



# THE CONDITION OF OREGON'S MANUFACTURING SECTOR

Prepared for the Oregon Business & Industry Education and  
Research Foundation and the Oregon Business Council

Fall 2021



**ECONorthwest**  
ECONOMICS • FINANCE • PLANNING

# TABLE OF CONTENTS

Executive Summary

Oregon Manufacturing by the Numbers

- 1 Purpose of this Report
- 2 Oregon Manufacturing: The Long View
- 6 Subsector and Regional Analysis
- 9 Workforce Analysis
- 14 Fiscal Impact
- 16 Conclusion



# EXECUTIVE SUMMARY

## The pandemic and its related recession have brought the importance of the U.S. manufacturing sector into plain view.

In Spring 2020, healthcare providers encountered shortages of personal protective equipment and virus testing kits and discovered supplies were overly dependent on foreign producers. Better news came from pharmaceutical manufacturers who shattered vaccine development and deployment records and started to bring the virus under control. But then as consumer demand returned in early 2021, bottlenecks appeared in international supply chains leading to shortages in materials and components of a wide array of consumer goods.

The public health and economic crises underscored manufacturers' critical role in economic and national security. The "re-shoring" of key productive capacity became a strategic imperative. The Biden Administration launched a comprehensive review

of supply chains, and the U.S. Senate passed a bill, with broad bi-partisan support, to strengthen innovation and competitiveness in the sector.

This new era of industrial policy presents a major economic opportunity for Oregon. A state that was not known for manufacturing a half-century ago has emerged as a growth leader. As the country rebuilds its domestic manufacturing capacity during this decade, Oregon finds itself in a competitive position to grow jobs in a sector recognized for its competitive compensation and training opportunities.

This report provides a detailed portrait of Oregon's manufacturing sector at the outset of a new era of policy and investment. The aim is to give Oregon policymakers and business leaders a clear picture of the sector's work, a profile of the manufacturing workforce, and a description of how manufacturing drives demand in other industries and supports the provision of public services.

## KEY FINDINGS INCLUDE:

**1** **Oregon has emerged as a leading manufacturing state during the past half century—with production and employment growth routinely outpacing the U.S. average.** Oregon's share of the nation's manufacturing gross domestic product (GDP) increased by 50 percent in the last 50 years, growing from about 1.0 to 1.5 percent of the U.S. total. Notably, Oregon's manufacturing employment increased 14 percent from 1969-2019—U.S. manufacturing jobs declined by 34 percent during the same period.

**2** **Oregon has 214,000 manufacturing jobs and the sector contributed \$33 billion to the state's GDP in 2020.** The sector represents 8 percent and 13 percent of the state's employment and GDP, respectively. A high share of state GDP relative to its share of the workforce reflects the sector's high level of productivity. The sector got off to a strong start in 2021 Q1, when quarterly production hit an all-time high—an annualized equivalent of \$35.7 billion—and exceeded production in the recession's trough (2020 2nd quarter) by 18 percent.

—Continued on next page—

## KEY FINDINGS (continued):

**3** **Manufacturing work is concentrated in four subsectors.** Most manufacturing jobs are found in high-tech and electronics; wood products; food and beverage; and metals, transportation, and other advanced manufacturing—combined they represent 80 percent of manufacturing jobs. The remaining 20 percent of manufacturing workers are spread across an array of smaller subsectors. Manufacturing employment grew in a broad range of subsectors since 1969. High-tech/electronics led the way with a three-fold increase in employees during 1969-2019. Job growth in Oregon's food and beverage subsector was one of very few bright spots during the Great Recession, with little job loss during the initial crisis and strong growth thereafter. The wood products subsector was the notable exception to the positive jobs story. Federal harvest restrictions, mill automation, and competition with the U.S. Southeast and British Columbia contributed to the subsector's losses beginning in the 1980s and accelerating in the early 2000s.

**4** **Supply chain and employee spending extend the sector's impacts across nearly all industries.** Manufacturers directly impact the economy through the production of the wide array of goods they make, including railcars, trucks, fabricated metals, aircraft parts, paper, cross-laminated timber, semiconductors, frozen and freeze-dried food, cheese, wine, craft beer, and more. But the industry's economic impact extends well beyond its direct output and includes the value of materials and supplies manufacturers purchase as inputs to their production, as well as the effects of their employees' spending in the local economy. Through these associated impacts, every job in manufacturing supports about 1.9 jobs outside of the sector in a long list of industries, including construction, business services, retail and wholesale trades, and healthcare.

**5** **A 10 percent increase in manufacturing output—equal to about four years of sector growth during the 2010s—would support an additional 66,000 jobs and generate \$800 million in annual state and local government revenue.** As manufacturers grow, economic and fiscal impacts spread broadly—across a wide range of industrial sectors and in every community in the state. A 10 percent increase in manufacturing output supports more than 23,000 jobs in the manufacturing sector and about 43,000 jobs in other sectors. Those jobs, in turn, generate a \$4.7 billion increase in personal income—largely in wages paid to employees across manufacturing and non-manufacturing industries.

Rising incomes translate into increased demand for goods and services, including state and local government services. A \$4.7 billion increase in personal income would generate about \$800 million in state and local government revenue and support investments in education, healthcare, the safety net, public safety, parks, and more. Increased revenue in the state general fund extends fiscal impacts to every community in the state—regardless of their proximity to new manufacturing activity (e.g., manufacturing activity in the Willamette Valley supports K12, healthcare, and investments in Eastern Oregon). If budgetary allocations resemble those of the past, a 10 percent increase in manufacturing activity would support, for example, \$158 million in additional annual K12 spending, or almost 1,500 teacher equivalents.

**6** **Oregon's manufacturing sector is 42 percent more productive than non-manufacturing sectors.** Oregon manufacturers sell into national and global markets, and competition requires sustained investments in production processes. The focus on processes results in a typical manufacturing job producing about 42 percent more in GDP per job than jobs in other industries. The higher level of productivity supports higher wages and additional rounds of business investment.

## KEY FINDINGS (continued):

**7** **Median earnings of full-time, full-year manufacturing workers are 17 percent higher than median earnings of full-time workers in other industries. Wage premia exist broadly across races, ethnicities, genders, and levels of education.** The typical full-time manufacturing employee earns \$55,000 annually—or \$8,000 more than their counterparts outside of manufacturing. Wage premia exist at every level of educational attainment. That is, workers at any level of education—from high school to graduate degree holders—have an opportunity to earn more by taking their degrees into the manufacturing sector. And, on average, BIPOC (Black, Indigenous, and people of color) and White workers and men and women earn more than their peers in other industries. Some exceptions exist (e.g., workers in the food and beverage sector earn less than their counterparts in non-manufacturing industries).

**8** **For the typical BIPOC worker, manufacturing employment—in terms of earnings—is akin to moving up a level in educational attainment.** BIPOC workers, like their White counterparts, earn more in the manufacturing sector at every level of educational attainment. But notably, for BIPOC workers, median earnings at every education level in manufacturing are equal to or higher than median earnings at the next education level in non-manufacturing industries. For example, median earnings for BIPOC manufacturing workers with associate degrees are 17 percent higher than earnings for bachelor's-degree-holding BIPOC workers in other industries. Moreover, median earnings for BIPOC manufacturing workers with a bachelor's degree exceed those of White workers in a non-manufacturing industry with a graduate degree.

**9** **Racial/ethnic representation in the manufacturing workforce is uneven.** Asian and Hispanic shares of the manufacturing workforce are larger than their corresponding shares of the overall statewide workforce. Asian workers hold a disproportionate share of jobs in the high-tech/electronics subsector but are less represented in food/beverage and wood products manufacturing. Meanwhile, Hispanic workers have disproportionate representation in food/beverage manufacturing and are less represented in high-tech/electronics. Black and White workers constitute smaller shares of the manufacturing workforce than their respective shares of the overall Oregon workforce.

**10** **Manufacturing jobs help lift households out of poverty.** The poverty rate of households with a full-time manufacturing worker is 3 percentage points lower than the poverty rate of households with a full-time worker outside of manufacturing.

# OREGON MANUFACTURING BY THE NUMBERS

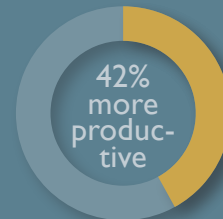
**214,000**  
manufacturing  
jobs in Oregon



**\$33 billion**  
contributed  
to GDP



**42% more**  
productive compared  
to other industries



**Rank: 16th**

Oregon ranks 16th  
in the U.S. for  
manufacturing as a  
share of state GDP

**\$55,000**

**\$47,000**

Manufacturing jobs have a median  
income of \$55k, compared to \$47k  
for all other industries

## WORKFORCE CHARACTERISTICS

**32%**

**23%**

**BIPOC  
Employees**

**28%**

**51%**

**Female  
Employees**

**9%**

**14%**

**16-24 year-old  
Employees**

**42**

**41**

**Median Age**



Bachelor's  
degree or more



Associate degree



Some college,  
high school  
diploma, or less



Manufacturing



All other  
industries

**Manf.**

**Other**

**30%**

**34%**

**9%**

**9%**

**61%**

**57%**

**Educational  
Attainment**

# PURPOSE OF THE REPORT

**Manufacturers play critical roles in national and regional economies, and the pandemic has only underscored their importance.**

Early in the fight against the coronavirus, public health officials learned that many of the materials needed to fight the virus's spread—personal protective equipment and testing kits—were made outside of the country, and production wasn't easily accelerated. Much better news came from the pharmaceutical sector, which shattered vaccine development and deployment records, thanks to years of research and development and domestic manufacturing capacity. But then as economic growth began to accelerate in early 2021, global production and supply chain bottlenecks created shortages of everything from metal parts and plastics to computer chips that run cars and a wide array of consumer goods. Production and distribution challenges are expected to continue for at least the next year or two.

