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Western manufacturing employment: trends and peaks over 30 years

U.S. manufacturing employment has been declining for 40 years, but this trend has not affected all regions equally. This paper examines employment changes in the Western region since 1990 to identify trends in the basket of subindustries unique to the region.

This article examines manufacturing employment in the West as defined by the census region that includes Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.[1] This *Monthly Labor Review* article—the last in a series of four examining long-term trends in U.S. regional manufacturing employment—uses data from the Current Employment Statistics (CES) program to provide an overview and analysis of secular shifts in Western manufacturing employment between 1990 and 2019.

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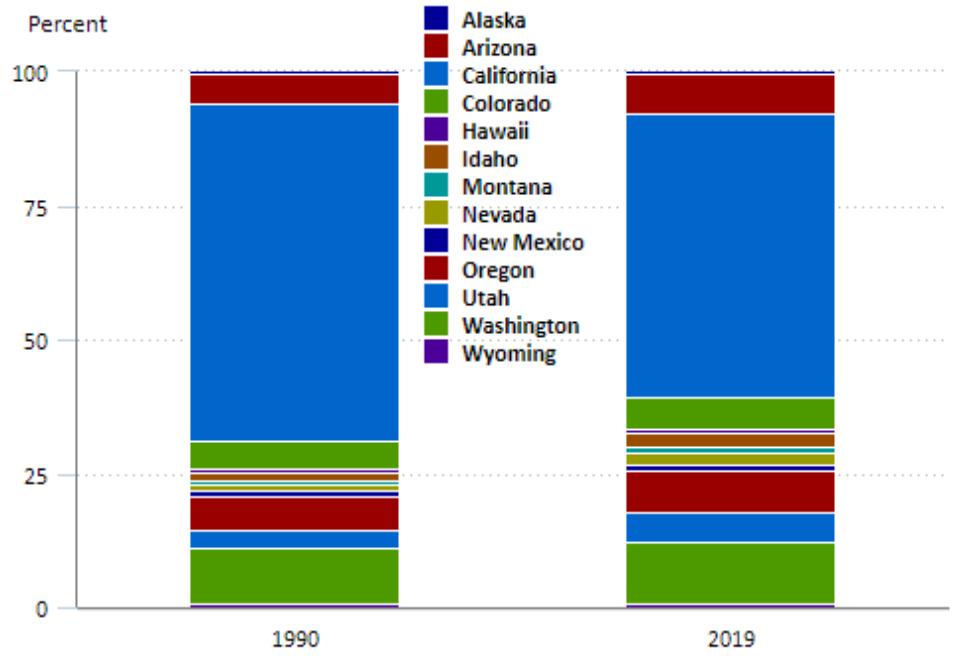
Scope and context

While manufacturing employment peaked nationally in 1979, the peak in the West occurred a decade later in 1989. Like most aggregate trends in this region, the data are heavily influenced by California because of the size of its economy. This regional dominance is illustrated in chart 1, which shows the relative composition of manufacturing employment in the West by state between 1990 and 2019. Excluding California from the aggregate shifts the manufacturing employment peak nearly another decade later to 1998. Nevada and Utah defy the trend, as both were at peak manufacturing employment in 2019. Manufacturing was not the economic foundation upon which employment in the West was founded, and the nature of the underlying mix of industries in the region is such that it may be more resistant to the forces shifting jobs away from the manufacturing industry in the rest of the United States. This article focuses on the period since the overall Western peak—from 1990 on—to examine how this particular mix of industries has performed. Not seasonally adjusted data are used in the analysis, as the focus is on long-term trends rather than month-to-month changes.

Chart 1. State share of manufacturing employment in the Western region, 1990 and 2019



Source: U.S. Bureau of Labor Statistics.

