OREGON'S FOREST RESOURCES AND MARKETS:
TRENDS AND ECONOMIC IMPACTS OF THE FOREST SECTOR

Oregon Forest Resources Institute

THE 2026 FOREST REPORT

REPORT AUTHORS: OREGON STATE UNIVERSITY

Mindy S. Crandall, Interim Department Head and Associate Professor of Forest Policy, Department of Forest Engineering, Resources, and Management, College of Forestry

Suhyun Jung, Assistant Professor of Natural Resource Economics, Department of Forest Ecosystems and Society, College of Forestry

Andres Susaeta, Assistant Professor of Natural Resource Economics, Department of Forest Engineering, Resources, and Management, College of Forestry

ECONOMIC CONTRIBUTION AUTHORS: UNIVERSITY OF IDAHO

Greg Latta, Director, Policy Analysis Group and Associate Research Professor of Forest Economics, Department of Natural Resources and Society

Timothy Nadreau, Assistant Professor, Department of Agricultural Economics and Rural Sociology

Philip Watson, Professor, Natural Resource and Regional Economics, Department of Agricultural Economics and Rural Sociology

PROJECT MANAGER AND COMMISSIONED BY: OREGON FOREST RESOURCES INSTITUTE

Julie Woodward, Deputy Director and Director of Forestry

SUPPORTING CONTRIBUTORS:

Hashendra Herath, Oregon State University: Data compilation and figure/table creation

Liam Resener, Portland State University: Map creation and spatial data analysis

ACKNOWLEDGMENTS

The authors thank (in alphabetical order) **Anna Johnson,** Oregon Department of Employment; **Brandon Kaetzel**, Oregon Department of Forestry; **Anna Maher**, **Sonja Oswalt** and **Suzanne Owen**, USDA Forest Service; and **Micah Scudder** and **Eric Simmons** with the Bureau of Business and Economic Research at the University of Montana for sharing and assisting with data.

Thank you to all those who served as committee members(*) and reviewers: Teresa Alcock, Inka Bajandas, Jennifer Beathe, Glenn Christensen, Tyler Ernst*, Rocky Goodnow, Courtney Griesel*, Anna Johnson*, Brandon Kaetzel*, Marcus Kauffman, Anna Maher*, Dan Newton, Suzanne Owen, Jim Paul*, Brian Rooney, Micah Scudder, Pete Sikora*, Eric Simmons, Amanda Sullivan-Astor, John Tokarczyk* and Andrew Yost.

Front cover: Thank you to employees from Freres Engineered Wood and Miami Corporation Management.

Table of Contents

1. INTRODUCTION 1

2. OREGON'S FOREST RESOURCES: THE SOURCE OF TIMBER SUPPLY 3
   - A Historical Overview of Oregon's Forests 3
   - Oregon Forestland and Forest Supply in a National Context 4
   - Forest Resources: Westside and Eastside Oregon 10
   - Net Change of Volume in Oregon: Sustainability Metrics 12
   - Harvest in Oregon Over Time 12
   - Research Highlight: Shifting Harvest and Processing Since the NWFP 16
   - Research Highlight: Policies Ensuring Sustainable Forest Management 17

3. OREGON'S FOREST PRODUCTS INDUSTRY 18
   - How Is Oregon Timber Used? 18
   - Oregon Sawmills 21
   - Oregon Plywood, Panel, and MDF Facilities 25
   - Mass Timber Production 27
   - Innovation Highlight: The Tallwood Design Institute and Emmerson Lab 28
   - Oregon Pulp and Paper Mills and Biomass Energy Facilities 29
   - Export Markets 32
   - Industry Receipts 38

4. ECONOMIC IMPORTANCE OF OREGON'S FOREST SECTOR 40
   - Employment and Wages 40
   - Economic Contributions of Oregon's Forest Sector to the State's Economy 47

5. THREATS, RISKS AND CONSTRAINTS TO SUPPLY 51
   - Fire in Oregon's Forests 51
   - Impact Highlight: 2020's Labor Day Fires 56
   - Research Highlight: Post-Fire Recovery of Wood Value 57
   - Oregon's Forest Health Issues 58

6. FUTURE OUTLOOK AND STRATEGIC CONSIDERATIONS 62
   - Demand Factors 62
   - Research Highlight: Changes in Risk in Western Forests 64
   - The Role of Emerging Markets in Oregon 65
   - Forest Carbon Offset Markets in Oregon 65
   - Other Values in Oregon's Forests 69

7. **CONCLUSION** 71

8. **DATA NOTES, SOURCES AND REFERENCES** 72

Notes on Data 72

Data Sources 73

References and Literature Cited 75

9. **APPENDIX: IMPLAN INPUT–OUTPUT DATA AND MODEL DESCRIPTION** 79

Appendix References 85

Table of Figures

Figure 1. Forest ownership in the state of Oregon 4

Figure 2. Estimates of forestland over time, Oregon and Washington 5

Figure 3. Net volume (million cubic feet) of timberland growing stock for selected states by owner, 2022 8

Figure 4. Net volume (million cubic feet) of timberland growing stock in Oregon by landowner, 1953–2022 8

Figure 5. Percentage of growing stock volume by species on forestland, 2021 9

Figure 6. Productivity (site index), proportion of land, westside Oregon, 2021 10

Figure 7. Productivity (site index), proportion of land, eastside Oregon, 2021 11

Figure 8. Percent of forestland by owner, eastside and westside Oregon, 2021 11

Figure 9. Timber harvest in Oregon by landowner, 1966–2022 14

Figure 10. Proportion of Oregon harvest by landowner, 1966–2022 14

Figure 11. Proportion of 2021 standing volume and 2022 harvest by landowner group 15

Figure 12. Average western Oregon log price index, adjusted for species, grade, and inflation, 2000–2024 15

Figure 13. Active primary wood products facilities in Oregon, 1988–2022 19

Figure 14. Total timber harvest and product flow in Oregon, 2022, in thousand cubic feet (MCF) ... 20

Figure 15. Softwood lumber production (millions of board feet, MMBF) in Oregon, 2016–2024 21

Figure 16. Key financial metrics in Oregon's sawmills and wood preservation sectors, 2013–2022 23

Figure 17. Total capital expenditures in Oregon's sawmills and wood preservation sectors, 2013–2022 23

Figure 18. Active Oregon sawmills ca. 2024 and forest ownership 24

Figure 19. Production of plywood (3/8-in. basis) in Oregon, 2018–2023 25
Figure 20. Key financial metrics in Oregon's veneer, plywood, and engineered wood product manufacturing, 2013–2022 25
Figure 21. Total capital expenditures in Oregon's veneer, plywood, and engineered wood product manufacturing, 2013–2022 26
Figure 22. Active plywood, panel, and medium density fiberboard (MDF) facilities ca. 2024 and forest ownership 27
Figure 23. Key financial metrics in Oregon's pulp, paper, and paperboard mill sector, 2013–2022 29
Figure 24. Total capital expenditures in Oregon's pulp and paper sector, 2013–2022 30
Figure 25. Active Oregon pulp/paper and biomass energy facilities ca. 2024 and forest ownership 31
Figure 26. Densified biomass fuel manufacturing facilities and capacity in Oregon, 2016–2024 32
Figure 27. Percentage of harvested timber exported from Oregon 33
Figure 28. Volume of softwood logs exported from the Columbia–Snake District 35
Figure 29. Volume of softwood lumber exported from the Columbia–Snake District 37
Figure 30. Volume received by Oregon processors by state of origin, 1985–2022 37
Figure 31. Total receipts in Oregon's wood and paper manufacturing sectors, 2014–2022 38
Figure 32. Total receipts in Oregon's wood manufacturing sector, 2013–2022 39
Figure 33. Total receipts in Oregon's pulp and paper sector, 2014–2022 39
Figure 34. Timber employment in Oregon and the United States, relative to 2001 40
Figure 35. Average annual employment by sector, 2001–2022 41
Figure 36. Total annual wages in Oregon by industry and worker type 43
Figure 37. Total annual wages in Oregon's wood manufacturing sectors, 2013–2022 44
Figure 38. Total annual wages in Oregon's paper manufacturing sectors, 2013–2022 44
Figure 39. Employment and hours in Oregon's wood products sectors, 2013–2022 45
Figure 40. Employment and hours in Oregon's paper manufacturing sectors, 2013–2022 46
Figure 41. Acres burned by fire severity in Oregon from 1984 to 2023 51
Figure 42. Locations of wildfire by severity 52
Figure 43. The causes of wildfire in eastern and western Oregon, 1992–2020 54
Figure 44. Spatial distribution of areas burned 1-3 times between 1984 and 2023 55
Figure 45. Historic fire regimes in Oregon by fire frequency and severity 55
Figure 46. Forest acres damaged by pests in Oregon, 1947–2023 58

Figure 47. Severity of forest damage effected by pests in Oregon, 1947–2023 ... 59
Figure 48. Total tree-damaged acreage by damage type in Oregon, 1947–2023 ... 60
Figure 49. New housing units authorized (permits) and new units (starts), thousands, 2000–2024 ... 62
Figure 50. Annual U.S. spending on commercial construction, 2002–2024 ... 63
Figure 51. U.S. mortgage delinquency rates, 2000–2024 ... 63

Table of Tables

Table 1. Forestland and timberland area (thousand acres) in select states, 2022 ... 5
Table 2. Area of forestland by ownership group, Oregon, 2021 ... 6
Table 3. Forest area (thousand acres) by ownership, selected states, 2022 ... 7
Table 4. Density of growing stock, cubic feet volume per acre, public and private timberlands, 2022 ... 9
Table 5. Annualized net change 2012–2021, growth, mortality, removals, and net change, eastside vs westside, by owner class ... 12
Table 6. Number of wood processing facilities in Oregon, 1988–2022 ... 18
Table 7. Lumber production (million board feet, MMBF), top 10 states, 2012–2024 ... 22
Table 8. Oregon timber processing capacity and use for all mills, 2022 ... 22
Table 9. Annual log export volumes (softwood and hardwood, metric tons) from ports in the Columbia–Snake District ... 34
Table 10. Net flows of timber in Oregon, 2022 ... 35
Table 11. Annual lumber export volumes (softwood and hardwood, metric tons) from ports in the Columbia–Snake District ... 36
Table 12. Gross employment estimates by sub-sector and by county (NAICS code), 2023 ... 42
Table 13. The 2023 economic contribution of Oregon's forest sector ... 49
Table 14. Economic output contribution of other sectors of the Oregon economy, 2023 ... 49
Table 15. Different types of species/diseases in Oregon, as of April 2024 ... 61

1. Introduction

The Oregon Forest Resources Institute (OFRI) was established by the Oregon Legislature in 1991 to support the forest sector and the stewardship of natural resources by advancing Oregonians' understanding of the social, environmental, and economic benefits of our forests. Accurate information is essential for sustainable forest management, and periodic reports on Oregon's Forest Sector Economy aim to provide a critical and timely overview of all aspects of supply and demand related to Oregon's forests and forest products industry. As Oregon's land grant institution with a three-fold mission to provide education, research, and outreach for the citizens of the state, Oregon State University (OSU) is pleased to collaborate with OFRI on this 2026 Forest Sector Economy Report.

The first forest sector report was produced in 2004 and used focus groups to characterize opportunities and challenges in the industry. Stakeholder interviews and an economic contribution analysis formed the basis of the forest report for 2012. In 2019, OSU worked with University of Idaho faculty to provide a comprehensive update to the 2012 report, focusing on quantitative data. Since 2019, much has changed in Oregon and the world, from the global pandemic resulting from COVID-19 to increasing disturbances impacting forest systems, including the 2020 Labor Day fires. For this update commissioned by OFRI in 2024, three professors from OSU's College of Forestry with expertise in forest and natural resource economics and forest policy worked with University of Idaho and state and federal agencies to gather, synthesize, and interpret the most recent data and research related to forest resources in Oregon, including forestry's economic contribution to the state.

This report begins with an overview of Oregon's forest resources in Section 2, the source of the logs and wood fiber that are the foundation of the industry. We situate Oregon in a national context and highlight the roles of both public and private lands in Oregon's landscape. Only by understanding Oregon's timber supply, including growth and removals, can we ensure that our forest management is sustainable, now and in the future.

Section 3 details how Oregon's timber is used by considering the industry itself, including facilities and employment. The forest sector is complex and includes those who own the land; those who grow and tend the resource; those who harvest and transport wood fiber; export markets; and the mills that process the raw material. Section 4 provides an update of the industry's economic contribution to the state's gross domestic product (GDP).

In Section 5 we consider threats and constraints to future supply, including the role of disturbance agents and their impact on Oregon's forests, before turning to future opportunities and strategic considerations for the resource in Section 6. Section 7 contains concluding thoughts. Throughout the report, we draw on both publicly available data and recent research conducted by the authors and others to shed light on aspects of the industry that may be less visible through standard economic information. As data was compiled from multiple sources, levels of data availability influenced the depth of historical look; however, our overall goal was to provide as comprehensive a view as possible. In the 2019 report, the authors compared Oregon to our nearest neighboring states, as well as our then top competitor in softwood lumber production, Georgia. While Georgia and other states have different dominant species and climates, both the Pacific Northwest and the Southeast regions of the United States focus on production of softwood species and provide the majority of the country's softwood lumber. We have chosen to maintain those comparisons for continuity's sake, while recognizing that the top lumber-producing state in the south has changed; since 2019, Alabama has edged out Georgia (see Table 7). Future reports may want to revisit and reconsider comparator states as the industry continues to change over time. All data and research papers used are detailed in Section 8; links included were active at the time of writing in 2025. Full details of the economic contribution analysis methods are included in the Appendix.

Ensuring the sustainability of Oregon's forest resources and industry is of vital importance to the state. Forestry has been a critical part of our economy and culture for more than a century; it is conducted with a high degree of environmental protection and provides multiple non-market goods and services for residents and visitors alike, along with market resources. The forest products industry in the state is driven by national and international consumer demand for softwood lumber, plywood and panel products, logs, and other items made from renewable resources. In the face of increasing need for housing and increasing recognition of the climate benefits of wood and renewable products over other materials, Oregon can continue to play a sustainable part of filling that demand. Keeping the resource growing and being utilized in the state provides all Oregonians with the beauty and non-market benefits of forest ecosystems the state is known for, visibility in how forests are responsibly managed and harvested, and economic value—all close to home.

2. Oregon's forest resources: the source of timber supply

A HISTORICAL OVERVIEW OF OREGON'S FORESTS

Oregon encompasses approximately 61.4 million acres (almost 96,000 square miles), about 29.7 million acres of which are classified as forestland (data from Oswalt et al., 2025). Human activity influencing Oregon's forests extends back through time immemorial, with Indigenous peoples of the state[1] using forest resources for housing, food, and clothing (Dobkins et al., 2017). Recent research has also documented widespread use of fire in intentional forest interventions by tribes, long before European contact and colonization (Hagmann et al., 2021; Merschel et al., 2024; Reilly et al., 2021). Tribal lands include forests, and active forest management, to this day.

Oregon's use of land to attract settlers and encourage settlement predated both federal land grant programs and statehood. The federal government confirmed earlier provisional government land grant programs through the passage of the Donation Land Claim Act in 1850 (O'Callaghan, 1960), although Oregon did not become a state until 1859, and the largest federal land grant program, the Homestead Act, was not passed until 1862.

Our land ownership pattern bears the marks of these programs and other federal actions to promote settlement (e.g., railroad grants). As transfers of land to private individuals and industry were carved out of existing public domain land before and after statehood, increasing concern about watershed and navigation impacts observed through eastern loss of forest cover, as well as a desire to ensure a sustainable timber supply, led to the initial establishment of publicly owned forest reserves around the turn of the century[2]. At the time that forest reserves were designated from the existing public domain land, settlement land grants had already been concentrated in the more accessible and productive areas around the Willamette Valley and Coast Range. Today, private forestland owned by families, individuals, and industry is more prevalent in these areas, with federal forestland comprising most of the Cascade Mountains and Blue Mountains, and much of the Klamath and Siskiyou Mountains in southwestern Oregon (Figure 1).

---

1 The nine federally recognized tribes in Oregon in 2025 are the Burns Paiute Tribe; the Confederated Tribes of Coos, Lower Umpqua and Siuslaw Indians; the Confederated Tribes of Grand Ronde; the Confederated Tribes of Siletz Indians; the Confederated Tribes of the Umatilla Indian Reservation; the Confederated Tribes of Warm Springs; the Cow Creek Band of Umpqua Tribe of Indians; the Coquille Indian Tribe; and the Klamath Tribes.

[2] Presidential authority to create forest reserves was authorized by the Creative Act (Federal Forest Reserve Act) of 1891 and clarified in the Organic Act of 1897. The U.S. Forest Service was created in 1905, and forest reserves were renamed "national forests" and their expansion prohibited in six Western states (including Oregon) in 1907.

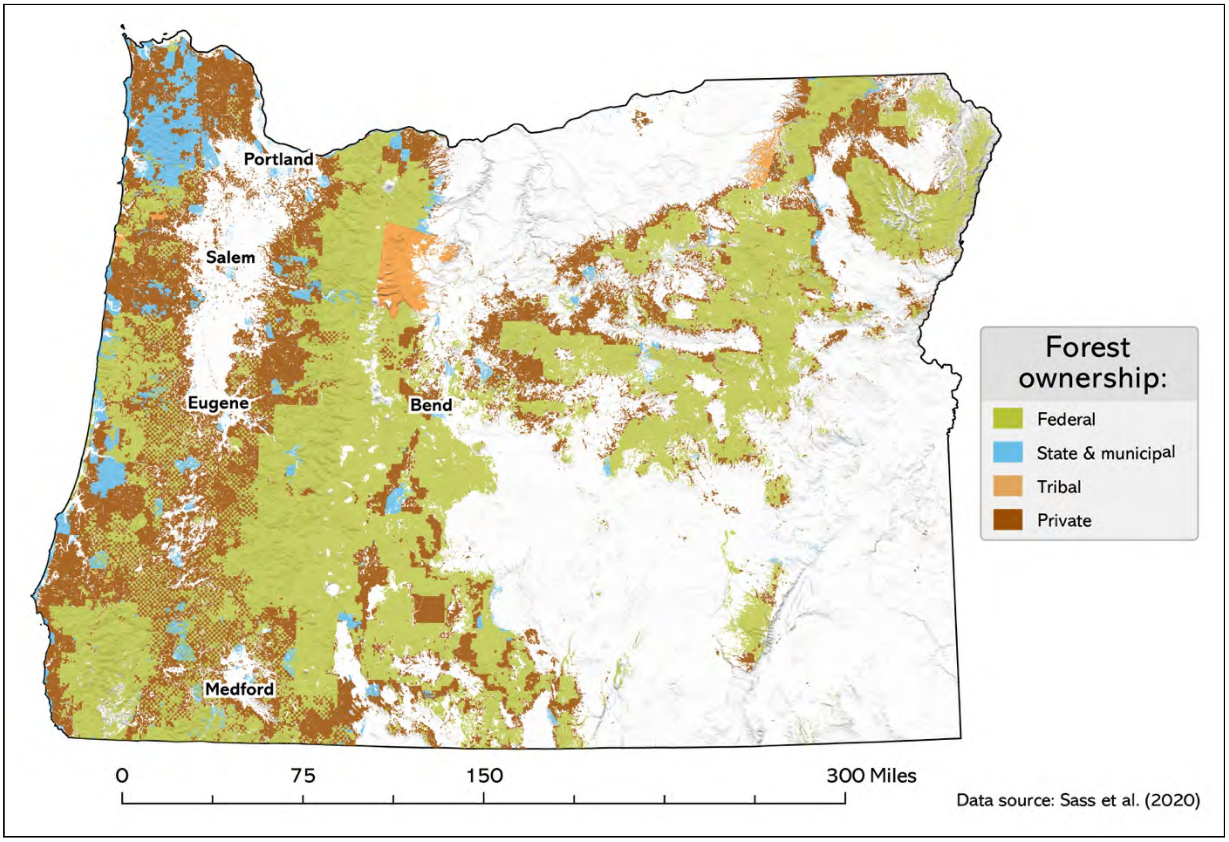


Figure 1. Forest ownership in the state of Oregon.

OREGON FORESTLAND AND FOREST SUPPLY IN A NATIONAL CONTEXT

The amount of forestland in Oregon has stayed remarkably consistent over time. Unlike much of the eastern and southern parts of the United States, where clearing of forests for settlement and agriculture resulted in large losses of forestland (some of which has returned to forest), estimates from the USFS of pre-colonization areas of forest in the state show little change from current amounts (Figure 2; Oswalt et al., 2025). In contrast, Washington state, our most similar neighbor in terms of ecosystems and history, has lost more forest area.

Almost half of Oregon, 48%, is forestland, defined as land with at least 10% canopy cover of trees of any size (currently or in the past). Of that forested area, 80% is defined as timberland, land that is capable of producing 20 ft^3 per acre per year of wood from trees classified as timber species (USFS, 2025). The percentage of forestland in Oregon is higher than in the United States as a whole (34%), but slightly lower than in Washington (52%) and Georgia (66%) (Table 1; Oswalt et al., 2025). However, Oregon's number of acres of forestland and timberland is higher than that of our nearest neighboring states and other softwood lumber producers (Washington, California, Idaho, Montana, and Georgia). Less than 15% of Oregon's timberland is classified as reserved by the USFS (Table 1). Oregon comprises 2.7% of the nation's land area but almost 4% of the nation's forestland.

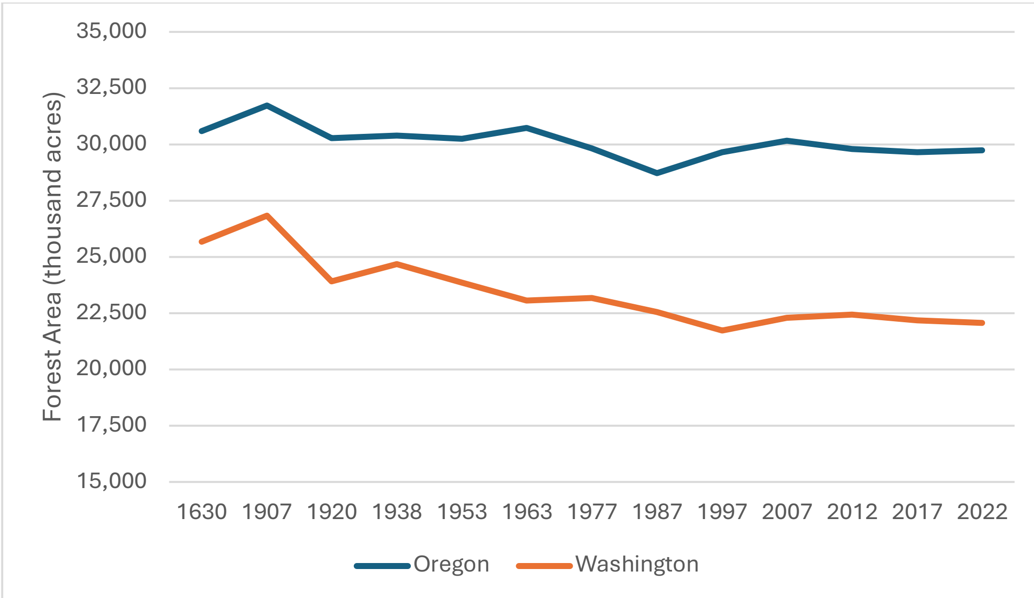


Figure 2. Estimates of forestland over time, Oregon and Washington.

Table 1. Forestland and timberland area (thousand acres) in select states, 2022.

State	Total land area	Total forestland	Forestland as % of all land	Total timberland	Timberland as % of forestland	Reserved as % of all timberlands
Oregon	61,437	**29,745**	48%	**23,888**	80%	12%
Washington	42,531	**22,069**	52%	**17,672**	80%	22%
California	99,749	**31,224**	31%	**16,271**	52%	39%
Idaho	52,893	**21,703**	41%	**16,717**	77%	23%
Montana	93,152	**25,885**	28%	**19,956**	77%	19%
Georgia	36,939	**24,343**	66%	**23,753**	98%	2%
All U.S.	2,261,134	**763,296**	34%	**509,340**	67%	15%

Of the states considered here, Oregon, Washington, and Georgia all have similar rates of timberland that is considered planted in origin (28%, 27%, and 32%, respectively), more than California, Idaho, and Montana, which each have less than 10% of timberland with a planted origin (Oswalt et al., 2025). Oregon's first law that mentions reforestation dates from 1941 and reforestation requirements were codified in the nation's first comprehensive forest practices act, passed in Oregon in 1971; Oregon has long emphasized the importance of reforestation in securing the next generation's timber supply.

Western states are dominated by public lands, unlike other states in the U.S., and forestland in Oregon is no exception. Overall, 64% of Oregon's forestland is held by a public entity, either in management by the USDA Forest Service (USFS), the Bureau of Land Management (BLM) within the U.S. Department of the Interior, the state of Oregon, or local county and municipal lands. Of the remaining forestland in Oregon, 62% is held by private industrial owners and 38% by individuals and families (also referred to as family forestlands, non-industrial forestland, or small woodlot; includes tribal owners) (Table 2; USFS, Forest Inventory and Analysis Program, EVALIDator). The proportion of forestland in public ownerships is higher in Idaho and Montana and much lower in Georgia (11%), which is more similar to other southern or eastern states that have few public lands (Table 3; Oswalt et al., 2025). Slight differences in acreage between Table 2 and Table 3 may be due to the different data sources or years (see Section 8.1).

Table 2. Area of forestland by ownership group, Oregon, 2021.

Ownership group and class	Total thousand acres)	Percent
USDA Forest Service:		
National Forest	14,006	47.1%
National Grasslands	55	0.2%
Total	14,061	47.2%
Other federal government:		
Bureau of Land Management	3,616	12.1%
Department of Defense and Energy	0	0.0%
National Park Service	179	0.6%
U.S. Fish and Wildlife Service	18	0.1%
Other federal	10	0.0%
Total	3,823	12.8%
State and local government:		
Local	222	0.7%
State	1,096	3.7%
Total	1,318	4.4%
Private:		
Corporate	6,522	21.9%
Noncorporate private:		
NGOs and conservation or natural resource orgs	14	0.0%
Unincorporated partnerships, associations, or clubs	20	0.1%
Native American	499	1.7%
Individual	3,508	11.8%
Total, noncorporate private	4,042	13.6%
All private	10,563	35.5%
All owners	29,766	100.0%

Table 3. Forest area (thousand acres) by ownership, selected states, 2022.

	Oregon	Washington	California	Idaho	Montana	Georgia	All US
All ownerships	29,745	22,069	31,224	21,703	25,885	24,343	763,296
Total public	19,093	12,817	18,799	18,703	18,578	2,767	323,697
Public as % of total forestland	64%	58%	60%	86%	72%	11%	42%
Total federal	17,866	9,795	17,711	17,464	17,510	1,871	237,515
USFS	14,053	8,266	14,982	16,527	15,277	859	140,650
BLM	3,601	77	1,269	832	1,225	0	37,444
Other	212	1,453	1,460	105	1,009	1,012	56,014
State	989	2,558	705	1,231	1,055	537	71,606
County & local	238	464	383	9	12	359	14,576
Total private	10,652	9,252	12,425	3,000	7,307	21,575	439,599
Private as % of total forestland	36%	42%	40%	14%	28%	89%	58%
Corporate	6,578	4,709	5,380	1,691	3,128	8,546	165,247
Noncorporate	4,074	4,542	7,045	1,309	4,180	13,029	274,353
Noncorporate as % of private	38%	49%	57%	44%	57%	60%	62%

Oregon growing stock totaled more than 93,354 million ft^3 in 2022 (net volume in trees at least 5 in. in diameter), almost 9% of the nation's total. Oregon holds more growing stock than any of our closest neighbors, and more than twice as much as Georgia's 42,070 million ft^3 (Figure 3; Oswalt et al., 2025). However, 74% of Oregon's growing stock is on public lands. Oregon's 24,227 million ft^3 of growing stock held on all private lands is less than Washington's (25,626 million ft^3), California's (27,750 million ft^3), and Georgia's (36,634 million ft^3).

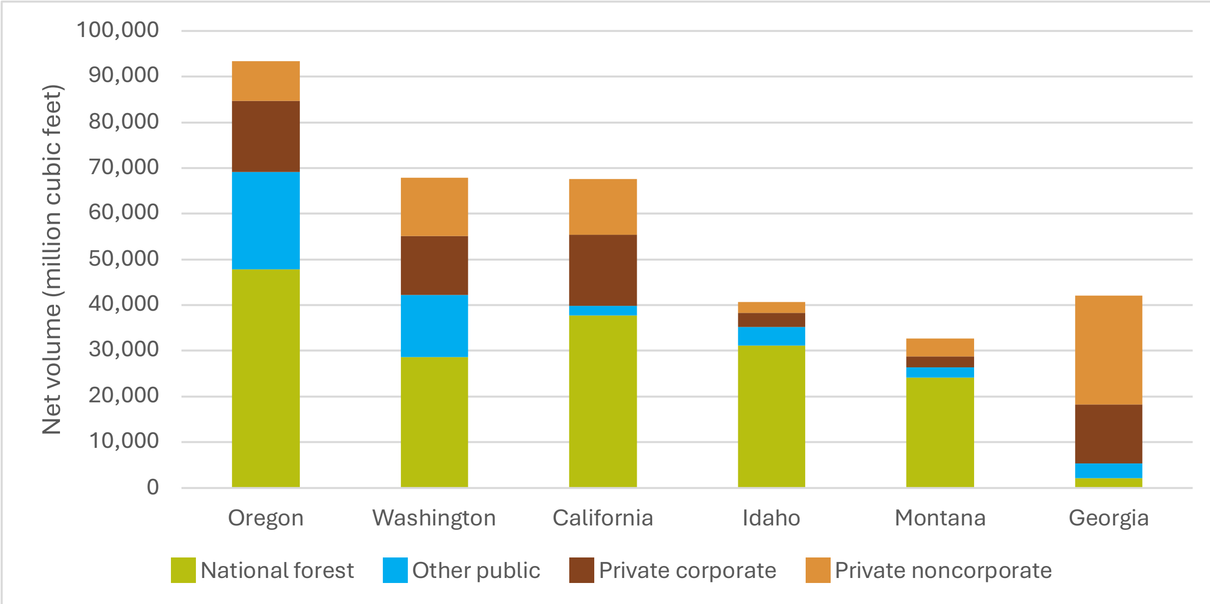


Figure 3. Net volume (million cubic feet) of timberland growing stock for selected states by owner, 2022.

The amount of growing stock in Oregon has been rising from a low of 76,620 million ft^3 in 1987 (based on observed years; see Figure 4). While the amount on private lands has remained remarkably consistent across 2007, 2017, and 2022, totaling between 24,200 million ft^3 and 24,800 million ft^3, growing stock volume on public lands has been increasing in tandem with total volume since an observed low in 1987 (Oswalt et al., 2025).

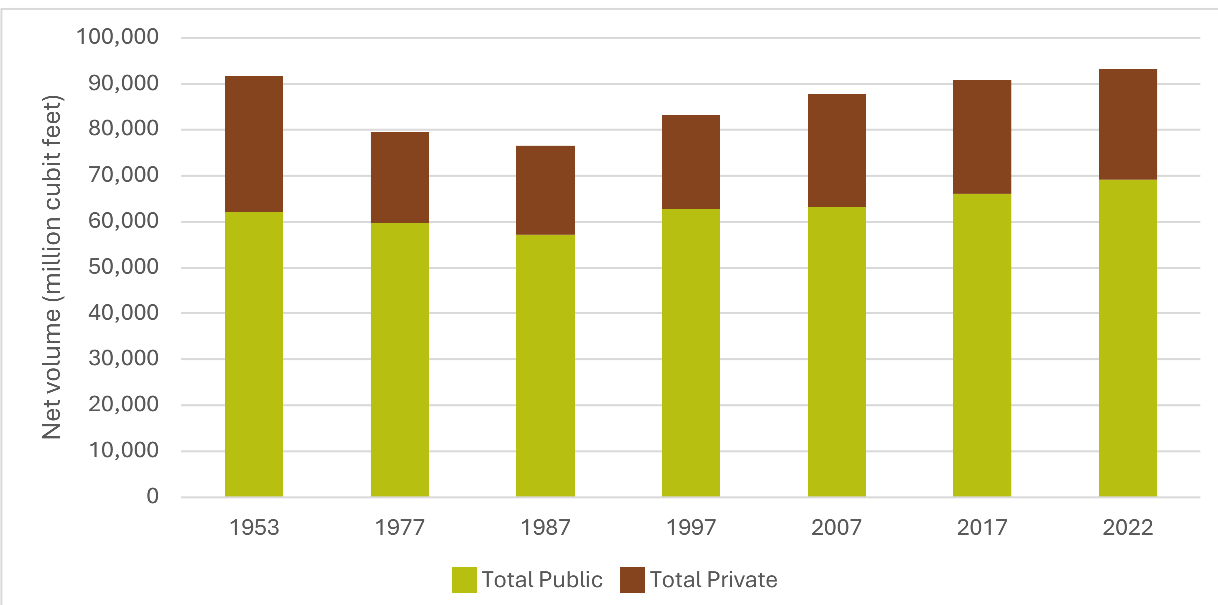


Figure 4. Net volume (million cubic feet) of timberland growing stock in Oregon by landowner, 1953–2022.

Across all highlighted states, public timberlands hold more growing stock than private lands (Table 4; growing stock data and acreage information from Oswalt et al., 2025). Oregon is third in volume per acre on private timberlands, after California and Washington, and second in volume per acre on public timberlands after Washington.

Table 4. Density of growing stock, cubic feet volume per acre, public and private timberlands, 2022.

State	Private timberlands	Public timberlands
Oregon	2,594.41	4,750.96
Washington	2,830.32	4,907.66
California	3,892.82	4,352.36
Idaho	1,914.80	2,539.26
Montana	993.52	1,926.91
Georgia	1,698.70	2,485.25
United States	1,832.81	2,665.90

Across Oregon, the majority of tree volume occurs in stands dominated by conifers, in particular by Douglas-fir (Figure 5; USFS, Forest Inventory and Analysis Program, EVALIDator), followed by true firs, ponderosa and Jeffrey pines, and western hemlock.