The crisis prompted a White House review of manufacturing supply chains.<sup>1</sup> It also inspired bi-partisan

support in the U.S. Senate for the United States Innovation and Competition Act, which includes a proposed \$50 billion investment in domestic semiconductor and microelectronics industries. In an era of political polarization, leaders of the two parties agree a healthy, domestic manufacturing sector is key to the country's economic prosperity and national security. And after years of national job decline, a new chapter in American industrial policy could bring jobs back to the U.S. and create new ones.

The renewed national focus is a major opportunity for Oregon—a state that has quietly evolved into a manufacturing leader over the past quarter century. This report provides a detailed portrait of Oregon's manufacturing sector at the outset of a new era of policy and investment. The aim is to give Oregon policymakers and business leaders a clear picture of the sector's work, a profile of the manufacturing workforce, and a description of how manufacturing drives demand in other industries and supports the provision of public services.



# OREGON MANUFACTURING: THE LONG VIEW

**A half century ago, the story of Oregon manufacturing was simpler: wood products manufacturing dominated the sector and the Oregon economy.**

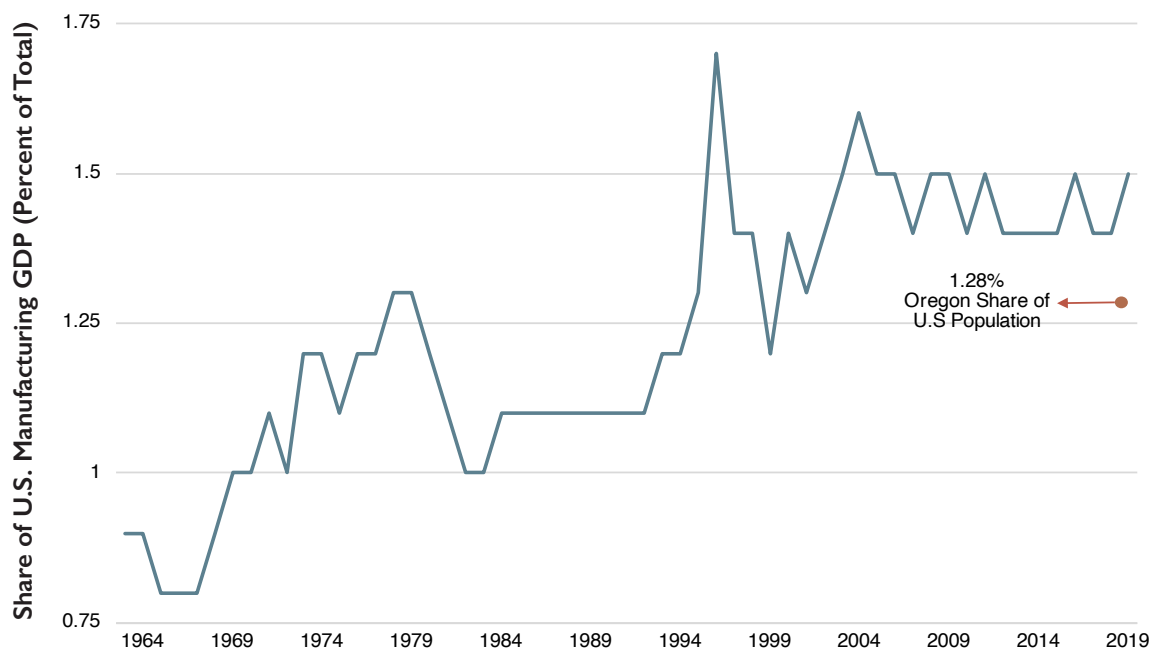
But manufacturing was evolving and benefiting from the legacy of World War II shipbuilding, an emerging electronics cluster in Washington County, and a small but growing food and beverage subsector. In the 1960s, Oregon's share of U.S. manufacturing was under one percent and then began to rise in 1970. In the subsequent 50 years, Oregon's share of U.S. manufacturing GDP has increased by 50 percent (see Exhibit 1).

The arrival of Intel in 1974 played an important role in the GDP growth. Those gains were offset in the 1980s by a double-dip recession that hit Oregon and its wood products subsector especially hard, with federal harvesting restrictions and competition from

the Southeastern U.S. and British Columbia. Strong GDP growth continued in the 1990s and into the 2000s. In the last two decades, Oregon's share of U.S. manufacturing GDP has settled between 1.4 and 1.5 percent—above the state's overall contribution to GDP (1.2 percent) or its share of population (1.3 percent).

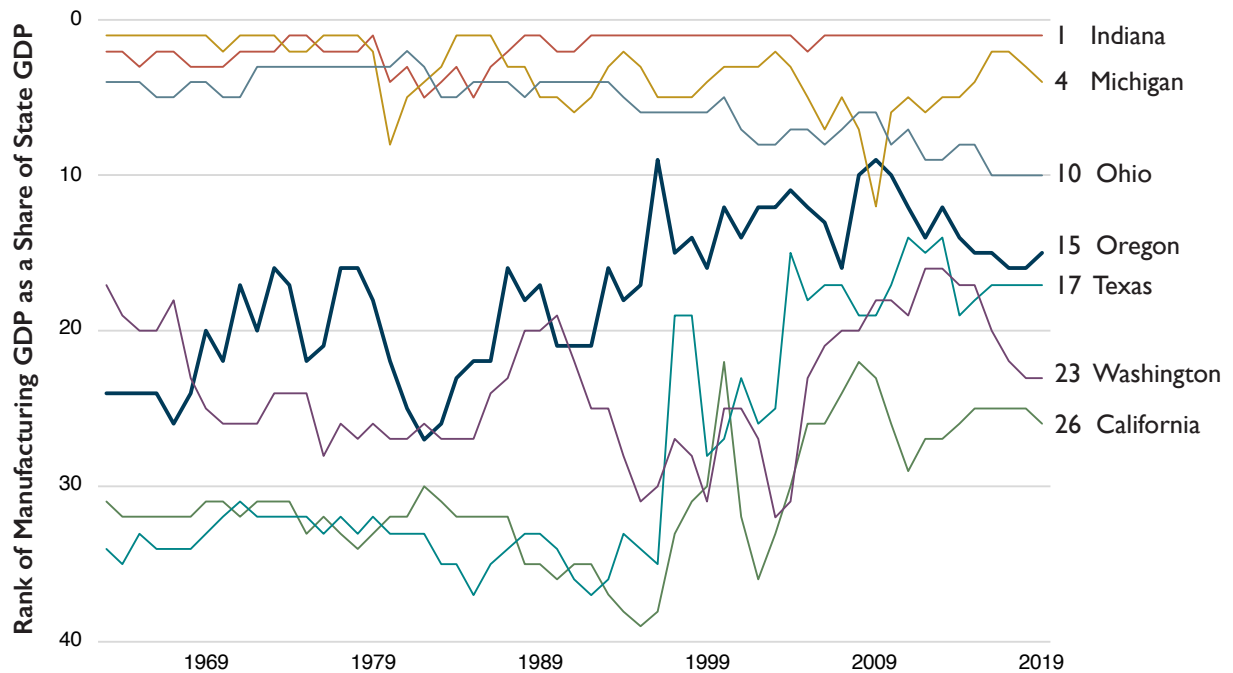
Since the 1960s, Oregon's position has risen on another measure—manufacturing GDP expressed as a share of total GDP (see Exhibit 2). Before the 1990s, Oregon ranked in the 20s relative to other states and would occasionally rise into the high teens. Since the 1990s, Oregon is consistently in the teens and twice entered the top 10 states. Unsurprisingly, Indiana, Michigan, and Ohio still have larger shares of their economies linked to manufacturing than Oregon, but that's not the case in California, Washington, or Texas.

**Exhibit 1. Oregon's share of U.S. manufacturing GDP**



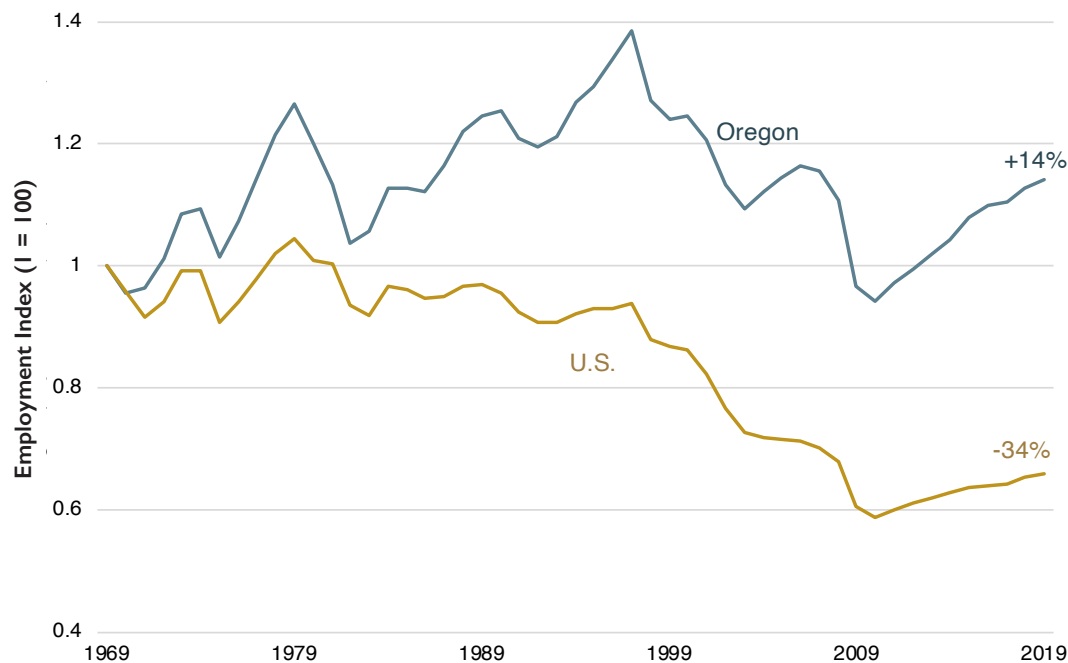
*Data source: U.S. Bureau of Economic Analysis, 1963-2019*

## Exhibit 2. State rankings for manufacturing as a share of state GDP, selected states



Data source:  
U.S. Bureau  
of Economic  
Analysis,  
1963-2019

## Exhibit 3. Manufacturing employment relative to 1969



Data source:  
U.S. Bureau  
of Economic  
Analysis,  
1969-2019

While Oregon's GDP trends have been strong, the jobs story is even more striking. Nationally, manufacturing jobs declined beginning with the double dip recession of the early 1980s, and losses accelerated during the 1990s because of offshoring and factory automation. U.S. manufacturing employment fell

by more than a third during 1969-2019 (see Exhibit 3). Oregon has had its ups and downs during the period—a peak in the mid-1990s followed by losses through the Great Recession—but, in 2019, ended the economic expansion with 14 percent more manufacturing jobs than it had in 1969.

