

### Manufacturing Industry Profile

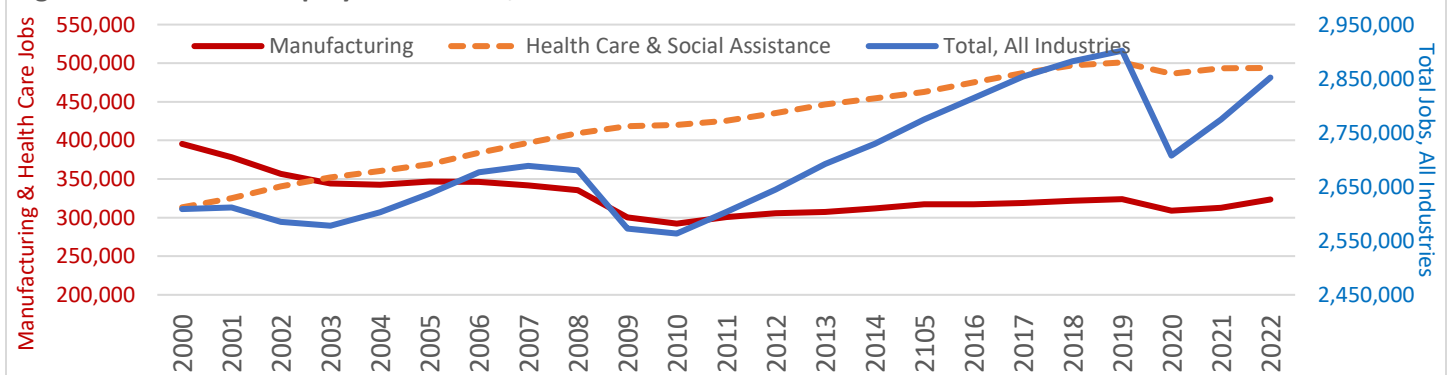
Until being passed by the Health Care industry in the early 2000’s, Manufacturing had been the largest employing industry in the state. With 323,365 jobs at 8,551 employer establishments, Manufacturing is still second largest, and has the second largest payroll. With average annual wages of \$77,000, wages are about \$7,000 above the total of all industries, but are highest in subsectors like Computer & Electronic Product Manufacturing, Chemical Manufacturing, and Petroleum & Coal Products Manufacturing.

Unlike most other industries, Manufacturing fared relatively well during the pandemic recession, and has regained jobs slightly faster than the economy overall in the past year; and is also projected to see slight growth over the next 10 years as the recovery continues. However, this also varies by sector, with areas like Food, Fabricated Metal Product, Miscellaneous, Chemical, and Machinery Manufacturing expected to add jobs while specialties like Printing, Paper, Textiles, and Apparel Manufacturing projected to decline (see Table 1 and Figure 1).