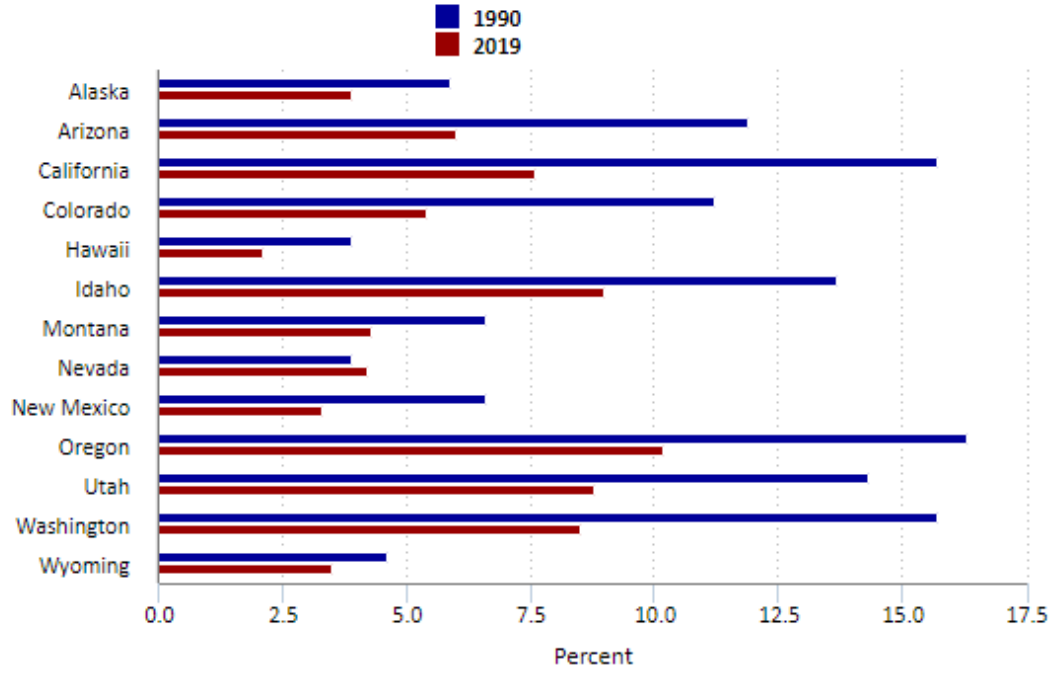
State stories

While the trends in some Western states are increasing, manufacturing employment has been falling in California. Manufacturing in the state peaked in 1989, and employment in the industry has been in consistent decline since, from an annual average of just under 2 million jobs in 1990 to just over 1.3 million in 2019. As a share of total nonfarm employment, manufacturing has steadily dropped from 15.7 percent to 7.6 percent of employment in the state over the same period. The decline is primarily driven by durable goods manufacturing, given that nondurable goods employment did not peak until 1997. Employment in both industries has declined, with losses accelerating through the 2008–09 recession. Manufacturing in California has seen a slow-motion rebound since the recession. Durable and nondurable goods manufacturing showed moderate growth after 2010, but as of 2019 the industries did not employ nearly as many as they did at their peaks. The textile, apparel, and paper manufacturing industries are exceptions to the postrecession growth and have all steadily declined with no sustained upward movement in the past decade.

Examining the remaining 12 states in the West, New Mexico posted declines in manufacturing over the 1990–2019 period, driven by a steady drop in durable goods employment. Likewise, the number of jobs in wood product manufacturing and its component industries fell sharply in both Oregon and Washington. One of the most pronounced examples of manufacturing employment decline in the region comes from Hawaii. Manufacturing is not prominent in the Aloha State, which has the lowest share of manufacturing employment as a percentage of total nonfarm in the region. (See chart 2). Even that small share of employment has declined over time, falling from 3.9 percent in 1990 to 2.1 percent in 2019. Historically, manufacturing employment in the state was concentrated

in nondurable goods production, particularly in food manufacturing. Nationally, food manufacturing employment has posted the most consistent growth of the production industries, making this trend in Hawaii more notable as it has not shown corresponding renewed growth in this sector. Employment has instead shifted into the service economy, which aligns with the comparative advantage that tourism affords the state.