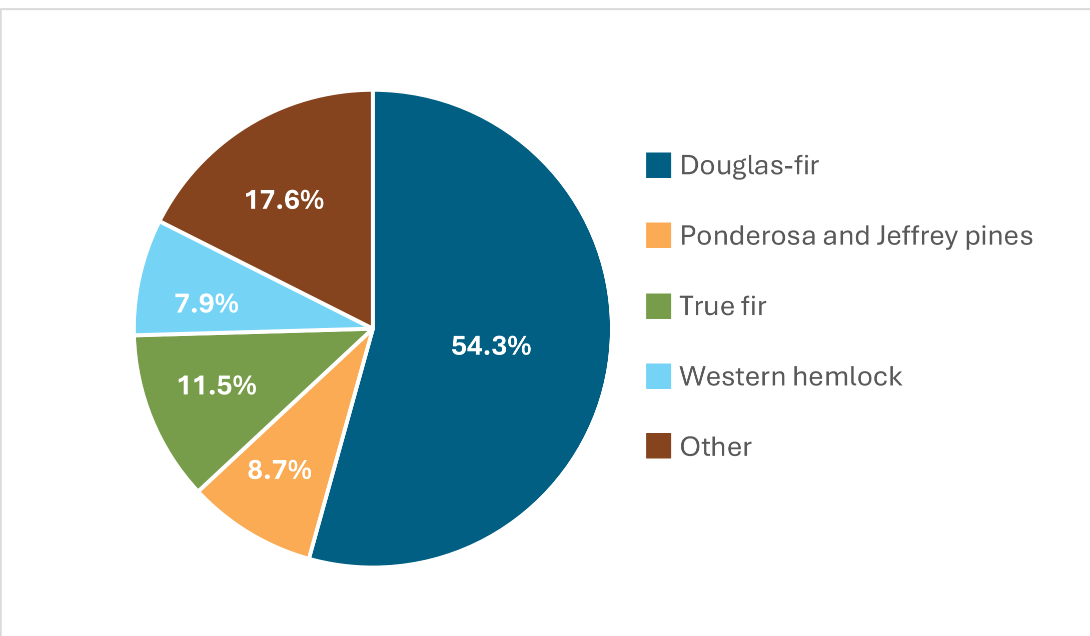


Figure 5. Percentage of growing stock volume by species on forestland, 2021.

FOREST RESOURCES: WESTSIDE AND EASTSIDE OREGON

Forest ecosystems in Oregon are commonly broken out by those occurring west of the crest of the Cascade Mountains (westside) and those on the east side of the mountains (eastside). Extent of forest, tree species, climate, disturbance regimes, and many other factors vary significantly between eastside and westside forests. Westside Oregon forests encompass both wet (coastal band) and moist climate types, with Douglas-fir dominating outside the Sitka spruce zone (Reilly et al., 2021). As forests in these zones age, western hemlock and various true fir species become more of a component of the under- and mid-stories. Cold forests, at higher elevations and where more precipitation falls as snow, feature a mix of hemlock, pines, firs, and spruce (Reilly et al., 2021). Westside forests in the Klamath-Siskiyou region of southwest Oregon are particularly diverse in species composition. Western Oregon forests receive more precipitation, especially rain, and are generally more productive than eastside forests (Figure 6; USFS, Forest Inventory and Analysis Program, EVALIDator).

Drier ecosystems dominate eastside Oregon (Reilly et al., 2021), where forests are dominated by pine species, particularly Ponderosa pine. These forests are typically less productive (Figure 7; USFS, Forest Inventory and Analysis Program, EVALIDator). Figures 6 and 7 show the proportion of land by site class, a measure of productivity. Site index indicates the height potential of dominant trees given a "base age" of measurement, typically 100 years. Higher numbers indicate higher growth potential and thus higher productivity.

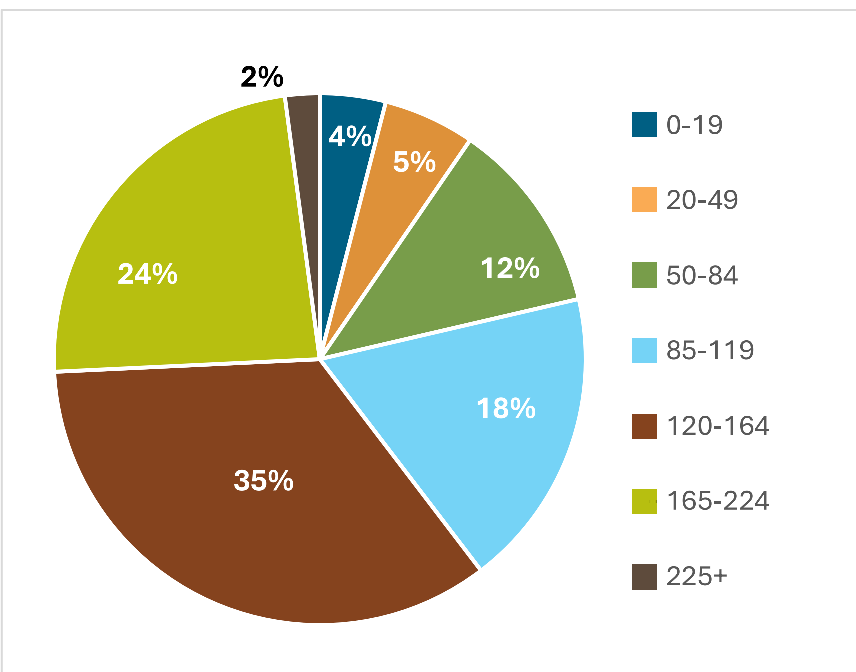


Figure 6. Productivity (site index), proportion of land, westside Oregon, 2021.

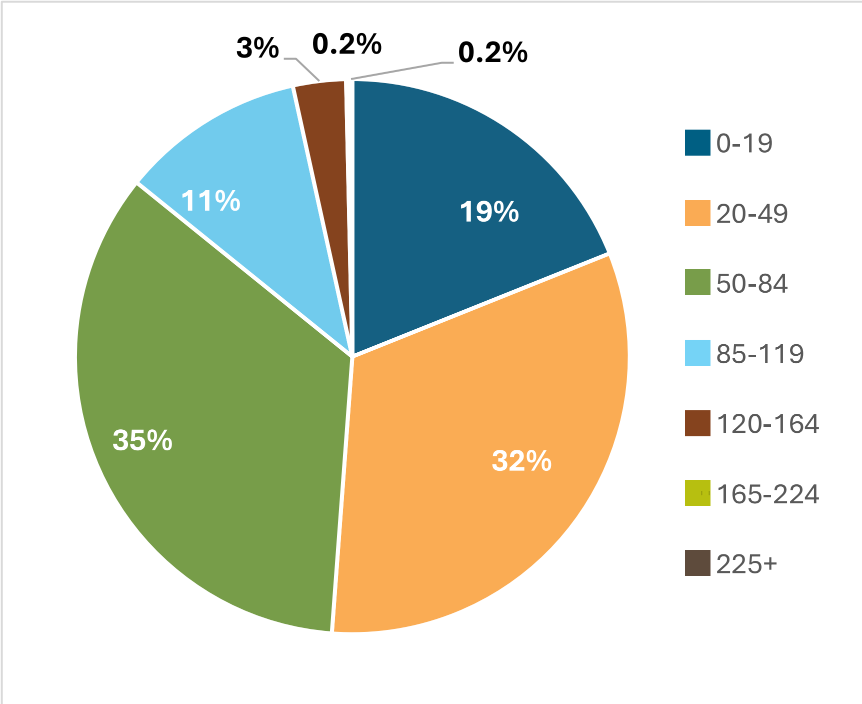


Figure 7. Productivity (site index), proportion of land, eastside Oregon, 2021.

Western Oregon has more forestland than eastern Oregon, and a higher percentage is privately owned. On the eastside, 71% of forests are in federal, state, or local ownership (Figure 8; USFS, Forest Inventory and Analysis Program, EVALIDator); in contrast, 42% of westside forests are in private ownership.

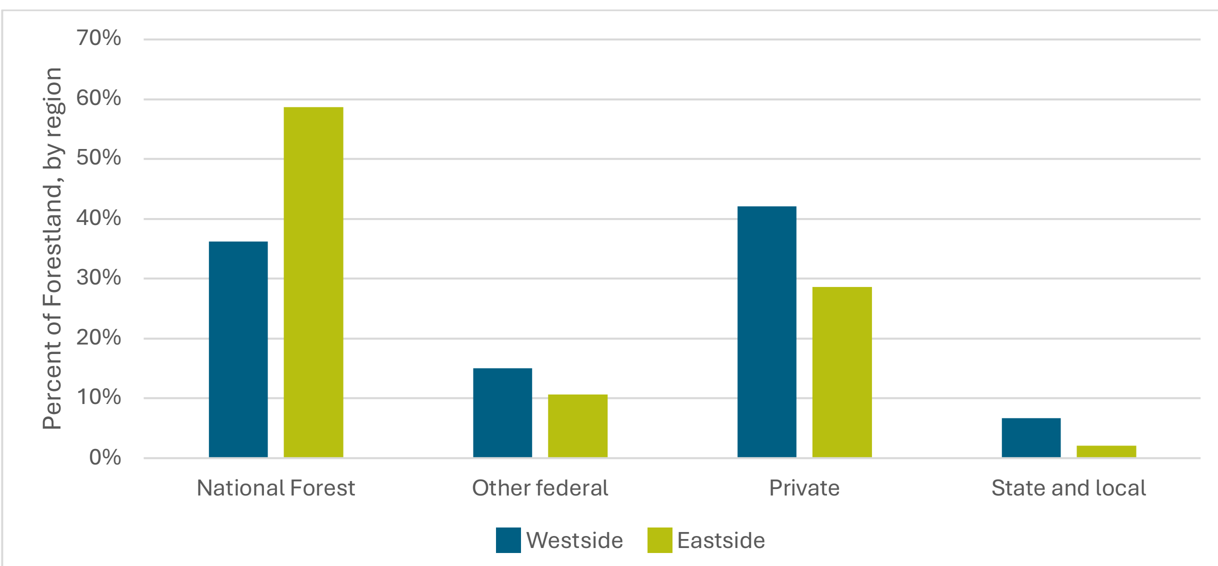


Figure 8. Percent of forestland by owner, eastside and westside Oregon, 2021.

NET CHANGE OF VOLUME IN OREGON: SUSTAINABILITY METRICS

A basic tenet of forest sustainability is that annual harvest and mortality are less than annual net growth. Using this metric, Oregon forestry remains a sustainable system, with mortality and removals remaining less than growth across both eastside and westside ecosystems and across landowners (Table 5; USFS, Forest Inventory and Analysis Program). While the 2012 Forest Report showed some negative net growth for eastside public lands, all net changes in the most recent decade for which data is available are positive.

Table 5. Annualized net change 2012–2021, growth, mortality, removals, and net change, eastside vs westside, by owner class.

	GROWTH	MORTALITY	REMOVALS	NET CHANGE
	2012–2021 (cubic feet per acre per year)			
WEST				
Public	129.6	49.2	17.6	62.8
Private	142.8	15.3	125.9	1.6
EAST				
Public	47	24.6	5.8	16.6
Private	39.2	8	23.1	8.1

HARVEST IN OREGON OVER TIME

Oregon's forest products industry, and thus the harvest of Oregon trees, is driven by consumer demand for softwood lumber. Consumer demand for softwood lumber is closely related to both population and per capita income, rising with increases in both cases. Unlike other states, in Oregon the use of wood fiber for pulp and paper has been predominately as a by-product of sawtimber harvest and processing. Due to its connection with housing markets, Oregon's industry has been particularly sensitive to economic recessions and downturns that result in higher mortgage interest rates, lower per capita incomes, or other factors that lead to tightening of housing and remodeling markets.

Over time, Oregon harvest trends show impacts of multiple factors: the high initial use of private forest lands (again, predominately centered around the Willamette Valley and Coast Range) for timber supply, followed by an increase in overall harvests driven by increasing use of federal lands for timber production. This increase in harvest of trees from public lands was itself driven by both increasing demand post-World War II (increasing incomes, population, and economic growth) and a limitation of second rotation availability on private land. That harvest trajectory changed abruptly in the late 1980s and 1990s, a shift that impacted both total harvest and the location of harvest and processing activity in the state.

These changes were brought about by an increasing awareness of the scarcity of late successional and old-growth forests, a forest type that remained primarily on federal lands. Social pressure and the identification of the northern spotted owl, *Strix occindentalis,* as an old-growth dependent species led to a series of actions by the USFS, and others, which changed harvest patterns. A limited injunction on 140 specific timber harvests was placed by a federal judge in 1989; in response, the USFS temporarily halted all timber sales on 13 national forests in the range of the spotted owl. Following the listing of the owl by U.S. Fish and Wildlife as endangered in 1990, a series of lawsuits challenged the agency's abilities to adequately protect late successional habitat under the existing USFS forest and Bureau of Land Management resource plans. The injunction was formalized in 1991 through a court ruling blocking all timber sales until a plan that enabled species protection was created.

Following President Clinton's election, he convened a forest congress in Portland in 1993. The outcome was the Forest Ecosystem Management and Assessment Team (FEMAT) Report. What eventually became known as the Northwest Forest Plan (NWFP) was a 1994 Record of Decision on a Final Supplemental Environmental Impact Statement under the National Environmental Policy Act that selected Alternative 9A, a scenario modeled by FEMAT. Thus, the NWFP is not a plan per se, but a land allocation overlay and comprehensive ecosystem management guidelines for all federal national forest and resource management plans in the range of the northern spotted owl. Covering western Washington, western Oregon, and northwestern California, the NWFP anticipated future harvest of approximately 1.1 billion board feet (BBF) of federal timber, a reduction from the 4.5 BBF realized annually between 1980–1989. Since the passage of the NWFP, annual harvests from federal land in the region have averaged closer to 0.5 BBF. Oregon harvest since the 1960s shows this decline in public timber supply (Figure 9; Oregon Department of Forestry).

When considering the *share* of total timber harvest coming from different landowner classes between 1966 and 2022, a clear difference in timber supply can be seen pre- and post-NWFP adoption in 1994.

Figure 10 shows the proportion of total harvest by landowners from ODF data. As the harvest declined in the state from ca. 8 BBF from 1966–1986 to ca. 4 BBF beginning in the mid-1990s, there was an increasing reliance on private lands for the supply stream for consumer end products and an increase in the percentage of the total coming from both industrial and other private landowners.

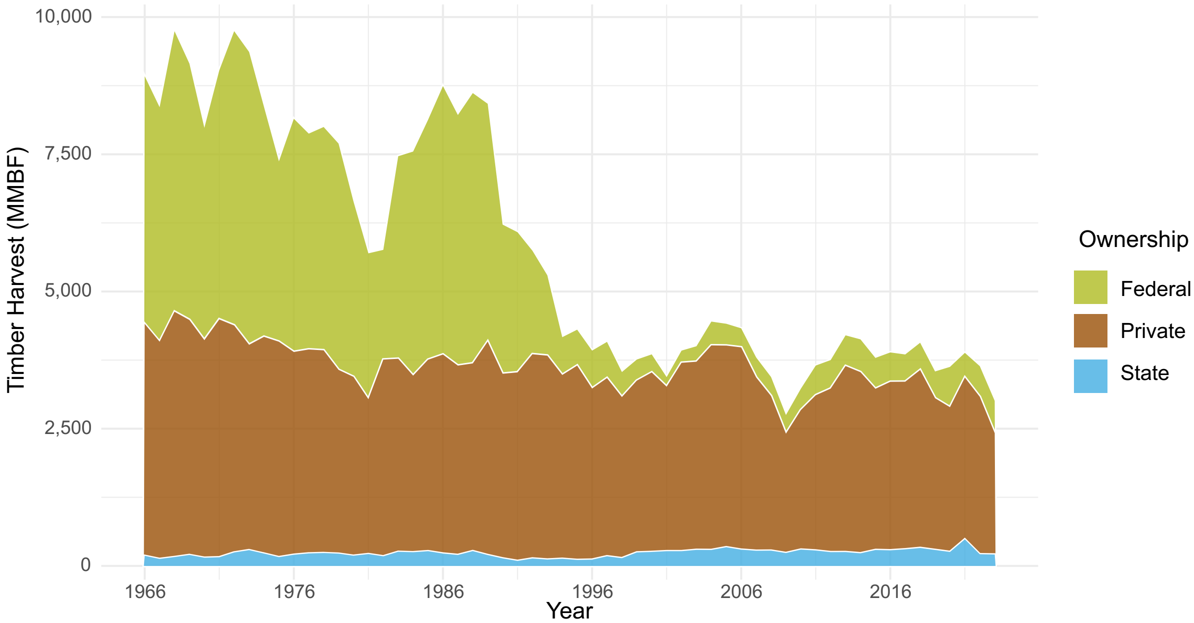


Figure 9. Timber harvest in Oregon by landowner, 1966–2022.

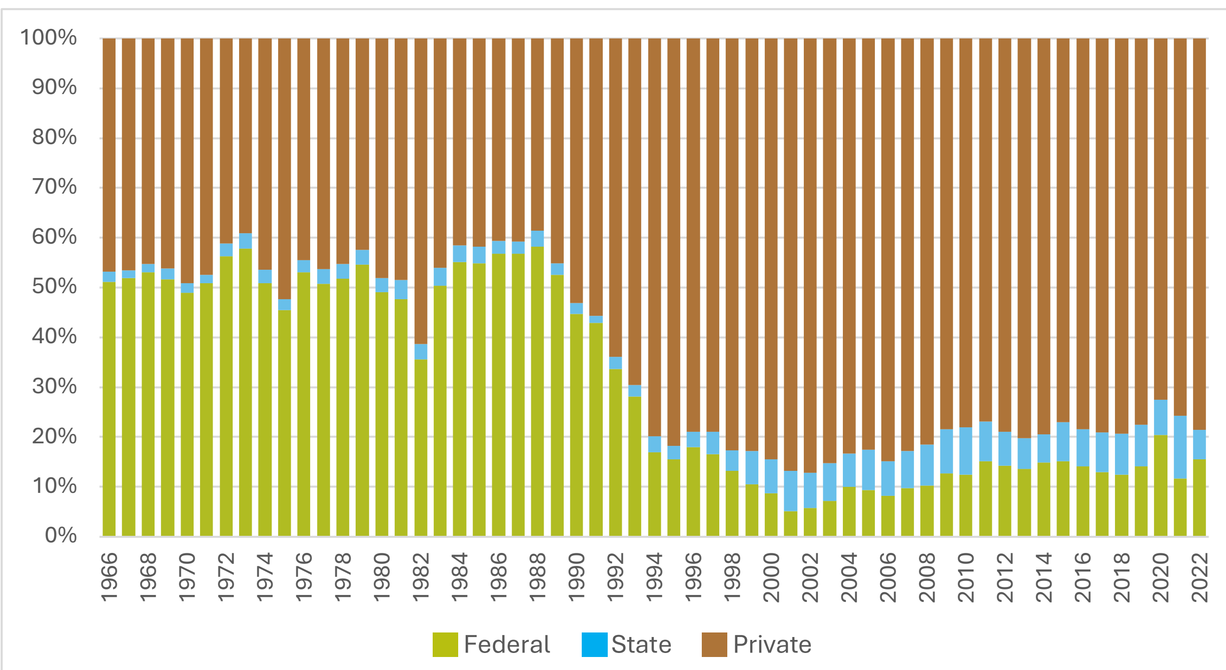


Figure 10. Proportion of Oregon harvest by landowner, 1966–2022.

The data for ownership, standing volume, and harvest highlight that while growth, volume, and ownership of forestland (particularly for the highly productive timberlands of westside Oregon) is concentrated on federal lands, harvest supporting the forest industry is predominantly from private lands (Figure 11; Simmons et al., 2025). Oregon log prices over the last 25 years highlight the role consumer demand plays in motivating the harvest of Oregon trees, with a notable downturn during the Great Recession of 2007–2009 (Figure 12; Oregon Department of Forestry).

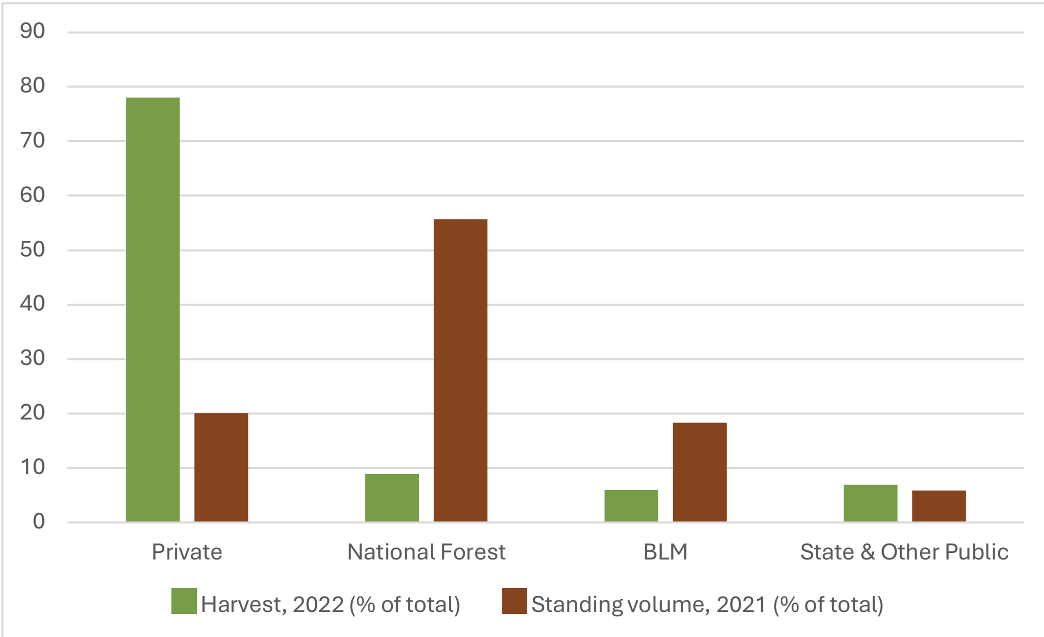


Figure 11. Proportion of 2021 standing volume and 2022 harvest by landowner group.

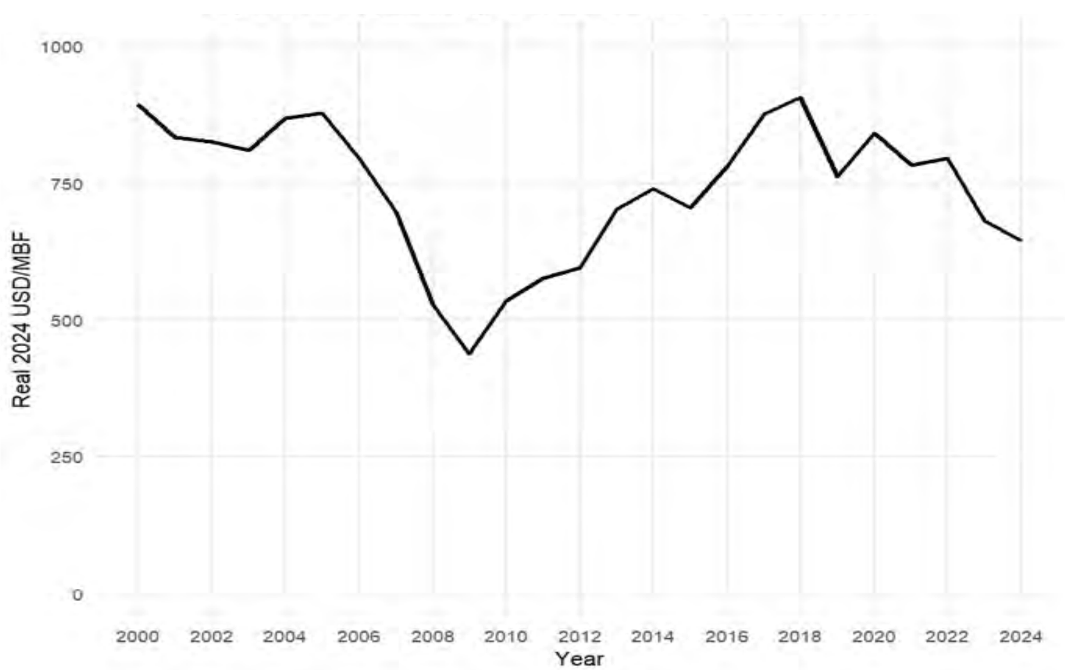
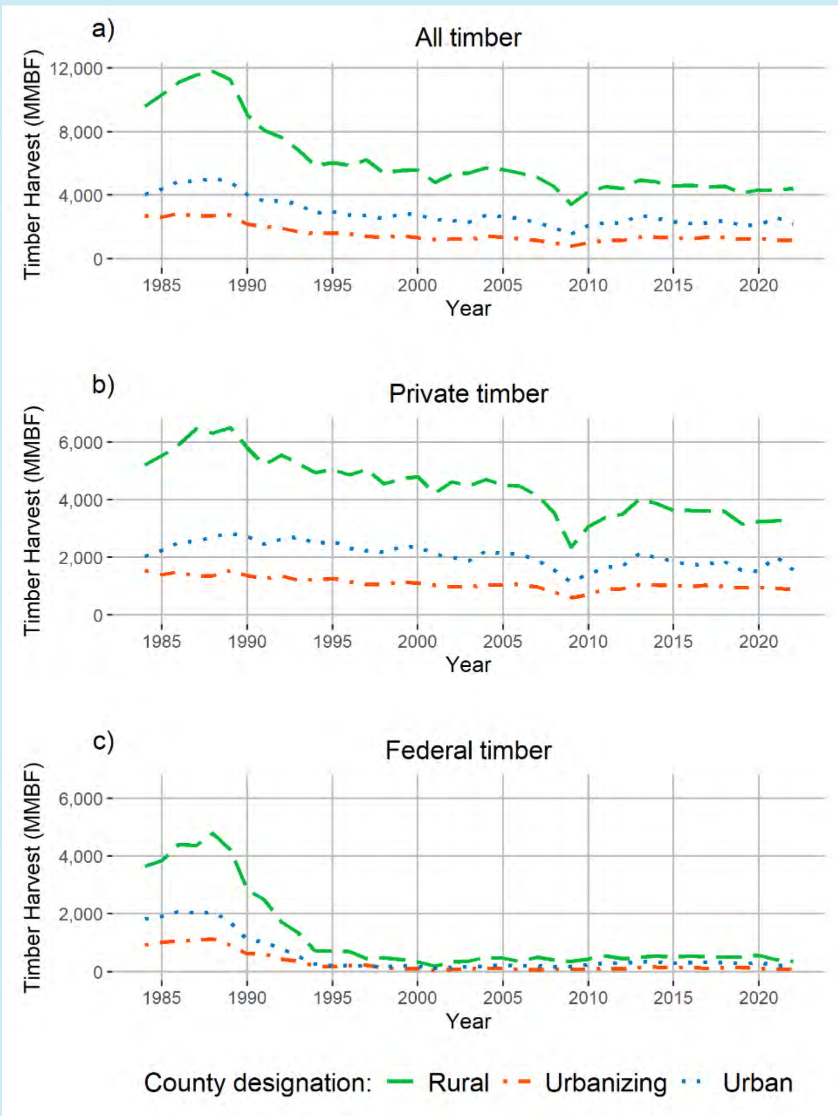


Figure 12. Average western Oregon log price index, adjusted for species, grade, and inflation, 2000–2024.

RESEARCH HIGHLIGHT: SHIFTING HARVEST AND PROCESSING SINCE THE NWFP

Recent research has explored the shifting role of harvest and infrastructure in the Pacific Northwest since the adoption of the Northwest Forest Plan (NWFP). Separating out the harvest and forest industry sector activity over time by rural or urban county highlights the stark loss of harvest activity in rural counties dominated by federal land ownership over the early 1990s (see figure below). Between 1983 and 2022, rural counties in the region experienced a 90% decline in federal timber harvest. This was particularly pronounced in Oregon, which relied more on federal timber prior to 1991.



Researchers also found a marked difference in the roles of sectors across urban, rural, and urbanizing counties. (Urbanizing counties were defined as those that changed status between 1973 and 2022 from rural to urban; they include many small metro areas in Oregon.) While harvesting predominantly occurs in rural counties—as you'd expect—mill establishments and employment are mostly in non-rural counties. However, rural and urbanizing counties share a reliance on the industry across all sectors, more so than urban counties.

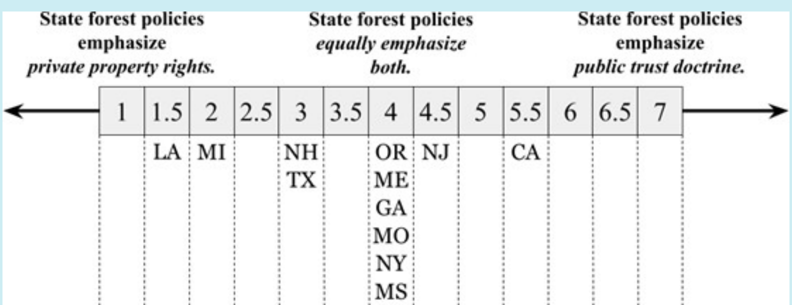
Figure from Crandall et al. (2025). Combined harvest (Oregon, Washington, and northern California) by landowner and by rural, urban, or urbanizing county status, 1984–2022.

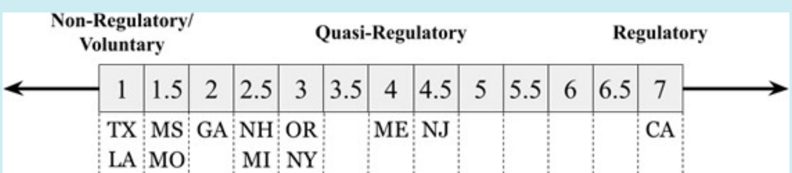
***For more information,** see "Shifting industrial geographies of timber production and processing in the Pacific Northwest" by Crandall et al. (2025; link in References). Figure used with permission of authors.*

RESEARCH HIGHLIGHT:
POLICIES ENSURING SUSTAINABLE FOREST MANAGEMENT

Oregon was the first state to pass a comprehensive Forest Practices Act (FPA) in 1971 to ensure sustainable environmental outcomes from forestry, and Washington and California followed suit shortly thereafter. However, many states do not have an FPA or have an FPA that covers only a small number of forestry activities. Comparing the policy tools employed by all 50 states revealed interesting regional differences and different justifications for relying on top-down (e.g., state) authority vs bottom-up (landowner) autonomy, with many states in the South utilizing largely voluntary instruments and areas of the Midwest placing an emphasis on incentive programs rather than regulatory systems (Kelly & Crandall, 2022).

Although all West Coast states have primarily relied on regulatory frameworks, the implementation of those has been varied between the three states. Oregon has relied more on education and promotion of “doing the right thing.” Interviews with policy experts in 12 states, including Oregon, highlighted the importance of maintaining balance and flexibility for landowners (Goldstein et al., 2023). Policy experts were asked if their state forest policies emphasized private property rights or the protection of public trust resources, or if they relied on voluntary or regulatory processes. Most interviewees felt that state-level policies provided a balance between protection and landowner flexibility regardless of policy instruments used. Most systems across the United States were considered largely voluntary or quasi-regulatory.





Figures 4 (top) and 5 (bottom) from Goldstein et al. (2023). Shown are the responses from each interviewee, indicated by state, asking them to position their state’s policies on a scale with an emphasis on private property rights vs protection of public resources, and if their policies were voluntary or regulatory. Policy experts indicated a balance of policy goals and a desire to preserve landowner choice. Note that these interviews took place before the Private Forest Accord process in Oregon.

***For more information,** see “State-level forestry policies across the U.S.: Discourses reflecting the tension between private property rights and public trust resources” by Kelly and Crandall (2022) and “‘The cost of doing business’: Private rights, public resources, and the resulting diversity of state-level forestry policies in the U.S.” by Goldstein et al. (2023; links in References). Figures used with permission of the authors.*

3. Oregon's Forest Products Industry

HOW IS OREGON TIMBER USED?

In 2022, Oregon had 133 primary forest product facilities in operation, down from 166 in 2017—a decline of 20% (Table 6; Simmons et al., 2025). Most facilities are located in western Oregon, near the state's primary timber resources. Figure 13 illustrates the long-term downward trend in facility numbers, though year-to-year comparisons are somewhat affected by changes in data collection methods (Simmons et al., 2025). Factors contributing to these trends are discussed in more detail below. Note that there is a slight difference in data definition as of 2022 for plywood and veneer; prior to that date, mill counts included layup-only facilities without plywood production, while the 2022 number reflects only facilities for firms that produce veneer.

Table 6. Number of wood processing facilities in Oregon, 1988–2022.