Oregon's manufacturing sector is diverse and produces a wide array of durable goods (e.g., semiconductors, lumber, railcars, aircraft parts) and non-durable goods (e.g., canned fruits and vegetables, wine, craft beer). Jobs and GDP are concentrated in four subsectors: high-tech/electronics, wood products, food and beverage, and metals/transportation/other advanced manufacturing. Location quotients (LQ)—based on GDP or jobs—gauge the strength of the subsectors relative to the same industries across the nation (see Exhibit 4). An LQ equal to 1.0 would imply that Oregon has the same share of GDP or jobs as found elsewhere. LQs greater than 1.0 denote an economic specialty and indicate that GDP, jobs, or both are more concentrated here than elsewhere. For example, an LQ of 1.5 indicates a 50 percent higher concentration than the U.S. average.

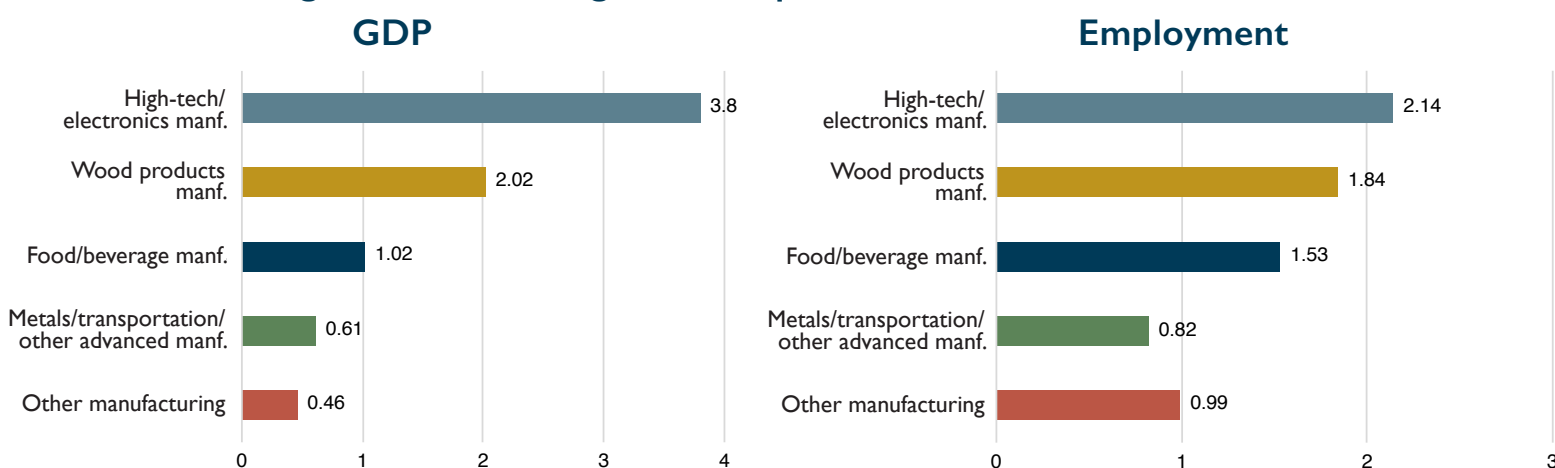
High-tech/electronics and wood products stand out—each with high LQs for both GDP and jobs. Oregon's high-tech/electronics' GDP is almost four times the U.S. average, and the subsector employs more than twice the workers as the typical state thanks, in large part, to Washington County's extraordinary cluster. And despite its long-term challenges, Oregon's wood products subsector is still large, with about twice as much economic activity—production and jobs—as the typical state.

In the food and beverage subsector, Oregon has a disproportionately large workforce but national-average production. Higher GDP numbers are found in states that manufacture higher quantities of meat, tobacco, and distillery products. Metals, transportation, and other advanced manufacturers make major contributions to Oregon's economy—creating a comparable number of jobs as the other three subsectors (as discussed in the next section). But the subsector remains relatively small when compared with automobile and aircraft centers in the Midwest, Southeast, and Puget Sound regions.

The subsectors show different job trends over the past half century (see Exhibit 5). High-tech/electronics manufacturing employed nearly four times as many workers in 2019 as it did in 1969. Those gains were partially offset by losses in the wood products subsector, where 2019 jobs stood at only 43 percent of their 1969 level. And taken together, the balance of manufacturing grew during the past half century—bucking the national trend. Especially notable was the growth of the food and beverage subsector during and after the Great Recession.

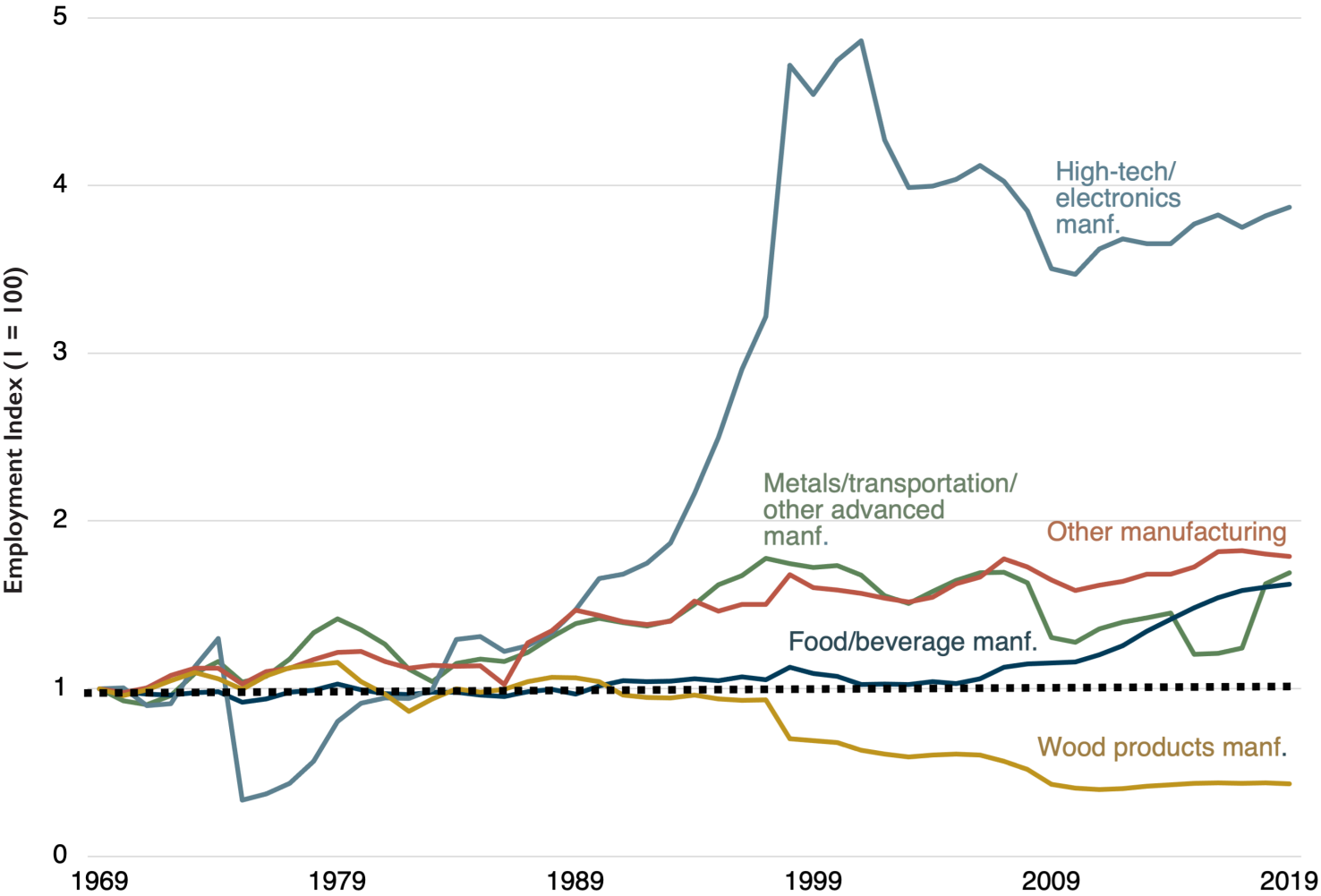
**The next section takes a closer look at how each of these subsectors has performed across the state and during the pandemic.**

