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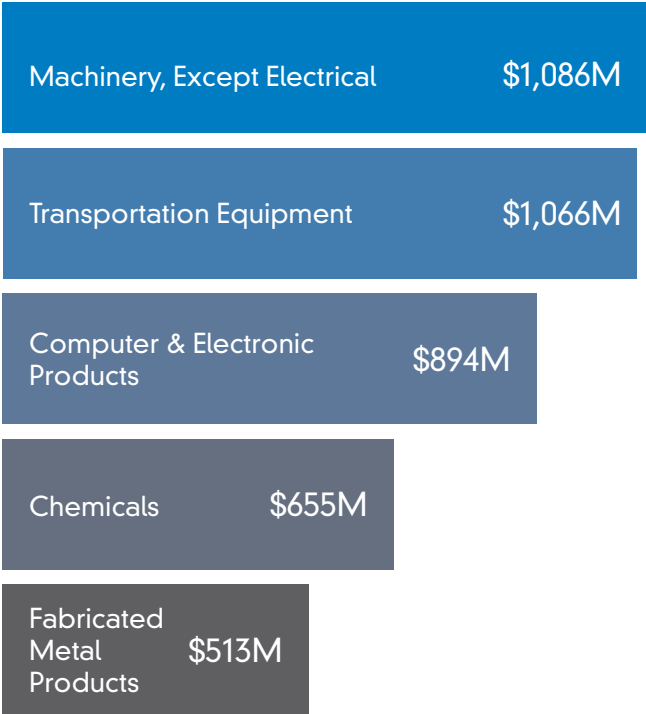
OKLAHOMA MANUFACTURING: A SNAPSHOT

OCTOBER 2019

Snapshot of the Economic Impact of Manufacturing in Oklahoma

Manufacturing contributes to exports in Oklahoma more than any other industry. In 2018, 92.5% of Oklahoma export dollars came from manufacturers. The top five export categories in Oklahoma are all manufacturing goods exports.

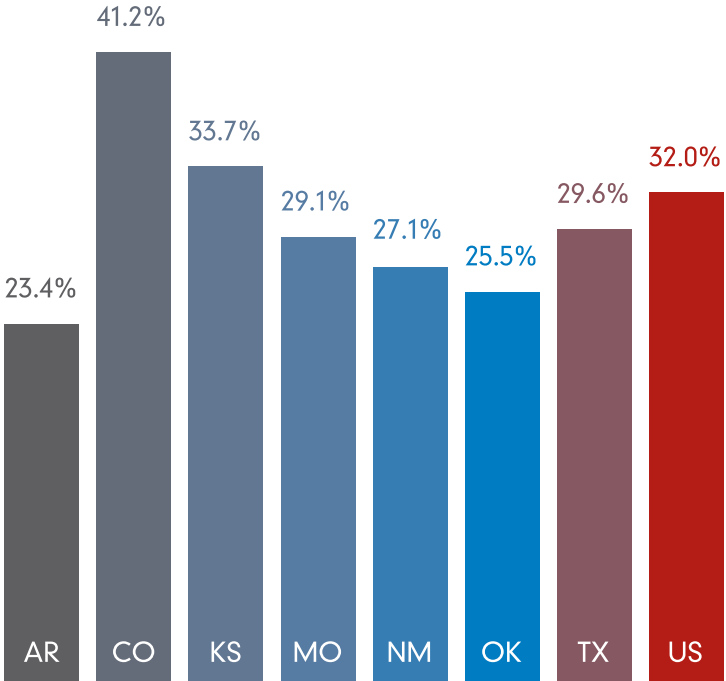
Oklahoma's Top 5 Export Categories in 2018 (Total Exports Value in Millions of U.S. Dollars)



Data Source: U.S. Census Bureau: Economic Indicators Division USA Trade Online. Source: U.S. Import and Export Merchandise trade statistics.