Survey Year	Sawmills	Plywood & Veneer	Pulp & Board	Other/Export	Total
1988	165	87	33	75	360
1992	115	64	30	44	253
1994	106	34	31	30	201
1998	93	43	29	35	200
2003	126	33	23	63	245
2008	122	30	22	72	246
2013	90	26	19	53	188
2017	75	25	15	51	166
2022	69	14	12	38	133

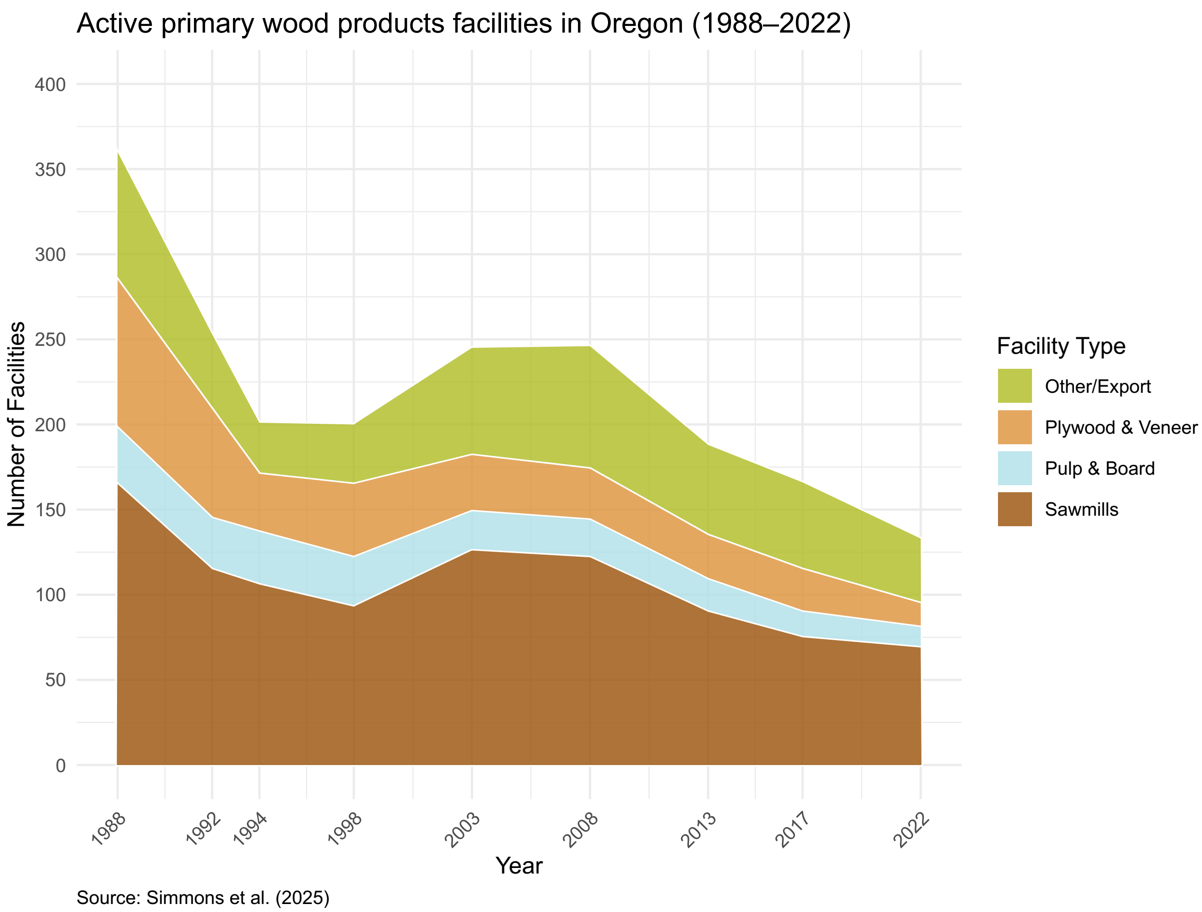
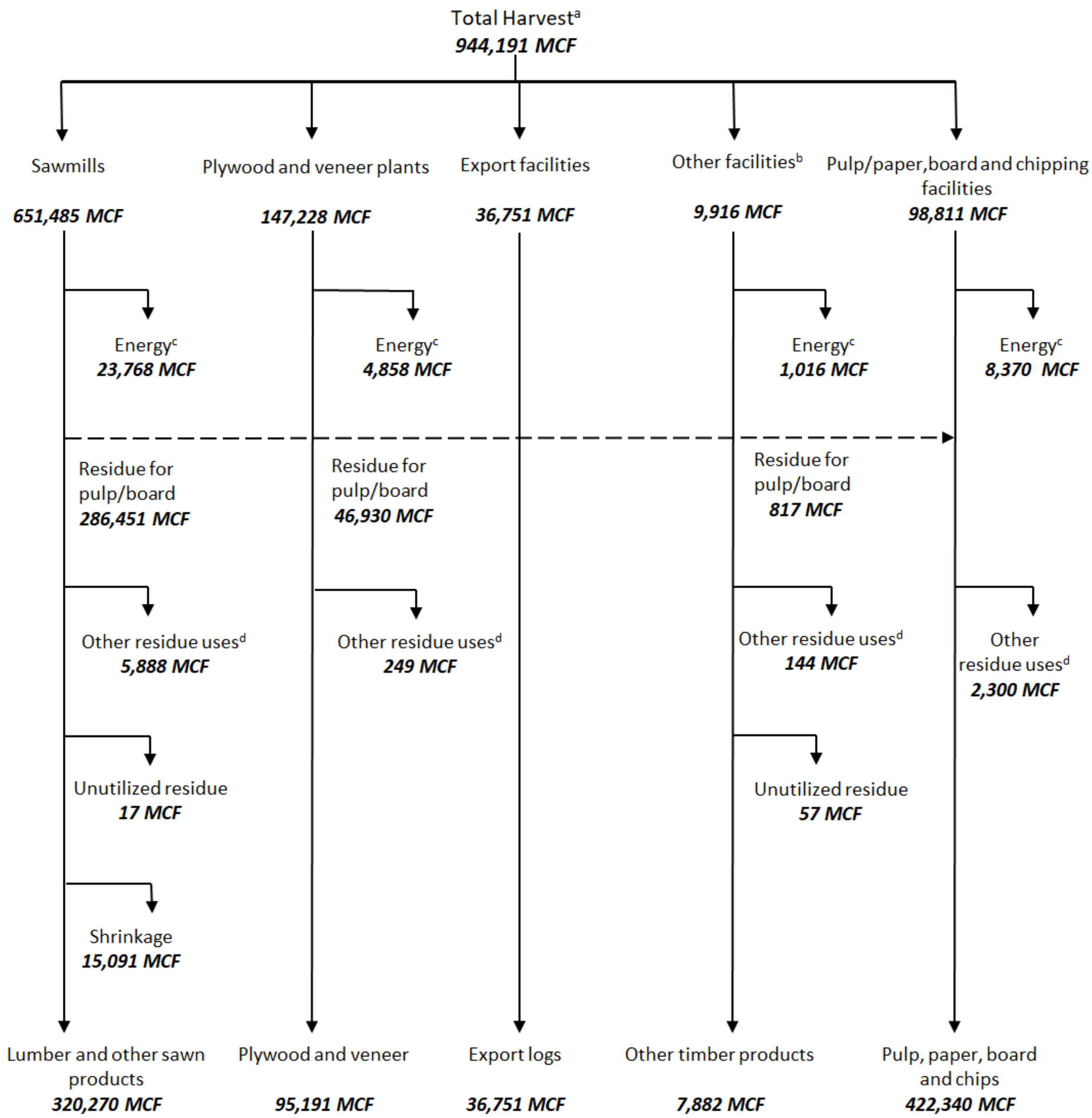


Figure 13. Active primary wood products facilities in Oregon, 1988–2022.

In 2022, Oregon's timber harvest totaled 3.7 billion board feet (BBF) Scribner—a 5% decrease compared to 2017. About 91% (3.4 BBF Scribner) came from counties west of the Cascade Range. Most logs (89%) are delivered to sawmills or veneer and plywood plants, or they are exported. In 2022, the allocation of harvested timber by initial use was as follows (Figure 14, Simmons et al. 2025):

- 69% delivered as sawlogs to sawmills
- 16% delivered as veneer logs to veneer and plywood plants
- 4% delivered to export facilities
- 10% chipped for pulp mills and board plants
- 1% delivered as other timber products to various facilities



[a] Harvest volume does not include bark.
[b] Other facilities include producers of posts, poles, utility poles, log homes, log furniture, energy, energy products, other products.
[c] Energy includes residue used internally for energy or sold for hog fuel, wood pellets, or compressed fuel logs.
[d] Other uses include landscape, mulch, and animal bedding

Figure 14. Total timber harvest and product flow in Oregon, 2022, in thousand cubic feet (MCF). Graphic courtesy of Simmons et al., 2025.

Although the primary initial destinations of harvested wood are sawmills and plywood and veneer plants, little wood fiber is wasted. Of the volume delivered to sawmills, 49.2% became finished lumber or other sawn products, while 48.5% became mill residues (Simmons et al., 2025). Roughly 90.6% of these residues were sold to other manufacturers (pulp and paper, particleboard, MDF, and hardboard), 7.5% were used for energy, and 1.9% went to miscellaneous uses.

At veneer plants, about 64.7% of delivered logs were processed into veneer, and 35.3% became residue. Of this residue, 90.7% was sold to other manufacturers, with the remainder used for energy (Simmons et al., 2025). Although only 10% of the roundwood harvest was delivered directly to pulp mills and board plants, these facilities ultimately used 35.4% of the total harvest once mill residues from other manufacturers were included (Simmons et al. 2025).

For timber delivered to other facilities, 79.5% became finished products, 10.2% was used for energy, 8.2% was sold as raw material to other manufacturers, 1.5% was used for other residue purposes, and 0.8% was not utilized (Simmons et al., 2025).

OREGON SAWMILLS

Oregon is consistently the leading producer of softwood lumber in the United States (Western Wood Products Association, 2024). In 2024, Oregon sawmills produced over 5 BBF of lumber (see Figure 15), accounting for approximately 14% of total U.S. production (Forest Economic Advisors, 2025); Washington was second with 11% (Table 7). In 2024, the majority of timber volume (78.8%) was produced from Douglas-fir, followed by hemlock-fir (15.8%), Ponderosa pine (2.9%), and other mixed softwood (2.4%; WWPA, 2024). As shown in Figure 15, Oregon's lumber production decreased at an average annual rate of 1.5% between 2020 and 2024 (Forest Economic Advisors 2025).

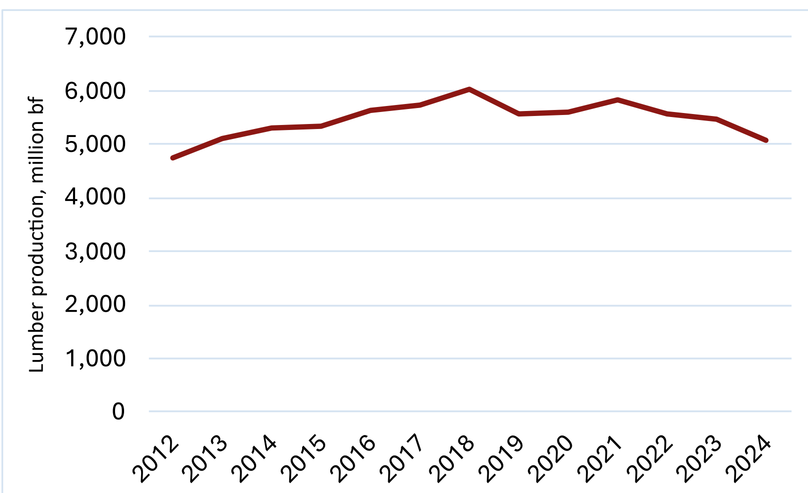


Figure 15. Softwood lumber production (millions of board feet, MMBF) in Oregon, 2016–2024.

The state's sawmill processing capacity declined by 8.1%, from 3.7 BBF Scribner in 2017 to 3.4 BBF Scribner in 2022. However, capacity utilization rose from 66.0% in 2017 to 73.1% in 2022 (Simmons et al., 2025). In 2022, Oregon had 42 facilities, including sawmills and plywood/veneer facilities, capable of processing more than 50 million board feet (lumber tally) annually (Table 8; Simmons et al., 2025). Total timber processing capacity for these mills was over 4 BBF Scribner. These facilities accounted for 80% of Oregon's total timber processing capacity.

Table 7. Lumber production (million board feet, MMBF), top 10 states, 2012–2024.

		2012	2013	2014	2015	2016	2017	2018
1	Oregon	4,754	5,114	5,291	5,341	5,646	5,724	6,016
2	Washington	3,841	4,140	4,322	3,813	3,569	3,806	3,943
3	Alabama	1,915	2,066	2,165	2,306	2,307	2,381	2,561
4	Mississippi	1,714	1,842	1,959	1,961	2,067	2,225	2,390
5	Georgia	2,254	2,338	2,525	2,645	2,774	2,846	2,806
6	Arkansas	1,922	1,975	2,070	2,078	2,177	2,462	2,617
7	N. Carolina	1,645	1,706	1,826	1,852	1,933	1,946	1,984
8	California	1,686	1,734	1,747	1,648	1,773	1,750	1,802
9	Texas	1,316	1,391	1,437	1,486	1,531	1,542	1,507
10	Louisiana	901	956	1,064	1,054	1,066	1,075	1,053
	U.S. Total	28,257	29,951	31,496	31,644	32,535	33,779	34,907

	continued	2019	2020	2021	2022	2023	2024
1	Oregon	5,584	5,607	5,839	5,576	5,471	5,093
2	Washington	4,142	4,228	4,365	4,130	3,958	4,054
3	Alabama	2,961	3,455	3,635	3,709	3,701	3,542
4	Mississippi	2,438	2,619	2,589	3,030	3,077	3,223
5	Georgia	2,750	3,289	3,369	3,508	3,430	3,159
6	Arkansas	2,581	2,584	2,522	2,637	2,612	2,438
7	N. Carolina	2,006	1,954	1,855	1,868	1,934	2,080
8	California	1,928	1,987	2,004	2,008	2,055	1,900
9	Texas	1,481	1,720	1,669	1,683	1,666	1,680
10	Louisiana	1,172	1,112	1,076	1,326	1,518	1,646
	U.S. Total	**35,164**	**36,908**	**37,301**	**37,835**	**37,307**	**36,230**

Table 8. Oregon timber processing capacity and use for all mills, 2022.

	Annual capacity				Annual production			
Production capacity class	**No. of timber processing mills**	**Timber processing capacity**	**% of total capacity**	**Avg capacity by mill class**	**Timber processed**	**% of total timber processed**	**Avg timber processed by mill class**	**Capacity utilization**
Annual Capacity		*MMBFa*	*Percent*	*MMBFa*	*MMBFa*	*Percent*	*MMBFa*	*Percent*
Over 100 MMBF annual capacity	17	2,367,854	46.6	139.3	1,547,114	44.4	91.0	65.3
Over 50 to 100 MMBF annual capacity	25	1,713,184	33.7	68.5	1,292,668	37.1	51.7	75.5
Over 10 to 50 MMBF annual capacity	34	939,702	18.5	27.6	615,484	17.6	18.1	65.5
10 MMBF or less annual capacity	31	55,454	1.1	1.8	32,294	0.9	1.0	58.2
Total	107	5,076,195	100	47.4	3,487,559	100	32.6	68.7

[a] MMBF = Million board feet lumber tally.

Oregon's sawmill and wood preservation sectors generated $2.7 billion in real value added in 2022, representing a 21% decline compared to 2021 (Figure 16; US Census Bureau, Annual Survey of Manufacturers and Economic Census, 2025). During the same period, total receipts fell to just over $5 billion, while the total cost of materials increased to approximately $2.8 billion. Total capital expenditures showed a consistent decline from a peak of $150 million in 2018 until 2020, after which they began to rise, reaching approximately $120 million in 2022 (see Figure 17; US Census Bureau, Annual Survey of Manufacturers and Economic Census, 2025).

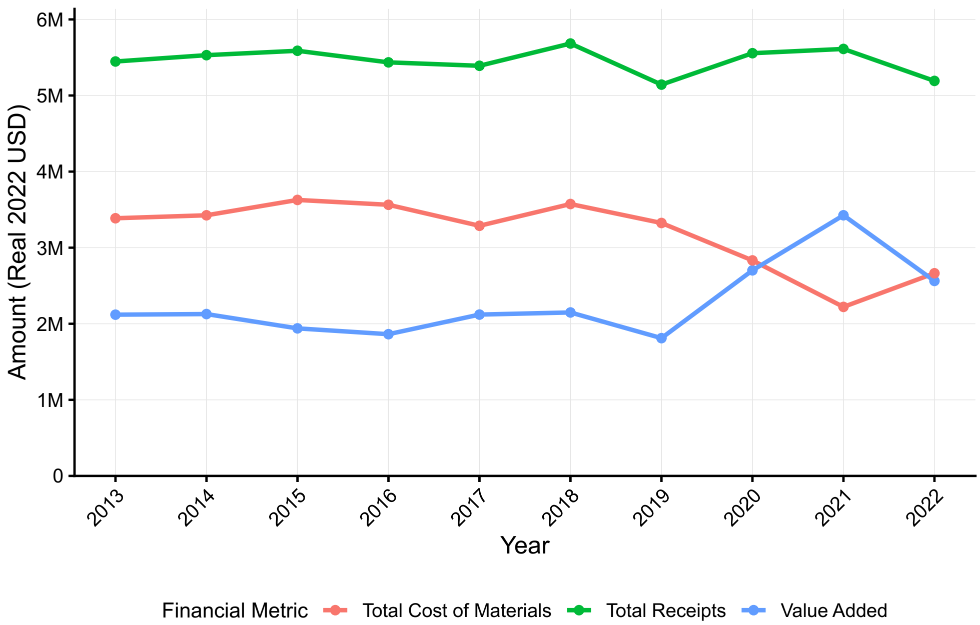


Figure 16. Key financial metrics in Oregon's sawmills and wood preservation sectors, 2013–2022.

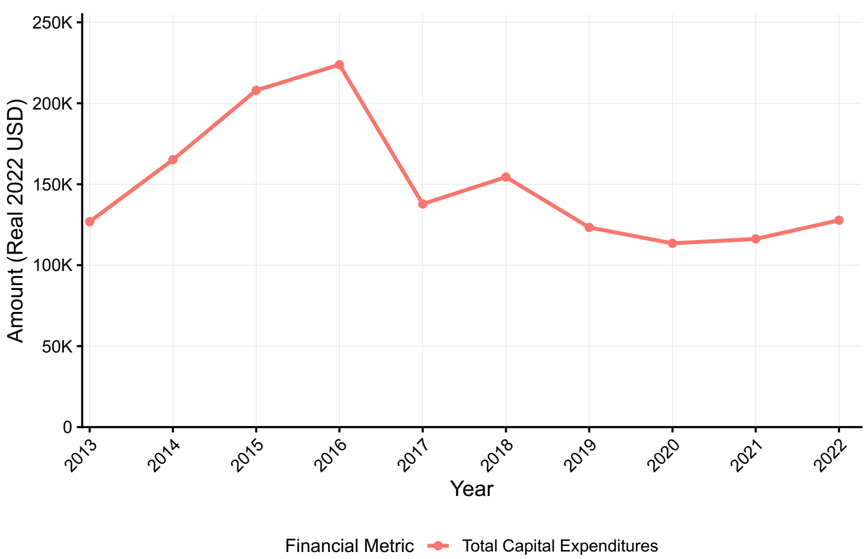


Figure 17. Total capital expenditures in Oregon's sawmills and wood preservation sectors, 2013–2022.

The number of lumber mills in Oregon declined by 58% between 1988 and 2022, and by 45% between 2003 and 2022 (Simmons et al., 2025). Although the number of sawmills has decreased substantially, this trend does not necessarily indicate a shrinking industry; the reduction can be partly attributed to improvements in mill efficiency, shifts in timber supply, and industry concentration (Simmons et al., 2016; Simmons et al., 2025). Figure 18 shows the locations of active mills in Oregon along with landownership.

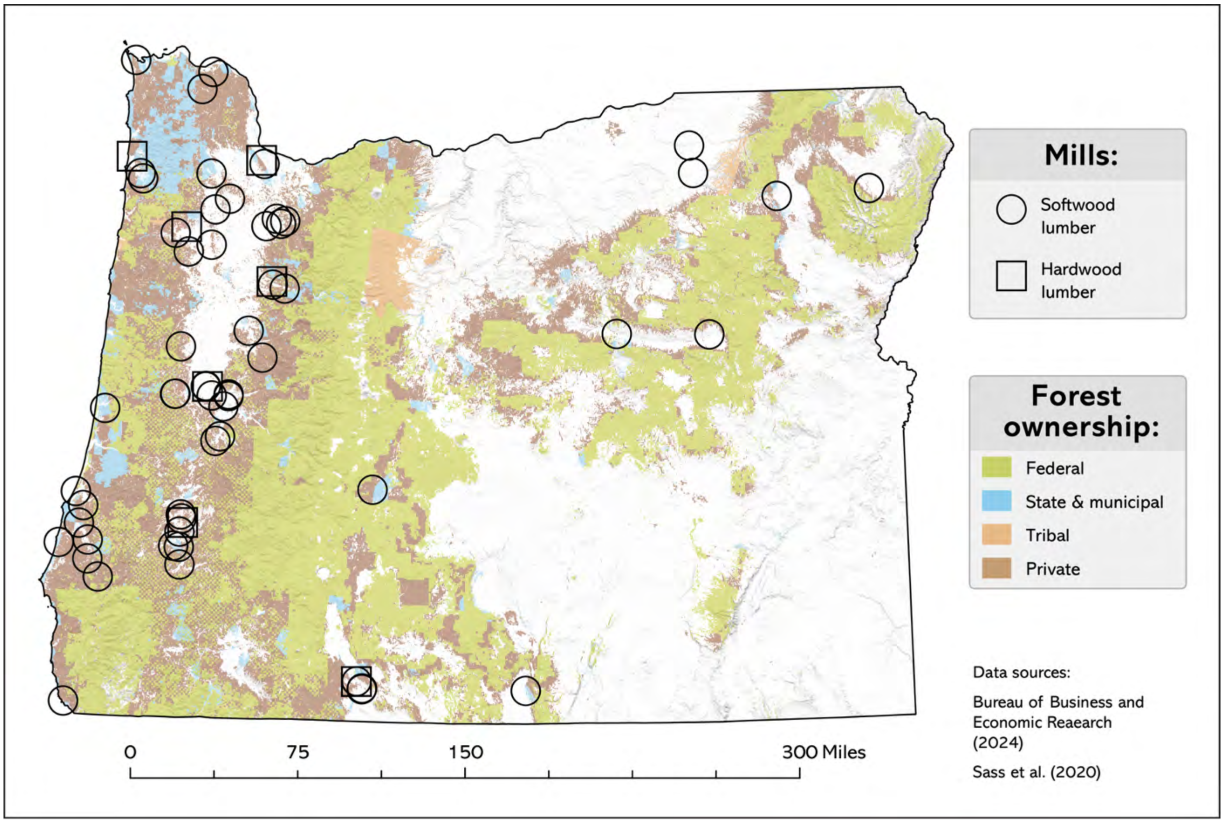


Figure 18. Active Oregon sawmills ca. 2024 and forest ownership.

In 2024, 47.8% of Oregon's sawmill production was transported by railway, while the remaining 52.2% was primarily moved by truck (WWPA, 2024). Most lumber in Oregon is distributed either to stocking distributors or directly to retailers. In 2024, 30.2% of lumber was shipped from Oregon sawmills to stocking distributors, and 31.8% was delivered directly to retailers (WWPA, 2024). Other distribution channels included independent office wholesalers (16.3%), remanufacturing facilities (14.1%), other lumber companies (0.9%), treatment facilities (5.1%), company-owned distribution yards (0.7%), and direct channels to end users (0.9%).

Technical efficiency refers to the volume of output achieved per unit of input utilized. In timber processing, one measure of technical efficiency is the lumber recovery ratio—the volume of lumber output (in thousands of board feet) per 1,000 ft^3 of timber processed. Between 1998 and 2008, the lumber recovery ratio increased by 8.4%, but then dropped from 9.0% in 2008 to 8.65% in 2013. It rose slightly to 8.74% in 2016 before falling again to 8.64% in 2022 (Simmons et al., 2025). Declines in the ratio are largely associated with the increased use of smaller-diameter logs, while improvements reflect technological upgrades that allowed Oregon sawmills to process smaller logs more efficiently (Simmons et al., 2016).

OREGON PLYWOOD, PANEL, AND MDF FACILITIES

Oregon is also the leading producer of plywood in the United States (Elling, 2024). In 2023, manufacturers in Oregon produced 2,146 million ft^2 (3/8-in. basis), 27.5% of total U.S. production. This output was about 329 million ft^2 lower than in 2018 (see Figure 19).

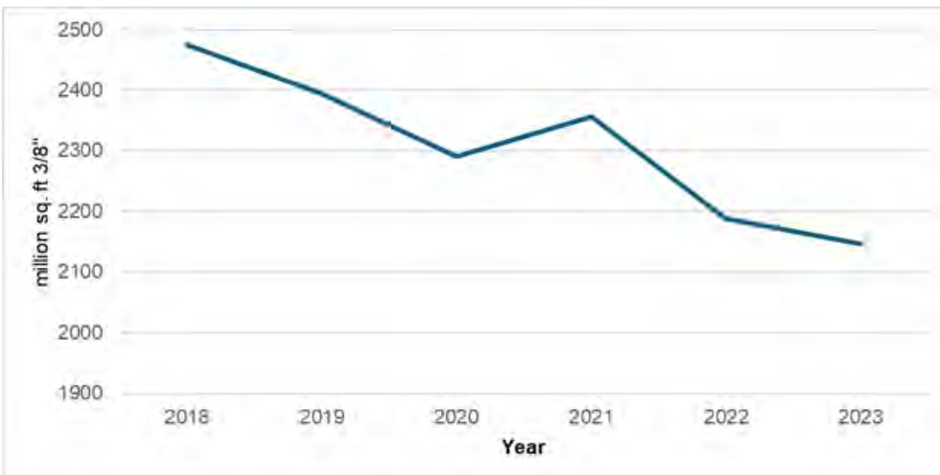


Figure 19. Production of plywood (3/8-in. basis) in Oregon, 2018–2023.

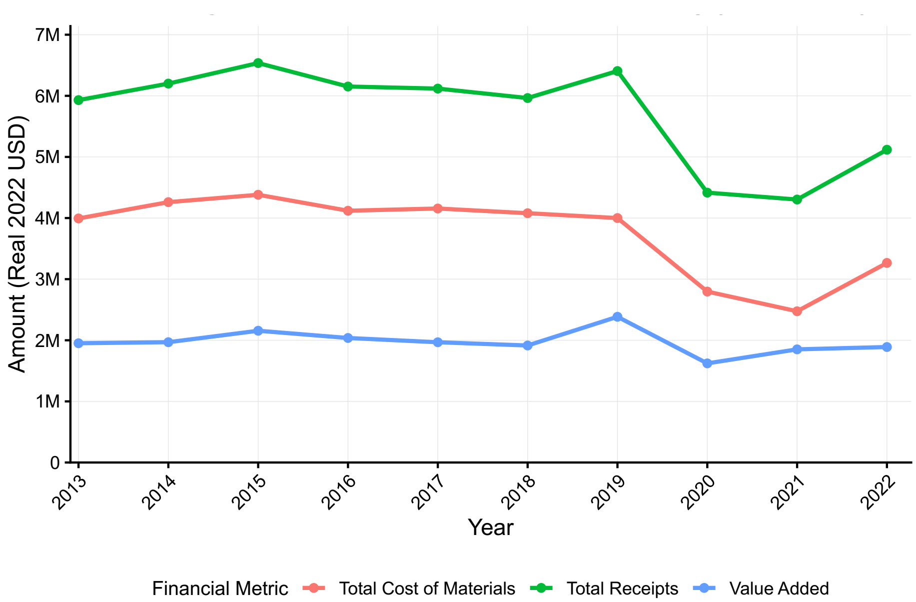


Figure 20. Key financial metrics in Oregon's veneer, plywood, and engineered wood product manufacturing, 2013–2022.

Production of veneer, plywood, and engineered wood products (including truss manufacturing and reconstituted wood products) generated approximately $2 billion in real value added in 2022 (Figure 20; US Census Bureau, Annual Survey of Manufacturers and Economic Census, 2025). Both total receipts and total cost of materials increased from 2021 to 2022: Total receipts rose from around $4.2 billion to slightly over $5 billion, while the cost of materials increased from approximately $2.6 billion to $3.2 billion.

Total capital expenditures increased from nearly $70 million in 2021 to slightly above $100 million in 2022. However, this recovery remains well below the historical levels observed between 2015 and 2020 (Figure 21; US Census Bureau, Annual Survey of Manufacturers and Economic Census, 2025).

Figure 21. Total capital expenditures in Oregon's veneer, plywood, and engineered wood product manufacturing, 2013–2022.

The number of plywood production facilities in Oregon declined from 30 in 2008 to 14 in 2022 (see Table 6), reflecting a long-term trend of contraction. Overall, the number of plywood and veneer facilities fell by 84% between 1988 and 2022, and by 57% between 2003 and 2022. Historically, this decline has been attributed to increased competition from strand-board producers, reduced availability of veneer-quality timber on private lands, lower harvest levels on public lands, periodic surges in export demand for veneer-quality timber, and unfavorable economic conditions (Gale et al., 2012). More recent declines may also reflect changes in plywood mill technology, competition from substitute products, and gains in technical efficiency.

Figure 22 presents the most recent data on active plywood and medium-density fiberboard (MDF) facilities and land ownership.

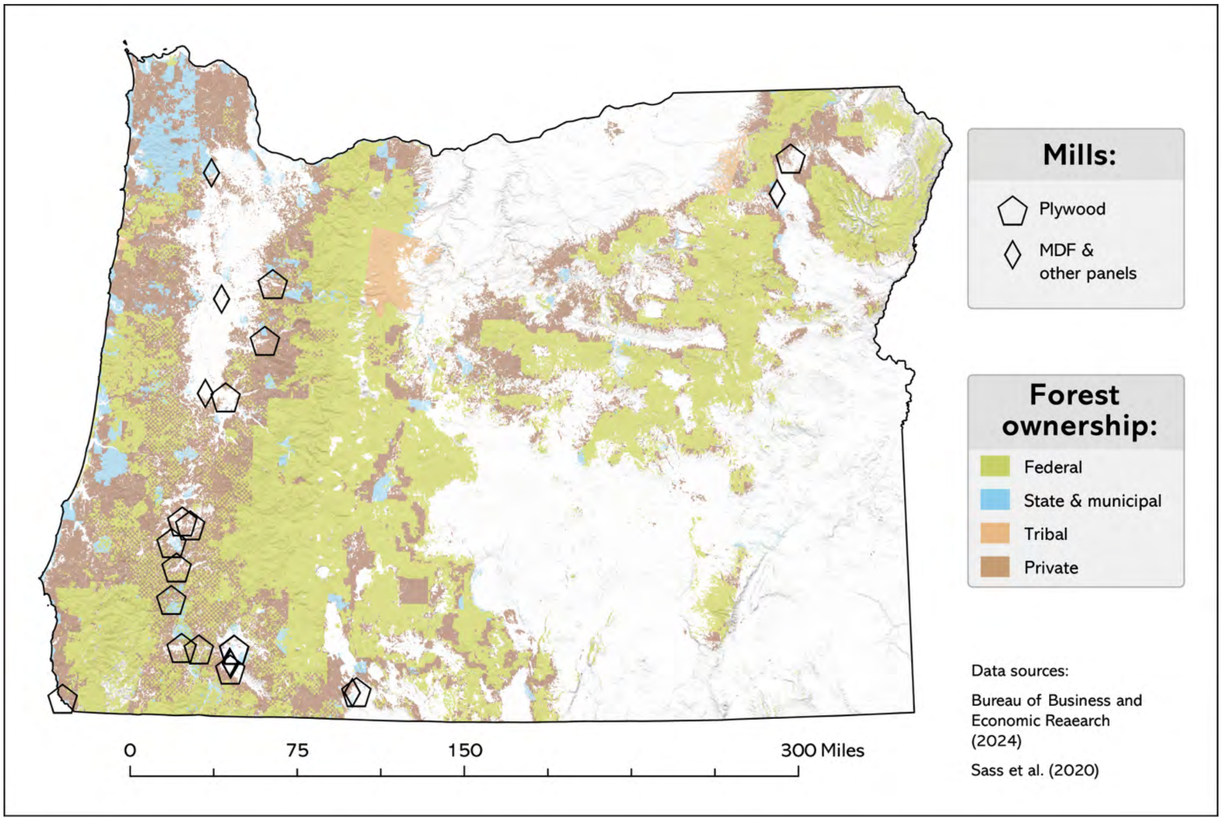


Figure 22. Active plywood, panel, and medium density fiberboard (MDF) facilities ca. 2024 and forest ownership.

MASS TIMBER PRODUCTION

Mass timber manufacturing and construction have the potential to serve as important economic drivers in the Pacific Northwest. A well-developed mass timber ecosystem supports high-quality employment in advanced manufacturing, promotes economic revitalization in rural communities, reduces the carbon footprint of the built environment, and establishes the region as a leader in sustainable construction. Currently, more than 20 companies in Oregon and Washington are engaged in mass timber production. Collectively, these activities generate an estimated $756 million in annual economic output, representing approximately 0.08% of the Pacific Northwest's $967 billion regional GDP (Pacific Northwest Mass Timber Tech Hub, 2025). While modest relative to the broader forest products sector, mass timber presents significant opportunities for rural job creation, economic diversification, and carbon reduction (Pacific Northwest Mass Timber Tech Hub, 2025).

At a production level of 62,000 m³ in 2024, the sector supported approximately 665 direct jobs, 441 induced jobs, and 224 advanced manufacturing positions, with a total direct payroll of roughly $60 million and state and local tax revenues of $6.3 million (Pacific Northwest Mass Timber Tech Hub, 2025).

Pacific Northwest Douglas-fir has some advantages over southern yellow pine as a material source for mass timber products. Primarily, it is stiffer and thus better for long spans in buildings. Southern yellow pine accepts preservative treatment and is cheaper; however, it is more difficult to dry, glue, machine, and finish, as it has more knots and a higher resin content than Douglas-fir (Iain Macdonald, personal communication, November 20, 2025). Maintaining a competitive advantage in the mass timber industry will require capitalizing on the strengths that Douglas-fir provides.

INNOVATION HIGHLIGHT: THE TALLWOOD DESIGN INSTITUTE AND EMMERSON LAB

The Tallwood Design Institute (TDI) is a partnership between Oregon State University's College of Forestry and College of Engineering and the University of Oregon's College of Design. It is one of the nation's first interdisciplinary research collaboratives focused exclusively on the advancement of mass timber and other wood products building solutions (TDI, 2025).