## Exhibit 4. Oregon manufacturing location quotients

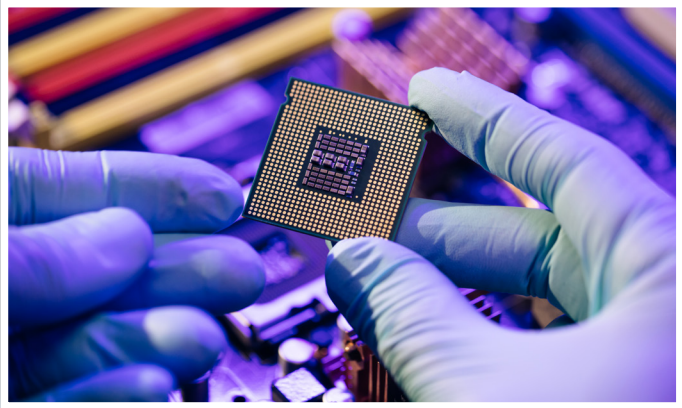


Data source: U.S. Bureau of Economic Analysis, 2019

Exhibit 5. Manufacturing employment relative to 1969, Oregon



Data source: U.S. Bureau of Economic Analysis, 1969-2019



# SUBSECTOR AND REGIONAL ANALYSIS

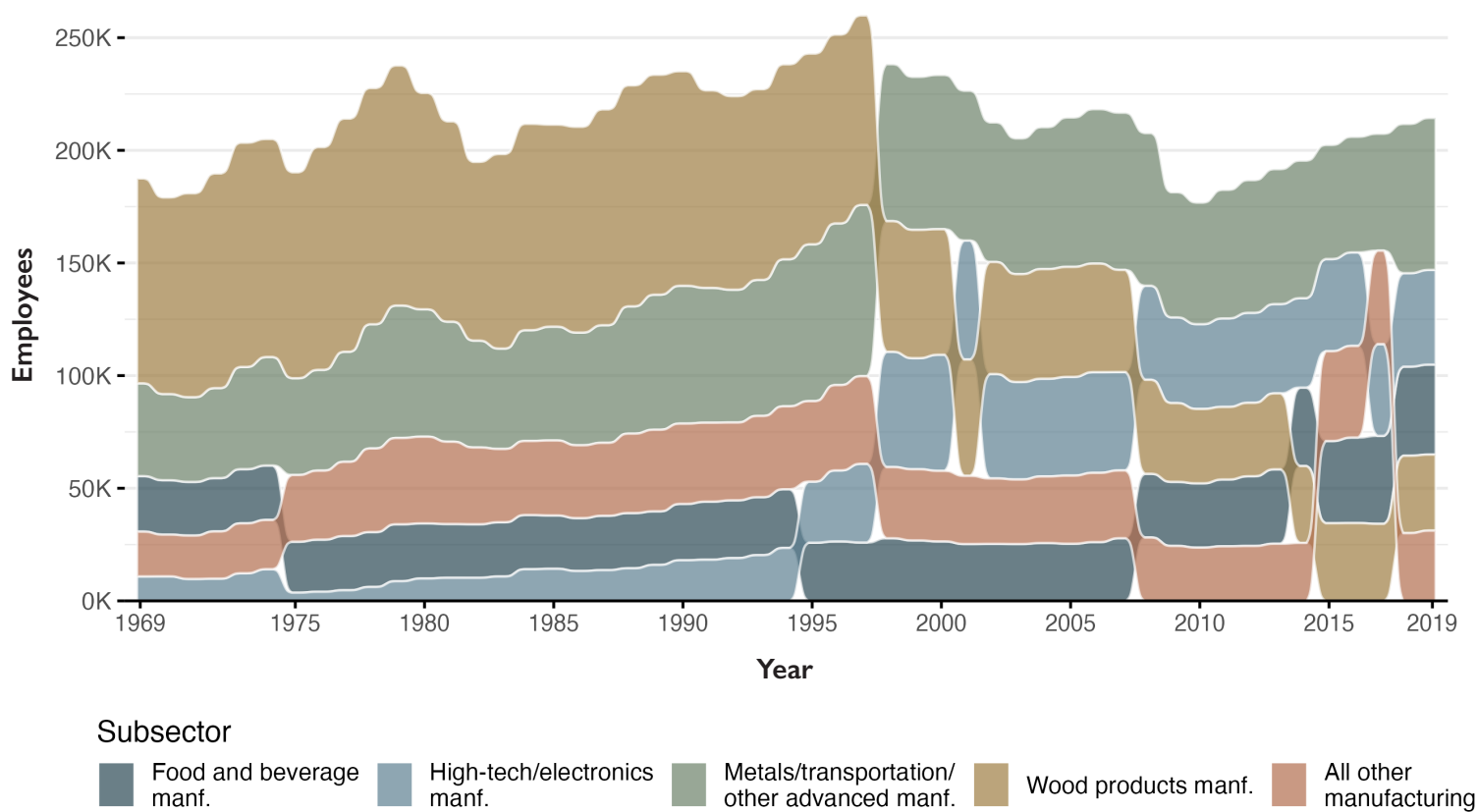
**Oregon's primary manufacturing subsectors were not always as close in size as they are now.**

Exhibit 6 illustrates the state's manufacturing employment level over time and divided into subsectors, sorted in each year by size—largest subsector on the top, smallest on the bottom. From the 1970s through the mid-1990s, wood products manufacturing was the largest subsector, followed by metals/transportation/other advanced manufacturing. The other three followed in the same order—other, food/

beverage, then high-tech/electronics—for most of those decades.

Since the late 1990s the subsectors have varied more in size relative to each other. Wood products has decreased in size and is most recently the second smallest subsector. High-tech/electronics has climbed from smallest to second largest, and food/beverage has moved into third place. Top-line employment in the sector peaked in 1997 but has been increasing again over the last decade.

**Exhibit 6. Oregon manufacturing employment since 1969, by subsector**



Data source: U.S. Bureau of Economic Analysis, 1969-2019

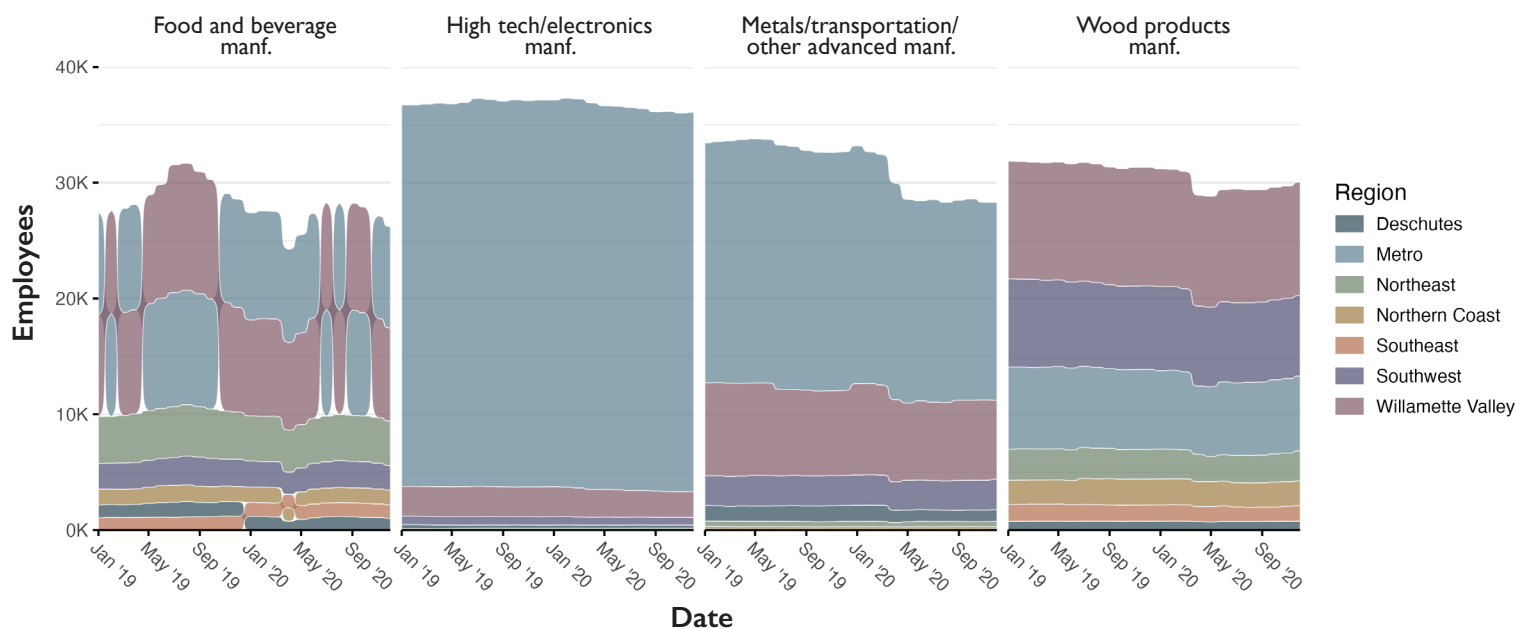
Manufacturing has a presence in every part of Oregon. We looked at the manufacturing subsectors within a regional context using the following regions: Central, East/Southeastern, North Central, North Coast, Portland Metro, Southwest, and Willamette Valley.<sup>2</sup> Exhibit 7 shows the regional makeup of the four main subsectors from January 2019 through December 2020. These four subsectors make up about 80 percent of the state's manufacturing employment. The region with the most employment in the subsector in each month is at the top of the chart for that month, with remaining regions ordered below it, from largest to smallest.

Food and beverage manufacturing presents the most variation in terms of its dominant region, with the Portland Metro and Willamette Valley trading places several times over the two years. The Northeast region has the next-highest employment level in food/beverage. High-tech/electronics is concentrated in the Portland Metro. Metals/transportation/other advanced manufacturing is as well, though about a third of its employment is in the

Willamette Valley. Wood products manufacturing is more evenly disbursed across the state—the Willamette Valley region is home to about a third of its workers, followed by the Southwest and Portland Metro regions.