NAICS Industry Title	Number of Establishments	Annual Data 2022		Avg. Annual Wage	Change in Jobs, 2021-2022		Change in Jobs, 2019-2022	
		Number of Jobs	Total Payroll		Number	Percent	Number	Percent
Total, All Industries	199,603	2,851,778	\$198,839,398,672	\$69,725	+77,490	+2.8%	-49,854	-1.7%
Manufacturing	8,551	323,365	\$24,881,122,907	\$76,944	+10,427	+3.3%	-576	-0.2%
Food Manufacturing	751	47,307	\$2,962,442,781	\$62,622	+1,230	+2.7%	+761	+1.6%
Fabricated Metal Product Mfg.	1,582	44,823	\$3,204,182,021	\$71,485	+1,252	+2.9%	+148	+0.3%
Computer & Electronic Product Mfg.	529	43,253	\$4,622,259,578	\$106,866	+775	+1.8%	-2,319	-5.1%
Machinery Manufacturing	847	35,395	\$2,741,643,508	\$77,458	+1,708	+5.1%	+1,552	+4.6%
Miscellaneous Manufacturing	1,201	27,407	\$2,183,282,658	\$79,661	+1,535	+5.9%	+959	+3.6%
Plastics & Rubber Products Mfg.	369	18,136	\$1,241,962,433	\$68,481	+699	+4.0%	+1,227	+7.3%
Printing & Related Support Activities	693	17,738	\$1,177,458,992	\$66,381	+305	+1.7%	-2,706	-13.2%
Chemical Manufacturing	295	12,975	\$1,332,274,534	\$102,680	+227	+1.8%	+602	+4.9%
Wood Product Manufacturing	354	12,760	\$836,503,163	\$65,557	+796	+6.7%	+1,019	+8.7%
Transportation Equipment Mfg.	233	11,813	\$789,048,210	\$66,795	+654	+5.9%	+517	+4.6%
Nonmetallic Mineral Product Mfg.	349	9,859	\$718,613,315	\$72,889	-75	-0.8%	-544	-5.2%
Furniture & Related Product Mfg.	481	9,588	\$643,909,804	\$67,158	+282	+3.0%	+143	+1.5%
Paper Manufacturing	100	8,068	\$663,780,826	\$82,273	-16	-0.2%	-518	-6.0%
Electrical Equipment & Appliance Mfg.	183	7,428	\$620,081,617	\$83,479	+208	+2.9%	-1,171	-13.6%
Primary Metal Manufacturing	89	5,246	\$388,113,533	\$73,983	+185	+3.7%	-799	-13.2%
Beverage & Tobacco Product Mfg.	234	5,018	\$233,403,732	\$46,513	+494	+10.9%	+636	+14.5%
Textile Product Mills	135	2,453	\$118,065,568	\$48,131	+21	+0.9%	-31	-1.2%
Petroleum & Coal Products Mfg.	20	1,954	\$274,834,541	\$140,652	+127	+7.0%	-3	-0.2%
Leather & Allied Manufacturing	24	1,072	\$82,608,235	\$77,060	-62	-5.5%	-108	-9.2%
Apparel Manufacturing	71	668	\$26,688,724	\$39,953	+7	+1.1%	+1	+0.1%
Textile Mills	13	398	\$19,965,134	\$50,164	+72	+22.1%	+57	+16.7%

Source: DEED Quarterly Census of Employment & Wages

Figure 1. Minnesota Employment Trends, 2000-2022



Source: DEED Quarterly Census of Employment & Wages

Most of the occupations in demand in manufacturing can be started with a high school diploma and some amount of on-the-job training, though employers prefer postsecondary training for some occupations such as Machinists, Welders, Industrial Machinery Mechanics, CNC Machine Tool Programmers, and more. Professional occupations such as Industrial Engineers, Industrial Production Managers, and Mechanical Engineers require a bachelor’s degree.