TDI combines materials testing, applied research, and educational opportunities in collaboration with agencies, industry representatives, and faculty and students. A key element of TDI is the A.A. "Red" Emmerson Advanced Wood Products Laboratory on the OSU campus, part of the Peavy Forest Science Complex. Peavy Forest Science Complex includes Peavy Forest Science Center, a state-of-the-art building completed in 2020 that utilizes many mass timber products, including Oregon-made cross-laminated timber (CLT) and mass plywood panels (MPP). The Emmerson Lab is an engineering facility dedicated to applied research in advanced timber fabrication and structural performance of large timber buildings, including large-scale structural testing and advanced manufacturing (TDI, 2025). In 2026, OSU plans to break ground on another center with the capacity to fire-test innovative wood products, enabling research in all aspects of mass timber production and use.

OREGON PULP AND PAPER MILLS AND BIOMASS ENERGY FACILITIES

Since 2020, there has been a reduction in the sales volume of pulp and paperboard. Between 2008 and 2013, the total product sales value of pulp and paperboard decreased by 32% but rebounded with a 16% increase between 2017 and 2022 (Simmons et al., 2025). This pattern is also reflected in declining total revenues (see Figure 23; US Census Bureau, Annual Survey of Manufactures and Economic Census, 2025). Total value added fell from nearly $1.5 billion in 2020 to slightly below $1 billion in 2022. This trend aligns with the decrease in total receipts, which dropped from almost $3 billion in 2020 to $2 billion in 2022, while the total cost of materials remained slightly above $1 billion in 2022.

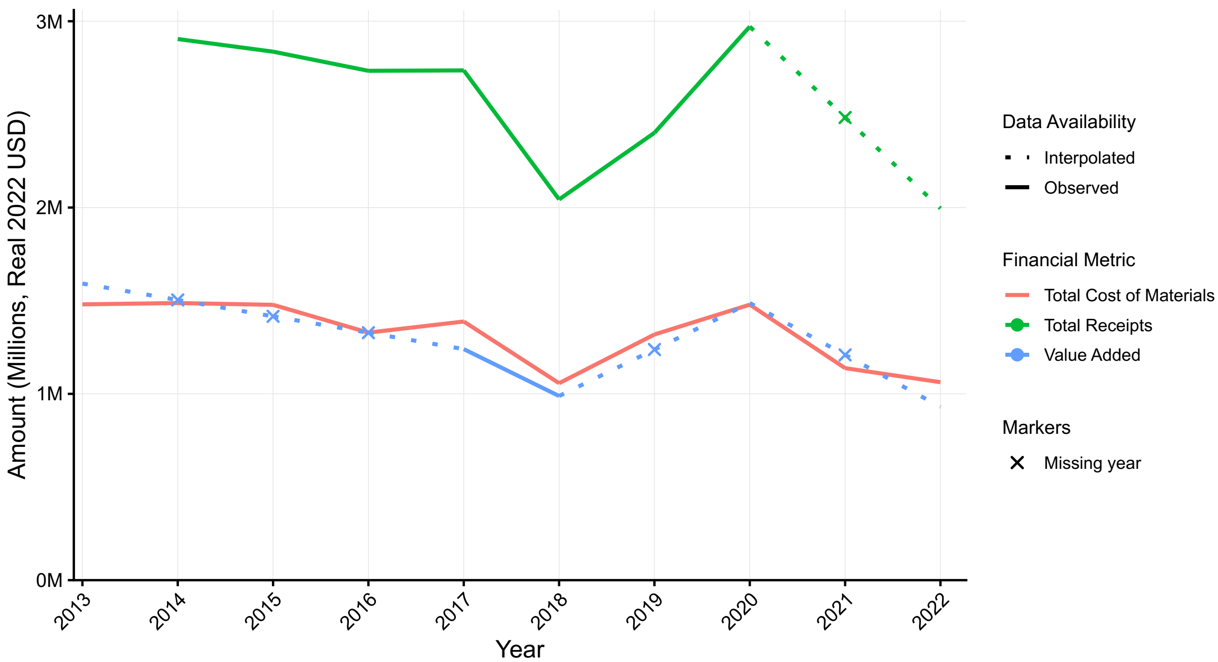


Figure 23. Key financial metrics in Oregon's pulp, paper, and paperboard mill sector, 2013–2022.

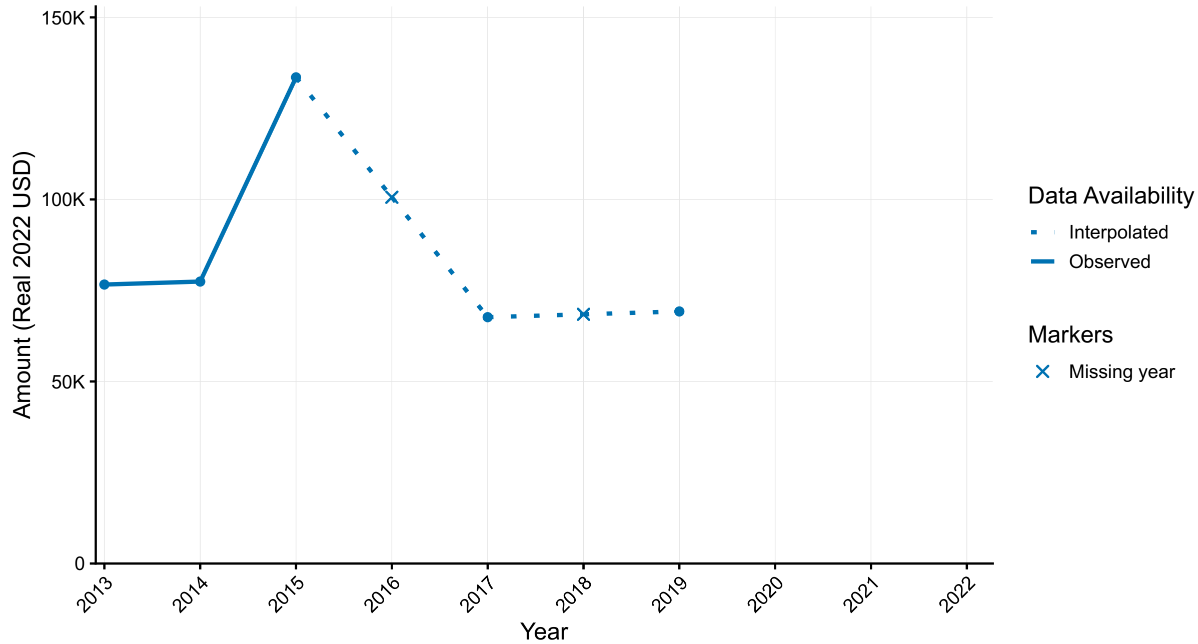


Figure 24. Total capital expenditures in Oregon's pulp and paper sector, 2013–2022.

Capital expenditures have remained relatively stable at around $70 million since 2017, following a sharp decline from their peak of $140 million in 2015 (Figure 24; US Census Bureau, Annual Survey of Manufacturers and Economic Census, 2025). Note that data related to the pulp and paper sector is frequently subject to disclosure limitations, reflected in missing data years in the figures below.

Figure 25 shows the locations of Oregon's pulp and paper mills. As of 2022, there were 12 active pulp, paper, and board facilities in the state. Both the number of facilities and production volumes have declined in recent years, consistent with the industry's long-term downward trend. The number of pulp and board facilities fell by 63% between 1988 and 2022, and by 48% between 2003 and 2022 (see Table 6).

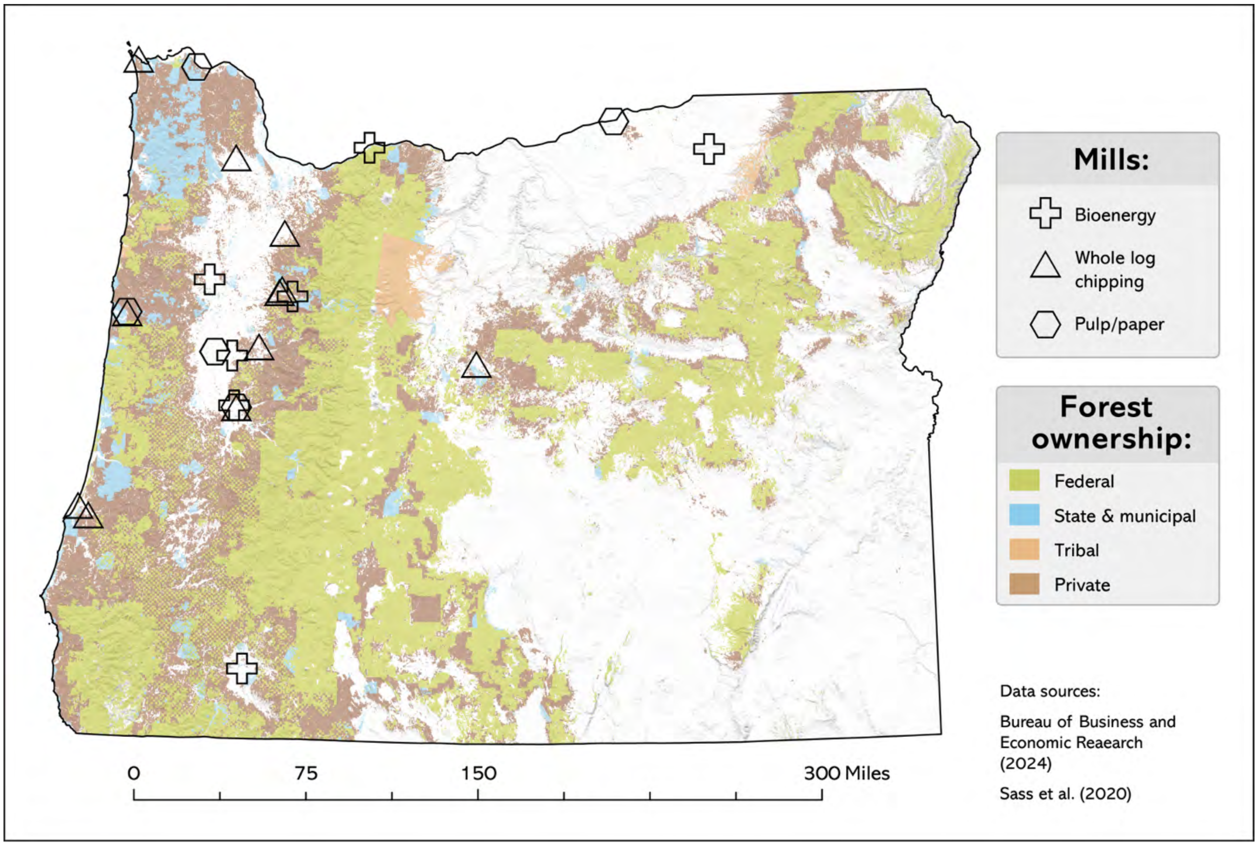


Figure 25. Active Oregon pulp/paper and biomass energy facilities ca. 2024 and forest ownership.

Oregon has a relatively small but active biomass industry focused primarily on woody feedstocks. Biomass—mainly from wood and wood waste—accounts for roughly 2% of Oregon's renewable electricity and about 1% of total state electricity generation, much of it produced through industrial combined heat and power systems (Oregon Department of Energy, 2022). Nationally, the United States has about 5 gigawatts (GW) of biomass-based generation capacity—approximately 2.3 GW from wood and 2.7 GW from waste biomass—producing 20–27 billion kWh of electricity annually (EIA, 2025c). Compared to this, Oregon's contribution is modest: Its pellet production represents roughly 2% of national capacity, and its biomass generation is far smaller than that of regions such as the Southeast, where large-scale wood-waste resources dominate (EIA, 2025c). Densified biomass fuel manufacturing capacity (e.g., pellets) was slightly below 300,000 tons in Oregon in 2024 (see Figure 26; EIA, 2025a). In 2024, there were five densified biomass fuel manufacturing facilities in Oregon producing fuel primarily for wood pellet stoves and large-scale boilers.

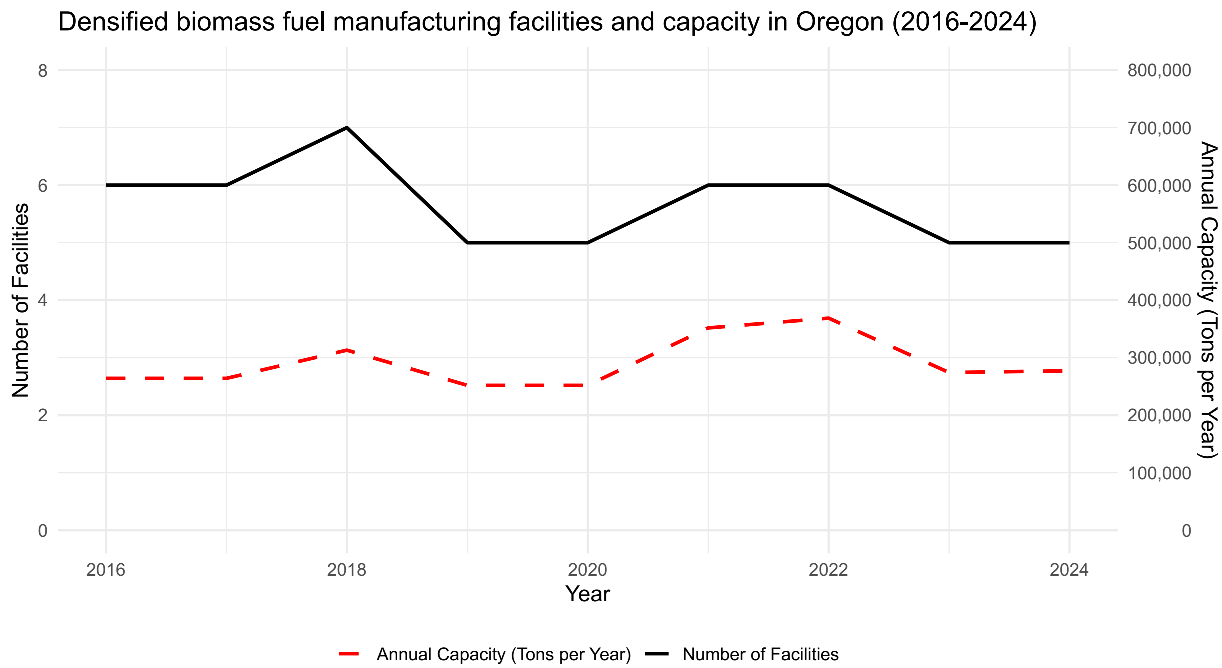


Figure 26. Densified biomass fuel manufacturing facilities and capacity in Oregon, 2016–2024.

There are an estimated seven biomass processing facilities in Oregon (see Figure 25), likely including densified fuel and power production. In 2022, the state consumed approximately 64 trillion Btu of biomass as a direct-use fuel. Biomass consumption by sector was distributed as follows: commercial—3.8 trillion Btu, residential—18.4 trillion Btu, and industrial—41.7 trillion Btu (Oregon Department of Energy, 2024). Commercial biomass use occurs in service-oriented buildings (e.g., offices, schools, and retail centers) and is mainly for space heating and building energy needs at relatively low intensity, while industrial biomass use occurs in production and manufacturing facilities, where energy is used for process heat and machinery at much larger scales and higher energy intensity. Biomass accounted for 2% of Oregon's renewable-sourced electricity and about 1% of the state's total net generation in 2024 (EIA, 2025b). Approximately one in 25 Oregon households rely on wood for heating. The wood pellet manufacturing facilities operating in the state have a combined production capacity of about 280,000 tons per year, representing roughly 2% of the nation's total; this is less than the production capacity of around 310,000 tons per year in 2018 (EIA, 2025b).

EXPORT MARKETS

Log export markets have historically provided significant revenue for Oregon's timberland owners, especially when domestic demand is low. All exported timber comes from private lands, as harvested material from Oregon's public forests cannot be sold internationally (Daniels, 2005). Exports were a major driver of Pacific Northwest timber demand from the 1960s, beginning after the 1962 Columbus Day Storm, which blew down an estimated 11.2 BBF (Daniels, 2005). This storm created a large surplus of downed timber in the Pacific Northwest, flooding domestic markets. Export markets, initially small, absorbed this excess, particularly for salvaged logs. This, combined with rising demand from Pacific Rim nations such as Japan, launched one of the region's most significant timber export flows. Since the mid-2000s (despite notable peaks in 2011 and 2013; see data provided by ODF and University of Montana Bureau of Business and Economic Research in Figure 27) log exports have accounted for a smaller share of the overall timber demand, with the domestic United States market now the primary destination, mainly for residential construction (Reimer, 2021). The decline in the market is due to reduced Pacific Northwest timber harvests, shifts in Asian demand, and increasing globalization of the wood market (Daniel, 2025).

Historically, international demand for Oregon logs has been driven by Pacific Rim nations, primarily China, Japan, and Korea. Between 2010 and 2018, 48% and 44% of Oregon's exported log volume went to China and Japan on average, respectively (Maher, 2024). In 2018, the shares were 40% for China and 53% for Japan. Including Korea, exports to these three countries account for roughly 99% of Oregon's timber harvest exports (Maher, 2024). However, given the significant uncertainties in log export data, these figures should be viewed with caution.

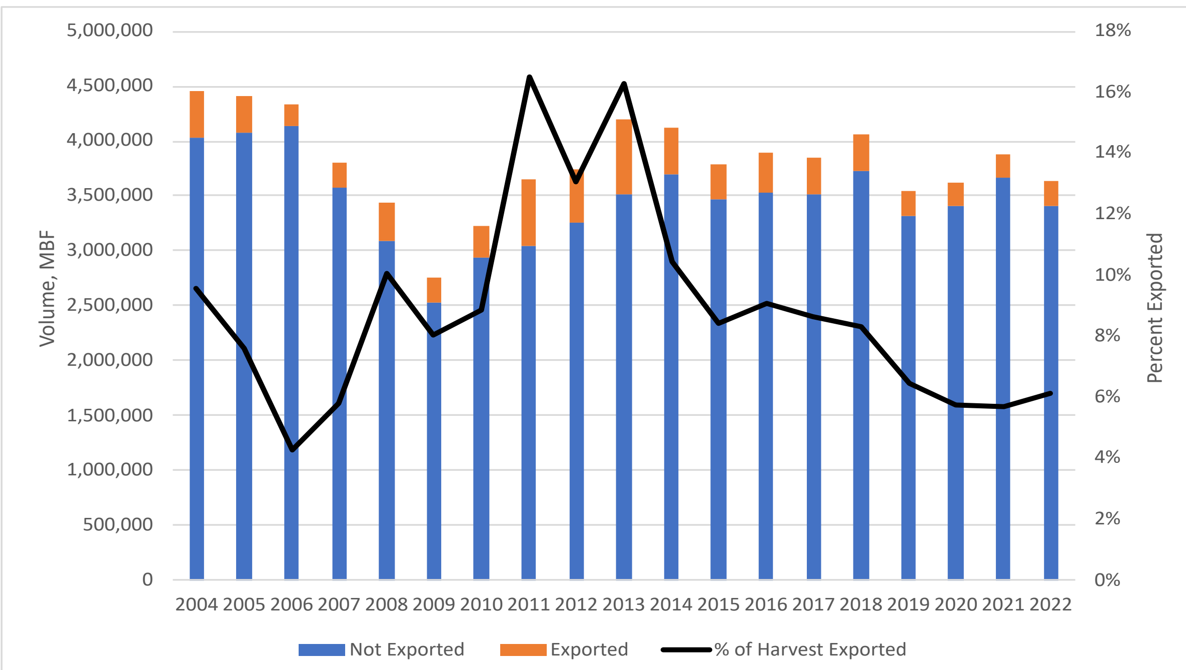


Figure 27. Percentage of harvested timber exported from Oregon.

Timber exports of softwood and hardwood logs bound for international markets between 2010 and 2024 from the Columbia–Snake District show a clear and persistent dominance by the Port of Longview, which handled between 75% and 95% of total export volumes each year (see Table 9; Maher, 2024; USDA Trade & Tariff Data, 2025). Even in years when total exports fluctuated significantly, Longview remained the main hub, consistently moving between 1.0 and 3.5 million metric tons annually. The district reached its peak export volume in 2013 at over 4.36 million metric tons, after which exports steadily declined, falling to just 1.06 million metric tons in 2024, a reduction of more than 70% from the peak. During this same period, Portland and Vancouver played only a minor role, contributing less than 1% of annual exports and often recording near-zero volumes. Not all of this volume originated from Oregon harvest.

While Longview dominated the export market, Coos Bay and Astoria showed notable but intermittent activity. Coos Bay accounted for 10%–25% of annual exports in several counted years, and its relative importance increased after 2020, with exports reaching nearly 25% of the district total in 2022. Astoria experienced temporary spikes—most prominently between 2015 and 2017, when it contributed up to 12%—but its volumes dropped sharply afterward, including several years with zero exports. Softwood log exports from the Columbia–Snake District remained more or less constant below 400 MMBF from 2000 until 2009, peaked near 1,000 MMBF in 2012, and declined steadily to 256 MMBF in 2024 (Figure 28; Maher, 2024; USDA Trade & Tariff Data, 2025). Overall, a small percentage of Oregon round wood was exported internationally in recent years—just 5% in 2022 (Table 10. Net flows of timber in Oregon, 2022.; Simmons et al., 2025).

Table 9. Annual log export volumes (softwood and hardwood, metric tons) from ports in the Columbia–Snake District.

Year	Astoria, OR	Coos Bay, OR	Longview, WA	Portland, OR	Vancouver, WA	Grand Total
2010	5,090	98,915	2,414,216	12,299	1,655	2,532,174
2011	201,666	637,658	2,912,899	33,031	6,148	3,791,402
2012	234,193	429,779	2,537,566	4,144	57	3,205,738
2013	375,174	479,673	3,502,446	7,002	366	4,364,662
2014	182,142	318,360	3,383,856	1,090	81	3,885,528
2015	368,096	83,789	2,563,815	175	20	3,015,895
2016	282,152	324,156	2,390,063	49	2,547	2,998,968
2017	307,789	226,200	2,237,147	0	307	2,771,442
2018	238,201	340,134	1,942,056	6	306	2,520,703
2019	69,166	235,659	1,461,686	0	0	1,766,510
2020	0	146,347	1,522,962	274	120	1,669,704
2021	0	165,854	1,460,736	2,434	24	1,629,049
2022	0	364,220	1,100,008	1,098	49	1,465,375
2023	0	276,131	1,042,511	543	179	1,319,364
2024	37,981	161,504	846,077	0	194	1,045,754

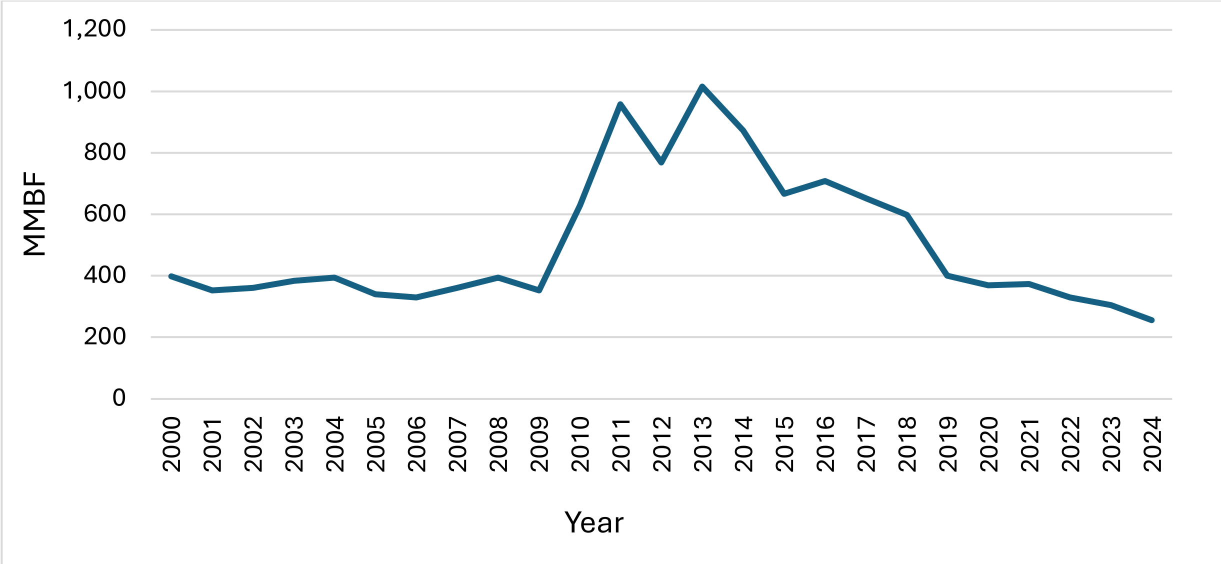


Figure 28. Volume of softwood logs exported from the Columbia–Snake District.

Table 10. Net flows of timber in Oregon, 2022.

Total Oregon harvest, MMBF	3,740.8
Oregon timber leaving the state, MMBF	290.8
Logs exported internationally, MMBF	179.3
Out-of-state timber in, MMBF	85.6
Net (out)	*-205.5*
Total timber received in Oregon, MMBF	3,535.6
% of Oregon harvest leaving Oregon	8%
% of Oregon logs exported internationally	5%

Lumber exports from the Columbia–Snake District were high in the early 2010s, followed by a sharp and persistent decline after 2014 (see Table 11; Maher, 2024; USDA Trade & Tariff Data, 2025). Total exports peaked in 2011 at around 148 thousand metric tons, driven almost entirely by Portland, and a one-time shipment from Astoria. After 2013, export volumes collapsed dramatically, reaching a low of 527 metric tons in 2020 and never recovering to earlier levels through 2024.

Portland dominated exports throughout the period, accounting for the vast majority of total volumes in nearly every year. Even during the post-2015 downturn, Portland remained the primary exporting port, although at substantially reduced levels. Vancouver played a secondary but consistent role, particularly after 2015, often ranking second in annual volume despite relatively small shipments.

Other ports showed sporadic and negligible activity, suggesting either limited infrastructure for lumber exports or a shift away from these locations over time.

Lumber exported from the Columbia-Snake District dropped sharply from about 200 MMBF in 2000 to 23 MMBF in 2005, gradually recovered to peak around 71 MMBF in 2012, and then fell to roughly 2 MMBF since 2014, reflecting a major contraction in the state's export market (see Figure 29; Maher, 2024; USDA Trade & Tariff Data, 2025). This trend highlights a significant reduction in the state's softwood log and lumber export activity over the past decade.

Table 11. Annual lumber export volumes (softwood and hardwood, metric tons) from ports in the Columbia–Snake District.

Year	Astoria, OR	Coos Bay, OR	Kalama, WA	Longview, WA	Portland, OR	Vancouver, WA	Grand Total
2010	0	0	0	0	49,726	5,762	55,487
2011	39,200	0	0	0	107,449	1,524	148,173
2012	0	0	0	138	119,457	115	119,710
2013	66	7,088	40	64	90,967	205	98,430
2014	108	0	0	79	53,794	894	54,874
2015	0	0	0	0	7,872	536	8,408
2016	0	0	0	41	1,729	456	2,226
2017	0	0	0	0	1,601	140	1,742
2018	0	0	0	0	2,790	111	2,901
2019	0	0	0	0	145	517	662
2020	0	0	0	20	439	68	527
2021	0	0	0	0	2,941	374	3,315
2022	0	1,157	0	0	1,464	1,356	3,977
2023	0	601	0	0	4,528	51	5,180
2024	0	0	0	0	3,165	157	3,322

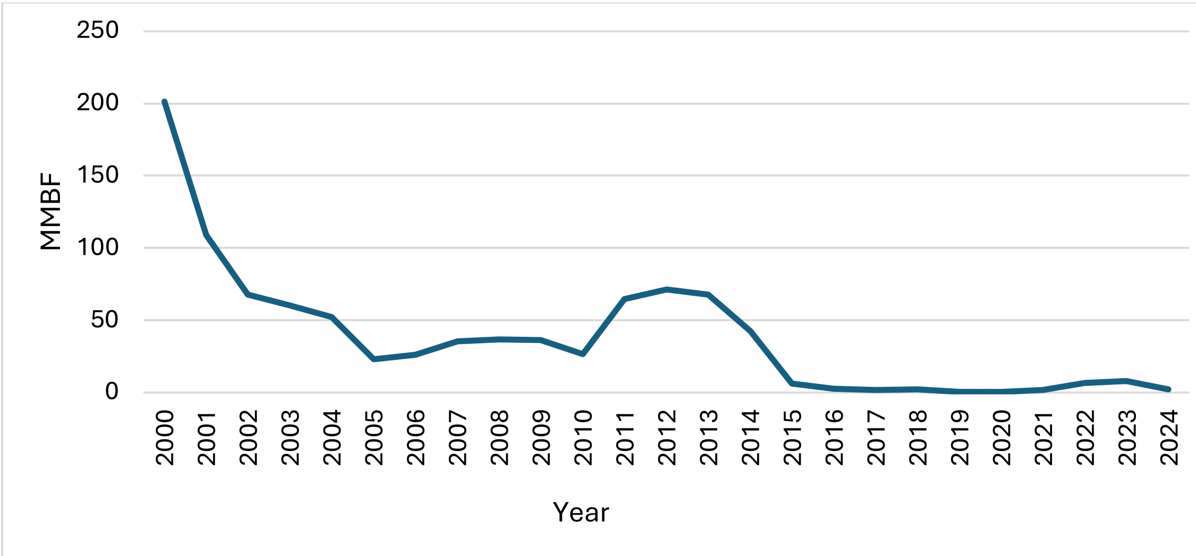


Figure 29. Volume of softwood lumber exported from the Columbia–Snake District.

Overall, the bulk of Oregon processors are processing Oregon-grown timber (Figure 30; Simmons et al., 2025).

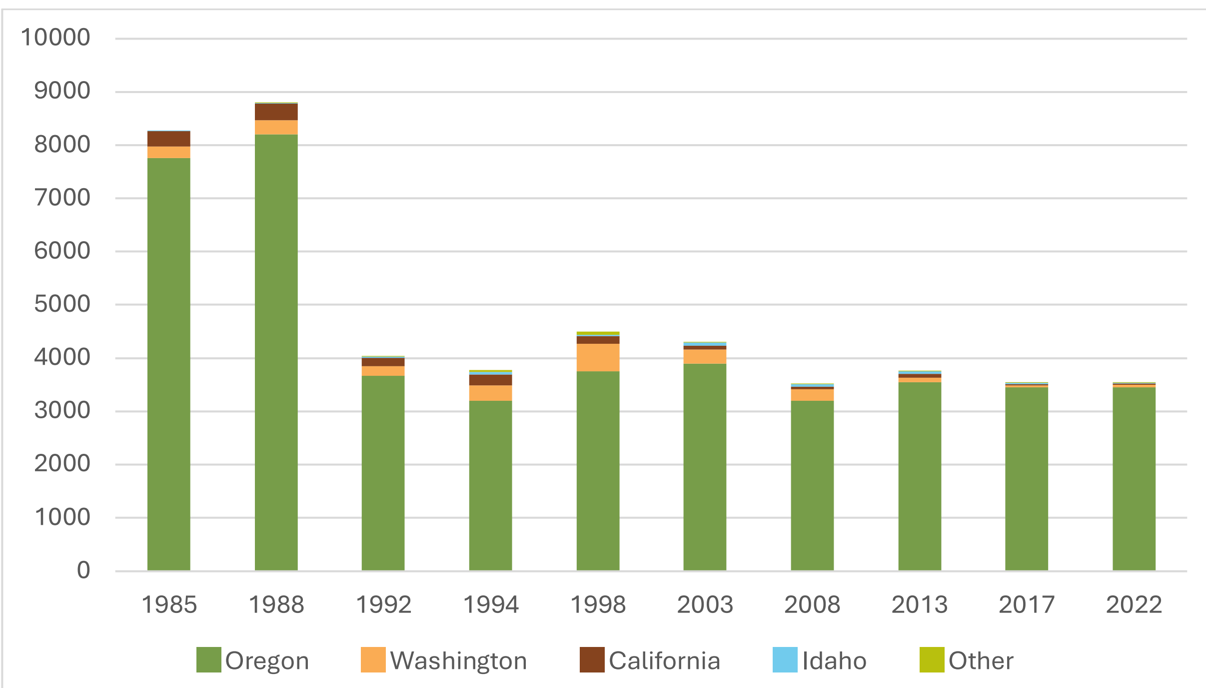


Figure 30. Volume received by Oregon processors by state of origin, 1985–2022.

INDUSTRY RECEIPTS

Figure 31 shows total receipts in Oregon's wood manufacturing sectors from 2014 to 2022 (real values 2022; note that missing data in pulp and paper for 2021 creates a false impression of zero values in the absence of interpolation; US Census Bureau, Annual Survey of Manufactures and Economic Census, 2025). Overall, receipts rose from about $13 billion in 2014 to a peak of roughly $18 billion in 2015–2016, remaining relatively stable through 2019.

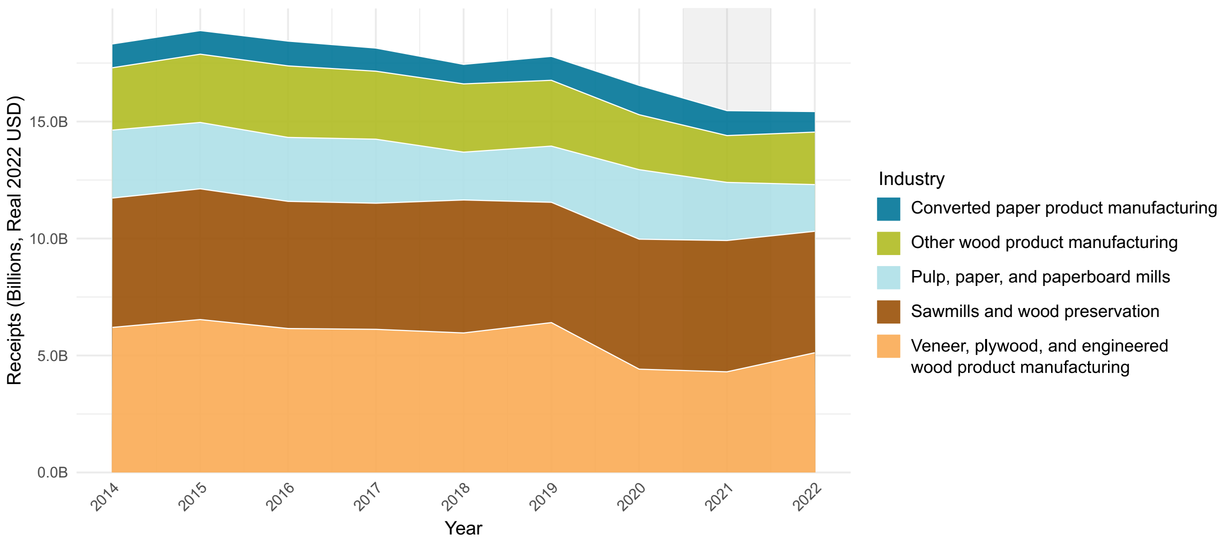


Figure 31. Total receipts in Oregon's wood and paper manufacturing sectors, 2014–2022.