Chart 2: State manufacturing employment as a percentage of state total nonfarm employment, in Western states, 1990 and 2019



Source: U.S. Bureau of Labor Statistics.

In contrast to the declining trends in manufacturing employment in the West, several states and industries showed renewed growth. Fabricated metal product employment experienced strong postrecession growth in the West, most notably in Arizona and Washington. Both of these states surpassed their post-1990 employment peaks. Arizona also saw strong growth in nondurable goods manufacturing jobs. Food manufacturing in Idaho has fully recovered from the 2008–09 recession, with growth above the previous peak in 1993. Fruit and vegetable preserving and specialty food manufacturing is the only published nondurable goods industry in the Gem State to lose employment between 2009 and 2019.

In Montana, nondurable goods employment grew quickly out of the 2008–09 recession compared with its neighboring states. In California, industrial machinery manufacturing also experienced strong employment growth since the 2008–09 recession. Also in California, the dairy product and other food manufacturing industries have both grown steadily since 1990. Neither industry was affected greatly by the 2001 and 2008–09 recessions, with both industries experiencing employment peaks in 2017. Growth has slowed down in the other food manufacturing industry, and dairy products manufacturing employment saw small declines over 2018 and 2019.

One manufacturing industry that had yet to peak in 2019 is beverage manufacturing. Beverage manufacturing in Colorado and beverage and tobacco product manufacturing in California showed strong growth and provided a new source of employment growth in their respective economies. These industries produce soft drinks, bottled

water, and alcohol products like beer and wine. Of these products, beer may the one contributing the most to employment growth. Data from the Brewers Association show that the number of craft breweries operating in California and Colorado more than tripled between 2011 and 2019.[2] California's wine industry is also growing; data from Rabobank show the number of wineries increased 31 percent between 2011 and 2016.[3]

