

# MANUFACTURING

# PATTERNS IN WISCONSIN MANUFACTURING: EMPLOYMENT AND AUTOMATION



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Manufacturing as a source of employment in Wisconsin has been declining over the last several years. This decline is particularly noticeable in the rural areas of Wisconsin. These declines can be attributed to many factors ranging from a shift from a goods consuming economy to a service consuming one to labor intensive industries moving over-seas seeking cheaper labor to automation where technology is used in place of labor. A recent study by Frey and Osborne (2017) suggests that the trend toward the adoption of new technologies in the form of automation may be the greatest threat to manufacturing employment.

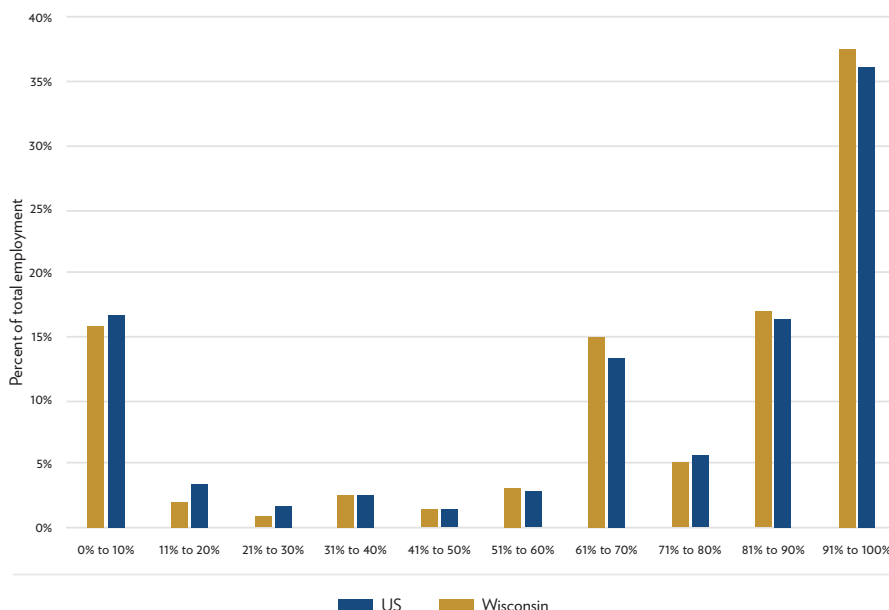
Certainly, employees both locally and nationally face a risk for automation, but Wisconsin's overall manufacturing industry may have a somewhat greater susceptibility. Based on the Frey and Osborne probabilities, almost 70% of employment in the manufacturing sector has an automation probability of 60% or higher (Figure 1). Furthermore, over 37% of Wisconsin's manufacturing sector employment has an automation probability of 91% or higher. With the exception of paper manufacturing, the high probability of automation is also found among Wisconsin's six largest manufacturing subsectors.

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If all of the jobs in Wisconsin manufacturing that have a potential to be automated are indeed automated, it could result in a reduction of 187,000 jobs, or 73% of total manufacturing employment.

While numerous occupations in the manufacturing are at risk for automation at some point, there is no way of knowing how many jobs will actually become automated.

**FIG 1** DISTRIBUTION OF EMPLOYMENT BY PROBABILITY OF AUTOMATION/COMPUTERIZATION



# THE WISCONSIN ECONOMY

When considering the probability of automation by individual occupations within the manufacturing sector, some of the industry’s most numerous occupations have a high probability of automation (Table 1). The largest single manufacturing occupation in Wisconsin is “team assemblers,” which accounts for just over 32,000 jobs. Based on the analysis of Frey and Osborne, there is a 97% probability of these jobs being replaced by automation.

What is important to note is that, beyond the potential to lose a large number of manufacturing jobs to automation, a shift in the education and skill sets that will be required. Many of the occupations that are most at risk, such as assemblers and laborers, tend to require modest levels of formal education. But occupations that require higher education and skill sets, such as engineers and managers, are less likely to be automated. This shift to greater levels of automation may replace one type of job while at the same time creating new types of jobs, thus requiring more workers with formal education and training in STEM related fields, including computer science and engineering. A Bachelor’s Degree may not be necessary, but an Associate’s Degree in a STEM field may become necessary for jobs in modern manufacturing.

**TABLE 1** | **TOP 25 OCCUPATIONS IN WISCONSIN’S MANUFACTURING SECTOR**

Occupation Category	Total Employment	Probability of Automation	Annual Average Salary
Team Assemblers	32,310	97.0%	\$33,200
First-Line Supervisors of Production and Operating Workers	19,760	1.6%	\$58,420
Laborers and Freight, Stock, and Material Movers, Hand	14,770	85.0%	\$32,580
Machinists	13,080	65.0%	\$42,280
Welders, Cutters, Solderers, and Brazers	13,010	94.0%	\$41,600
Packaging and Filling Machine Operators and Tenders	11,860	98.0%	\$33,700
Inspectors, Testers, Sorters, Samplers, and Weighers	11,340	98.0%	\$39,660
Computer-Controlled Machine Tool Operators, Metal & Plastic	10,220	86.0%	\$42,210
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	10,180	85.0%	\$70,200
Maintenance and Repair Workers, General	8,920	64.0%	\$44,600
Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	8,790	78.0%	\$36,710
Paper Goods Machine Setters, Operators, and Tenders	8,580	67.0%	\$40,790
Electrical and Electronic Equipment Assemblers	8,360	95.0%	\$32,750
Food Batchmakers	8,240	70.0%	\$36,010
Office Clerks, General	7,810	96.0%	\$35,370
Helpers--Production Workers	7,750	66.0%	\$30,790
Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	7,500	91.0%	\$36,150
Mechanical Engineers	7,340	1.1%	\$74,470
Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	7,290	95.0%	\$34,390
Shipping, Receiving, and Traffic Clerks	6,970	98.0%	\$36,180
Customer Service Representatives	6,900	55.0%	\$38,990
Industrial Machinery Mechanics	6,790	67.0%	\$49,860
Packers and Packagers, Hand	6,750	38.0%	\$28,700
Printing Press Operators	6,750	83.0%	\$39,020
Industrial Engineers	6,720	2.9%	\$74,670

Frey, Carl Benedikt, and Michael A. Osborne. “The future of employment: how susceptible are jobs to computerisation?.” Technological

Forecasting and Social Change 114 (2017): 254-280.