The topline employment level for each subsector varies over the period, with the latter half affected by COVID-19 and the resulting recession and safety protocols. Food and beverage manufacturers experienced employment losses early in the pandemic as facilities shut down and demand dropped. High-tech and electronics manufacturing employment was less affected, as many professional and office employees were able to work remotely and production facilities adapted to social distancing rules. Metals/transportation/other advanced manufacturing and wood products both experienced a COVID-related decline, with wood products recovering more jobs than has metals/transportation. Manufacturers tied into the transportation and aircraft supply chains have been disproportionately affected by the sharp decrease in travel during the pandemic.

## Exhibit 7. Oregon manufacturing employment by subsector, 2019-2020



Data source: Oregon Employment Department, Quarterly Census of Employment and Wages, 2019-2020

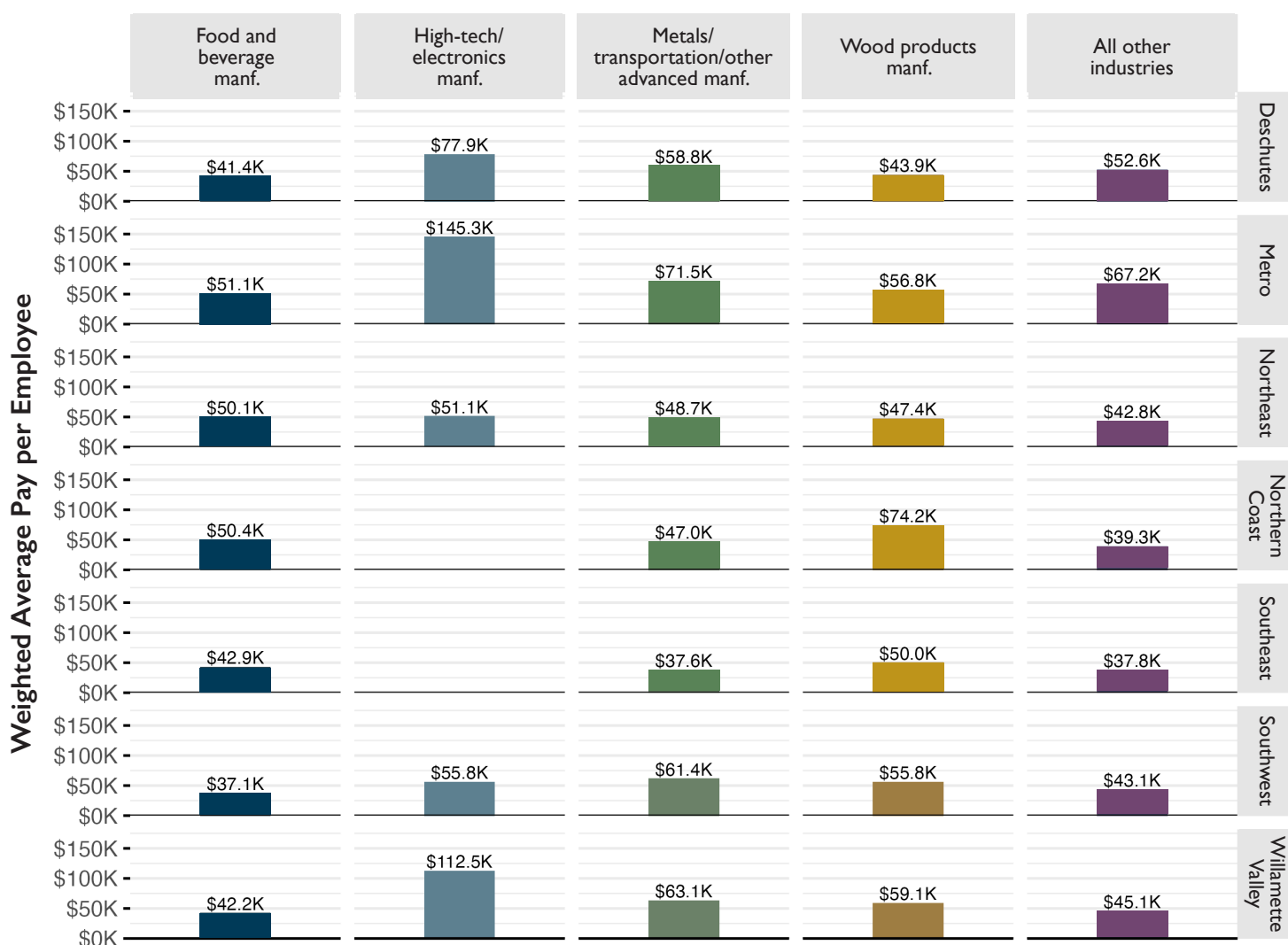
Relative to the same subsectors at the national level over this period, Oregon was harder hit by COVID-19 in food/beverage and metals/transportation/other advanced manufacturing. This is likely attributed to Oregon's mix of manufacturers in these subsectors: labor-intensive food/beverage manufacturers and manufacturers connected with transportation and aircraft supply chains. As of December 2020, job losses (as a share of regional employment) were most pronounced in Central Oregon and the Willamette Valley for food/beverage manufacturing and in Central Oregon, the Portland Metro, and the Willamette Valley for metals/transportation/other advanced manufacturing.

Despite the COVID-19 employment effects described above, average wages remained steady during 2019 and 2020. However, wages vary across subsectors and regions (see Exhibit 8). Average wages in

many manufacturing subsector/region combinations exceed that region's average for non-manufacturing industries ("all other industries"). For example, the wood products average wage exceeds the non-manufacturing average in all but two regions, and the metals/transportation/other advanced manufacturing average exceeds non-manufacturing in all but one region. The food/beverage average is higher than the non-manufacturing average in three regions: Northeast, Northern Coast, and Southeast. In all five regions with available data for high-tech/electronics manufacturing, the average exceeds the non-manufacturing average—more than doubling it in the Metro and Willamette Valley regions, largely influenced by the semiconductor presence in Washington County.

**The next section provides additional information about wages and describes workforce characteristics.**

**Exhibit 8. Average wage by manufacturing subsector and region, Oregon**



Data source: Oregon Employment Department, Quarterly Census of Employment and Wages, 2019-2020

# WORKFORCE ANALYSIS

**Oregon has 214,000 manufacturing jobs, representing 8 percent of the state's employment.<sup>3</sup>**

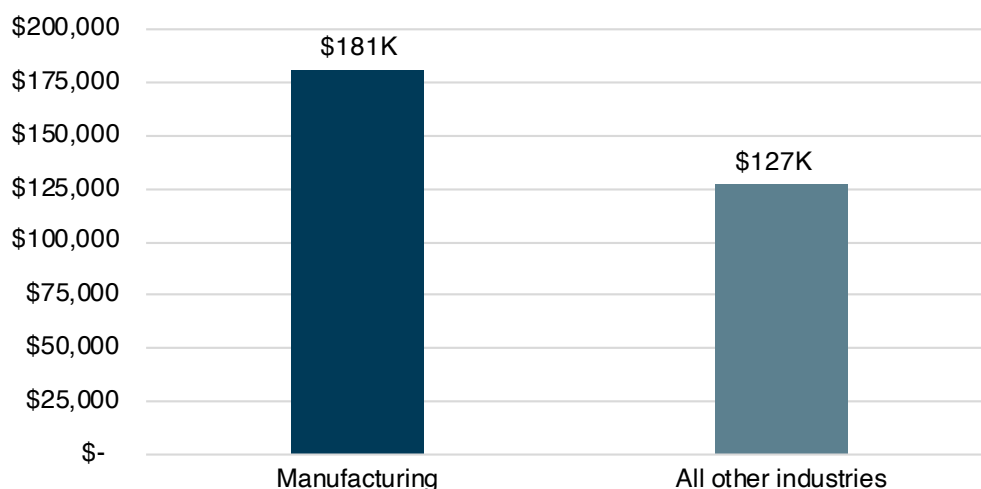
Most manufacturing jobs are found in high-tech and electronics; wood products; food and beverage; and metals, transportation, and other advanced manufacturing. The remaining workers are spread across an array of smaller subsectors. About one third of workers are BIPOC, 28 percent are women, 30 percent have a bachelor's degree or more, and 9 percent are ages 16-24.<sup>4</sup>

The state's manufacturing workforce operates at higher levels of GDP per job than the average of all other industrial sectors (see Exhibit 9). Oregon manufacturers sell into national and global markets, and competition requires sustained investments in production processes. The focus on processes results in a typical manufacturing job producing about \$181,000 of output per job versus \$127,000 for a typical job in other industries—a 42 percent difference. The higher level of productivity supports higher wages and additional rounds of business investment.