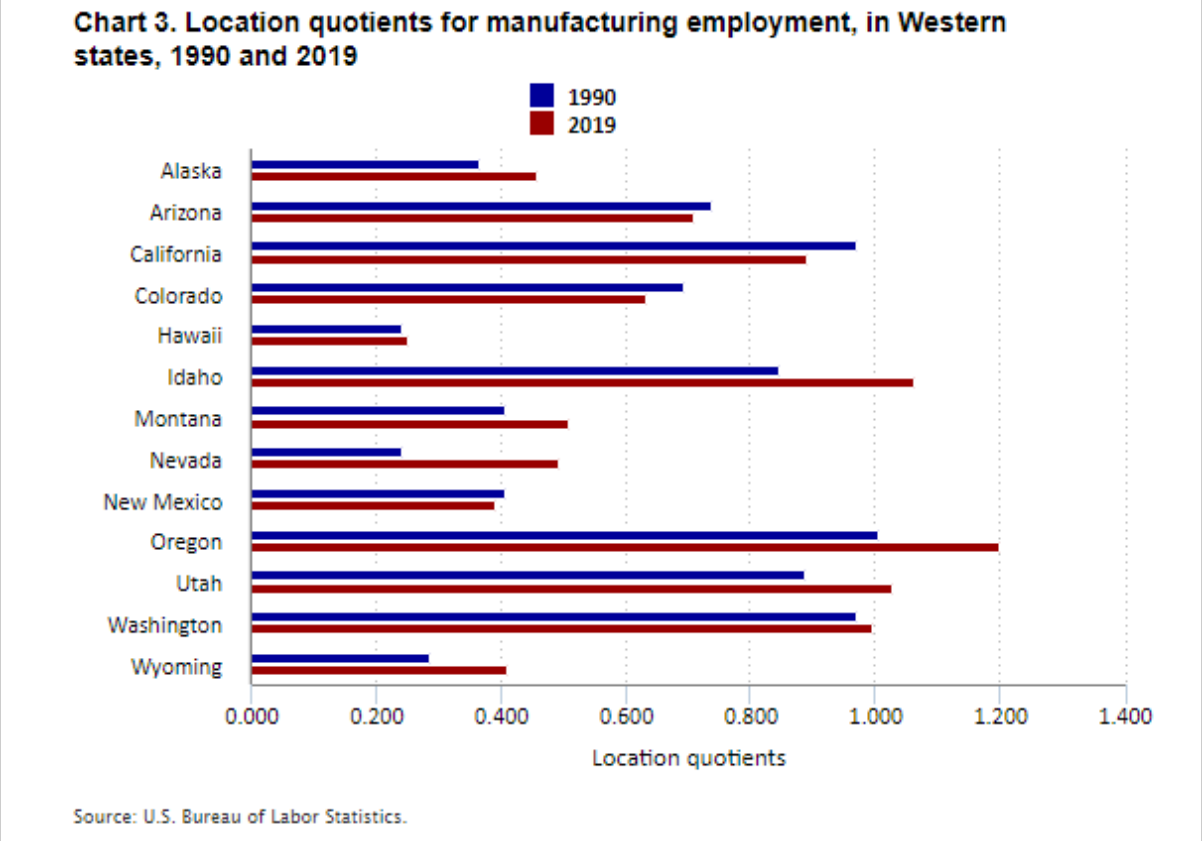
Nevada's durable goods manufacturing employment has more than doubled since 1990. CES does not publish detailed industry employment estimates at a level necessary to pinpoint where this growth is coming from. However, using data from the Quarterly Census of Employment and Wages (QCEW) helps in explaining this large change.[4] QCEW data show a clear shift over the past 3 years in levels of electrical equipment and appliance manufacturing employment. In the early 2010s, the annual average job counts were between 500 and 700, compared with an average of 9,000 in 2018. The number of establishments in the industry grew from 35 to 43 over the same period, indicating that growth in the average number of employees per business is behind this trend, rather than an increase in the number of employers. CES data show that annual average manufacturing employment in the Reno area grew by 11,700 between 2016 and 2019.

Trends versus total nonfarm employment

These stories of new and renewed industry growth run counter to the overall trend in manufacturing employment, so it is important to look at this job growth in the context of broader employment trends in the region. By examining the ratio of manufacturing to total nonfarm employment, we can explore another facet of production's shifting place in the economy over time. In the West region as a whole, the data show that manufacturing is a declining source of employment. Looking at the same ratio at the state level, we see a similar trend, shown in chart 2 as a comparison between 1990 and 2019.

The only state in the West where the ratio of manufacturing employment to total nonfarm employment increased was Nevada. The average annual rate of increase over the 1990–2019 period was less than one tenth of a percentage point. While small, the change is noteworthy because only one other state in the nation saw an increase in this ratio over the same span—North Dakota—and Nevada saw the larger relative increase between the two. This change appears to be driven entirely by the increase in durable goods manufacturing in the Reno metro area.

Manufacturing employment as a share of total nonfarm is, in general, decreasing in the West, but location quotients can help to contextualize this shift with national employment trends. Location quotients are calculated by taking manufacturing's share of total nonfarm employment for each state and dividing it by the share of manufacturing employment at the national level. This ratio describes the relative concentration of employment in the state versus nationally. Values greater than 1.0 indicate a higher concentration. Chart 3 compares the location quotient for states in the West between 1990 and 2019.