**Table 2. Top 25 Occupations in the Manufacturing Industry**

SOC Code	SOC Occupational Title	Current Demand Indicator	Median Hourly Wage	Median Annual Wage	2020-2030 Percent Growth	2020-2030 Total Growth	Typical Educational Requirement
512090	<a href="#">Miscellaneous Assemblers &amp; Fabricators</a>	★★★★★	\$19.68	\$40,914	-8.4%	+29,512	<a href="#">High school or equiv.</a>
511011	<a href="#">First-Line Supervisors of Production Workers</a>	★★★★★	\$32.94	\$68,520	+3.7%	+12,276	<a href="#">High school or equiv.</a>
537062	<a href="#">Laborers &amp; Freight &amp; Material Movers, Hand</a>	★★★★★	\$19.92	\$41,416	+6.5%	+58,224	<a href="#">High school or equiv.</a>
519061	<a href="#">Inspectors, Testers, Samplers, &amp; Weighers</a>	★★★★★	\$23.89	\$49,678	-12.0%	+10,264	<a href="#">High school or equiv.</a>
519111	<a href="#">Packaging &amp; Filling Machine Operators</a>	★★★★★	\$18.98	\$39,465	+4.6%	+9,703	<a href="#">High school or equiv.</a>
514041	<a href="#">Machinists</a>	★★★★★	\$25.70	\$53,440	+6.9%	+11,713	<a href="#">Postsecondary award</a>
514121	<a href="#">Welders, Cutters, Solderers, &amp; Brazers</a>	★★★★★	\$25.03	\$52,075	+7.7%	+11,233	<a href="#">High school or equiv.</a>
111021	<a href="#">General &amp; Operations Managers</a>	★★★★★	\$43.50	\$90,481	+6.9%	+38,082	<a href="#">Bachelor's degree</a>
512028	<a href="#">Electrical &amp; Electromechanical Assemblers</a>	★★★★★	\$19.76	\$41,101	+4.1%	+8,403	<a href="#">High school or equiv.</a>
414012	<a href="#">Sales Representatives, Wholesale &amp; Mfg.</a>	★★★★★	\$36.95	\$76,857	+2.9%	+31,987	<a href="#">High school or equiv.</a>
435071	<a href="#">Shipping, Receiving, &amp; Inventory Clerks</a>	★★★★★	\$21.07	\$43,818	-6.6%	+10,757	<a href="#">High school or equiv.</a>
172112	<a href="#">Industrial Engineers</a>	★★★★★	\$48.01	\$99,846	+11.2%	+7,876	<a href="#">Bachelor's degree</a>
499041	<a href="#">Industrial Machinery Mechanics</a>	★★★★★	\$31.45	\$65,425	+18.9%	+8,965	<a href="#">Postsecondary award</a>
499071	<a href="#">Maintenance &amp; Repair Workers, General</a>	★★★★★	\$24.39	\$50,729	+4.6%	+22,553	<a href="#">High school or equiv.</a>
514031	<a href="#">Cutting, Punching, &amp; Press Machine Setters</a>	★★★★★	\$22.80	\$47,438	-2.3%	+4,582	<a href="#">High school or equiv.</a>
537051	<a href="#">Industrial Truck &amp; Tractor Operators</a>	★★★★★	\$22.33	\$46,452	+4.0%	+10,386	<a href="#">High school or equiv.</a>
113051	<a href="#">Industrial Production Managers</a>	★★★★★	\$50.97	\$106,014	+4.6%	+3,867	<a href="#">Bachelor's degree</a>
439061	<a href="#">Office Clerks, General</a>	★★★★★	\$21.69	\$45,119	-3.3%	+53,694	<a href="#">High school or equiv.</a>
514072	<a href="#">Molding, Coremaking &amp; Casting Machine Setters</a>	★★★★★	\$20.08	\$41,779	-3.1%	+3,351	<a href="#">High school or equiv.</a>
519162	<a href="#">Computer Numeric Controlled Tool Programmers</a>	★★★★★	\$32.52	\$67,655	+25.5%	+1,860	<a href="#">Postsecondary award</a>
533032	<a href="#">Heavy &amp; Tractor-Trailer Truck Drivers</a>	★★★★★	\$28.11	\$58,460	+4.1%	+43,441	<a href="#">High school or equiv.</a>
537064	<a href="#">Packers &amp; Packers, Hand</a>	★★★★★	\$16.75	\$34,849	+1.2%	+10,847	<a href="#">High school or equiv.</a>
172141	<a href="#">Mechanical Engineers</a>	★★★★★	\$40.98	\$85,224	+6.0%	+4,971	<a href="#">Bachelor's degree</a>
434051	<a href="#">Customer Service Representatives</a>	★★★★★	\$22.26	\$46,307	-4.4%	+68,803	<a href="#">High school or equiv.</a>
513092	<a href="#">Food Batchmakers</a>	★★★★★	\$17.11	\$35,589	+6.1%	+6,263	<a href="#">High school or equiv.</a>

*Source: DEED Occupations in Demand*

The recent recovery in Manufacturing employment has led to an increased number of [job vacancies](#) across the state. The 18,987 job vacancies reported by Manufacturing employers in the second quarter of 2022 was the highest number ever recorded following the record set in the fourth quarter of 2021. It was the fourth largest number of any industry, after Health Care & Social Assistance (45,230), Retail Trade (28,477), and Accommodation & Food Services (25,894). This shows the tremendous levels of demand for manufacturing workers following the pandemic, with the number of vacancies in 2022 passing 9 times higher than the low point in 2009 during the Great Recession (see Figure 2). There were around 11,000 Manufacturing vacancies in 2019. The median wage offer for these vacancies increased to \$19.99 per hour in the second quarter of 2022, up nearly \$2 per hour compared to the same survey in the second quarter of 2019, and up nearly \$0.75 from the second quarter of 2021.



About one-quarter (24%) of the Manufacturing vacancies required postsecondary education and just 15% required a certificate or license, compared to 32% and 38% of all vacancies, respectively. Manufacturing employers continue to place a high premium on related work experience, especially in comparison to other industries, with just over half (51%) requiring at least 1 year of work experience. Just 13% of the openings were part-time, as compared to 37% of vacancies across all industries (see Table 3).