A sharp decline occurred in 2020, when total receipts dropped from around $15 billion to $13 billion in 2021, likely reflecting the economic disruptions caused by the COVID-19 pandemic. By 2022, receipts had partially recovered to around $15 billion.

Among sectors, sawmills and wood preservation accounted for the largest portion, typically ranging between $5 billion and $6 billion annually, followed by veneer, plywood, and engineered wood product manufacturing (around $4 billion–$5 billion). The pulp, paper, and paperboard mills sector and other wood product manufacturing each contributed between $2 billion and $3 billion, while converted paper product manufacturing consistently remained below $2 billion.

Between 2013 and 2022, total receipts across all wood manufacturing sectors rose from about $14 billion in 2013 to a peak near $15 billion by 2015, remained relatively steady until 2019, and then declined sharply to around $12 billion in 2020 due to pandemic-related disruptions (Figure 32; US Census Bureau, Annual Survey of Manufactures and Economic Census, 2025). By 2022, receipts had partially recovered to approximately $13 billion. The sawmills and wood preservation industry remained the dominant contributor (around $6 billion annually), followed by veneer, plywood, and engineered wood manufacturing (about $4 billion–$5 billion), and other wood products (around $2 billion–$3 billion).

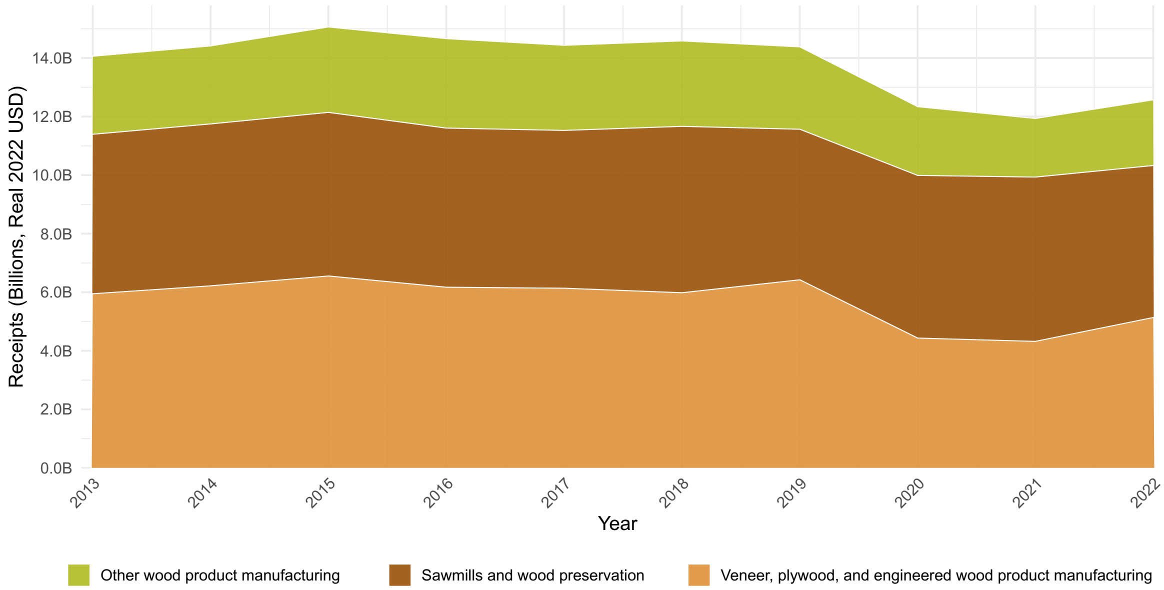


Figure 32. Total receipts in Oregon's wood manufacturing sector, 2013–2022.

In the pulp and paper sector (Figure 33; US Census Bureau, Annual Survey of Manufactures and Economic Census, 2025), receipts remained relatively stable between 2014 and 2018, ranging from $3.5 billion to $4 billion (note again the data discontinuity in 2021 has been interpolated through). They then declined in 2018 before increasing through 2020, reaching a value above $4 billion. By 2022, receipts had fallen to nearly $3 billion. A similar pattern is observed in both the converted paper product manufacturing sector and the pulp, paper, and paperboard mills sector.

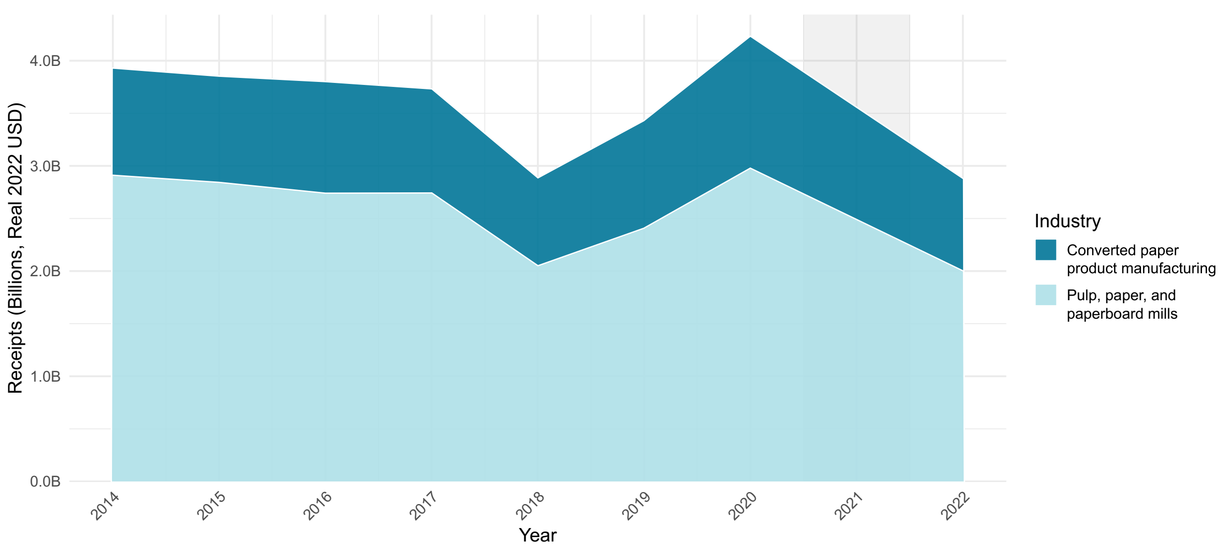


Figure 33. Total receipts in Oregon's pulp and paper sector, 2014–2022.

4. Economic Importance of Oregon's Forest Sector

EMPLOYMENT AND WAGES

Oregon's forestry and wood products industry is a foundational sector of the state's economy, environment, and rural livelihoods. With approximately 30.5 million acres of forestland covering about half the state, Oregon is among the most forested states in the western United States and ranks first in the nation in softwood lumber and plywood production. This advantage stems from abundant native species, especially Douglas-fir; a temperate climate conducive to rapid tree growth; and a long history of timber-based economic development. Over the past several decades, the industry has undergone structural changes driven by evolving environmental policy, technological advancements, and shifting domestic and global market dynamics. While the forest sector in Oregon is smaller than it was in 2001, it has fared better than the timber industry nationally (

Figure 34; Watson & Alward, 2024) and remains a major driver of economic activity in Oregon. This section provides an integrated overview of Oregon's forestry and wood products industry, detailing its economic role, forest management practices, production technologies, labor force dynamics, and forward-looking challenges.

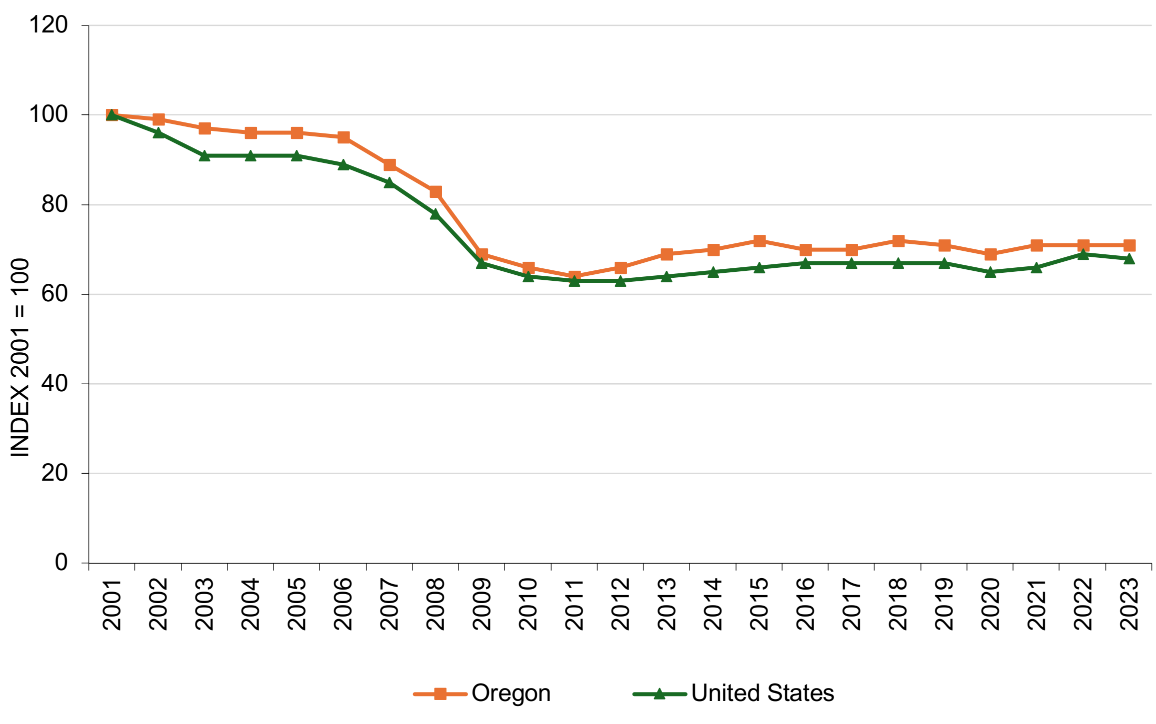


Figure 34. Timber employment in Oregon and the United States, relative to 2001.

The forest industry in Oregon comprises several interdependent sectors: forest management and logging; manufacturing, both primary (e.g., sawmills and veneer mills) and secondary (e.g., millwork and engineered wood); pulp and paper facilities; transportation; and professional services, including government and education. According to the Oregon Employment Department, there were almost 62,300 people employed in Oregon's forest sector. The majority of these jobs were in the manufacturing of wood products, followed by forest management and logging (Figure 35; U.S. Bureau of Labor Statistics, QCEW).

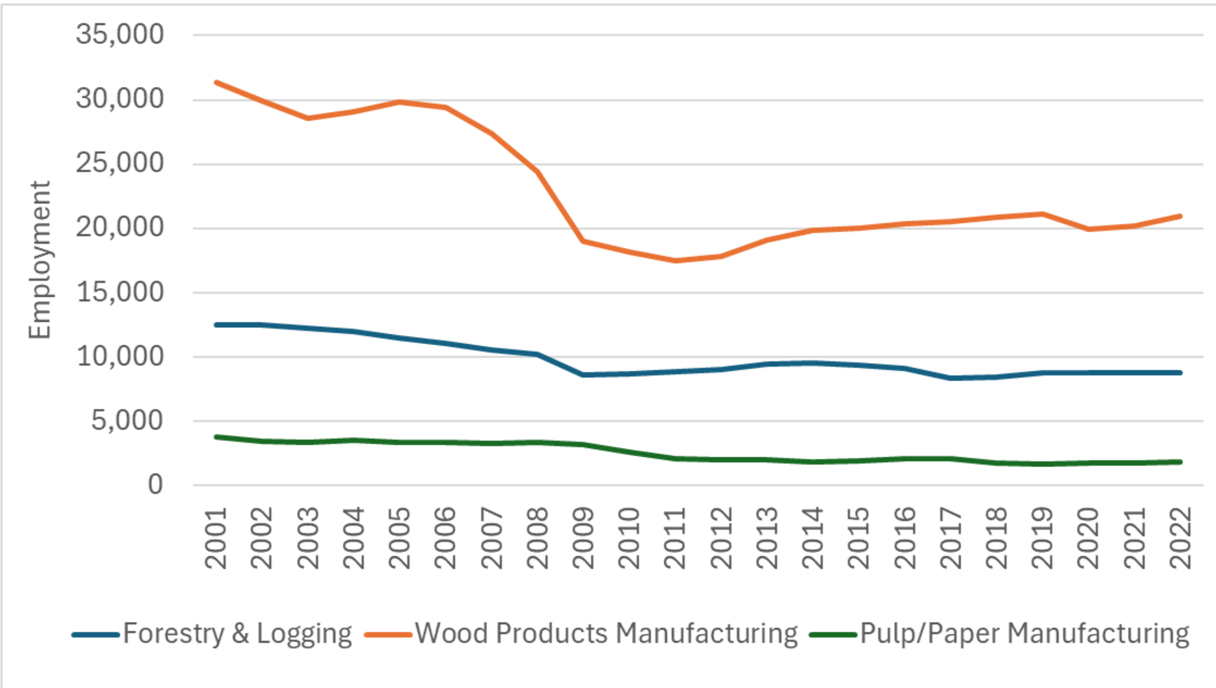


Figure 35. Average annual employment by sector, 2001–2022.

While management and logging jobs are more common in rural counties, more manufacturing employment (sawmills, paper mills) are in urban or urbanizing counties (Crandall et al., 2025). Because of this, while forest sector jobs are spread across the state, Lane County holds the largest number with more than 7,200 jobs, followed by Multnomah County at just under 5,700 jobs, Marion County at almost 5,200 jobs, and Douglas County with more than 4,900 jobs (see Table 12). Data for forestry jobs by county were obtained from the Tapestry regional data project (Watson & Alward, 2024) and correspond to the estimated amount of jobs in forestry in the following North American Industrial Classification System (NAICS) codes: forestry and support (113–115), Wood Product Manufacturing (322–337), Trade and Transport (420–484), Professional Services (551–813), and Government (920).

Table 12. Gross employment estimates by sub-sector and by county (NAICS code), 2023.

County	Forestry and Support (113-115)	Wood Product Mfg. (322-337)	Trade and Transport (420-484)	Professional Services (551-813)	Government (920)	Total
Baker	154	281	17	6	9	467
Benton	495	382	53	77	23	1,031
Clackamas	1,059	1,826	774	122	47	3,828
Clatsop	169	828	35	8	8	1,047
Columbia	137	764	47	9	10	967
Coos	542	898	120	14	11	1,585
Crook	205	411	57	4	3	679
Curry	143	443	11	4	4	606
Deschutes	800	977	294	58	68	2,197
Douglas	1,382	3,295	199	26	12	4,914
Gilliam	3	0	10	2	1	16
Grant	412	49	1	3	2	467
Harney	72	0	3	2	6	83
Hood River	250	310	21	4	1	586
Jackson	1,331	2,356	480	63	68	4,299
Jefferson	46	797	12	2	16	873
Josephine	249	1,039	29	20	18	1,354
Klamath	362	1,587	66	22	25	2,063
Lake	146	206	5	2	7	366
Lane	1,192	5,257	482	180	97	7,208
Lincoln	177	462	19	8	13	680
Linn	728	3,043	241	36	34	4,083
Malheur	126	31	28	9	63	257
Marion	2,030	2,245	431	106	340	5,153
Morrow	140	21	16	3	1	182
Multnomah	649	1,972	2,108	655	294	5,678
Polk	573	130	63	22	25	814
Sherman	7	0	3	2	2	14
Tillamook	257	350	50	7	14	679
Umatilla	990	483	235	20	68	1,796
Union	251	561	42	8	9	872
Wallowa	126	25	5	3	0	158
Wasco	97	110	35	7	15	263
Washington	396	3,241	562	398	176	4,774
Wheeler	0	16	0	1	0	17
Yamhill	320	1,429	42	32	32	1,856
Unknown	90	106	148	30	4	378
Total	16,109	35,931	6,746	1,976	1,528	62,291

Employment and wages are central to the economic contribution of Oregon's forest sector, and recent trends reveal diverging trajectories across industries. Wood products manufacturing has been the clear leader in payrolls, with total wages surpassing $1.3 billion annually after 2018 and production workers alone earning over $1 billion by 2022 (see Figure 36; US Census Bureau, Annual Survey of Manufactures and Economic Census, 2025). Wages in this sector rose steadily from 2013 to 2022, interrupted only by a brief dip during the 2020 pandemic before rebounding to record highs. In contrast, paper manufacturing has contracted, with wages peaking around 2015, declining sharply by 2017, and stabilizing between $250 million and $400 million in subsequent years, underscoring a long-term structural decline.

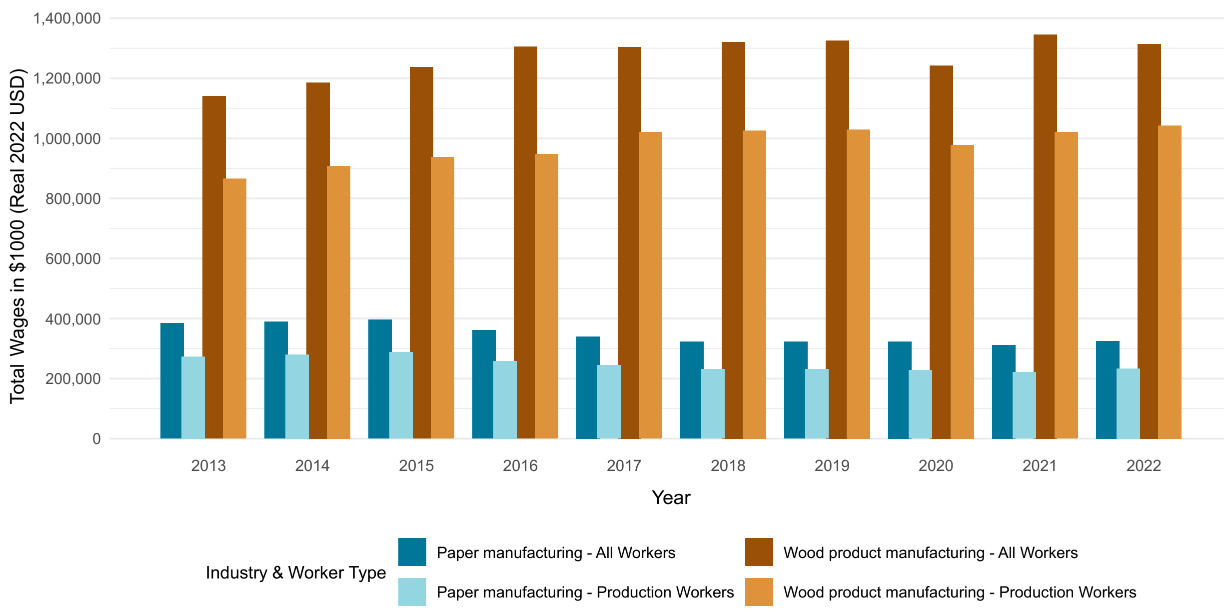


Figure 36. Total annual wages in Oregon by industry and worker type.

Within the wood manufacturing sector, total wages expanded from about $1.15 billion in 2013 to nearly $1.4 billion in 2022 (Figure 37; US Census Bureau, Annual Survey of Manufactures and Economic Census, 2025). Sawmills and wood preservation consistently contributed the largest share, exceeding $500 million at their peak. The veneer, plywood, and engineered wood products group accounted for $450 million–$500 million but experienced a sharp drop in 2020 before partially recovering. Meanwhile, the "Other wood products manufacturing" sector—including millwork, prefabricated buildings, and miscellaneous items—grew steadily to more than $400 million by 2022, providing stability during periods of volatility. Together, these subsectors highlight both the dominance of sawmills and engineered wood in driving wages and the growing role of diversified wood manufacturing in sustaining payroll resilience.

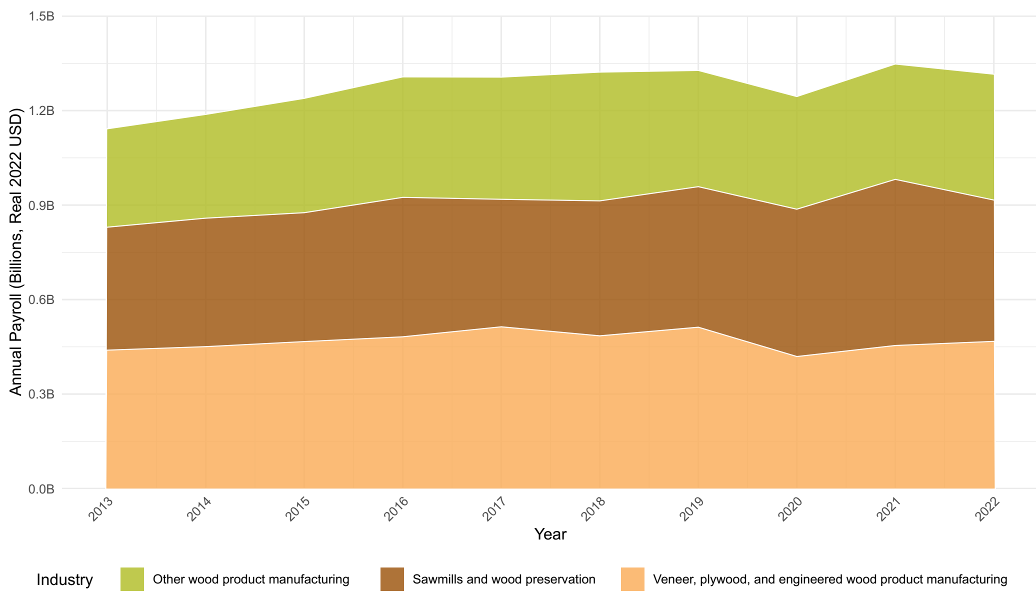


Figure 37. Total annual wages in Oregon's wood manufacturing sectors, 2013–2022.

By contrast, Oregon's paper manufacturing sector shows signs of contraction and restructuring (see Figure 38; US Census Bureau, Annual Survey of Manufactures and Economic Census, 2025). Between 2013 and 2018, combined wages across pulp, paper, and paperboard mills and converted paper product manufacturing fell from roughly $300 million to about $200 million, reflecting consolidation, automation, and declining demand. Pulp, paper, and paperboard mills consistently accounted for the larger share of payrolls, though they experienced sharp mid-2010s declines. Converted paper product manufacturing has been somewhat more stable, particularly after 2018. From 2020 to 2022, the sector exhibited modest stabilization, likely reflecting adaptation to shifting markets, including pandemic-driven demand for certain paper products.

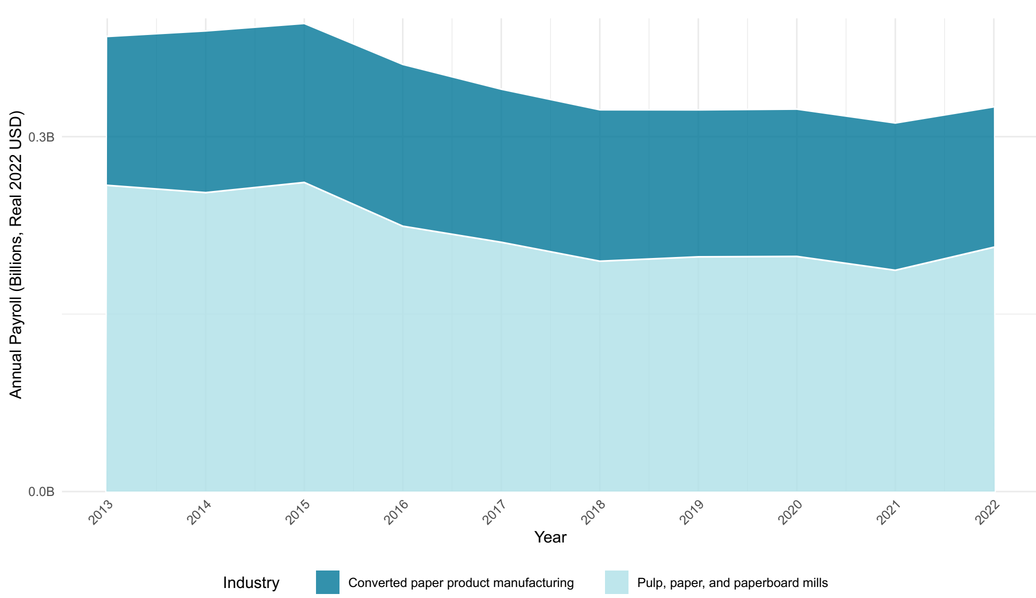


Figure 38. Total annual wages in Oregon's paper manufacturing sectors, 2013–2022.

Employment and hours worked follow a similar pattern. In the wood products sector (Figure 39; US Census Bureau, Annual Survey of Manufactures and Economic Census, 2025), employment rose steadily from about 21,000 workers in 2013 to nearly 23,500 in 2019–2020, supported by strong housing and construction demand. The pandemic interrupted this growth, reducing employment to about 21,700 by 2021, though modest recovery occurred in 2022, with employment rebounding to roughly 22,000 workers. An important feature is the divergence between employment and worker hours. While generally aligned earlier in the decade, they decoupled at times; in 2016–2017, worker hours spiked to a decade-high of about 39,000 even as employment was climbing. This indicates that firms often met demand by extending hours for existing workers rather than expanding their workforce.

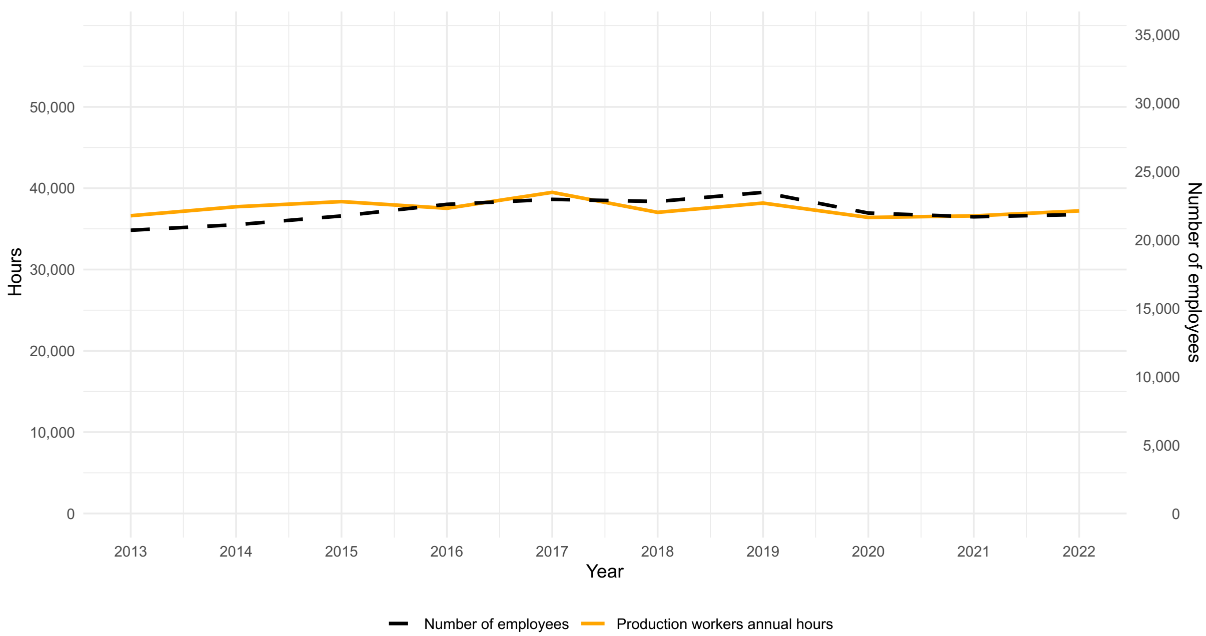


Figure 39. Employment and hours in Oregon's wood products sectors, 2013–2022.

In pulp, paper, and board manufacturing (Figure 40; US Census Bureau, Annual Survey of Manufactures and Economic Census, 2025), employment contracted steadily from about 4,600 workers in 2013 to fewer than 3,600 by 2021, with production worker hours following the same trajectory. The steepest losses occurred between 2015 and 2018, after which employment stabilized at reduced levels. Between 2021 and 2022 employment and hours rebounded, adding several hundred positions and hours worked, likely due to short-term shifts in demand or the reopening of capacity after pandemic disruptions. Nonetheless, employment remains well below early 2010's levels, highlighting the sector's long-term contraction despite periodic rebounds.

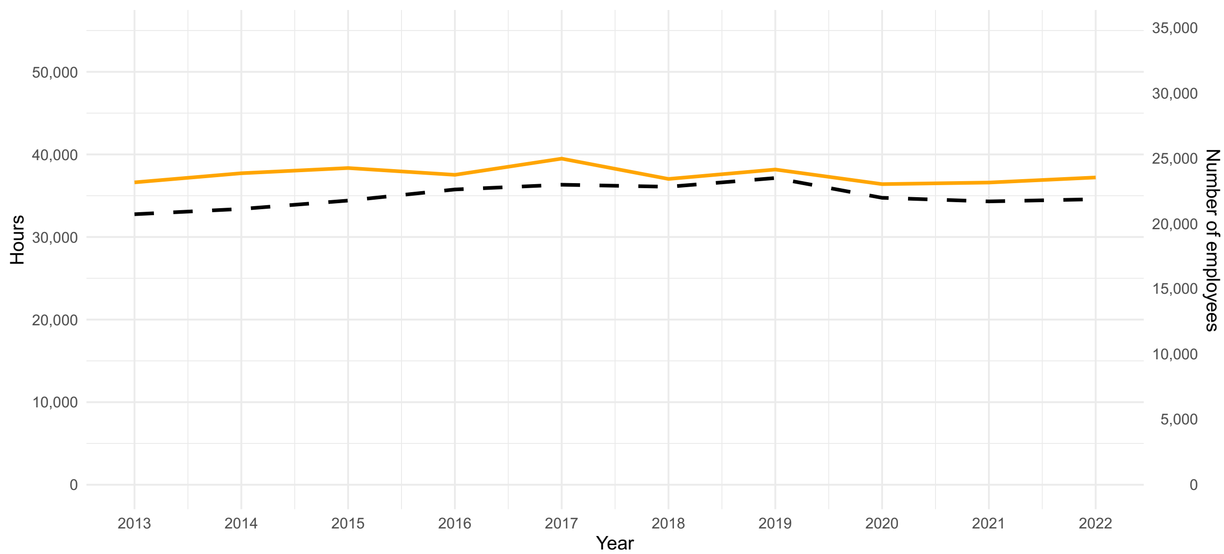


Figure 40. Employment and hours in Oregon's paper manufacturing sectors, 2013–2022.

The employment patterns across Oregon's wood products and paper manufacturing sectors from 2013 to 2022 reveal contrasting trends in workforce stability and production activity. In the wood products sector (Figure 39), total employment rose modestly from around 21,000 employees in 2013 to a peak of roughly 24,000 in 2018–2019, while production worker hours hovered near 38,000–41,000 hours, indicating consistent labor demand throughout most of the decade. After 2019, both metrics declined slightly, stabilizing around 22,000–23,000 employees and 37,000–38,000 hours by 2022, suggesting partial recovery following the 2020 downturn. In contrast, the paper manufacturing sector experienced a gradual contraction over the same period (Figure 40). Employment dropped from approximately 4,800 employees in 2013 to about 3,600 by 2021, with production hours decreasing in parallel from roughly 7,300 to 5,700 hours. A small rebound occurred in 2022, with employment and hours returning near 4,000 and 6,200, respectively. Overall, while Oregon's wood products industry demonstrated relative resilience and post-2020 stabilization, the paper manufacturing sector showed a more pronounced long-term decline, with only modest signs of recovery toward the end of the period.

The Oregon Forest Operations and Management Workforce Study (2025) provides a current snapshot of the state's forest workforce, revealing that the broader operations and management segment sustains a substantial economic footprint. The data from the study records a total workforce of 31,513 across key subsectors, with forest operations accounting for 12,778 workers—9,780 industry employees and 2,998 non-employer contributors—comprising about 41% of the total. Transportation followed closely with 11,537 workers (5,664 industry employees and 5,873 non-employer workers), or roughly 37% of the labor force. Forest management held 6,414 industry jobs, while other related firms employed 784. Critically, the study spotlighted the growing prominence of non-employer arrangements—independent contractors, self-employed professionals, and small businesses—totaling nearly 9,000 workers statewide. These roles were especially concentrated in forest operations and transportation, underscoring the evolving nature of forestry employment toward more flexible and decentralized workforce models.

ECONOMIC CONTRIBUTIONS OF OREGON'S FOREST SECTOR TO THE STATE'S ECONOMY

Understanding Impact Terminology & Economic Contributions

An evaluation of the economic contribution of Oregon's forestry and wood products seeks to identify and estimate the cumulative effects of spending within the sector and account for how it cycles through the state's economy. To account for this cycling, it is necessary to go beyond the "gross" measures of economic activity typically reported by government agencies (e.g., the U.S. Bureau of Economic Analysis, the U.S. Bureau of Labor Statistics, and the Oregon Employment Department) and consider how the economic activity in one sector generates further activity within other sectors.