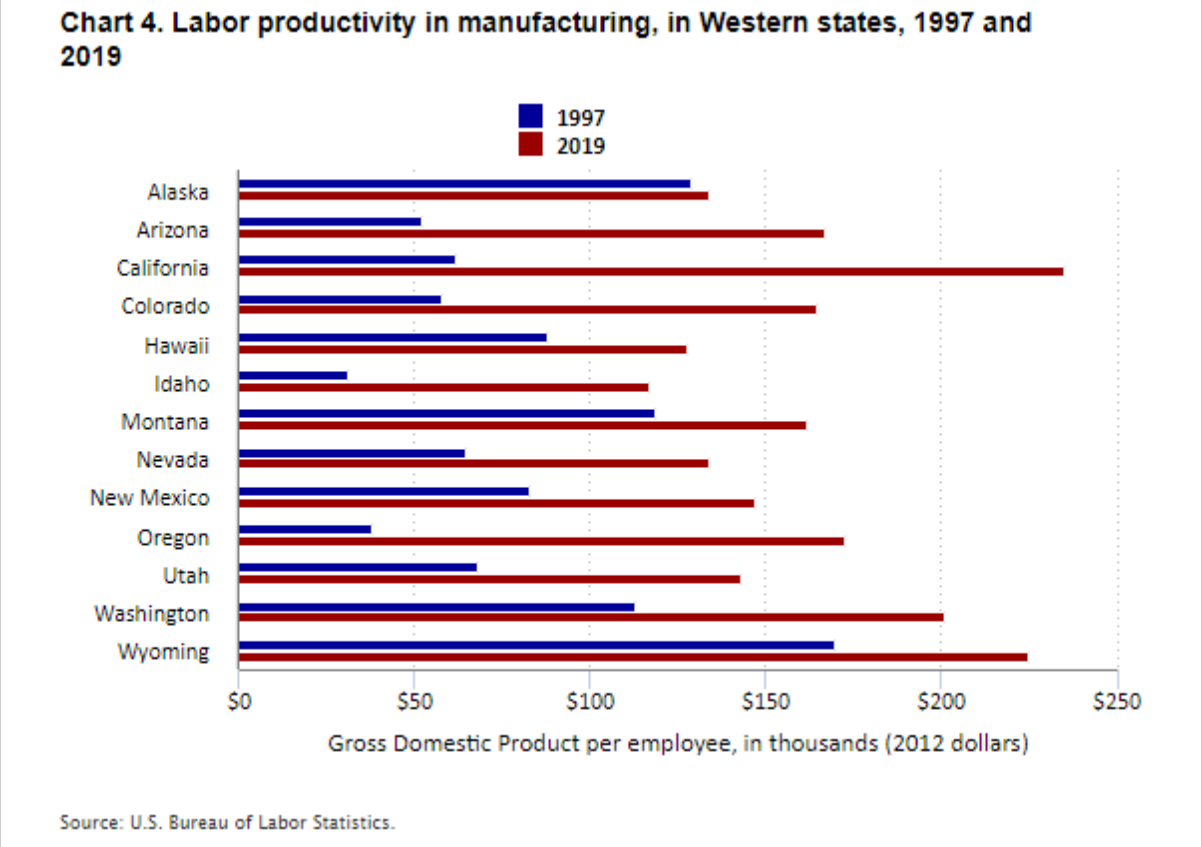


In 1990, Oregon was the only state to have a location quotient over 1.0, illustrating that employment in the West was more concentrated in other sectors of the economy than manufacturing. By 2019, over half of states in the West had retained manufacturing employment better than the rest of the country, as shown by a growing location quotient, despite decreasing shares of manufacturing employment. In 2019, Idaho, Oregon, and Utah each had location quotients over 1.0, with Washington falling just below 1 at 0.995.