The higher level of productivity translates into higher levels of compensation for workers: median earnings of full-time, full-year manufacturing workers are 17 percent higher than median earnings of full-time workers in other industries. The typical full-time manufacturing employee earns \$55,000 annually—or \$8,000 more than their counterparts outside of manufacturing.<sup>5</sup>

The manufacturing wage premium exists across the earnings spectrum—low-, middle-, and high-wage manufacturing workers in Oregon earn more than their peers in other industries. It covers most of the state, with typical manufacturing workers in the Metro and Northeast regions earning 25 percent more than typical workers in other industries in those regions. In the Willamette Valley region, the typical manufacturing worker earns 14 percent more.<sup>6</sup> And the premium helps lift households out of poverty: the poverty rate of households with a full-time manufacturing worker is 3 percentage points lower than the poverty rate of households with a full-time worker outside of manufacturing.<sup>7</sup>

**Exhibit 9. Average GDP per job in Oregon**

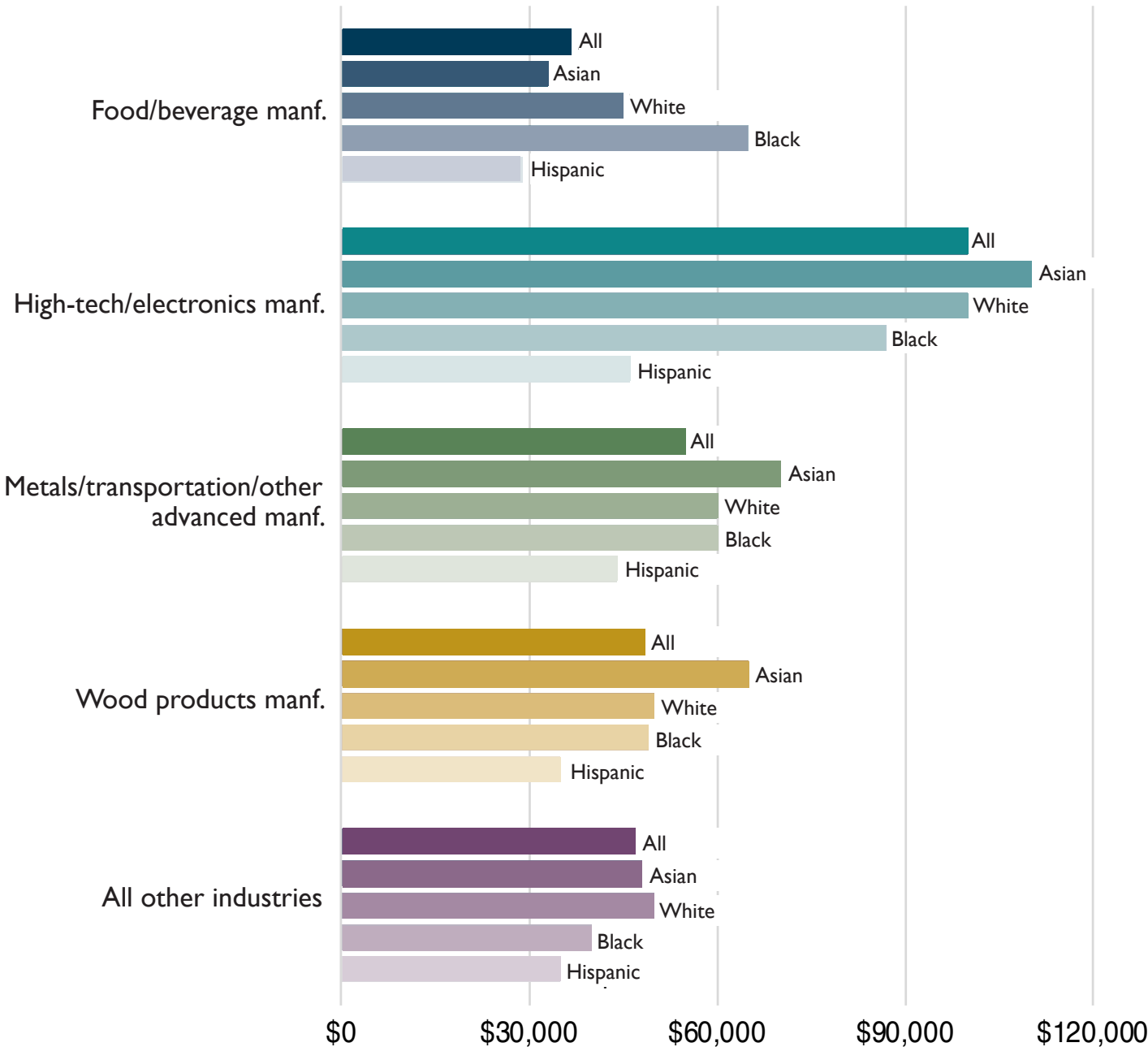


*Data sources: U.S. Bureau of Economic Analysis and U.S. Bureau of Labor Statistics, 2020*

Manufacturing wage premia also exist broadly across genders, races, ethnicities, and levels of educational attainment. Women and men in manufacturing earn an average of \$3,500 and \$8,000 more, respectively, than women and men working in other industries.<sup>8</sup> On average, BIPOC and White workers also earn more than their counterparts in other industries.

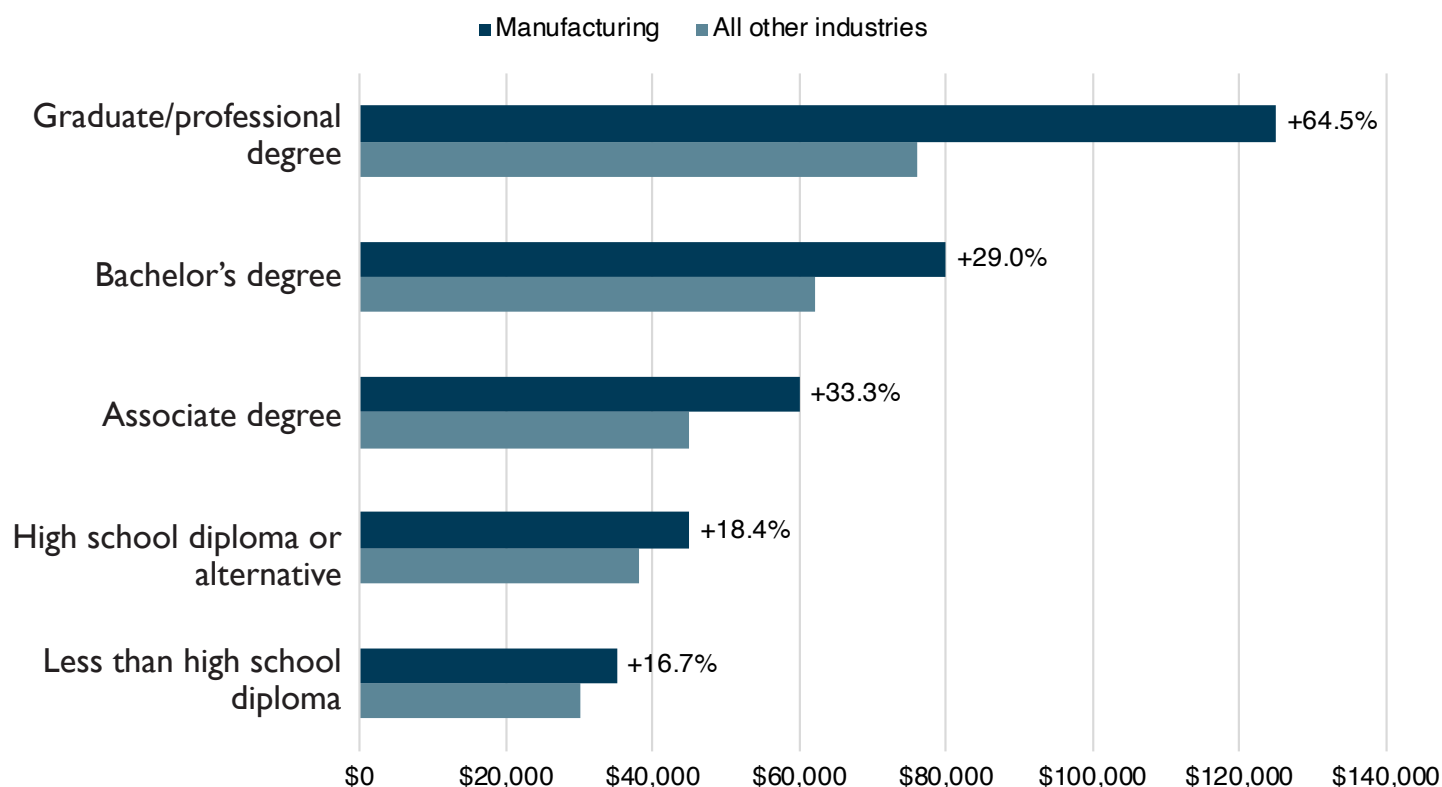
Exhibit 10 provides median earnings for full-time, full-year Oregon workers by manufacturing subsector and race/ethnicity. The top bar in each cluster represents all workers in that subsector, regardless of race/ethnicity. Median manufacturing earnings generally exceed the median for all other industries: \$47,000 (“All”) in the purple cluster. Some exceptions exist (e.g., workers in the food and beverage subsector earn less than their counterparts in non-manufacturing industries).

**Exhibit 10. Median earnings for Oregon full-time, full-year workers**



Data source: U.S. Census Bureau, ACS PUMS, 1-Year Estimates, 2019. Notes: Full time is 30+ hours/week; full year is 52 weeks/year. Race/ethnicity categories excluded from this chart have small sample sizes that result in unreliable estimates.