Manufacturing & The Workforce

One of the major reasons that employment in Oklahoma's manufacturing industry is decreasing is the existence of a skills gap. There are many manufacturing jobs that require skills that the existing workforce doesn't have. This problem is not inherently unique to Oklahoma. In the United States, 53 out of 100 open positions remain vacant due to a skills shortage in the U.S. manufacturing industry. In comparison to other states, Oklahoma is behind in terms of educational attainment. Oklahoma ranks 43rd in the percentage of adults age 25 and older with a bachelor's degree or higher.



Percentage of Adults Age 25 and Older with a Bachelor's Degree or Higher (2017) | **Data Source:** U.S. Census Bureau

While a bachelor's degree is not necessary for all manufacturing jobs, some education credential/training beyond a high school diploma is becoming a necessity for most manufacturing jobs.

How do we close the current skills gap in the manufacturing industry?

According to a 2018 study by Deloitte and The Manufacturing Institute, there are many ways that we can fill the skills gap in the future manufacturing workplace. A few solutions with real-life examples are listed below:

Apprenticeship Programs

The Apprenticeship Carolina program in South Carolina is a comprehensive partnership model to build a multi-industry talent pipeline. The program includes partnerships with businesses, education institutions, students, and their parents. It combines high school curriculum and technology training with the essential on-the-job trainings required by businesses. As of October 2019, the program has produced over 32,000 apprentices since 2007, with 1,026 registered programs and 220 youth apprenticeship programs.

Public-Private Partnerships

Fluor Corporation, a multinational engineering and construction firm, has partnered with high schools and the Texas Workforce Commission to provide pre-employment training in skilled workforce areas. The 12-week training courses include 40 hours of employability skills development and are based on NCCER (The National Center for Construction Education and Research) curriculum. After going through this program, the trained graduates are in a better position to be productive for their employers.

In-House Training that Leverages Digital Technology

A German industrial goods company uses advanced digital technology to enhance the skills and productivity of its employees. Through an AI headset, Microsoft HoloLens, the company provides on-the-job training to its 24,000 service engineers. The technology helps them with visual cues on assembling and disassembling the latest company products in a 3D space, and with viewing equipment schematics in the field while being connected with specialists via a Skype call. The technology improved service times by a factor of four. Several other industrial manufacturers also use similar AR technologies to upskill and provide live assistance to their workers.

Manufacturing & Innovation

According to the National Association of Manufacturers (NAM), manufacturers nationwide are exploring a wide variety of disruptive technologies, including additive manufacturing, the cloud, drones, advanced materials, and the Internet of Things (IoT). This technology-driven disruption in the manufacturing sector is having a positive impact on businesses and products.

67%

of manufacturers are making investments in disruptive technologies to drive efficiencies in production.

60%

of manufacturers are investing in disruptive technologies to speed up and improve development.

1/2

of manufacturers are using disruptive technologies to enable new business models/new revenue streams.

61%

of manufacturers are investing in disruptive technologies to differentiate products/service offerings.

2/3

of manufacturers say disruptive technologies are increasing their long-term outlook.

MORE THAN

1/3

of manufacturers have used disruptive technologies to move into completely different markets/product lines.

Some of the challenges that limit investment in disruptive technologies are skills and unnecessary regulation.

ALMOST
40%

of manufacturers cite a skills mismatch.

30%

of manufacturers cite current or proposed government regulations.

Oklahoma manufacturers need to invest in the same disruptive technologies to keep up with the rest of the nation.



The State Chamber Research Foundation is dedicated to public policy research that promotes Oklahoma's growth and success. As the state's leading source for forward-thinking policy research and analysis, we are a driving force in developing public policies that strengthen Oklahoma's future in a competitive, global economy. The State Chamber Research Foundation has provided research for Oklahoma policymakers, businesses and citizens since 1981. An initiative of the State Chamber of Oklahoma, the Research Foundation is committed to providing high-caliber research relevant to policy decisions impacting Oklahoma's economy, health, workforce, business climate and quality of life.

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