Manufacturing productivity

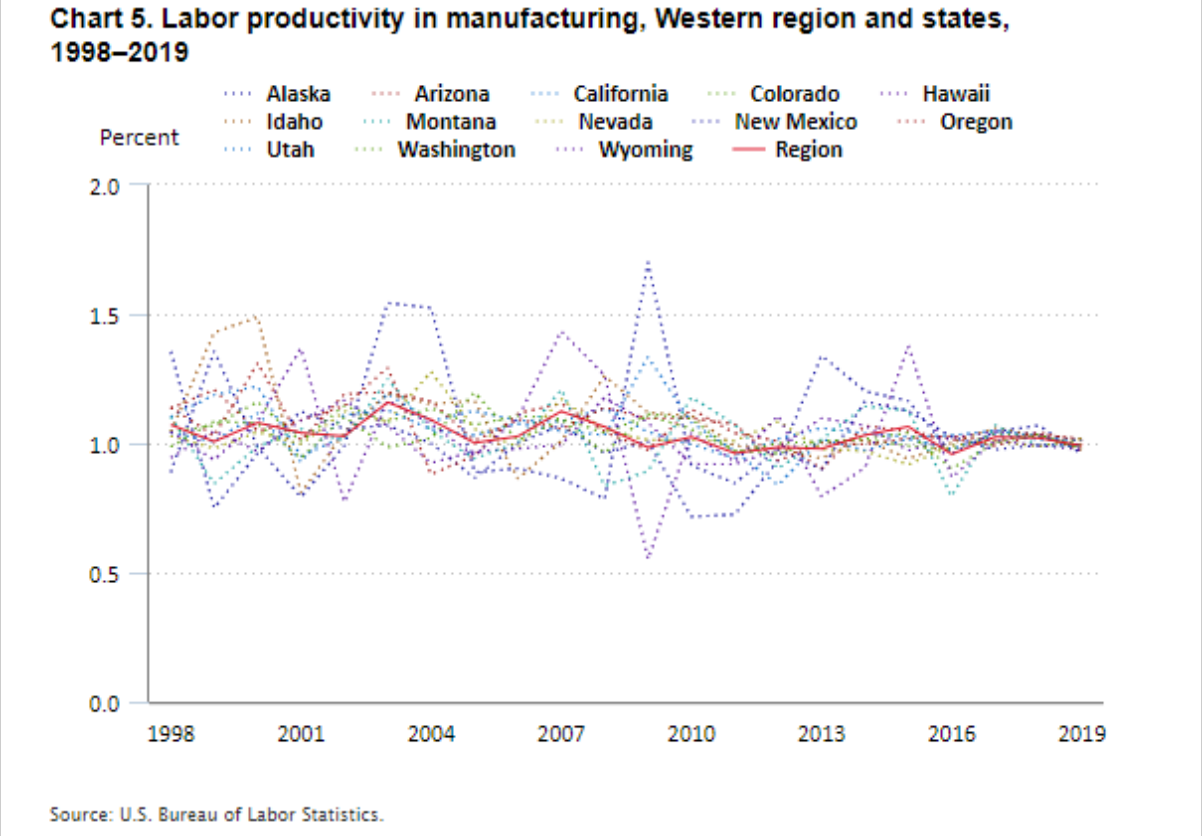
Examining manufacturing productivity tells another side of the economic story. One way to measure productivity is to use the ratio of gross domestic product of an industry to employment in that industry. The Bureau of Economic Analysis (BEA) produces annual real gross output by North American Industry Classification System (NAICS) industry in 2012 dollars.[5] Coupling those data with CES estimates provides an approximation of productivity in dollars per job.[6]

As shown in chart 4, the derived labor productivity measure shows increases in Gross Domestic Product (GDP) per manufacturing job in Western states between 1997 and 2019. Alaska saw the least productivity growth over the 12-year span, with manufacturing GDP only increasing by $5,000 per job. Productivity in Arizona, California, Colorado, and Oregon grew by over $100,000 per job, with California leading the way with a $173,000 increase over the 12-year period.



A prominent driver of the larger increases in manufacturing productivity is computer and electronics production.[7] This assertion is supported by state-level GDP data that show that output by computer and electronics manufacturing accounted for an average of 44 percent and a median of 33 percent of the change in topline manufacturing GDP for states in the West between 1997 and 2017. California and Oregon increased the mean, with the more detailed industry in each of these states growing by 72 percent of the overall increase in manufacturing output over the 20-year period.