NAICS Industry Title	Number of Job Vacancies	Median Wage Offer	Percent Part-time	Percent Requiring Postsecondary Education	Percent Requiring 1+ Years Work Exp.	Percent Requiring Certificate or License
Total, All Industries	184,588	\$18.32	37%	32%	47%	38%
Manufacturing	18,987	\$19.99	13%	24%	51%	15%

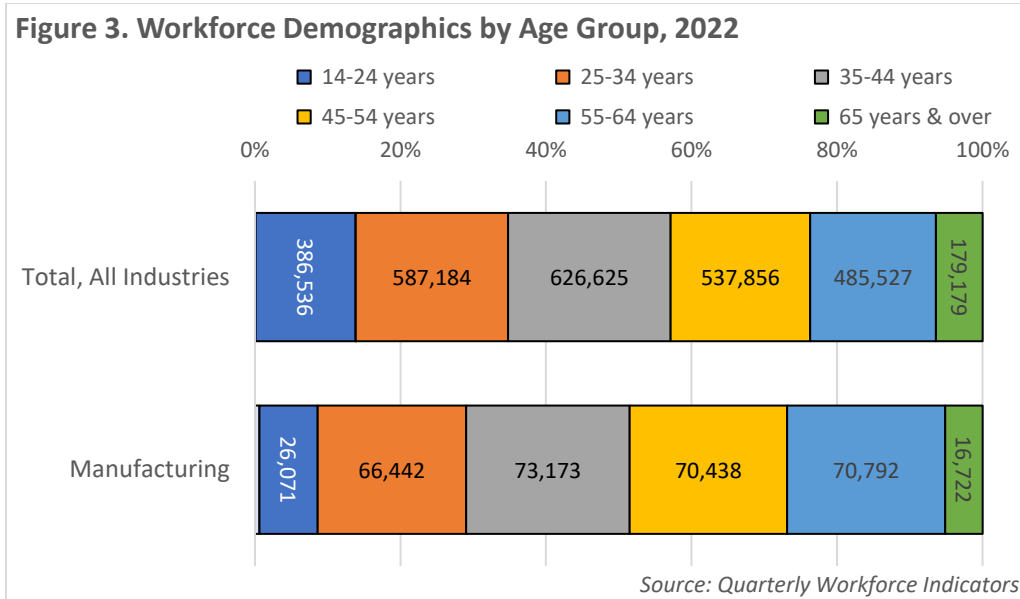
Source: DEED [Job Vacancy Survey](#)

The largest number of vacancies were for Production occupations, including Machinists, Miscellaneous Assemblers & Fabricators, Helpers, and Welders, as well as engineering and management occupations such as Industrial Engineers, Industrial Production Managers, and Mechanical Engineers. The median wage offer for these positions ranged from \$15 an hour up to more than \$45 per hour. In most cases, less than 20% of the vacancies required postsecondary education, with the exception of the engineering occupations (see Table 4).