## Exhibit 11. Median earnings by educational attainment level for Oregon full-time, full-year workers

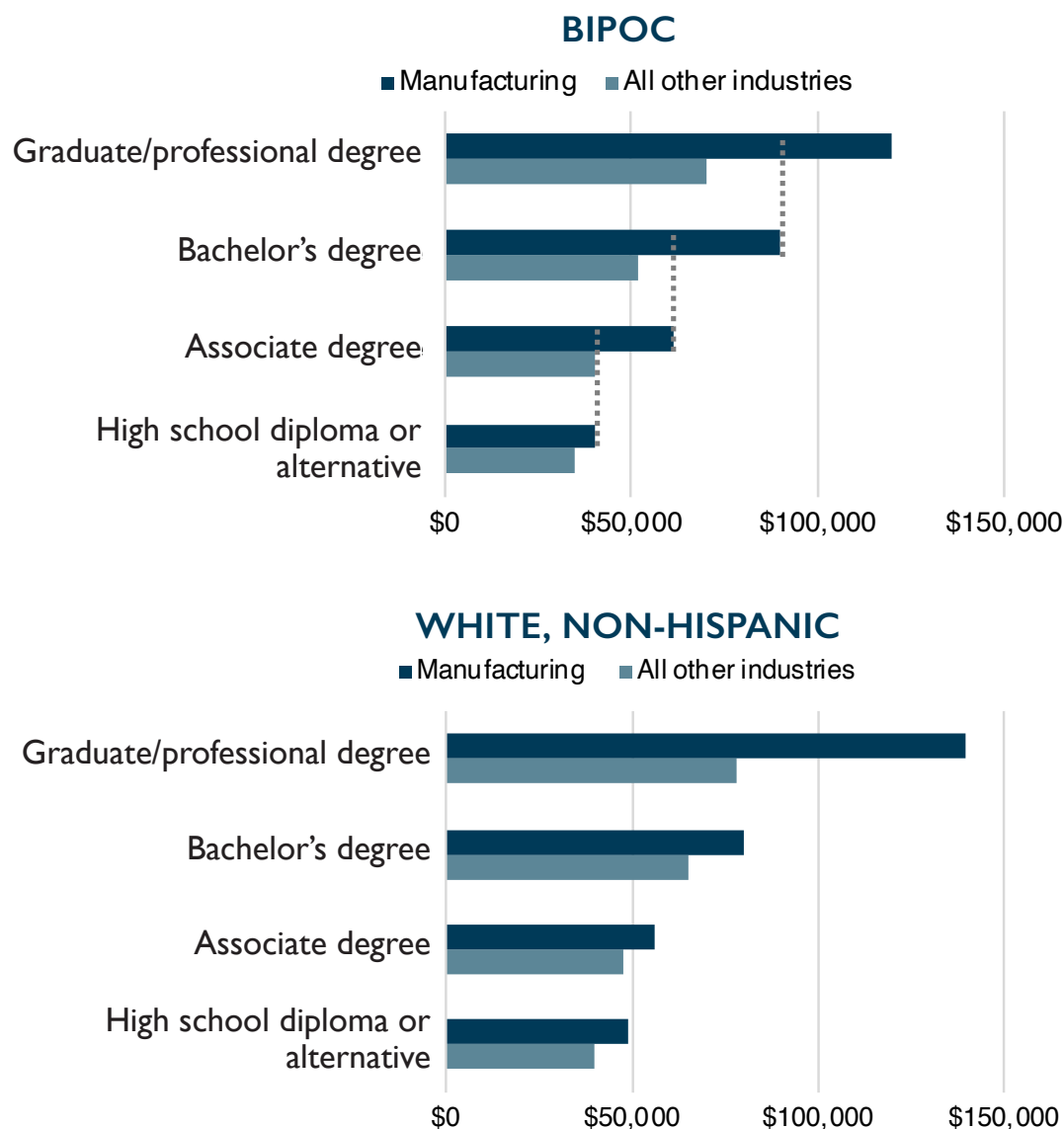


Data source: U.S. Census Bureau, ACS PUMS, 1-Year Estimates, 2019

Higher median earnings also exist at each level of educational attainment, from high school to graduate degree holders (see Exhibit 11). The largest differences between median earnings are at the highest education levels (e.g., a 65 percent wage premium for manufacturing workers with a graduate or professional degree). But workers at any level of education have an opportunity to earn more by taking their credentials into the manufacturing sector, and the sector provides opportunities across education levels (39 percent of Oregon manufacturing workers have a postsecondary degree; 61 percent do not). The median earnings pattern is present in subsectors as well: high-tech/electronics, wood products, and metals/transportation/other advanced manufacturing all demonstrate strong earnings gains corresponding to educational attainment gains.

Exhibit 12 illustrates the same earnings information broken out by for BIPOC and White workers, with three main takeaways. First, the manufacturing wage premium continues to hold at every education level, for both BIPOC and White workers. Second, racial/ethnic earnings gaps exist at the high school and graduate level for manufacturing, but not at the associate and bachelor's levels. In fact, median earnings for BIPOC manufacturing workers with an associate or bachelor's degree exceed median earnings for White workers at the same levels. Finally, at every education level, median earnings in manufacturing are equal to or higher than median earnings at the next education level in non-manufacturing industries, especially for BIPOC workers. For example, median earnings for BIPOC associate degree holders in manufacturing are 17 percent higher than median earnings for BIPOC bachelor's degree holders in other industries. Moreover, median earnings for BIPOC manufacturing workers with a bachelor's degree exceed those of White workers in a non-manufacturing industry with a graduate degree.

## Exhibit 12. Median earnings by educational attainment level for BIPOC (Black, Indigenous, or People of Color) and White workers, Oregon



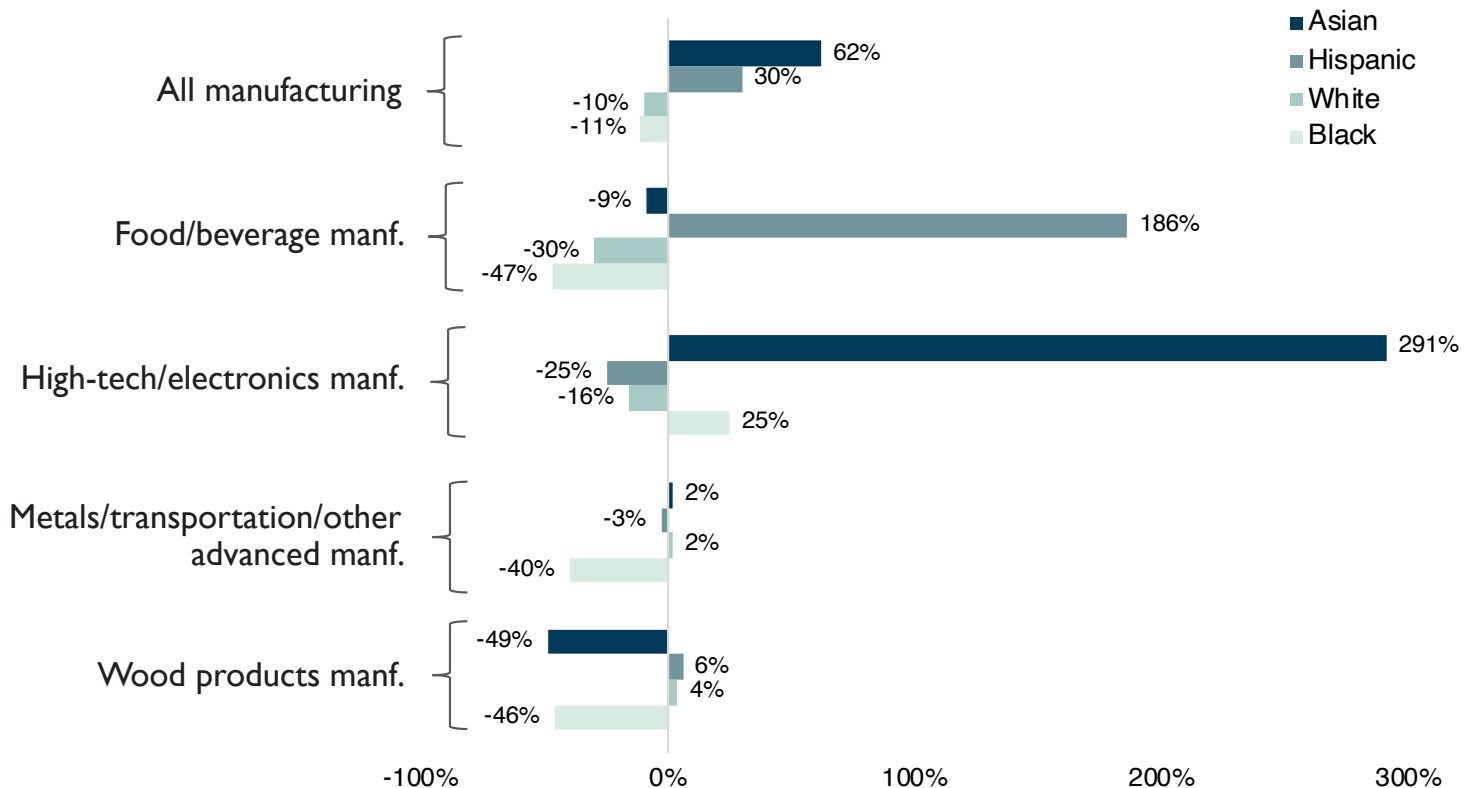
Data source: U.S. Census Bureau, ACS PUMS, 1-Year Estimates, 2019. Note: BIPOC = Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, Hispanic, Two or More Races, and Some Other Race

Oregon's manufacturing workforce is 32 percent BIPOC; the overall statewide workforce is 23 percent BIPOC.<sup>9</sup> However, racial/ethnic representation in the manufacturing workforce is uneven (see Exhibit 13). Asian and Hispanic shares of the manufacturing workforce are larger than their corresponding shares of the overall statewide workforce (62 percent and 30 percent larger, respectively). Asian workers hold a disproportionate share of jobs in the high-tech/electronics subsector but are less represented in food/beverage and wood products manufacturing.

Meanwhile, Hispanic workers have disproportionate representation in food/beverage manufacturing and are less represented in high-tech/electronics. Black and White workers constitute smaller shares of the manufacturing workforce than their respective shares of the overall Oregon workforce. White workers are less represented in food/beverage and high-tech/electronics manufacturing, and Black workers are less represented in food/beverage, wood products, and metals/transportation/other advanced manufacturing.



**Exhibit 13. Percent difference between Oregon manufacturing workforce share and statewide workforce share**



*Data source: U.S. Census Bureau, ACS PUMS, 1-Year Estimates, 2019*

Manufacturing workers are more productive and earn more, on average, than their counterparts in other sectors. However, these earnings are not spread proportionately across the workforce. BIPOC workers, women, and young people are underrepresented across subsectors. Each

subsector has a unique situation, challenges, and opportunities. Manufacturers, educators, training providers, and policymakers can together identify ways to improve representation within the manufacturing workforce and access to the jobs and opportunities the industry provides.