When conducting an impact analysis, economists must distinguish between different types of jobs. A primary distinction is between basic vs non-basic employment. *Basic jobs* are those that directly bring money into the economy. *Non-basic jobs* are part of the internal supply network; they 1) support basic jobs and 2) circulate money within the economy. If we look at a natural resource extraction industry (e.g., agriculture, forestry, or mining), some of the employment will be basic and some will be non-basic. Loggers might export 10% of their logs out of Oregon for processing in Washington, Idaho, or California. The remaining 90% of the logs may be sent to a mill in Oregon. In this case 10% of the loggers are considered basic, and 90% are part of the Oregon mill's supply chain and are thus considered non-basic.

This distinction is important because supply chain multipliers, calculated from an impact model, can only be applied to basic employment. Otherwise, we would be double-counting the jobs in the supply chain. For example, suppose someone counted 100% of the loggers as basic but then attached a multiplier to the jobs at the sawmill. The multiplier would add additional loggers to the economy, but we already captured 100% of them. This double-counting is common with impact assessments, and special care must be taken to ensure analysts are not inflating results.

The basic jobs in each industry are often referred to as "direct" employment, while the non-basic jobs are often referred to as "indirect" or "induced" employment, depending on whether the non-basic employment is supporting local businesses or resident families. In other words, the indirect and induced employment are the non-basic support jobs for direct employment (basic jobs).

You will often hear regional economists refer to "base" and "gross" employment as well. These terms are used more broadly. *Gross employment* simply refers to total employment reported within an industry, regardless of whether it is basic or non-basic. Suppose Oregon has 5,000 loggers; the industry will report those 5,000 loggers to the state under the industry code NAICS 1133. The 5,000 is gross employment. Those are jobs active within the regional industry, but they are not all basic. Many of them are part of the mill's supply chain.

Base employment refers to all jobs, regardless of industry, that are supported by the basic employment for a specific industry. Suppose a mill has 200 employees, of which 100 are considered basic. We would apply a multiplier on the 100 basic jobs to identify the non-basic employment outside of the mill that those 100 mill jobs support, (e.g., accountants, loggers, lawyers, barbers, etc.). In doing this we are able to determine how many and which jobs in the economy are dependent on mill operations. The immediate question is, what about the other 100 mill jobs? Those mill jobs may be part of the regional supply chain for a local furniture manufacturer and are therefore non-basic support occupations for furniture manufacturing. They are captured in the Oregon forest products industry, but as indirect jobs associated with furniture manufacturing—not as part of direct mill employment.

This section presents an in-depth economic contribution analysis of Oregon's forest sector for the year 2023. We follow that with a look at the gross statistics across a range of years to give an indication of how the sector's economic activity has changed over time. We begin with employment and wages and then look at exports and conclude with overall output. For more information on the IMPLAN data and modeling system, please see the Appendix.

Economic Contributions in 2023

The metrics commonly evaluated when determining economic contributions are output (dollar value of sales of goods and services), employment (jobs), and value added (dollars). Value added first accounts for gross output and then deducts for the costs of the various inputs required to produce the final good. The sum of value added for all parts of the county or state economy is called *gross domestic product* (GDP). This value added, or GDP, is the most commonly used indicator of the level to which an organization, industry, or sector contributes to the economy of the county or state as a whole.

The most common method used to determine economic contributions is an input–output (I-O) model. A common issue with traditional I-O modeling is double-counting, or inflation of outputs. To avoid this issue, we used a social accounting matrix (SAM) approach, which takes IMPLAN I-O data and adjusts it using employment data from the Oregon Bureau of Labor and Industry and the Oregon Employment Department. An SAM is a data framework that utilizes double-entry bookkeeping to trace all monetary flows within a regional economy over a given period. It provides a method to organize the flow-of-value data for a national, state, or regional economy. The approach uses gross observable employment and output data to generate the base values, which include the economic activity generated in other sectors, non-forestry sectors, as a result.

The base economic contribution of forestry can also be broken down into the direct and the indirect/induced effects. The direct effects are the new dollars or jobs brought into the state of Oregon as a result of forestry. The indirect/induced effects are the jobs created in other sectors from the linkages of forestry to the broader state economy: indirect effects come from forestry operations creating additional economic activity through input purchases (i.e., supply chains) from other sectors of the Oregon economy, while induced effects are created when forestry sectors pay wages, salaries, and profits to Oregon households who then use that money to purchase goods and services from other sectors of the Oregon economy. Table 13 provides a breakdown of the economic base contributions of Oregon's forest sector in 2023, in terms of both direct and indirect/induced effects.

Table 13. The 2023 economic contribution of Oregon's forest sector.

	Economic Contribution	Percentage of State Total
Output ($Billion)	$28.20	5.2%
State GDP ($Billion)	$12.90	4.3%
Employment (Jobs)	103,500	3.9%

The economic base model results indicate that forestry was responsible for generating over $28 billion in output, over 103,000 jobs, and almost $13 billion in Oregon GDP (as measured by value added). This translates to 5.2% of total state output, almost 4% of state employment, and 4.3% of state GDP. Applying an identical analysis to other sectors of the Oregon economy can provide some context as to the relative size of the forestry sector (see Table 14). For example, the forestry sector has a larger economic base contribution than the chemical manufacturing (NAICS 325), transportation equipment manufacturing (NAICS 336), and publishing industries (NAICS 511).

Table 14. Economic output contribution of other sectors of the Oregon economy, 2023.

Sector	Economic Contribution	Percent of State Total
Chemical manufacturing	$6,958,086,575	1.29%
Transportation equipment manufacturing	$7,815,874,683	1.45%
Publishing	$3,369,222,598	0.62%

Comparing 2016 to 2023

This analysis was conducted with the same methodology as that in the 2019 Forest Report, which used 2016 data. At that time, the economic contribution of the forest industry was an estimated $8 billion in output and $8 billion in state GDP (as measured by value added) and equal to 4.7% of the state's output, almost 3% of state employment, and 3.7% of the state's GDP. For both the 2019 and the 2025 Forest Reports, our first step was to take the reported gross employment data for each industry in the Oregon wood products sector (for 2019 see Tables A3-A8) and identify the percentage that is basic (for 2019 see Table A10). We then calculated the non-basic support using the Oregon input–output model. The base employment result in each report reflects the direct (basic) employment, as well as all non-basic support employment, regardless of industry. The gross employment figure is, in many ways, a subset of the base employment, but it does not account for all support occupations.

From 2019 to 2025, direct (basic, export-oriented) employment in Oregon's forest products industry (FPI) fell from 36,401 jobs to 34,900 jobs. The indirect and induced (supply chain, non-basic) employment dependent on the direct jobs grew over this same time period from 34,817 jobs to 68,600 jobs. This growth in support employment shows a "deepening" of the Oregon supply chain. The Oregon FPI became more interdependent, and the direct employment supported a much larger number of Oregonians in 2025 than it did in 2019.

Comparing the 2012 results to the 2019 results is difficult. The researchers in 2012 used an incorrect definition for the direct employment figures for the Oregon FPI and undoubtedly double- and triple-counted many of those jobs. It is possible to go back and update the 2012 analysis with corrected methodology, but this would require a significant data collection and modeling effort, in part because the industry codes have been revised since 2012, and because we would need to purchase a legacy input–output model of the 2012 Oregon economy.

5. Threats, Risks and Constraints to Supply

Given the significant contribution of Oregon's forestry sector to the state's economy, as discussed in the previous section, it is important to understand the factors that create threats, risks, and constraints to supply. Oregon's fire and forest health have undergone profound changes over the past several decades, shaped by changing climate conditions, accumulated fuels, and evolving land management practices. Understanding short- and long-term patterns in wildfire and forest disease extent and severity, as well as how they differ across regions and management regimes, provides contexts for informing future policy and strategies to further the economic contribution of the forestry sector.

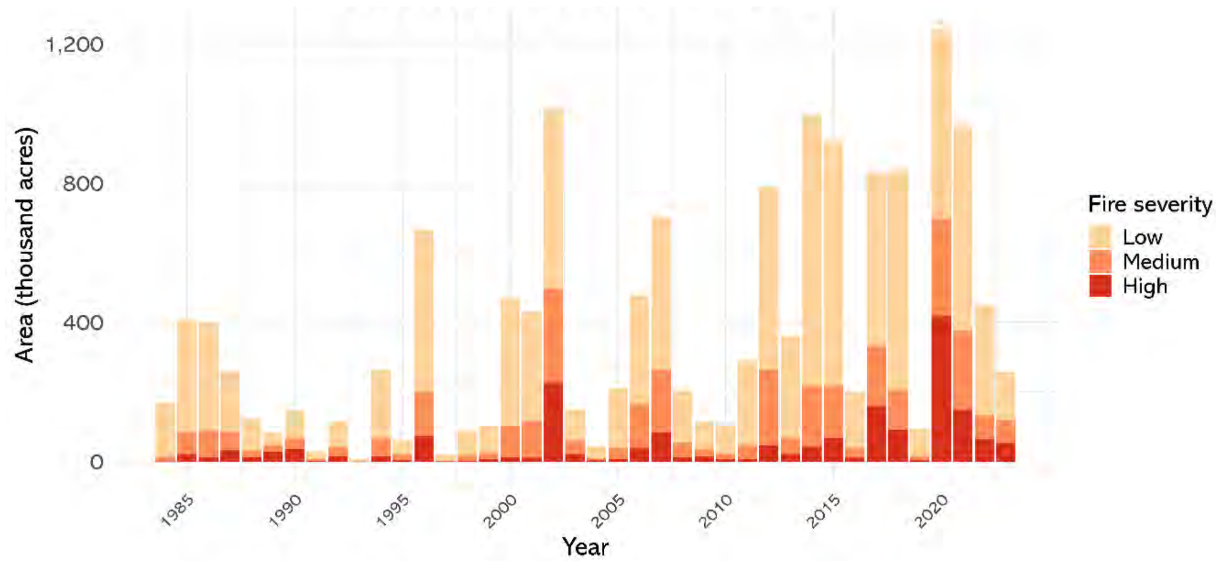
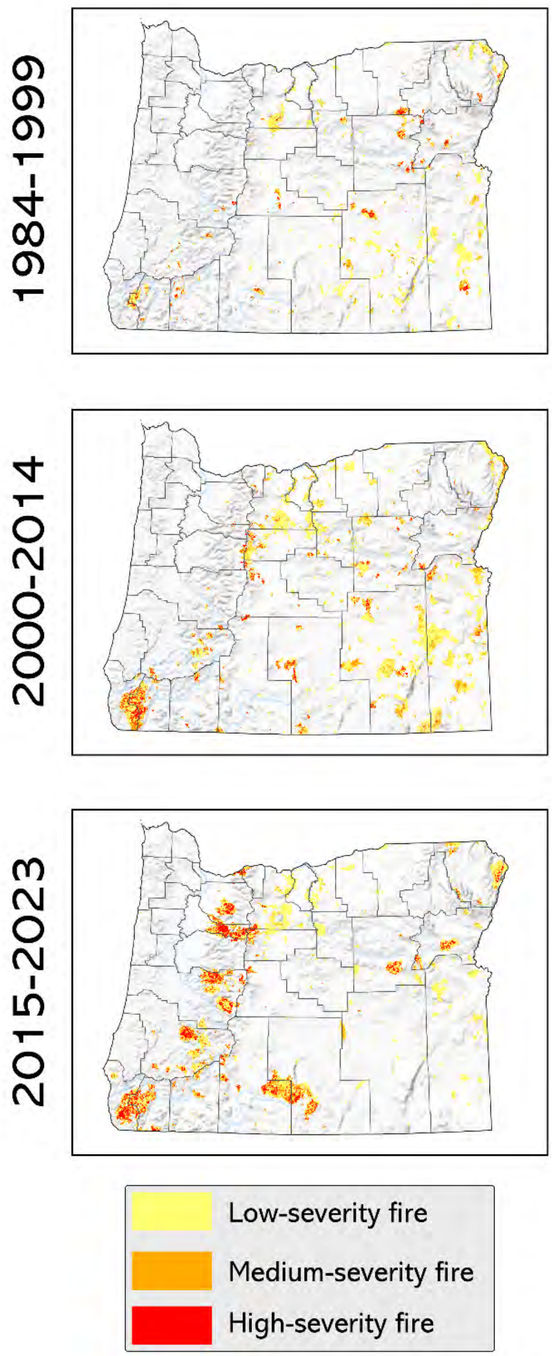


Figure 41. Acres burned by fire severity in Oregon from 1984 to 2023.

FIRE IN OREGON'S FORESTS

Figure 41 and 42 show how wildfire activity and burn severity[3] in Oregon have evolved from 1984 to 2023 using data from Monitoring Trends in Burn Severity (US Geological Survey et al., 2021). The overall pattern reflects increasing variability and a general trend toward larger and more severe wildfire events in Oregon over the past four decades. The fire total area and severity were relatively

[3] Burn severity is defined by the Monitoring Trends in Burn Severity (MTBS) program as the magnitude of change in vegetation and ground cover caused by fire, using satellite images taken before and after a fire. MTBS classifies burned areas into severity categories, low, moderate, and high, which reflect increasing levels of vegetation consumption, canopy mortality, and alteration of surface organic material, with high-severity fire indicating substantial loss of live biomass and ground cover.



Data source: U.S. Geological Survey et al. (2021)

Figure 42. Locations of wildfire by severity.

modest through the late 1980s and early 1990s, followed by a marked increase in both frequency and scale of large fire years beginning in the late 1990s. Several pronounced peaks appear around 2002, 2007, 2012, 2015, and especially 2020, when total burned area surpassed one million acres. Across the entire period, low-severity fire consistently accounted for the largest share of area burned, but medium- and high-severity portions also expanded during large fire years.

Figure 42 shows the locations of Oregon's wildfires over the past four decades, illustrating a clear trend toward more widespread and severe wildfires across nearly all of Oregon's forested landscapes. In the 1980s and 1990s, burned areas were concentrated mainly in southwestern Oregon, the eastern Cascades, and portions of the Blue Mountains. Most burned areas seem to be scattered, with smaller patches and only some isolated high-severity burns. By the early 2000s through the mid-2010s, fire activity had broadened, with larger and more contiguous burns appearing across central, eastern, and southwestern Oregon. Significant concentrations emerge in the eastern Cascades, as well as the Blue Mountains of northeast Oregon. The southwest also shows more frequent and extensive fires. Medium- and high-severity burns have become more common, particularly in central and eastern Oregon.

The most recent period, 2015–2023, shows the most dramatic change: extensive high-severity fires emerge across the western Cascades and Klamath-Siskiyou region of southwestern Oregon, while major events continue in the eastern Cascades and northeast forests. The western Cascades include major events near the Willamette Valley edge and into the central Cascade crest. The Klamath–Siskiyou region of southwestern Oregon shows some of the highest concentrations of high- and medium-severity fire.

The causes of wildfire vary significantly by location in Oregon. Natural fires dominate in eastern Oregon, driven largely by lightning, and human-caused fires dominate in western Oregon, particularly associated with debris burning and equipment use (see Figure 43). Both regions show a general decline in total fire numbers after the mid-2000s, possibly due to improved fire management or changing environmental conditions. Eastern Oregon experienced a mix of human-caused and natural fires, with natural fires (green) generally dominating the total count (Figure 43, top; Short, 2022). Human-caused fires (red) were significant in the early 1990s and mid-2000s but declined steadily after 2010. Western Oregon (Figure 43, bottom) shows a stark contrast: human-caused fires (red) overwhelmingly dominated across all years, often more than doubling the number of natural fires (green). Although total fire counts fluctuate, there was a slight downward trend after the early 2000s. Debris burning and equipment use were consistently the leading causes, with notable contributions from arson and other human activities. Natural fires remained relatively low, underscoring the strong influence of human behavior on fire occurrence in this region.

The map in Figure 44 shows the spatial distribution of areas in Oregon that burned once or repeatedly between 1984 and 2023, where "burns" refer to locations on the landscape that were affected by wildfire rather than the number of individual fire events (US Geological Survey et al., 2021). Single-burn areas were widespread across the state, while repeated burns were concentrated in southwestern Oregon (Klamath Mountains and Siskiyou region) and northeastern Oregon (Blue and Wallowa Mountains). The repeatedly burnt areas were dominated by fire-adapted ecosystems, such as mixed-conifer forests, which historically experienced frequent low-intensity or mixed-severity fires.

Decades of fire suppression have allowed fuels to accumulate, increasing the likelihood of high-severity fires and subsequent reburns. Climate factors, especially warm, dry summers and periodic droughts, further amplify fire risk in these regions. In northeastern Oregon, interactions between drought and bark beetle outbreaks have created extensive dead fuels, making landscapes highly susceptible to repeated burning. Smaller clusters of reburns in central Oregon and along the eastern slopes of the Cascades occur in transition zones where dry forests and shrublands dominate. In these areas, reburn extent is limited because of fragmented vegetation and variable fuel continuity, but human activity and wildland–urban interfaces introduce ignition sources.

Oregon has five fire regimes, classified by fire frequency and severity (Figure 45; Long & Hatten, 2024): Fire Regime I dominates the Willamette Valley, southwestern Oregon, and the far eastern Cascades, characterized by frequent fires (0–35 years) of low to mixed severity. This reflects ecosystems where regular burning historically maintained open grassland or forest structures and reduced fuel loads. Fire Regime II occurs in smaller patches, adjacent, with similar frequency but high severity. Fire Regimes III and IV cover much of central and eastern Oregon, where fires occur less frequently (35–200 years) and range from low to high severity. Infrequent, high-severity regimes in eastern Oregon often occur in grasslands. Fire Regime V dominates in the Coast and

Cascade ranges, representing areas with very infrequent fires (intervals exceeding 200 years). Overall, the map in Figure 45 shows a gradient from frequent, low-severity fire regimes in the west to infrequent, high-severity regimes in the east, reflecting climatic gradients: wetter coastal areas support vegetation that burns more often but less intensely, while drier inland areas cause infrequent but severe fires.

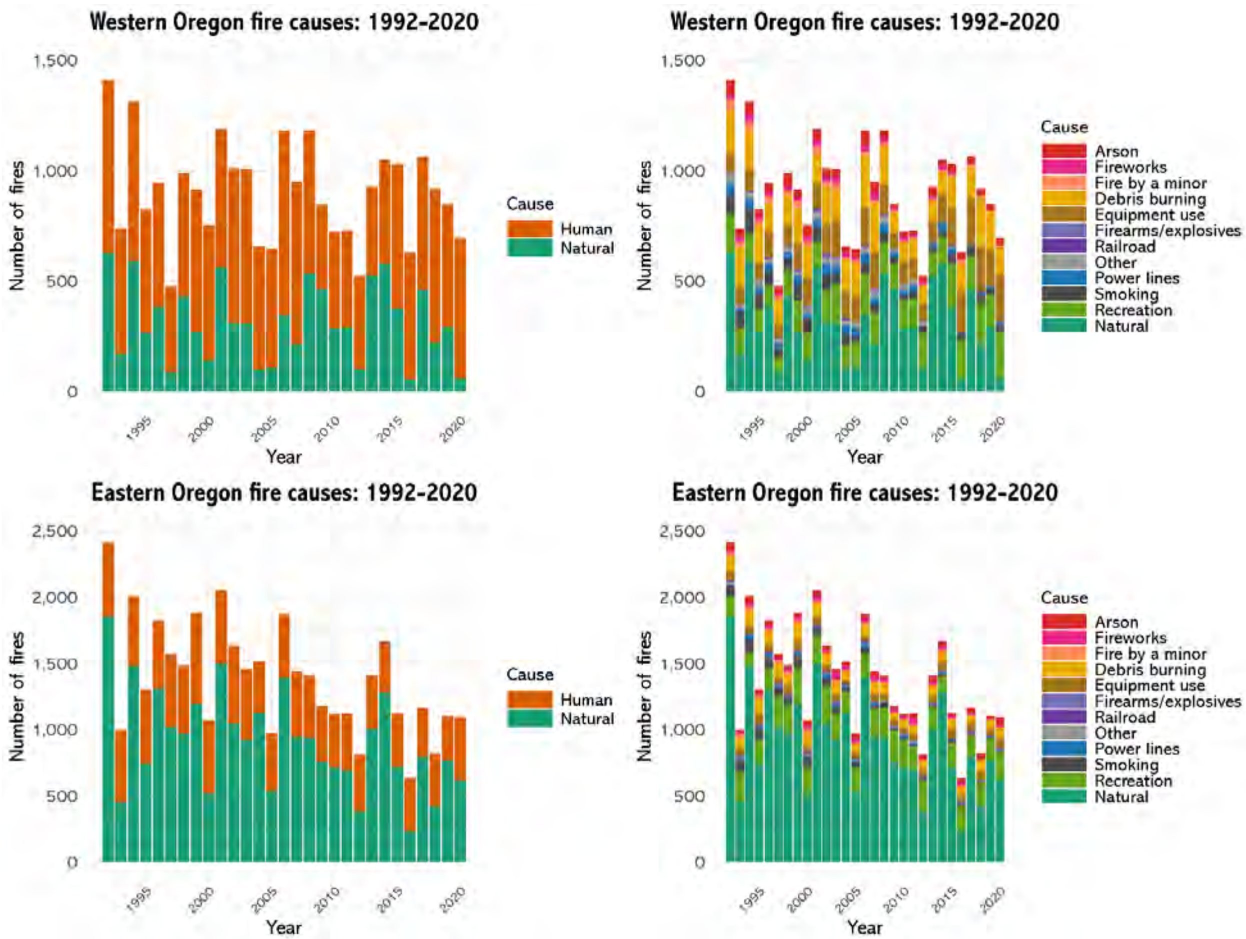


Figure 43. The causes of wildfire in eastern and western Oregon, 1992–2020.

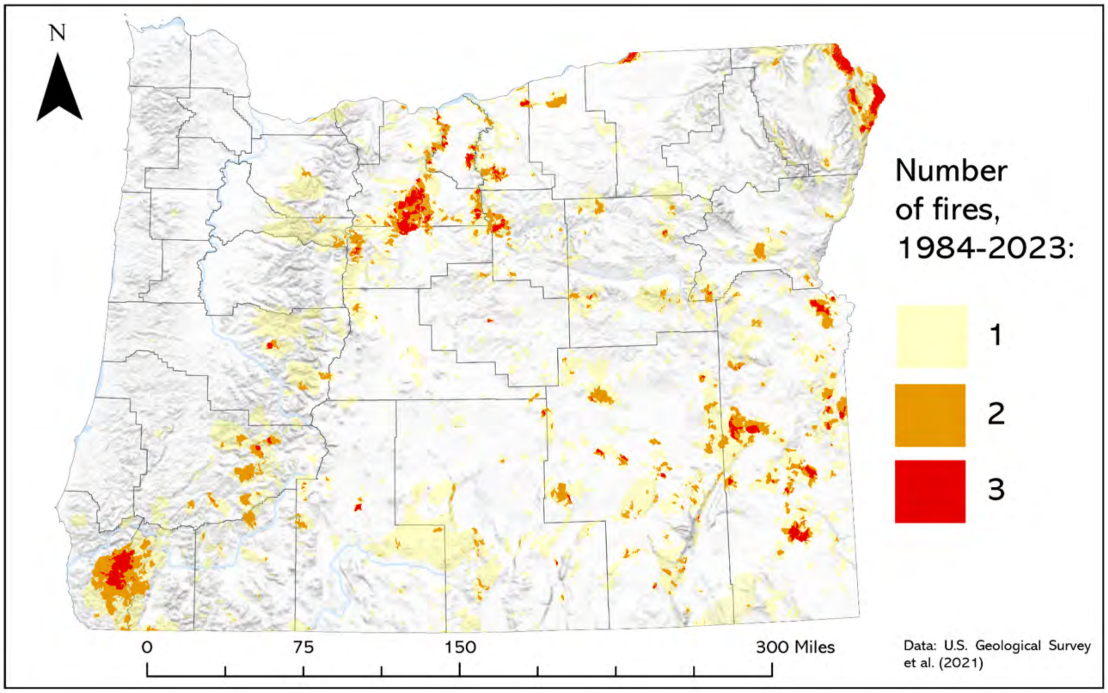


Figure 44. Spatial distribution of areas burned 1-3 times between 1984 and 2023.

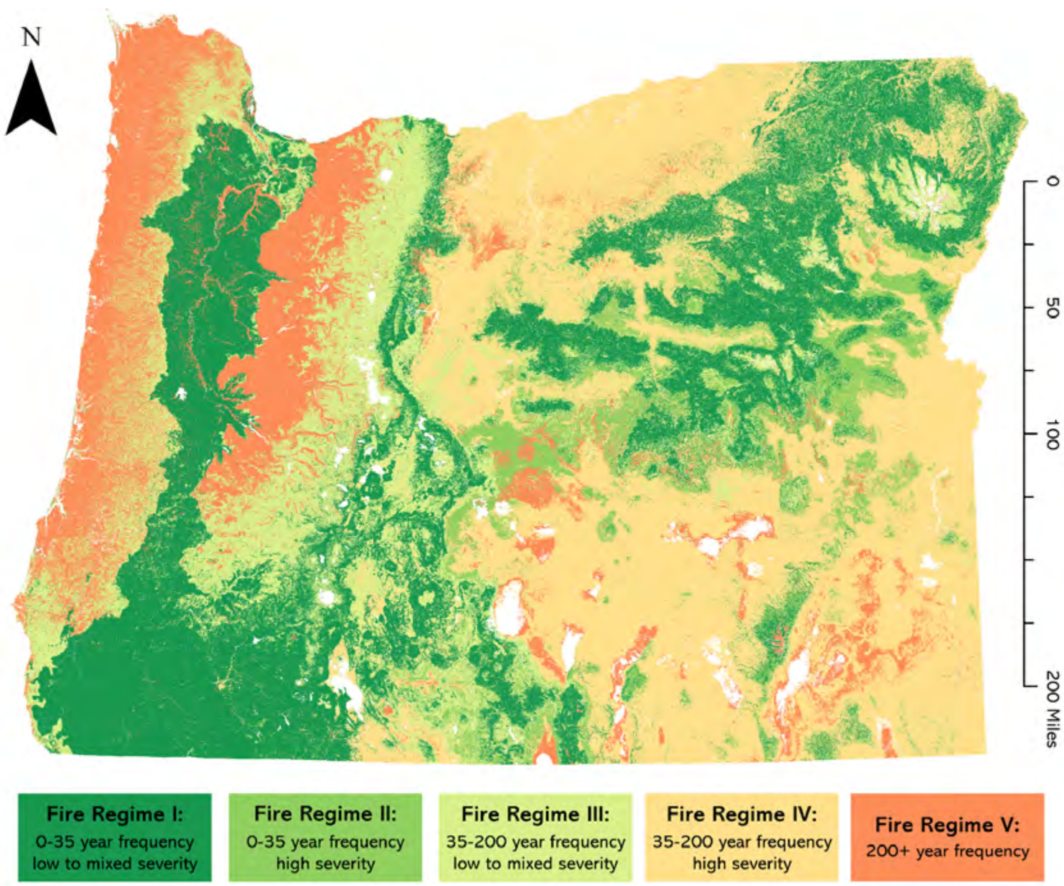


Figure 45. Historic fire regimes in Oregon by fire frequency and severity.

IMPACT HIGHLIGHT: 2020'S LABOR DAY FIRES

The summer of 2020 was already hot and dry when strong east winds swept across the state on September 7th and 8th. The resulting "Labor Day fires" included five megafires greater than 100,000 acres, an additional five fires between 10,000 and 50,000 acres, and seven smaller fires—totaling over 1 million acres burned in a matter of days (Rasmussen et al., 2021). The result was nine fatalities; over 50,000 people evacuated; more than 6,000 homes, businesses, and structures destroyed; and several communities burned. Hazardous air quality, coupled with restrictions in place due to COVID-19, impacted millions more residents who were unable to spend significant time outside. Suppression costs were at least $354 million (Rasmussen et al., 2021).

The Labor Day fires were notable for their impact on private forest landowners. Fires high in the Cascade Mountains were spread to the west by the wind event, including expanding into high-value timberlands on the east side of the Willamette Valley. An economic impact report, commissioned by the Oregon Forest Resources Institute and produced by forest economists from Mason, Bruce, & Girard and Forest Economic Advisors, notes that some 425,000 acres of private forestland were burned. The 12 fires examined for the report destroyed nearly 15 BBF of timber with more than $30 billion of estimated end-product value.

The timber loss is anticipated to have longer-term impacts as well, reducing future harvests by 115 million to 265 million board feet annually over the next 40 years. Altogether, the report estimates a total economic impact of $5.9 billion from the extreme event.

SUMMARY OF ECONOMIC IMPACTS

Impact description	Amount
Value of merchantable timber available for harvest	$7,513 million
Value of pre-merchantable timber	$704 million
Road reconstruction costs	$27 million
Losses to forest contractors	$100 million
Reforestation costs	$144 million
Gross economic impact	**$8,488 million**
Offset – value of timber likely to be salvaged	$2,604 million
Net economic impact	**$5,884 million**

***For more information**, see "2020 Labor Day fires: Economic impacts to Oregon's forest sector" by Rasmussen et al. (2021; link in References).*

RESEARCH HIGHLIGHT: POST-FIRE RECOVERY OF WOOD VALUE

As wildfire size has increased in the last decades in Oregon, post-fire harvest is one option for landowners who want to recover lost value of timber. However, little is known about the actual amount of harvestable timber on the post-fire landscape. Using remote sensing tools and models, recent research by Zuspan, Reilley, and Lee (2025) estimated the proportion of area harvested following wildfire between 1986 and 2017. Post-fire harvest declined across the study area over the period of observation to a low in the 1990s. Following large fires in the 2000s, post-fire harvest across the landscape increased, albeit at lower rates for federal owners. Even so, and while harvest rates fluctuate year to year, harvest after fire on private lands over the study period rarely exceeded 25% of the total area burned—despite the fact that private landowners may have had more incentive to capture lost value, and fewer restrictions on doing so.

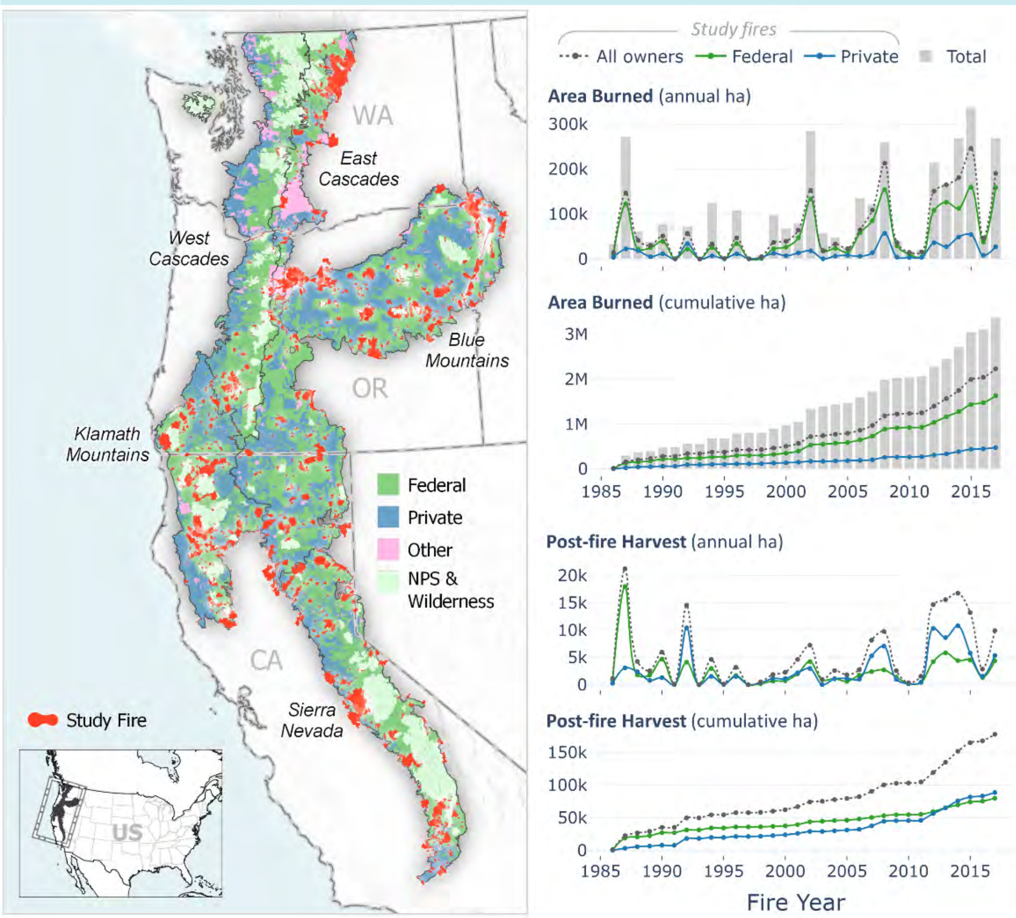


Figure in Zuspan et al. (2025) shows the study area with land ownership and study fires overlaid. Wilderness and national parks were excluded from analysis. (Right) Area burned (top two panels) and area harvested post-fire (bottom two panels) in the 1,007 study fires, annually and cumulatively over the study period, by ownership. Grey bars in the top two panels show the total forested area burned in the study region, including wilderness and national parks.

***For more information**, see "Long-term patterns of post-fire harvest diverge among ownerships in the Pacific West, U.S.A." by Zuspan et al. (2024; link in References). Figure used with permission of the authors.*

OREGON'S FOREST HEALTH ISSUES

Figure 46 shows long-term trends in forest acres damaged by pests from 1947 to 2023 (USDA Forest Service Pacific Northwest Research Station, Aerial Insect & Disease Survey, 2024). Overall, the trend reflects episodic pest outbreaks rather than a steady increase or decrease, with recent years suggesting a potential resurgence. Damage levels have fluctuated significantly over time, with three major peaks: the early 1950s, mid-1980s, and early 1990s. The early 1950s outbreak is likely linked to post-war forest conditions and limited pest management infrastructure. The most severe outbreak occurred in the mid-1980s, exceeding 8 million acres, followed by a sharp decline in the late 1980s and 1990s. This most severe observed outbreak may have been driven by large-scale bark beetle infestation and drought conditions that weakened tree defenses. After reaching very low levels around 2000, damage remained relatively minimal for two decades, with only minor fluctuations. However, there has been a noticeable increase since 2020, rising to over 3 million acres by 2022, potentially associated with climate change impacts including warmer winters and increased tree stress. The episodic nature of pest outbreaks indicates that forest health is sensitive to environmental stressors and pest population cycles, and historical peaks highlight the importance of preparedness and rapid response to prevent large-scale forest loss. The recent uptick in damage highlights the need for adaptive management strategies that consider changes in pest dynamics caused by climate change.