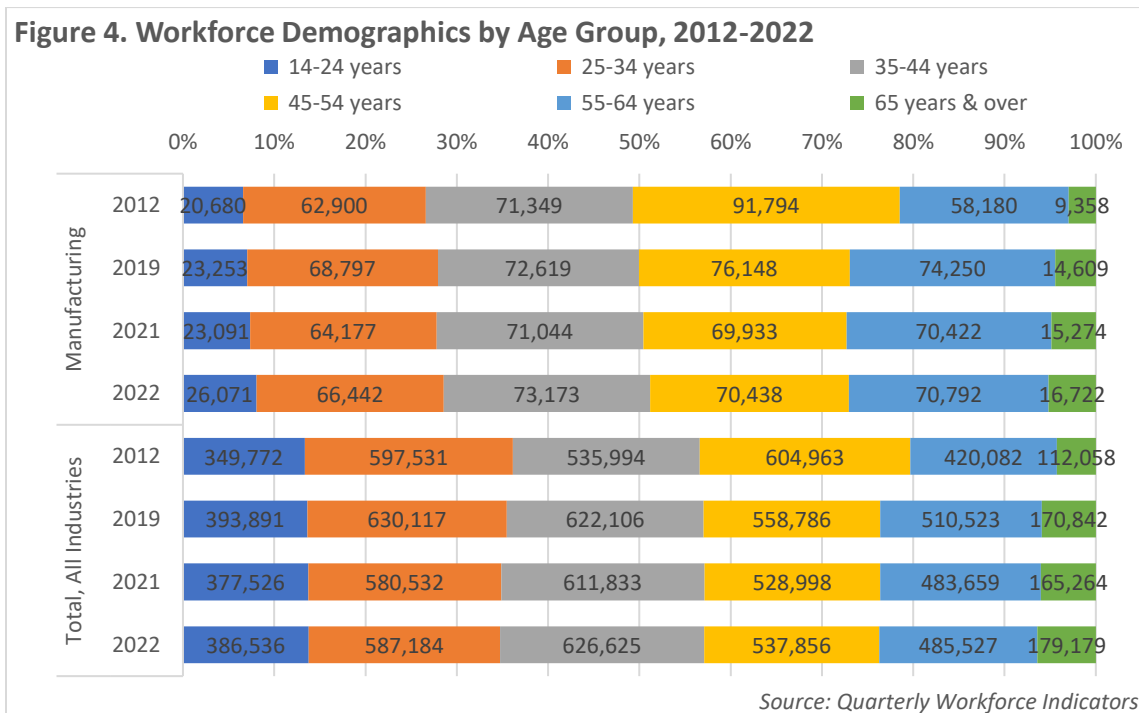
SOC Code	SOC Occupational Title	Number of Vacancies	Median Wage Offer	Percent Requiring Postsecondary Education	Percent Requiring Work Experience
0	Total, All Occupations	184,588	\$18.32	32%	47%
510000	Production Occupations	11,273	\$18.25	9%	36%
514041	Machinists	1,289	\$30.58	20%	91%
512090	Miscellaneous Assemblers & Fabricators	1,165	\$15.23	0%	11%
414012	Sales Representatives, Wholesale & Manufacturing	1,020	\$25.33	39%	92%
519198	Helpers-Production Workers	905	\$19.18	2%	20%
514121	Welders, Cutters, Solderers & Brazers	699	\$19.95	11%	56%
172112	Industrial Engineers	632	\$37.86	99%	91%
511011	First-Line Supervisors or Production Workers	523	\$26.85	29%	74%
537061	Cleaners of Vehicles & Equipment	428	\$15.93	1%	2%
513011	Bakers	422	\$15.01	0%	11%
537064	Packers & Packagers, Hand	393	\$15.91	0%	3%
537051	Industrial Truck & Tractor Operators	391	\$20.67	1%	29%
513022	Meat, Poultry & Fish Cutters & Trimmers	380	\$17.44	0%	1%
515112	Printing Press Operators	370	\$20.29	18%	59%
519161	Computer Numeric Controlled Machine Tool Operators	335	\$16.95	16%	26%
512028	Electrical & Electromechanical Assemblers	323	\$19.04	3%	52%
113051	Industrial Production Managers	320	\$41.63	58%	100%
517041	Sawing Machine Setters & Operators	319	\$16.91	0%	0%
517011	Cabinetmakers & Bench Carpenters	315	\$15.92	0%	9%
519111	Packaging & Filling Machine Operators	300	\$21.42	0%	15%
517042	Woodworking Machine Setters & Operators	299	\$15.81	0%	0%
514031	Cutting, Punching & Press Machine Setters	288	\$17.83	4%	20%
435061	Production, Planning & Expediting Clerks	280	\$20.60	51%	66%
519124	Coating, Painting & Spraying Machine Setters	275	\$18.42	5%	27%
172141	Mechanical Engineers	269	\$46.07	99%	91%

Source: DEED [Job Vacancy Survey](#)

New graduates and other jobseekers will be important in filling the workforce pipeline in the Manufacturing industry. The Manufacturing industry relies more heavily on workers aged 45 years and older, with nearly half (48.8%) of workers in the oldest age groups, compared to 42.9% across all industries. Because of the work experience requirements, just 8.1% of all workers in Manufacturing are under 25 years of age, compared to 13.8% across all industries (see Figure 3).