# FISCAL IMPACT

**Another way to describe the manufacturing sector's importance to the state's economy is through the way the sector supports jobs—in manufacturing and other sectors—throughout the state and generates tax revenues for the provision of infrastructure and other public services.**

Manufacturers directly impact the economy through the production of the wide array of goods they make, including railcars, trucks, fabricated metals, aircraft parts, paper, cross-laminated timber, semiconductors, frozen and freeze-dried food, cheese, wine, craft beer, and more. But the industry's economic impact extends well beyond its direct output and includes the value of materials and supplies manufacturers purchase as inputs to their production (supply-chain spending on things the industry needs to make its products), as well as the effects of their employees' spending in the local economy (what households consume as a result of earning income). Through these associated impacts, also known as employment multipliers or indirect and induced effects, the manufacturing sector affects nearly all industries and every community in the state.

To illustrate the relationship between manufacturing output, state revenue, and state expenditures, we simulate a 10 percent increase in manufacturing output in Oregon.<sup>10</sup> This increase approximates about four years of growth during the 2010s and is associated with an increase of 66,000 jobs and \$800 million annually in state and local government

revenue. Exhibits 14 and 15 summarize the impacts in terms of jobs, population, GDP, personal income, revenue, and expenditures.

More than 23,000 of the 66,000 jobs supported by the 10 percent increase in manufacturing output are in the manufacturing sector and the remaining—about 43,000 jobs—are in other sectors. In other words, every job in manufacturing supports about 1.9 jobs outside of the sector in a long list of industries, including construction, business services, retail and wholesale trades, and healthcare. Those jobs, in turn, generate a \$4.7 billion increase in personal income—largely in wages paid to employees across manufacturing and non-manufacturing industries.

Rising incomes translate into increased demand for goods and services, including state and local government services. A \$4.7 billion increase in personal income would generate about \$800 million in state and local government revenue and support investments in education, healthcare, the safety net, public safety, parks, and more. Increased revenue in the state general fund extends fiscal impacts to every community in the state—regardless of their proximity to new manufacturing activity (e.g., manufacturing activity in the Willamette Valley supports K12, healthcare, and investments in Eastern Oregon). If budgetary allocations resemble those of the past, a 10 percent increase in manufacturing activity would support, for example, \$158 million in additional annual K12 spending, or almost 1,500 teacher equivalents.

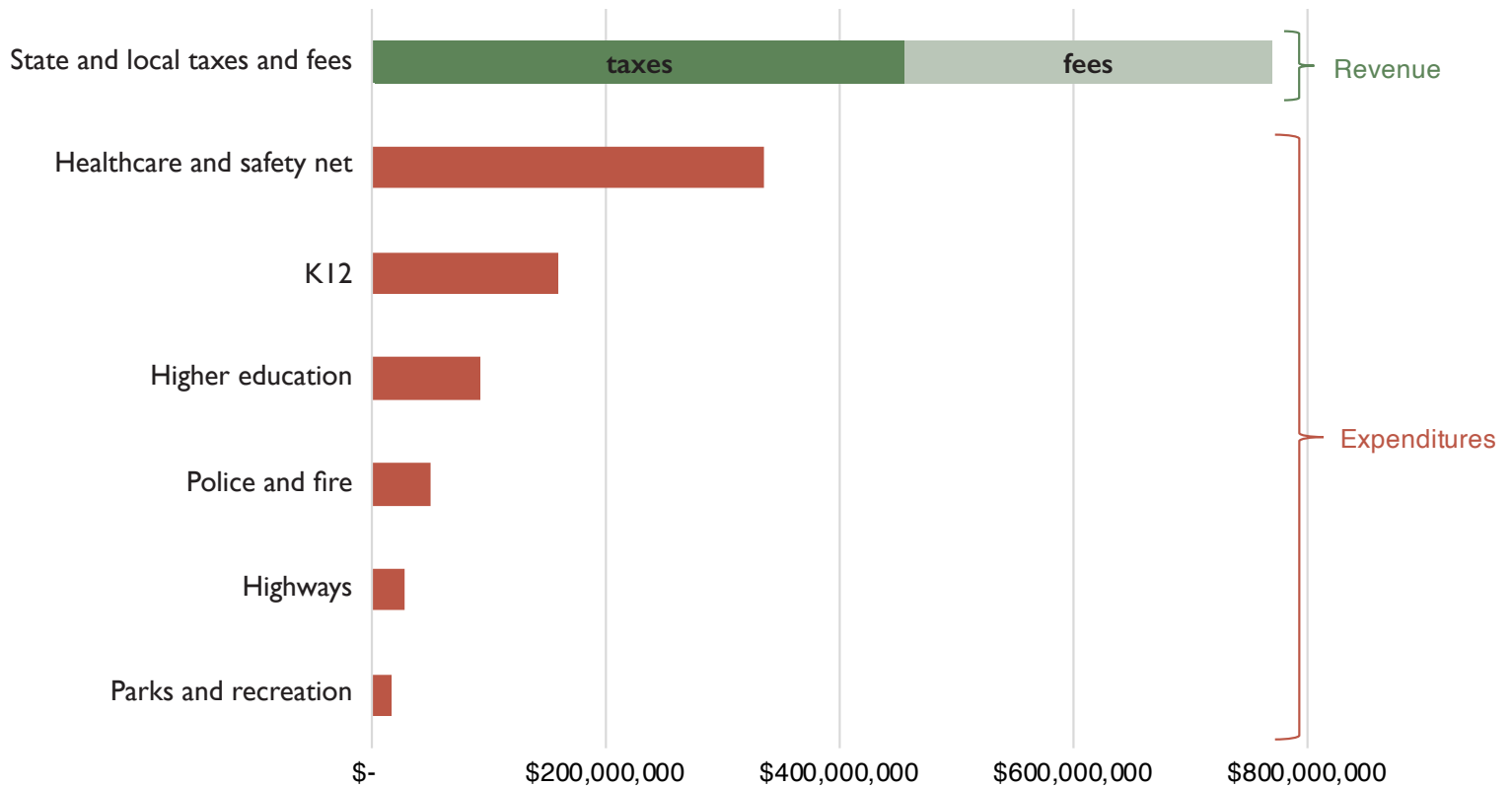


### Exhibit 14. Benefits to Oregon of a 10 percent increase in manufacturing output

|                           |               |
|---------------------------|---------------|
| Total employment increase | 65,610        |
| Population increase       | 22,107        |
| State GDP increase        | \$8.9 billion |
| Personal income increase  | \$4.7 billion |

Data source: Regional Economic Models, Inc. (REMI)

### Exhibit 15. Estimated annual fiscal and service impacts of a 10 percent increase in manufacturing output



Data sources: Regional Economic Models, Inc. (REMI); U.S. Census Bureau Annual Survey of State and Local Government Finances, compiled by the Urban Institute; Oregon Quality Education Model

# CONCLUSION

## It's difficult to overstate the importance of the manufacturing sector to the state's outlook.

Manufacturers sit at the center of the traded sector, are highly productive, draw on diverse supply chains of businesses of all sizes, and generally compensate their workers well. The state's manufacturers have outperformed national GDP and employment growth trends throughout the last two decades. The sector supports jobs across the state, drives demand in other industries, and supports the provision of public services. For all these reasons, a healthy manufacturing sector is an important precondition to a thriving Oregon economy.

The pandemic disrupted global supply chains and underscored the importance of maintaining a

strong domestic manufacturing sector. Constrained supplies of the components of COVID-19 testing kits and personal protective equipment got the attention of elected leaders and public health officials. The pandemic has led to a renewed national focus on supply chain resiliency and reshoring opportunities.

Oregon has evolved into a manufacturing leader during the past half century and now has an opportunity to continue to lead and grow equitably in a new era of policy and investment. Seizing the new opportunity—attracting a better-than-fair share of the domestic manufacturing job growth—will require focused state and regional strategies and reexamination of tax, regulatory, and investment policies that help and hinder the sector's competitiveness.

## ENDNOTES

- 1 <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/02/24/executive-order-on-american-supply-chains>
- 2 The regions for this study are: Central (Deschutes County), East/Southeastern (Umatilla, Union, Wallowa, Baker, Malheur, Harney, Lake, and Klamath counties), North Central (Hood River, Wasco, Sherman, Gilliam, Morrow, Jefferson, Wheeler, Grant, and Crook counties), North Coast (Clatsop, Columbia, Tillamook, and Lincoln counties), Portland Metro (Washington, Multnomah, and Clackamas counties), Southwest (Douglas, Coos, Curry, Josephine, and Jackson counties), and Willamette Valley (Yamhill, Polk, Marion, Benton, Linn, and Lane counties).
- 3 U.S. Bureau of Economic Analysis
- 4 U.S. Census Bureau, ACS PUMS, 1-Year Estimates, 2019
- 5 Ibid.
- 6 Ibid.
- 7 Ibid.
- 8 Ibid.
- 9 Ibid.
- 10 Based on Regional Economic Models, Inc. (REMI) modeling, a 10 percent increase in manufacturing output is equivalent to \$8.5 billion; the associated value-add impact in manufacturing is \$4.4 billion.

# ECONorthwest

ECONOMICS • FINANCE • PLANNING

[www.ECONW.com](http://www.ECONW.com)

OREGON  
KON Center  
222 SW Columbia, Suite 1600  
Portland, Oregon 97201  
503-222-6060

WASHINGTON  
Park Place  
1200 Sixth Avenue, Suite 615  
Seattle, WA 98101  
206-823-3060

CALIFORNIA  
706 South Hill  
Suite 1100  
Los Angeles, CA 90014  
213-218-6740

IDAHO  
Eagles Center  
223 North 6th Street, Suite 430  
Boise, ID 83702  
208-918-0617