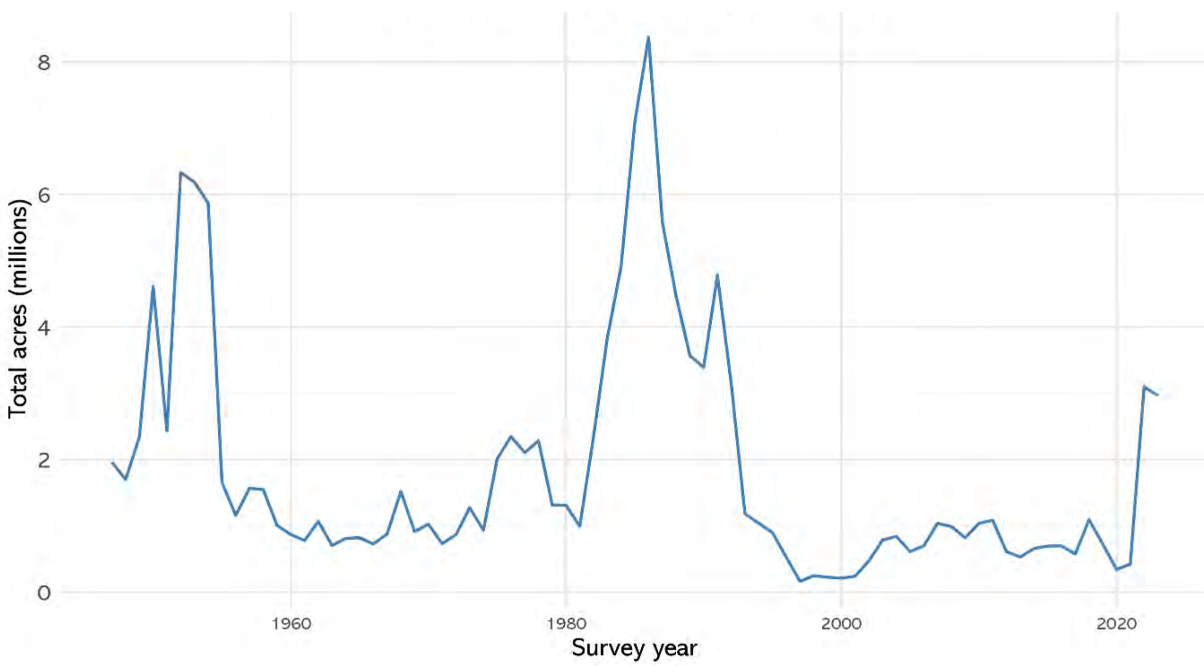


Figure 46. Forest acres damaged by pests in Oregon, 1947–2023.

Figure 47 shows the total forest acreage affected by pests, categorized by severity of mortality. Similar to forest acres damaged by pests (Figure 46), damage severity shows episodic peaks rather than a steady trend, with most acres experiencing minimal mortality during outbreaks. Most damaged acres fall under "None (0%)" and "Very light (1–3%)" severity classes, which indicates that pest outbreaks typically cause low mortality across large areas. Categories such as "Light (4–10%)," "Moderate (11–29%)," "Severe (30–50%)," and "Very severe (>50%)" remain consistently low throughout the period, rarely exceeding 0.5 million acres. This suggests that while pest outbreaks affect large areas, severe tree mortality is relatively rare. However, as moderate mortality can have significant ecological and economic impacts, it is important to focus on early detection and intervention during low-severity phases before escalation. Particularly, incorporating climate adaptation strategies, such as thinning and species diversification, may be important in mitigating future outbreaks, given the recent uptick in acreage with very light and light damage severity.

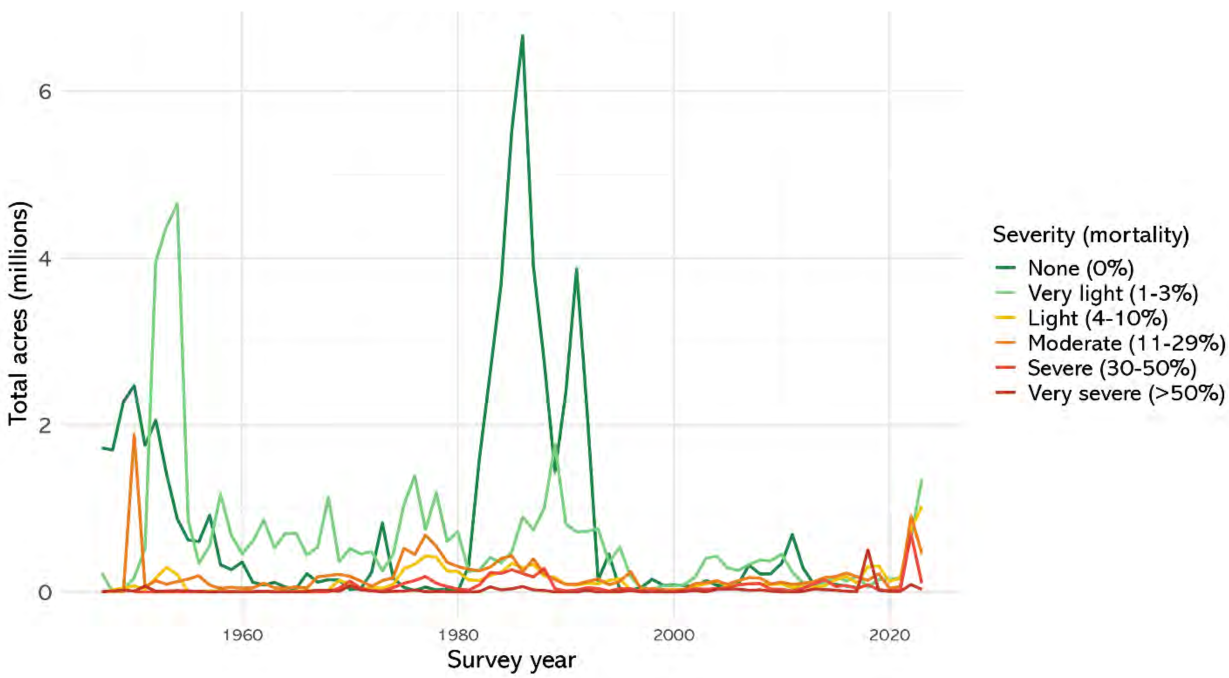


Figure 47. Severity of forest damage effected by pests in Oregon, 1947–2023.

Figure 48 shows pest-related forest damage, categorized by damage type. The two dominant damage types are defoliation (green), which refers to the loss of leaves or needles caused by insects but does not necessarily result in tree death, and mortality (red), which represents trees that have died as a result of pest activity. Defoliation peaked sharply in the mid-1980s, exceeding 6 million acres, and again in the early 1950s. Mortality showed major peaks in the early 1950s (over 4 million acres), mid-1980s (around 2 million acres), and early 2020s (about 2 million acres). Branch flagging, topkill, crown dieback, and crown discoloration remained consistently low throughout the period. It appears that defoliation dominated during major outbreaks, which indicates that pests weakened trees before causing death. Mortality spikes tended to follow defoliation peaks, suggesting cascading effects.

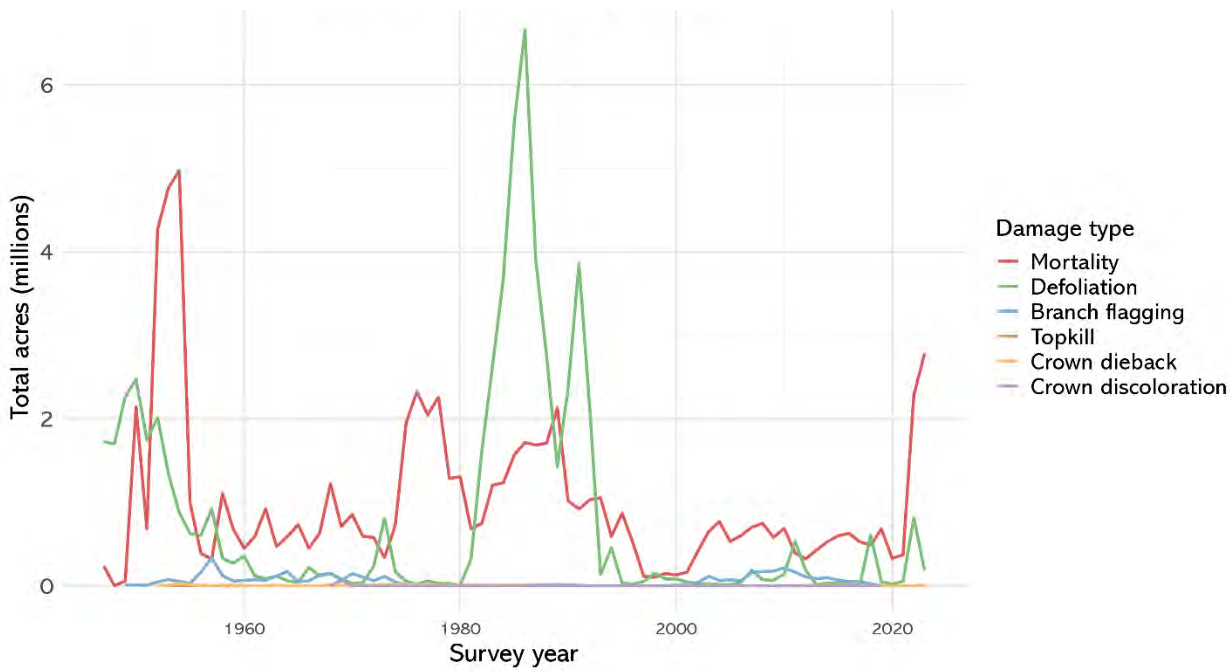


Figure 48. Total tree-damaged acreage by damage type in Oregon, 1947–2023.

Oregon's forests are affected by a wide range of pests and diseases, with varying distribution patterns across the state (see Table 15; Fei et al., n.d.). Pests such as white pine blister rust (30 counties), balsam woolly adelgid (24 counties), and pear thrips (23 counties) pose broad-scale risks to forest health, followed by strawberry root weevil (22 counties) and smaller European elm bark beetle (21 counties). Others, including sudden oak death, emerald ash borer, and chestnut blight, are highly localized, each reported in only one county. Counties such as Multnomah, Marion, Lane, and Douglas appear most frequently across pest listings, where they are experiencing the greatest diversity of forest health challenges. The coexistence of widespread pests and localized threats underscores the need for region-specific strategies. Widespread pests targeting common hosts such as Douglas-fir and pine require statewide monitoring and coordinated control, while localized pests demand rapid containment measures to prevent expansion.

Table 15. Different types of species/diseases in Oregon, as of April 2024.

Species/disease:	Affected Oregon counties:
White Pine Blister Rust	30 counties: Baker, Benton, Clackamas, Clatsop, Columbia, Coos, Crook, Curry, Deschutes, Douglas, Grant, Hood River, Jackson, Jefferson, Josephine, Klamath, Lake, Lane, Lincoln, Linn, Marion, Multnomah, Polk, Tillamook, Umatilla, Union, Wallowa, Wasco, Washington, Yamhill
Balsam Woolly Adelgid	24 counties: Baker, Clackamas, Crook, Curry, Deschutes, Douglas, Grant, Harney, Hood River, Jackson, Jefferson, Josephine, Klamath, Lane, Linn, Malheur, Marion, Morrow, Multnomah, Umatilla, Union, Wallowa, Wasco, Wheeler
Pear Thrips	23 counties: Benton, Clackamas, Clatsop, Columbia, Coos, Curry, Douglas, Hood River, Jackson, Josephine, Klamath, Lane, Lincoln, Linn, Marion, Multnomah, Polk, Tillamook, Umatilla, Union, Wasco, Washington, Yamhill
Strawberry Root Weevil	22 counties: Benton, Clackamas, Columbia, Coos, Deschutes, Douglas, Gilliam, Grant, Hood River, Jackson, Josephine, Klamath, Lane, Linn, Malheur, Marion, Multnomah, Polk, Sherman, Umatilla, Wasco, Yamhill
Smaller European Elm Bark Beetle	21 counties: Baker, Crook, Deschutes, Gilliam, Grant, Harney, Hood River, Jackson, Jefferson, Josephine, Klamath, Lake, Malheur, Morrow, Multnomah, Sherman, Umatilla, Union, Wallowa, Wasco, Wheeler
Black Vine Weevil	13 counties: Benton, Clatsop, Columbia, Coos, Harney, Lane, Lincoln, Linn, Marion, Multnomah, Polk, Washington, Yamhill
Larch Casebearer	13 counties: Baker, Crook, Deschutes, Grant, Harney, Hood River, Jefferson, Morrow, Umatilla, Union, Wallowa, Wasco, Wheeler
Pear Sawfly	13 counties: Benton, Clackamas, Columbia, Deschutes, Douglas, Jackson, Lane, Linn, Malheur, Marion, Polk, Umatilla, Yamhill
Peach Twig Borer	12 counties: Benton, Clackamas, Douglas, Jackson, Josephine, Lane, Linn, Marion, Polk, Umatilla, Wasco, Yamhill
Port-Orford-Cedar Root Disease	11 counties: Clatsop, Columbia, Coos, Curry, Douglas, Josephine, Lane, Lincoln, Multnomah, Tillamook, Yamhill
Satin Moth	11 counties: Benton, Clatsop, Deschutes, Douglas, Grant, Harney, Klamath, Lake, Linn, Marion, Union
Green Spruce Aphid	7 counties: Clatsop, Coos, Curry, Douglas, Lane, Lincoln, Tillamook
Larch Sawfly	7 counties: Baker, Clackamas, Grant, Jefferson, Umatilla, Union, Wallowa
Elm Leaf Beetle	6 counties: Deschutes, Jackson, Morrow, Multnomah, Umatilla, Washington
European Bark Beetle	6 counties: Clackamas, Linn, Marion, Multnomah, Wasco, Washington
Poplar-and-Willow Borer	6 counties: Clatsop, Columbia, Morrow, Multnomah, Umatilla, Washington
Banded Elm Bark Beetle	4 counties: Crook, Malheur, Union, Wasco
Birch Leafminer	4 counties: Lane, Marion, Multnomah, Washington
Cherry Bark Tortrix	4 counties: Clackamas, Marion, Multnomah, Washington
Spruce Bud Scale	4 counties: Jackson, Marion, Multnomah, Polk
Eurasian Poplar Leaf Rust	3 counties: Clatsop, Columbia, Multnomah
Oystershell Scale	3 counties: Douglas, Multnomah, Union
Birch Casebearer	Douglas
Chestnut Blight	Douglas
Dutch Elm Disease	Malheur
Eastern Spruce Gall Adelgid	Benton
Elm Flea Weevil	Umatilla
Elm Leafminer	Multnomah
Emerald Ash Borer	Washington
Linden Aphid	Umatilla
San Jose Scale	Jackson
Sudden Oak Death	Curry
Willow Scab	Benton

6. Future Outlook and Strategic Considerations

DEMAND FACTORS

Oregon has seen a decline in the number of sawmills and plants for plywood, veneer, pulp, and paper since the 1980s (Section 3). The annual average employment in wood product manufacturing dropped by over 50% between 1990 and 2020. Multiple factors have contributed to the decline in employment by the wood product manufacturing sector, including market and institutional drivers such as the Great Recession; the COVID-19 pandemic; the shrinkage of pulp, paper, and plywood markets; and a decrease in harvest from federal lands. Structural shifts in the wood products industry, including the closure of smaller and less efficient mills, and better technology, also contributed to the decrease in employment in the wood product manufacturing sector.

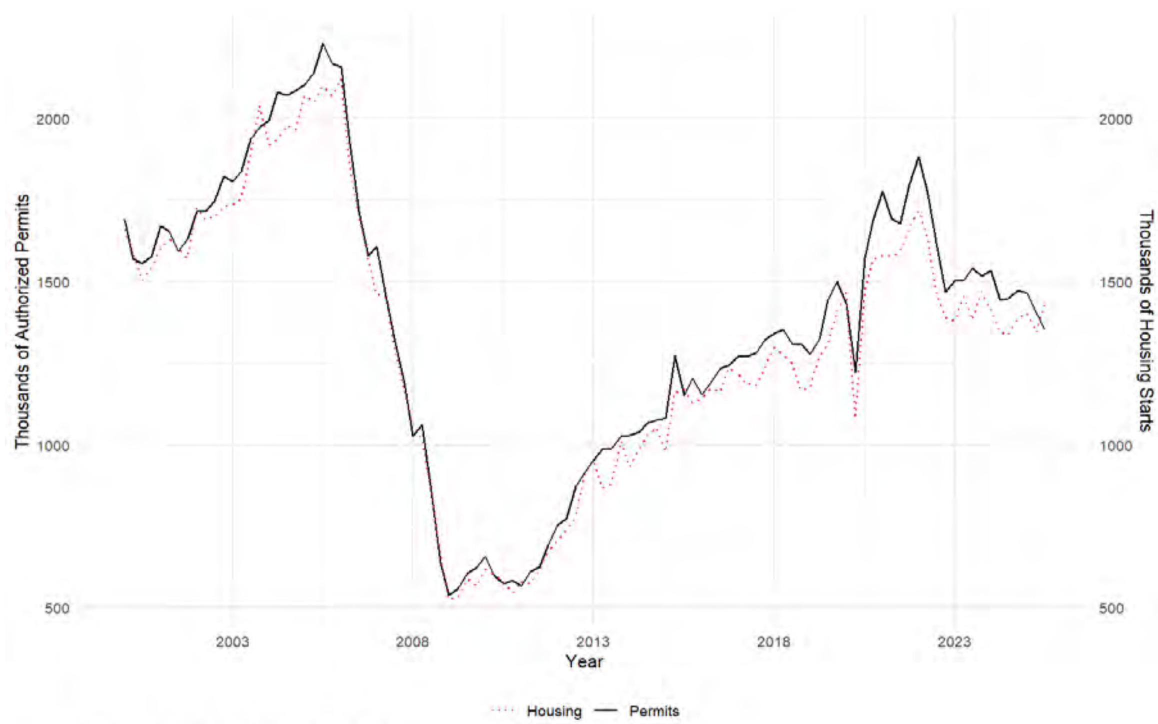


Figure 49. New housing units authorized (permits) and new units (starts), thousands, 2000–2024.

As discussed in Section 3.5, relatively little of Oregon's harvested wood is exported internationally at this time. Indicators of domestic lumber demand can provide clues as to the future outlook for most of our products. Since Oregon's industry is driven by lumber, new construction of family homes, along with repairs and remodels to existing housing stock, are important uses of Oregon wood. The Federal Resource Bank of St. Louis (2025) tracks authorized permits and housing starts for the country (Figure 49). While demand spiked during COVID-19, it has yet to reach the level of starts and permits seen before the Great Recession and the housing bubble.

Annual spending on commercial construction in the United States, in contrast, has risen greatly since the Great Recession (see Figure 50; Federal Reserve Bank of St. Louis, 2025).

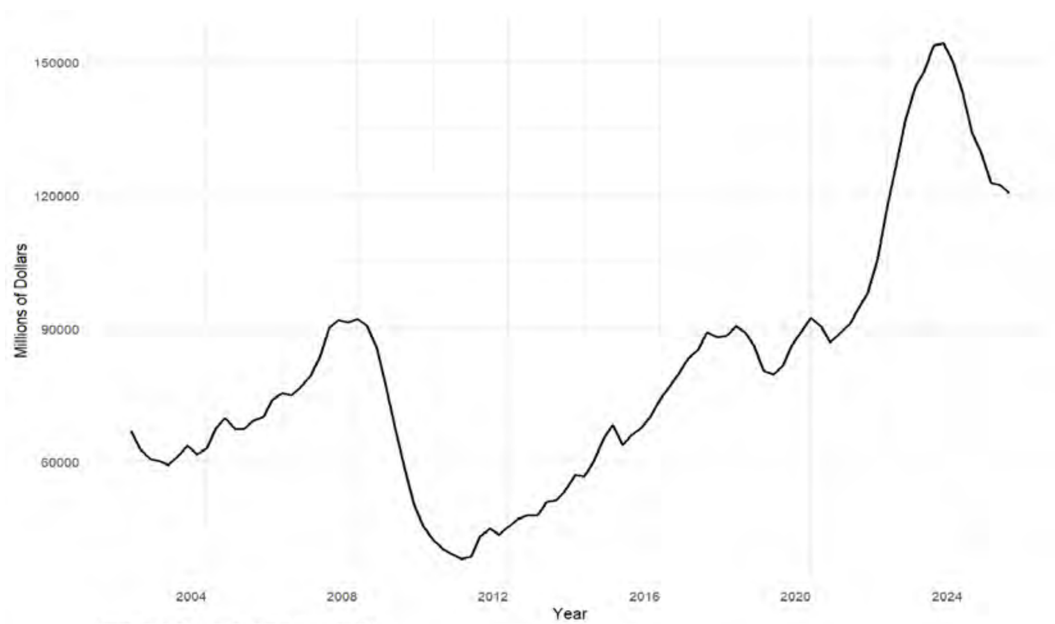


Figure 50. Annual U.S. spending on commercial construction, 2002–2024.

Delinquency rates on mortgages can be an important leading indicator of future reduced demand due to instabilities in lending systems. After the extreme rise in delinquencies that fueled much of the housing crisis and Great Recession, delinquency rates have remained low and relatively stable in recent years (see Figure 51; Federal Reserve Bank of St. Louis, 2025).

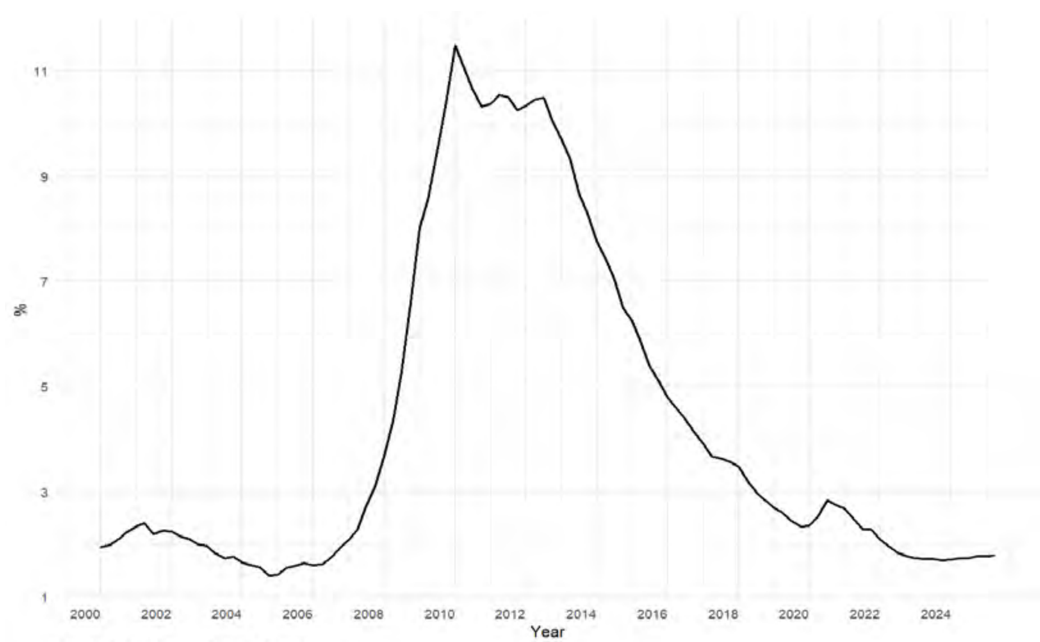


Figure 51. U.S. mortgage delinquency rates, 2000–2024.

RESEARCH HIGHLIGHT: CHANGES IN RISK IN WESTERN FORESTS

Wildfire is increasingly a part of Oregon's landscape (see Section 5). How will landowners adjust?

Two recent studies have explored this question and its implications for Oregon's forests. Kyaw et al. (2025) used economic models of even-aged, westside Douglas-fir forest management under different assumptions about fire and post-fire salvage proportions to see how risk might impact land values and harvest timing. High wildfire risk reduced modeled rotation ages and land values by ca. 50%. Increasing the salvageable portion assumption mitigated some of the economic loss. They also found that wildfire risk offset the rotation-lengthening effect of carbon pricing, when potential carbon values were also incorporated.

Wang and Lewis (2024) looked at wildfire experience across Washington, Oregon, and California and actual sales of parcels of forestland (both burned and near-burned land) to see if land markets reflected these risks. They found evidence that risk expectations are being capitalized into land values, with estimates of a 10% loss over the last two decades, or about $11.2 billion across the three states.

Table 3 from Wang and Lewis (2025). Capitalization impacts of wildfire and drought changes between current period (2001–2020) and past period (1984–2003) across different subregions within the study area.

	Full sample	California	Oregon		Washington		Population weighted
			West of Cascades	East of Cascades	West of Cascades	East of Cascades	
Drought stress impacts	-1.78%	0.23%	-1.59%	-1.08%	-0.21%	-3.52%	-1.04%
Total large wildfire impacts	-8.01%	-13.74%	-7.67%	-6.02%	-5.16%	-8.15%	-8.78%
From changes in large fires on each parcel	-1.09%	-3.77%	-0.36%	0.04%	0.03%	-1.40%	-1.36%
From changes in nearby large fires	-4.24%	-8.23%	-2.67%	-6.34%	-0.10%	-6.21%	-4.51%
From changes in nearby very large fires	-2.68%	-1.74%	-4.64%	0.28%	-5.09%	-0.54%	-2.91%
Total capitalization impacts	-9.79%	-13.51%	-9.25%	-7.10%	-5.37%	-11.67%	-9.82%

Note: We calculated the population-weighted drought stress, large wildfire, and total capitalization impacts based on weights of 0.28, 0.28, 0.08, 0.21, and 0.15, respectively, for California, West of Cascades Oregon, East of Cascades Oregon, West of Cascades Washington, and East of Cascades Washington.

For more information, *see "Optimal forest management of Douglas-fir in Western Oregon: Stochastic prices, carbon sequestration and wildfire risk" by Kyaw et al. (2025) and "Wildfires and climate change have lowered the economic value of western U.S. forests by altering risk expectations" by Wang and Lewis (2024; links in References). Table used with permission of the authors.*

THE ROLE OF EMERGING MARKETS IN OREGON

Emerging markets are important to the sustainability of the industry and to active forest management and support the traditional solid wood products sectors. The market for engineered wood products is growing, and Oregon has the largest number of engineered wood manufacturing plants operating in the United States. Mass timber (see Section 3.4) is a critical part of engineering wood products and an area of growth for the state. One key to that potential growth is increasing adoption of the material for structures in the three- to 12-story range, where it can compete favorably with concrete/steel construction and has carbon benefits compared to those traditional methods. Other emerging markets include direct payment for carbon through carbon offset markets.

FOREST CARBON OFFSET MARKETS IN OREGON

History of Oregon's Climate-Related Regulations and Advancements

The first greenhouse gas emission-reduction goals in Oregon were established in 2007, to achieve 10% below and 75% below 1990 greenhouse gas levels by 2020 and 2050, respectively. To make advancements in achieving these goals and provide guidance, the 2007 Oregon Legislature created the Oregon Global Warming Commission, which was renamed in 2023 as the Climate Action Commission. While efforts have been made, including an increase in the renewable portfolio standard to 50% in 2016 and the electrification of the transportation sector, the emissions in 2020 exceeded the emission reduction goal by 26%, according to the sector-based emissions data (Oregon Global Warming Commission, 2020). Governor Brown issued Executive Order 20-04 in 2020, directing state agencies to reduce greenhouse gas emissions and adding a new interim goal of achieving at least a 45% reduction and 80% reduction below 1990 levels by 2035 and 2050, respectively.

Since the issuance of the Executive Order in 2020, there have been programs and initiatives to reduce emissions. Two major programs include the Climate Protection Program (CPP) and the Clean Energy Law of 2021. The Oregon Department of Environmental Quality adopted the CPP to cap fossil fuel emissions, requiring a 90% reduction in fossil fuel supplier emissions from 2017–2019 levels by 2050. In the same year, House Bill 2021 mandated electric utilities to provide 100% clean energy by 2040.

In 2023, the Oregon Climate Action Commission published "The Roadmap to 2030," with a technical analysis document called the Transformational Integrated Greenhouse Gas Emissions Reduction Project Report (TIGHGER). In parallel, Oregon has adopted "Nature and Working Lands" (NWL) proposals for forests, wetlands, farmlands, grasslands, rangelands, and urban open space. Governor Kotek signed the Climate Resilience Package (HB 3409) into law in 2023, establishing a permanent fund to support projects to achieve goals outlined in the roadmap and NWL, with initial funding of $10 million.

Carbon Offset Project Types and Requirements

Carbon offset projects recognized by major programs in the United States can be divided into three types: avoided conversion, or forest conversion to non-forest land; afforestation/reforestation; and improved forest management. *Avoided deforestation* projects decrease the conversion of forest land to non-forest land (where deforestation would have happened without the project). *Afforestation/reforestation* refers to the restoration of tree cover on previously non-forested land or severely degraded land by tree planting or natural regeneration. *Forest management improvement* projects include activities that maintain or store more carbon than the business-as-usual scenario or what is required by the relevant regulations. Given Oregon's steady rates of forest cover over time, the best opportunities for carbon offsets in the state come from forest management improvement projects.

For a project to be eligible for carbon programs, it must be able to demonstrate additionality, permanence, account for leakage, and measurability. *Additionality* means that the project's emission reductions are beyond what would have happened in the counterfactual scenario without the carbon credit. *Permanence* requires the emission reductions to be durable and long-lasting to ensure permanent storage of the carbon. *No leakage* means that there should be no increase in emissions in other areas (i.e., deforestation or other harmful activities that would have happened inside the project areas cannot be displaced to other places). *Measurability* ensures that emission reductions are quantifiable by robust methodologies and verified by third party independent auditors.

Certification Programs and Forest Carbon Offset Projects in Oregon

Oregon has several sustainability certification systems, such as those offered by the Sustainable Forestry Initiative, Forest Stewardship Council, and American Tree Farm System, that support responsible forest management. These certification systems can support carbon outcomes; they do not necessarily certify carbon offsets or issue credit per se, and are geared toward addressing a broader issue of sustainable management of forests. Actual carbon credit certification occurs through registries such as ACR, Climate Action Reserve (CAR), and Verra. State legislation (e.g., House Bill 3409) and Oregon Department of Forestry (ODF) programs support natural climate solutions and project development. ODF has a "Climate Change and Carbon Plan," approved in 2021, and a Climate-Smart Program that supports landowners in adopting practices that use carbon capture, retention, or reduced carbon release, which may be able to help coordinate with other registries. ACR and CAR are common choices for many improved forest management projects on the U.S. West Coast.

There are a number of active forest carbon projects in Oregon that have been developed and certified in both voluntary and regulatory carbon markets. These include projects developed and led by conservation organizations and land trusts (such as the Coastal Edge Old Growth Project), by local municipalities (such as City of Astoria's Bear Creek Watershed project at ACR), by state agencies (such as the planned carbon projects on the Elliot State Research Forest under the management of the Oregon Department of State Lands), and by large industrial landowners (such as projects in southeast Oregon by Green Diamond Resource Company covering thousands of acres of privately owned forestland). As is the case in many other states, the participation of small forest landowners has not been significant in Oregon. High upfront costs and data requirements can be prohibitive for smaller landowners who have limited capacity in registration and verification, although there are opportunities to join aggregation programs such as the Family Forest Carbon Program run by the American Forest Foundation and The Nature Conservancy. Oregon law (ORS 526.780) authorizes the state forester to "market, register, transfer, or sell forestry carbon offsets on behalf of the landowners to provide a stewardship incentive for nonfederal forestlands," and requires a minimum of 50% of the proceeds to go to landowners.

Oregon Forest Ecosystem Carbon Inventory Analysis by USFS and ODF

The Forest Inventory Analysis Program in 2024 published forest monitoring data that included the full set of remeasured plots in Oregon, along with estimates of the stock and flux of carbon using newly developed volume and biomass equations that are consistent across all forests of the United States.

The report found that the amount of carbon in wood products ("Wood products in use" in the following table) made from timber harvested in Oregon between 1906 and 2023 is about 6.3% of the total stock of forest carbon, and the landfill pool ("Landfills" in the table) is about 4.7% of the total stock of forest carbon.

Oregon Carbon Stocks by Forest Pools, Wood Products in Use, and Landfills

Forest Carbon Pools	Tg CO_2e
All Forest Pools (2011–2020)	11675
Live Trees	3948.6
Standing Dead	316.0
Understory Veg	134.8
Dead Woody Debris	120.9
Forest Floor	475.2
Roots	900.3
Soil Organic C	5779.5
Wood products in use (1906–2023)	739.19
Landfills	577.98
Total carbon	**12990**

The report also found that over a 20-year forest monitoring period (2001–2021), Oregon's forests were a **net sink of carbon**. The average increase in the pool of wood products each year was about 8% of the average positive flux in Oregon's forests. The average annual increase in the landfills was more than twice the amount of products in use. The average annual carbon flux in forests and wood products combined was 36.7 teragrams of carbon dioxide equivalent (Tg CO_2e).

Annual Flux of Carbon, 2001–2021 average	Tg CO_2e
Forest Pools	+ 28.37
Pool of Wood Products in Use	+ 2.39
Pool of Landfills	+ 5.94
Total Forest Sector Carbon Flux	**+ 36.70**

Yost, A., with Christensen, G., Gray, A., & Kuegler, O. (n.d.) Oregon Forest Ecosystem Carbon Inventory. Presentation and data shared by authors.