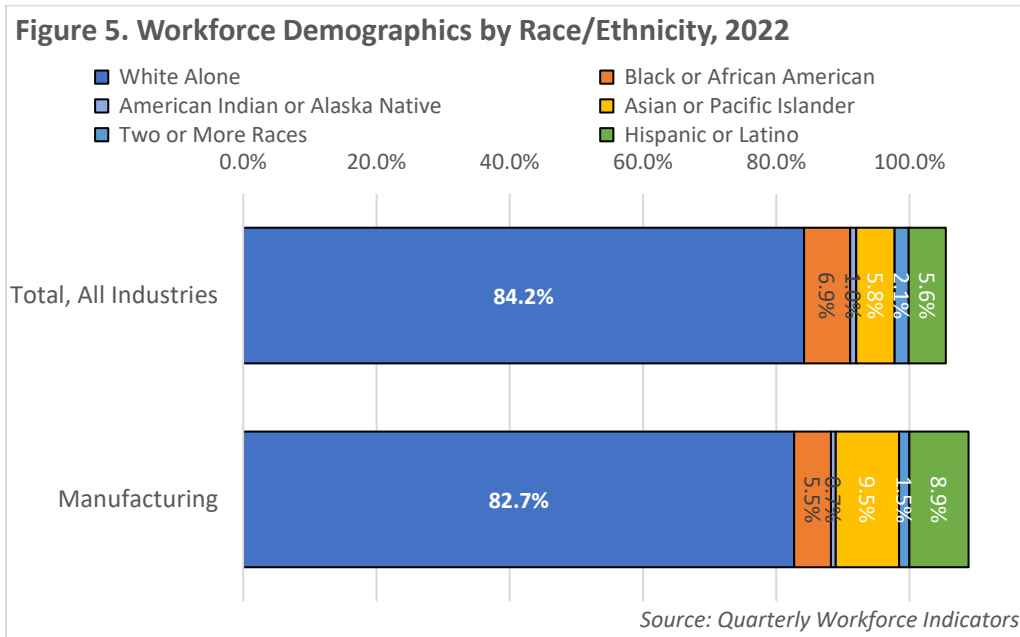


The workforce overall and the Manufacturing workforce have been aging over the past decade. In 2012, about 21.5% of the Manufacturing workforce was 55 years or older, compared to 20.3% across all industries. By 2019, 27% of the Manufacturing workforce was 55 or older, well above the 23.6% rate across all industries. (see Figure 4.)