Chart 5 displays the regional trends in manufacturing productivity. The red line represents the mean year-over-year percent change in manufacturing productivity for all states in the West region. Values greater than 1 indicate productivity growth. Plots of individual states are represented by dotted lines to contextualize the regional average. There is a distinct downward slope that indicates that productivity growth is slowing, and for most states much of the growth came between 1998 and 2010. The regional average was over 1 between 1998 and 2008, but was above 1 for only 5 of the remaining 10 years. Growth in 2017, 2018, and 2019 leveled off with considerable stabilization in the underlying state data. This manufacturing productivity slowdown is also apparent in national-level productivity statistics.[8]



The picture painted by the decline in manufacturing employment is somewhat complicated by the rise in factory jobs counted outside what is defined as manufacturing under NAICS. For example, if a factory relies heavily on temporary help agencies for its workforce, then that employment will show up under a different industry, administrative and support services (NAICS 561). According to a BLS working paper, almost 10 percent of workers at manufacturing establishments in 2015 had such an employment arrangement.[9]

Conclusion

Though manufacturing employment nationally has been in decline for 40 years, the story in the West is of more recent peaks and declines. While most manufacturing subindustries in the region have seen declining employment trends, there has been growth in specialized manufacturing sectors. It remains to be seen whether these specialized sectors will remain resistant to the factors behind declining manufacturing employment more broadly. Productivity growth driven by increases in computer and electronics output has buoyed the industry, but the trend is that it has been declining. The extent to which this trend continues will write the story of employment in the industry for the next 30 years.

SUGGESTED CITATION

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NOTES

1 For a visual representation of Census regions and divisions of the United States, see https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf.

2 For more information, see "State Craft Beer Sales & Production Statistics," updated annually, https://www.brewersassociation.org/statistics-and-data/state-craft-beer-stats/.

3 Thomas Pellechia, "A 31% Increase In Number Of California Wineries Makes Financial Success That Much Harder," *Forbes*, December 9, 2018, https://www.forbes.com/sites/thomaspellechia/2018/12/09/a-31-increase-in-california-wineries-makes-financial-success-that-much-harder/#562a4f7750e5.

4 For more information on the Quarterly Census of Employment and Wages program, see https://www.bls.gov/cew/questions-and-answers.htm

5 For a general overview of the North American Industry Classification System (NAICS), see https://www.bls.gov/bls/naics.htm/. For current NAICS classifications, see https://www.census.gov/naics/

6 It is important to note the limitations of this productivity estimate and its difference with official productivity measures. Labor productivity is defined as output divided by hours worked, not the total number of jobs. The Labor Productivity and Costs program makes several adjustments and supplements to CES data to derive total hours worked measures. Time series of the necessary inputs to match the total hours worked concept are not readily available at the level of detail of interest and length of time for this analysis. Additionally, output concepts used by the Labor Productivity and Costs and Total Factor Productivity programs differ from Gross Domestic Product by industry. For more information on Labor Productivity and Costs program methodology, see https://www.bls.gov/lpc/iprhours.htm.

7 Susan Houseman, "Understanding the Decline of U.S. Manufacturing Employment," Upjohn Institute Working Paper 18-287, June 1, 2018, https://doi.org/10.17848/wp18-287.

8 Michael Brill, Brian Chansky, and Jennifer Kim, "Multifactor productivity slowdown in U.S. manufacturing," *Monthly Labor Review*, July 2018, https://www.bls.gov/opub/mlr/2018/article/multifactor-productivity-slowdown-in-us-manufacturing.htm.

9 Matthew Dey, Susan Houseman, and Anne Polivka, "Manufacturers' Outsourcing to Temporary Help Services: A Research Update," BLS Working Paper 493, January 2017, https://www.bls.gov/osmr/research-papers/2017/pdf/ec170010.pdf.

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