OTHER VALUES IN OREGON'S FORESTS

While this report is focused primarily on the economic value of our forests, Oregonians know that is but a part of the total value. Forests provide a host of market and non-market values above and beyond wood fiber, although the wood fiber value is the easiest to observe, document, and measure. Along with carbon sequestration, where emerging markets are beginning to capture some monetary value, a true accounting of the importance of forests for the state would include the value of their role in the provision of clean water (through filtration and runoff functions), the role of forests in providing for non-timber forest products, the aesthetic benefits to both residents and visitors, and, importantly, their role in recreation.

Countless Oregonians recreate in forests every year, including recreation on federal lands, state lands, local municipal or conservation lands, and industrial private lands. Recreationists hunt, fish in forested streams, camp, hike, run, mountain bike, ATV, observe wildlife, picnic, or simply spend time in the woods for personal and spiritual renewal. Outdoor recreation has been proven to have concrete health benefits, both physically and mentally; one recent study estimated the cost of illness savings from all outdoor recreation participation in Oregon at $2.965 billion (Rosenberger, 2023a). These benefits were made apparent for many people during the COVID-19 pandemic, when opportunities to socialize indoors were restricted.

Documenting the share of Oregon's recreation or hunting activity that is due solely to forest resources is difficult. While some visitors may come to Oregon primarily to see the ocean, Willamette Valley attractions such as wineries and breweries, or even the wide-open beauty of eastside grasslands, many will also participate in forest-based recreation as part of their visit. We do know, however, that recreation as a whole is a significant part of Oregon's economy, with an estimated $18 billion in outdoor recreation spending supporting 192,000 full- and part-time jobs in 2022 (Earth Economics, 2022) and an estimated $57 billion in net economic value of recreation participation (Rosenberger, 2023b). Similarly, the estimated value of hunting, fishing, and wildlife watching activities for 2019 was $1.2 billion with over 11,000 jobs supported (Earth Economics, 2021).

Non-timber forest products represent another sizeable contribution forestland provides. Although it is difficult to capture the full range of products, some are highly valued and gathered commercially, including mushrooms (particularly matsutake, chanterelle, morel, and truffle harvests) and boughs, shrubs, and cones used in the floral industry. Studies in the 1990s estimated the value of floral greens products in 1989 originating in Washington, Oregon, and British Columbia at $128 million (Schlosser et al., 1991) with a workforce of 700 full-time workers and more than 4,100 part-time workers annually. That was higher than the estimated value of mushrooms in 1992 of $41 million (Schlosser & Blatner, 1995).

Mushrooms alone generate millions of dollars in economic activity; although prices fluctuate greatly based on quality, supply, and income of consumers in Asian markets, matsutakes can fetch hundreds of dollars per pound (Luoma et al., 2006). Economic models of joint timber and mushroom production found almost equivalent total value in some areas where mushroom productivity is high and timber productivity is low (Alexander et al., 2002).

In the west, much of this collection happens on public lands, where the price and purchase of permits for collecting provide some information on commercial value. The Deschutes National Forest has a designated matsutake collection season and requires permits for harvest of any that will be resold. Across the country, the USFS and Bureau of Land Management generated almost $79 million from non-timber forest products collection between 2004 and 2013 and estimated the wholesale value of non-timber forest products in all of the United States as $900 million (Chamberlain, 2015). The bulk of the value was from fuelwood, followed by crafts and floral products (Chamberlain, 2015). Although calculating the total economic value of forests suffers from imprecise data and the multitude of non-market values that lack prices, it is clear that timber is but one part of it. Forest landowners, by maintaining forest cover across the state, make significant contributions to Oregon's high quality of life and direct value that accrues to most residents and visitors.

7. Conclusion

In this 2026 Forest Sector Economic Report, we assess Oregon's forest resources and industry and provide a snapshot of the current state of each. However, neither is static. Oregon contains large areas of forest and volumes of trees that have supported sustainable harvest and utilization for more than a century. While the forest products industry showed resilience in the face of a reduction in supply in the 1990s, the number of mills has continued to decline, even as production of key products such as softwood lumber and plywood has been maintained. The loss of mills in specific locations has implications for both rural communities and active forest management, which relies on demand for wood fiber within an economically feasible haul distance. A reduction in the spatial distribution of mills and other processing infrastructure has increased costs, not only for commercial timber production, but also to further ecological restoration and wildfire risk reduction. With limited resources available for these activities, that means fewer acres treated and more values at risk.

While the most current data was used whenever possible, many key indicators aren't publicly available for 18 months to years later. Numbers of mills, levels of employment, and other aspects of the industry included here date from 2022 and don't capture the most recent closures or current market prices for logs; recent policy changes, like the expanded riparian buffers that took effect for all private landowners in 2024; or proposed increased harvests from federal lands.

Oregon forests will continue to play an essential role in supplying families and businesses across the United States with lumber and plywood necessary for homes and construction. Innovation and advancements in mass timber can provide more climate-friendly building solutions for mid-story structures. Forests will continue to support clean water, clean air, recreation, wildlife habitat, and a scenic landscape that attracts residents and visitors. Active forest management is a critical part of a sustainable future for all Oregon residents.

8. Data Notes, Sources and References

NOTES ON DATA

The primary source of forestland data is the USFS, through two primary products: the Forest Inventory and Analysis (FIA) program, and the data compiled in support of the decadal assessments of forest resources under the Forest and Rangeland Resources Planning Act (RPA) of 1975.

The FIA program samples forests across all landowner types across the country, under cooperative agreements for confidentiality for private landowners. A full data cycle (when all >10,000 plots are measured across the state) is completed about every 10 years. Data using this data set, accessed for this report from EVALIDator, is a compilation of approximately the previous 10 years' samples from the date given as the data reference year.

While the data available through EVALIDator and that published as part of the RPA are related, each uses a slightly different definition of forestland, which means that total acres of forestland can differ slightly based on the data product, or based on what span of data is compiled in an EVALIDator download. For more information on precisely how forestland is defined in each, please see https://apps.fs.usda.gov/fiadb-api/static/html/RPA_forest_filter.html.

Our thanks to many of the reviewers involved, including Suzanne Owen and Glenn Christensen with the USFS, Brandon Kaetzel with ODF, and Eric Simmons and Micah Scudder with University of Montana BBER for helping with understanding these data.

Why are employment numbers sometimes different between sources? There's not one way to count people employed in the forest industry, and not one source to get data from; this makes counting up who works in the "forest sector" difficult. In general, we are interested in industry data, which is different from occupation data (for example, accounting is an occupation; an accountant could work in the forest industry by working for a forest company, or in the accounting industry by working at an accounting firm). Many data on industries in the United States are compiled and reported at the NAICS code level, and that works fairly well for employees in discrete sectors such as sawmills (NAICS code 321). However, determining what proportion of related industries (e.g., trucking) are tied to forest activity can be more difficult, as can capturing data on self-employed individuals. Thus, different estimates of who is directly employed in the forest industry overall can vary depending on data sources and assumptions used.

Current mills: Data for the landownership map (Figure 1) and for the maps showing processing facilities with ownership (Figure 18, Figure 22, and Figure 25) come from two sources. Landownership data is from Sass et al. (2020). Processing facilities are courtesy of the Bureau of Business and Economic Research at the University of Montana (BBER) from a database current in

2023. Over the course of 2024, report authors L. Resener and M. Crandall updated the BBER data with known closures; some errors may remain.

DATA SOURCES

Bureau of Business and Economic Research [BBER]. (2024). *Forest Industries Data Collection System (FIDACS)* [dataset]. Missoula, MT: Bureau of Business and Economic Research, Forest Industry Research Program.

EIA (2025a). Monthly Densified Biomass Fuel Report. Accessed July–September 2025, https://www.eia.gov/biofuels/biomass/?year=2025&month=01

EIA. (2025b). Oregon: State Profile and Energy Estimates. Accessed July–September 2025, https://www.eia.gov/state/analysis.php?sid=OR

EIA. (2025c). Short-Term Energy Outlook. Accessed July–September 2025, https://www.eia.gov/outlooks/steo/

Elling, J. (2024). *Structural Panel and Engineered Wood Yearbook.* APA Economics Report E189. 84p.

EVALIDator [dataset]. U.S. Department of Agriculture, Forest Service, Forest Inventory and Analysis Program. Accessed July–September 2025, https://apps.fs.usda.gov/fiadb-api/evalidator. *Queries used to generate data for specific tables and figures.*

Federal Reserve Bank of St. Louis [datasets]. Accessed July–September 2025, https://www.stlouisfed.org/

Fei, S., Morin, R., Li, S., Kong, N., Croker, S., Krist, F., & Liebhold, A. (N.D.) Alien Forest Pest Detection by Counties in the United States. doi: 10.4231/HWQF-V087. Accessed October 2025.

Forest Economic Advisors. (2025). Lumber production by state [dataset]. Received June 2025; personal communication.

Long, J.L., and Hatten, T.D., (2024). LANDFIRE 2016 Remap Fire Regime Group (FRG) CONUS. doi: 10.3133/fs20233044. Accessed October 2025.

Maher, A. (2024). Production, prices, employment, and trade in Northwest Forest industries: 1958–2023. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. Online only.

Oregon Department of Forestry (ODF). (2025). *Timber Harvest Report, 1962–2023* [dataset] and *Oregon Log Price Index* [dataset]. Used with permission; received from Brandon Kaetzel, July 2025.

Oswalt, S. N., Bush, R. R., & Murray, L. T. (2025). *Forest resources of the United States: 2022 appendix data tables.* Fort Collins, CO: Forest Service Research Data Archive. https://doi.org/10.2737/WO-GTR-107-s1

Sass, E. M., Butler, B. J., & Markowski-Lindsay, M. (2020). *Forest Ownership in the Conterminous United States, 2018: Geospatial Dataset*. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Research Data Archive. doi: 10.2737/RDS-2020-0044. Accessed October 2025.

Short, Karen C. (2022) Spatial wildfire occurrence data for the United States, 1992–2020 [FPA_FOD_20221014]. 6th Edition. Fort Collins, CO: Forest Service Research Data Archive. doi: 10.2737/RDS-2013-0009.6. Accessed October 2025

Simmons, E., Scudder, M., Scott, S., Garibotti, M., Morgan, T. & Christensen, G. (2025). *Oregon forest products industry and timber harvest, 2022 with trends through 2024.* U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station (in progress). Used with permission of the authors.

US Bureau of Labor Statistics, Quarterly Census of Employment and Wages [dataset]. Accessed September 2025, https://www.bls.gov/data/home.htm.

US Census Bureau, Annual Survey of Manufacturers and Economic Census [dataset]. Accessed July–September 2025, https://www.census.gov/programs-surveys/asm.html.

U.S. Department of Agriculture, Forest Service [USDA FS]. 2025. Forest Inventory and Analysis National Program. Research and Development. https://research.fs.usda.gov/programs/fia

U.S. Department of Agriculture, Forest Service [USDA FS], Pacific Northwest Research Station. (N.D.). Aerial Insect and Disease Survey GIS Data for Oregon and Washington 1947-Present. Accessed October 2025: https://www.fs.usda.gov/r06/data-tools/gis/aerial-insect-and-disease-survey-gis-data-oregon-and-washington-1947-present?utm

U.S. Geological Survey, USDA Forest Service, and Nelson, K. (2021). Monitoring Trends in Burn Severity Thematic Burn Severity Mosaic (ver. 12.0, April 2025): U.S. Geological Survey data release. doi: 10.5066/P9NETC0T. Accessed October 2025.

U.S Trade & tariff Data. (2025). Dataweb. Accessed January 2026: https://dataweb.usitc.gov.

Watson, P., & Alward, G. (2024). Tapestry: Collaborative Tool for Regional Data and Modeling. *Review of Regional Studies* 54 (2): 109–18. https://doi.org/10.52324/001c.123153. [dataset: https://www.uidaho.edu/idaho-ag-experiment-station/services/tapestry].

WWPA. **(**2024**)**. Statistical Yearbook of the Western Lumber Industry. Portland, OR. 22 p.

REFERENCES AND LITERATURE CITED

Alexander, S. J., Pilz, D., Weber, N. S., Brown, E., & Rockwell, V. A. (2002). Mushrooms, Trees, and Money: Value Estimates of Commercial Mushrooms and Timber in the Pacific Northwest. *Environmental Management (New York)*, *30*(1), 129–141. https://doi.org/10.1007/s00267-002-2610-1

Chamberlain, J. L. (2015). The volumes and value of non-timber forest products harvested in the United States. In: Stanton, S. M.; Christensen, G. A., comps. 2015. *Pushing boundaries: new directions in inventory techniques and applications: Forest Inventory and Analysis (FIA) symposium 2015.* Gen. Tech. Rep. PNW-GTR-931. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station.

Crandall, M. S., Resener, L., Charnley, S., Martin, J. V., & Mycek, J. (2025). Shifting industrial geographies of timber production and processing in the Pacific Northwest. *Forest Policy and Economics*, *181*, Article 103588. https://doi.org/10.1016/j.forpol.2025.103588

Daniels, J.M. (2005). *The rise and fall of the Pacific Northwest log export market.* Gen. Tech. Rep. PNW-GTR-624. Portland, OR: US Department of Agriculture, Forest Service, Pacific Northwest Research Station.

Dobkins, R., Hummel, S. S., Lewis, C., Pochis, G., & Dickey, E. (2017). Tribes of the Oregon Country: Cultural Plant Harvests and Indigenous Relationships with Ancestral Lands in the Twenty-first Century. *Oregon Historical Quarterly*, *118*(4), 488–517. https://doi.org/10.5403/oregonhistq.118.4.0488

Earth Economics. (2021). *Economic analysis of outdoor recreation in Oregon*. Report. Available at: https://issuu.com/traveloregon2019/docs/economicanalysisofoutdoorrecreationinoregon_otc-ea

Earth Economics. (2022). Economic analysis of outdoor recreation in Oregon: 2022 update. Report. Available at: https://www.oregon.gov/oprd/PRP/Documents/2024.07.17%20Economic%20analysis%20of%20outdoor%20recreation%20in%20OR%20-%202022%20update.pdf

EcoNorthwest. (2025). *Oregon Forest Operations and Management Workforce Study.* Final report prepared for Oregon Higher Education Coordinating Committee. Available at: https://www.oregon.gov/workforceboard/data-and-reports/Documents/Forestry%20Operations%20%26%20Management%20Workforce%20Study.pdf

Gale, C., C. Keegan III, E. Berg, E. Daniels, G. Christensen, C. Sorenson, T. Morgan, & P. Polzin. (2012). *Oregon's forest products industry and timber harvest, 20018: industry trends and impacts of the Great Recession through 2010.* Gen. Tech. Rep. PNW-GTR-868. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station.

Goldstein, B., Crandall, M. S., & Kelly, E. C. (2023). "The cost of doing business": Private rights, public resources, and the resulting diversity of state-level forestry policies in the U.S. *Land Use Policy*, *132*, 106792-. https://doi.org/10.1016/j.landusepol.2023.106792

Hagmann, R. K., Hessburg, P. F., Prichard, S. J., Povak, N. A., Brown, P. M., Fulé, P. Z., Keane, R. E., Knapp, E. E., Lydersen, J. M., Metlen, K. L., Reilly, M. J., Meador, A. J. S., Stephens, S. L., Stevens, J. T., Taylor, A. H., Yocom, L. L., Battaglia, M. A., Churchill, D. J., Daniels, L. D., … Waltz, A. E. M. (2021). Evidence for widespread changes in the structure, composition, and fire regimes of western North American forests. *Ecological Applications*, *31*(8), 1–34. https://doi.org/10.1002/eap.2431

Kelly, E. C., & Crandall, M. S. (2022). State-level forestry policies across the US: Discourses reflecting the tension between private property rights and public trust resources. *Forest Policy and Economics*, *141*, 102757-. https://doi.org/10.1016/j.forpol.2022.102757

Kyaw, H. Y., Susaeta, A. L., & Crandall, M. S. (2025). Optimal forest management of Douglas-fir in Western Oregon: Stochastic prices, carbon sequestration and wildfire risk. *Forest Policy and Economics*, *180*, Article 103629. https://doi.org/10.1016/j.forpol.2025.103629

Luoma, D. L., Eberhart, J. L., Abbott, R., Moore, A., Amaranthus, M. P., & Pilz, D. (2006). Effects of mushroom harvest technique on subsequent American matsutake production. *Forest Ecology and Management*, *236*(1), 65–75. https://doi.org/10.1016/j.foreco.2006.08.342

Merschel, A. G., Krawchuk, M. A., Johnston, J. D., & Spies, T. A. (2024). Historical pyrodiversity in Douglas-fir forests of the southern Cascades of Oregon, USA. *Forest Ecology and Management*, *572*, Article 122306. https://doi.org/10.1016/j.foreco.2024.122306

O'Callaghan, J. A., & United States Congress, Senate Committee on Interior and Insular Affairs. (1960). *The disposition of the Public Domain in Oregon.* U.S. Govt. Print. Off.

Oregon Department of Energy. 2022. *Energy by the Numbers: 2022 Biennial Energy Report*. Salem, OR: Oregon Department of Energy. Available at: https://www.oregon.gov/energy/Data-and-Reports/Documents/2022-BER-Energy-by-the-Numbers.pdf

Oregon Department of Energy. 2024. *Energy by the Numbers: 2024 Biennial Energy Report*. Salem, OR: Oregon Department of Energy. Available at: https://www.oregon.gov/energy/Data-and-Reports/Documents/2024-BER-EBTN.pdf

Oregon Global Warming Commission. 2020. Biennial Report to the Oregon Legislature. Available at: https://static1.squarespace.com/static/59c554e0f09ca40655ea6eb0/t/5fe137fac70e3835b6e8f58e/1608595458463/2020-OGWC-Biennial-Report-Legislature.pdf

Pacific Northwest Mass Timber Tech Hub, 2025. PNW Regional Mass Timber Market Study. Available at https://www.pnwmasstimbertechhub.org/projects/mass-timber-market-assessment

Reilly, M.J., Halofsky, J. E., Krawchuk, M. A., Donato, D. C., Hessburg, P. F., Johnston, J. D., Merschel, A. G., Swanson, M. E., Halofsky, J. S., & Spies, T. A. (2021). Fire Ecology and Management in Pacific Northwest Forests. In: Greenberg, C.H., Collins, B. (eds) *Fire Ecology and Management: Past, Present, and Future of US Forested Ecosystems*. Managing Forest Ecosystems, vol 39. Springer, Cham. https://doi.org/10.1007/978-3-030-73267-7_10

Reimer, J. J. 2021. An Investigation of Log Prices in the U.S. Pacific Northwest. *Forest Policy and Economics, 126*: 102437. https://doi.org/10.1016/j.forpol.2021.102437

Rasmussen, M., Lord, R., Fay, R., Baribault, T., & Goodnow, R. (2021). *2020 Labor Day Fires: Economic Impacts to Oregon's Forest Sector.* Report prepared for OFRI, available at: https://oregonforests.org/sites/default/files/2021-09/OFRI-LaborDayFiresEconomicReport_Final%20Sept%202021.pdf

Rosenberger, R. (2023a). Health benefits estimates for Oregonians from their outdoor recreation participation in Oregon. Final Report: 2025–2029 Statewide Comprehensive Outdoor Recreation Plan Supporting Documentation. Corvallis, OR: College of Forestry.

Rosenberger, R. (2023b). Total net economic value from residents' outdoor recreation participation in Oregon. Final Report: 2025–2029 Statewide Comprehensive Outdoor Recreation Plan Supporting Documentation. Corvallis, OR: College of Forestry.

Schlosser, W. E., & Blatner, K. A. (1995). The Wild Edible Mushroom Industry of Washington, Oregon, and Idaho: A 1992 Survey. *Journal of Forestry*, *93*(3), 31–36. https://doi.org/10.1093/jof/93.3.31

Schlosser, W. E., Blatner, K. A., & Chapman, R. C. (1991). Economic and marketing implications of special forest products harvest in the Coastal Pacific Northwest. *Western Journal of Applied Forestry*, *6*(3), 67–72. https://doi.org/10.1093/wjaf/6.3.67

Simmons, E.A., Scudder, M.G., Morgan, T.A., Berg, E.C., & Christensen, G.A. (2016). *Oregon's Forest Products Industry and Timber Harvest 2013 With Trends Through 2014.* Gen. Tech. Rep. PNW-GTR-942. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station.

TDI. (n.d.). Tallwood Design Institute [webpage]. Accessed October 2025, https://tallwoodinstitute.org/about-tdi/

Wang, Y., & Lewis, D. J. (2024). Wildfires and climate change have lowered the economic value of western U.S. forests by altering risk expectations. *Journal of Environmental Economics and Management*, *123*, 102894. https://doi.org/10.1016/j.jeem.2023.102894

Zuspan, A., Reilly, M. J., & Lee, E. H. (2024). Long-term patterns of post-fire harvest diverge among ownerships in the Pacific West, U.S.A. *Environmental Research Letters*, *19*(12), 124075. https://doi.org/10.1088/1748-9326/ad8e75

9. Appendix: IMPLAN Input–Output Data and Model Description

The analysis reported in Section 4 utilizes data and modeling frameworks derived from IMPLAN (IMpact Analysis for PLANning), a widely used input–output (I-O) modeling system developed by IMPLAN Group LLC. The IMPLAN system is based on the input–output accounts originally formulated by the U.S. Bureau of Economic Analysis (BEA) and extended to include additional data sources and modeling features to support regional economic analysis at various geographic scales, including national, state, county, and zip-code levels (IMPLAN, 2023).

Data Structure

IMPLAN data are organized around the structure of the BEA's Input–Output Accounts and Social Accounting Matrices (SAM) and provide detailed industry-by-industry transactions for over 500 distinct sectors, based on the North American Industry Classification System (NAICS). The data are constructed using a variety of federal datasets including:

- BEA Benchmark I-O Accounts and Regional Economic Accounts
- Bureau of Labor Statistics (BLS) Covered Employment and Wages (CEW)
- U.S. Census Bureau's County Business Patterns (CBP) and Economic Census
- U.S. Department of Agriculture (USDA) agricultural statistics
- Internal Revenue Service (IRS) tax return data
- State and local government finance data

These sources are synthesized through IMPLAN's proprietary estimation algorithms to produce consistent regional data sets that include estimates of output, employment, value added, labor income, tax generation, and inter-industry linkages for each sector.

Geographic and Temporal Scope

The IMPLAN data used in this report are for the year 2023, reflecting the most recent complete data set available at the time of analysis. All results are in constant 2023 dollars and are reported for the study region, defined as the state of Oregon.

Economic Base Contribution Analysis

The IMPLAN I-O model is a linear, static, demand-driven model based on the Leontief production function. The model assumes fixed production coefficients, no supply constraints, and constant returns to scale. This implies that all inputs required to produce an additional unit of output are used in fixed proportions, and there is no substitution among inputs.

In this framework, a change in final demand (e.g., an increase in consumer spending, government investment, or exports) is propagated through the regional economy via three types of economic effects:

- *Direct effects*: the initial change in economic activity (e.g., an increase in industry output or employment).
- *Indirect effects*: the inter-industry purchases of goods and services as industries respond to the direct effects.
- *Induced effects*: the household spending generated by changes in labor income associated with both direct and indirect effects.

These ripple effects are captured through the use of Type I and Type SAM multipliers, depending on whether induced effects are included. This study used Type SAM multipliers where households and state and local government sectors were endogenous.

The economic contribution that the forestry and wood products sector makes to the Oregon economy is not limited simply to the jobs and income of the workers that are directly employed in those sectors; it extends to the economic activity (i.e., jobs, income, sales) that are supported in the Oregon economy when the forestry and wood products sector brings new dollars into the state's economy by selling products across the nation and the world. The employment and employee compensation data presented in the previous section are simply government statistics on who directly works in the forestry and wood products sector. These government statistics are based on "gross" measures of economic activity. For the purposes of this report, the term *gross* refers to the observed measures of economic activity that are reported in secondary data sources (e.g., BEA, BLS, Census).

Definitions of gross and base:

Both gross and base economic activity (i.e., employment and wages) are important aspects to consider when analyzing a regional economy.

• Gross values are the directly observable employment and wages paid in a given sector. These are the values that are reported in government statistics.

• Base values are economic contributions that include the regional economic effect of that sector's production and how it spawns activity within other sectors. The total base contribution is calculated as the sector's sales outside the state times the sector's multiplier.

In total, gross economic activity and base economic activity are equivalent. However, the gross and base measures of economic activity for a given sector are likely to be quite different.

For example, if you were to ask a restaurant how many people are on their payroll and they answer 10, then the gross employment of that restaurant is 10. However, just looking at gross employment can create a misleading picture of what drives economic production in a region. An alternative accounting framework that provides a different picture of what sectors are responsible for employment and income in a given region is an economic "base" analysis. Base analysis measures a sector's ability, through its exports, to bring in new dollars to the region and how those dollars generate economic activity (i.e., jobs and income) in other sectors of the economy, particularly the sector's supply chains. Across all sectors of the Oregon economy, the total jobs and employee compensation in the gross analysis will be the same total number as in the base analysis; they will simply be distributed differently. Gross analysis measures where people actually work, and base analysis measures who brings money into the regional economy that then generates the regional jobs and income.

An example of a store selling a saw blade to a sawmill clarifies the difference between these two measures. The gross metric would attribute the saw blade sale (and associated jobs and employee compensation) to the non-base retail store. However, the saw blade sale is possible only because the base industry (the sawmill) brings the new dollars (exports) into the Oregon economy; and the base analysis credits the saw blade sale from the retail sector to the wood products industry. In summary, the base metric is propelled by exports (and could be more accurately labeled as the "contribution of exports"). The base metric implies that the source of economic growth is exports; thus, the base analysis is useful for developing policies that increase sales, jobs, and income through exports.

Method for Generating Economic Base Model

When doing comprehensive economic base analysis, data and method intersect in the concept of social accounts. Because of its central role, let's begin with a brief overview of social accounts and their expression within a social accounting matrix. Social accounts connect total aggregate demand and supply for an entire economy. A social accounting matrix connects total demand and supply by sector.

Table A.1. Notational Social Accounting Matrix (SAM) for a Three-Sector Regional Economy.

		Local Industries I1	I2	I3	Local Households (Consumption)	Exogenous Demand (Exports)	Total
Local Industries	I1	z_{11}	z_{12}	z_{13}	c_{14}	y_1	x_1
	I2	z_{21}	z_{22}	z_{23}	c_{24}	y_2	x_2
	I3	z_{31}	z_{32}	z_{33}	c_{34}	y_3	x_3
Local Households (Value Added)		v_1	v_2	v_3		$y_4 = v_4$	v
Exogenous Inputs (Imports)		m_1	m_2	m_3	m_4		m
Total		x_1	x_2	x_3	c	y	

Notes: Here we define *exogenous demand* as any sales outside the region. As per convention, SAMs present sales between the accounts across the row and purchases between accounts down a column. By definition, in total, $c = v$ and $y = m$.

The data necessary to evaluate the extent and economic contribution of local food can be derived from regional social accounts and organized into a regional SAM. An SAM is a statistical framework that utilizes double-entry bookkeeping to trace all monetary flows within a regional economy over a given period. It provides a method to organize the flow-of-value statistical data for a national, state, or regional economy. Mathematically, an SAM is a square matrix in which each nonzero element records the value of a financial transaction between economic actors. Table A.1 presents a notational, three-sector SAM for a hypothetical economy. Industry rows record sales to all possible endogenous (i.e., local) and exogenous outlets including endogenous intermediate demand (z_{ij}); endogenous final demand associated with household spending (c_{i4}); and exogenous final demand associated with, for example, household investment income, government spending, and exports (y_i). The total of these transactions represents the total industry output of a given sector (x_i). Note that total consumption (c_{i4}) is equal to total income (v_{4j}) and that y_4 and v_4 are identical and can be interpreted as both an export and income (i.e., income into the region from exogenous sources). Industry columns record purchases and represent Leontief production functions that include local input purchases (z_{ij}), factor payments (income; v_{4j}), and imported input purchases (m_{5j}). Within the SAM accounting framework, economic actors are required to meet their budget constraints to maintain equilibrium between buyers and sellers. As such, all row sums are balanced with corresponding column sums.

The requirements table (Table A.2) is derived from the regional SAM, where a_{ij} equals the share of total industry outlay for every *i*th row and *j*th column, and the full dimension matrix of a_{ij} coefficients is denoted as matrix **A** (Miller & Blair, 2009, p. 16). This matrix is collectively referred to as the “A matrix” and it represents the matrix of technical coefficients, or how much of each dollar of output goes into purchasing inputs from other local sectors in the economy. The default A matrix values from each of the respective regions analyzed in this study were then taken from the most up-to-date IMPLAN data available.

Table A.2. Endogenous Requirements Matrix (A) of Regional Economy

		Local Industries I1	I2	I3	Local Households
Local Industries	I1	a_{11}	a_{12}	a_{13}	a_{14}
	I2	a_{21}	a_{22}	a_{23}	a_{24}
	I3	a_{31}	a_{32}	a_{33}	a_{34}
Local Households		v_1	a_{41}	a_{42}	

Notes: The a_{ij} elements are defined as $\frac{z_{ij}}{x_j}$ and represent the share of total inputs spent on local inputs.

While data for the non-forest sectors will be obtained from IMPLAN, we want to disaggregate the forestry-related sectors to provide greater sectoral detail. Using the **A** matrix described above, the output of an economy can be expressed in equation 1:

1) $\mathrm{X} = \mathrm{AX} + \mathrm{Y},$

where X represents a vector or industry outputs, A is the matrix of technical coefficients, and Y is a vector of exogenous final demands. These input–output matrices can always be thought of as both where a sector sells its output (that is the interpretation across the row) or where a sector buys its inputs (that is the interpretation down the columns). Since local sector A's sales to local sector B can also be thought of as sector B's purchases from sector A, the inputs and outputs are the same in total. Interpreting equation 1 by moving across a given row in A, the term *AX* represents the total amount of output a given sector sells locally. Another way to think about equation 1 is that all output of a given sector must either be sold locally or exported out of the region. In this way, equation 1 represents an accounting identity that says: for any given sector's output (X), they sell some percentage of its output locally (A) and the remaining output is sold outside the region (Y). Rearranging equation 1 to gather like terms together yields equation 2:

2) $(I - A)X = Y$

where *I* is an identity matrix of ones along the diagonal and zeros in the off-diagonal cells. Finally, when we solve for X, we are left with equation 3, the fundamental equation of input–output analysis:

3) $X = (I - A)^{-1}Y$

This equation tells us how output (X) is related to exogenous final demand (Y) through the multiplier ($(I-A)^{-1}$). The column sum of the $(I-A)^{-1}$ matrix through the producing sectors is the output multiplier for each respective sector.

Waters, Holland, and Weber (1999) were the first to formally suggest a simple modification to the standard Leontief input–output model that increases the amount of useful information produced. The procedure consists of diagonalizing the vector of final demand to create the matrix $\mathbf{\hat{Y}}$. Diagonalizing a vector simply means placing the elements of the vector along the major diagonal of an *n*×*n* matrix. By doing, so the *n*×*n* multiplier matrix can then be multiplied by an *n*×*n* diagonal matrix of final demand and yield an *n*×*n* matrix of gross and base output (**X**). Equation 4 presents the formal economic-base model:

4) $X = (I - A)^{-1}\hat{Y},$

where **X** represents a matrix of industry output, $\mathbf{\hat{Y}}$ represents a diagonalized matrix of final demands, and $\mathbf{(I-A)^{-1}}$ represents an n×n matrix of interactions between the endogenous sectors of the economy (and is also called the "Leontief inverse"). This *Leontief inverse* can also be thought of as a matrix of partial output multipliers, where the column sum of the endogenous sector columns through the output-producing sector rows is the output multiplier for each respective sector. Note that for all equations we adopt the convention of denoting matrices in bold, upper-case letters, vectors in bold, lower-case letters, and scalars in italicized, lower-case letters.

Applied to the Leontief model, this procedure results in an *n*×*n* output matrix (**X**) rather than the *n*×*1* output vector produced by the standard Leontief input–output model. It squares the amount of useful information produced by the model, simultaneously separates each industry's export–base contribution (as a row vector of column sums) from gross contribution (as a column vector of row sums), and produces a square matrix that ensures that export–base contributions sum to total industry output. The principal diagonal of this output matrix contains an estimate of direct effects and own use by industry, while the off-diagonal elements contain an estimate of indirect export–base contributions by industry (down the columns). Given these subtle but important differences, Watson et al. (2015) recommended that all economic contribution studies be conducted in this manner to prevent the possibility of double-counting or over-estimation.

The sum of export–base output and gross output across all sectors is equal in total. However, export–base output and gross output are almost never equal by sector. The difference between gross and base output by sector can be used to discern the main role that an industry plays in bringing money to or keeping money within a regional economy (Watson et al., 2015).

APPENDIX REFERENCES

IMPLAN. (2023). IMPLAN Methodology and Data Sources. IMPLAN Group, LLC. Retrieved from https://implan.com

Waters, E. C., Weber, B. A., & Holland, D. W. (1999). The role of agriculture in Oregon's economic base: findings from a social accounting matrix. *Journal of Agricultural and Resource Economics*, 266–280.

Watson, P., & Alward, G. (2024). Tapestry: Collaborative Tool for Regional Data and Modeling. *Review of Regional Studies*, *54*(2), 109-118. Data available for download at https://www.uidaho.edu/cals/tapestry

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.

OREGON STATE UNIVERSITY is Oregon's largest research university and a land-, sea-, space-, and sun-grant institution. Their mission is to promote economic, social, cultural, and environmental progress for the people of Oregon, the nation, and the world.

forestry.oregonstate.edu

THE OREGON FOREST RESOURCES INSTITUTE supports the forest sector and the stewardship of natural resources by advancing Oregonians' understanding of the social, environmental, and economic benefits of our forests.

OregonForests.org | TheForestReport.org

THE UNIVERSITY OF IDAHO is Idaho's land-grant research university. Their mission is to enhance Idaho's scientific, economic, social, legal, and cultural assets, and develop solutions for complex problems facing our society.

uidaho.edu/natural-resources