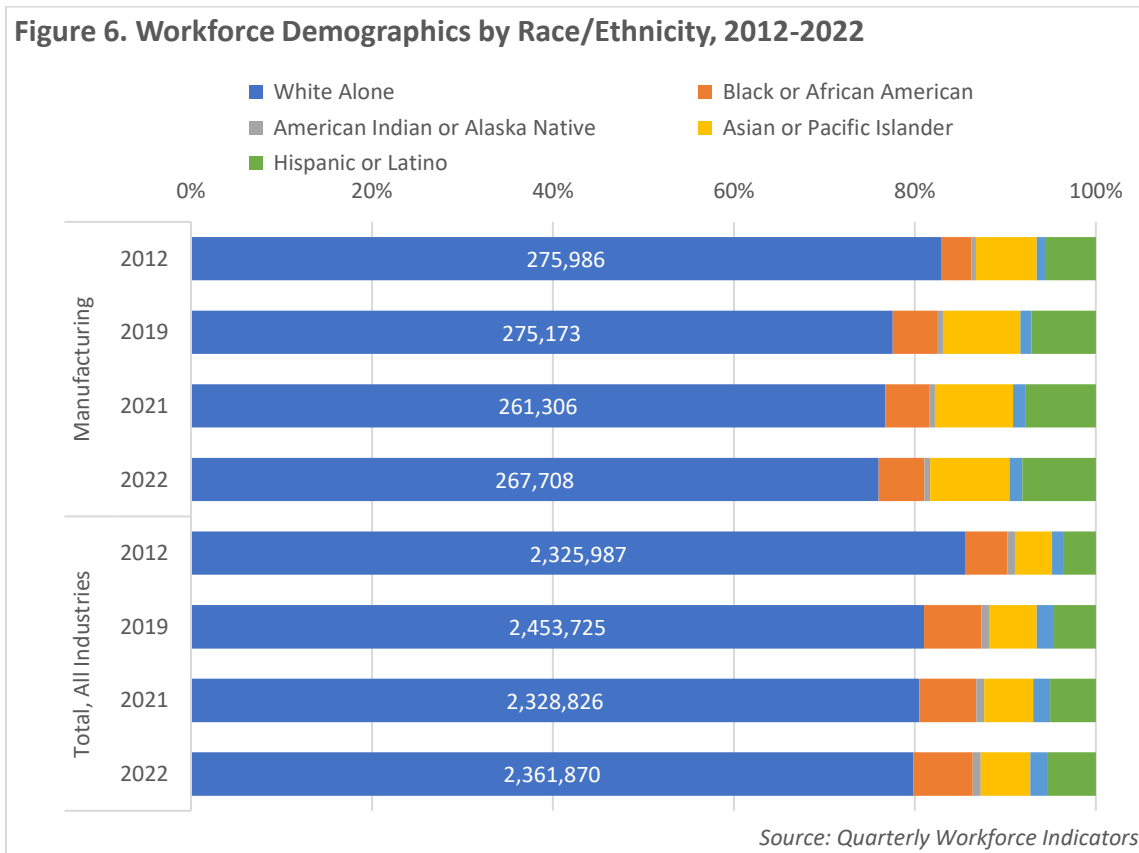


Further demographic data from Quarterly Workforce Indicators shows that the Manufacturing industry has become much more racially diverse over time, and is now one of the more racially diverse industries in the state, with 82.7% reporting white as their race compared to 84.2% overall.

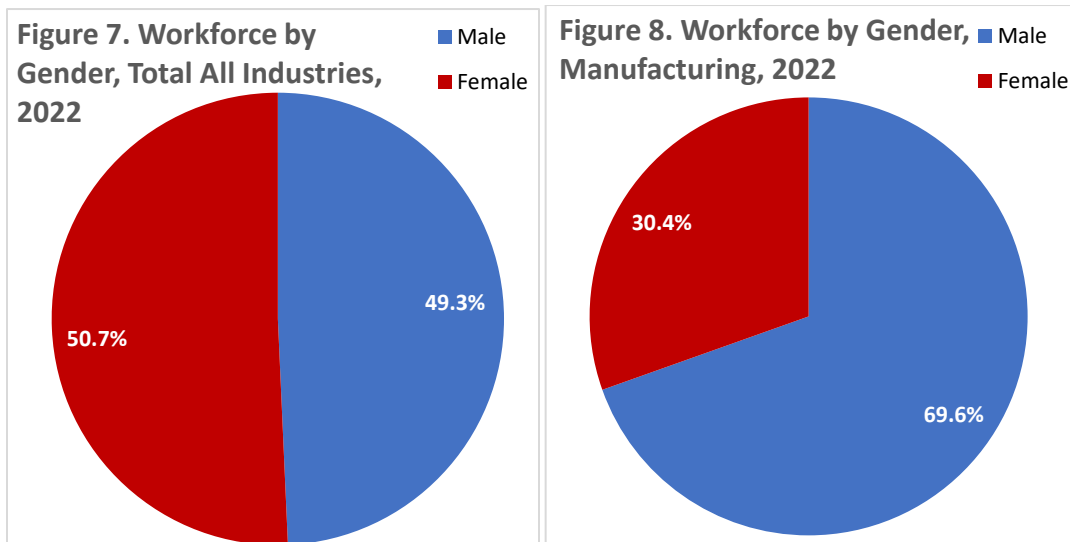
Manufacturing has higher concentrations of workers who are Asian or Pacific Islanders and of Hispanic or Latino origin, but smaller concentrations of Black or African American and American Indian workers (see Figure 5).



The racial diversity of the workforce has changed over time, with the number of Manufacturing workers identifying as white alone declining by -3.0% from 2012 to 2022, compared to a 48.4% increase in the number of jobholders of other race or other ethnic groups (see Figure 6).



Manufacturing is a male dominated industry, with males holding more than two-thirds of total jobs, compared to a nearly 50-50 split across all industries (see Figure 7 and 8). In the face of tight labor markets, Manufacturing employers will need to continue to tap into new labor pools in order to attract the talent they need to grow and replace existing workers in the future.



**RESOURCES**

The Manufacturing Business Conditions Survey attempts to gauge the sentiments of Minnesota manufacturers concerning themselves and the state economy. <https://mn.gov/deed/data/economic-analysis/biz-conditions-survey/>

Enterprise Minnesota conducts The State of Manufacturing® as an annual survey of Minnesota manufacturing executives that reveals the latest trends in key business areas including growth, workforce, supply chain, economic confidence, and more. Each year, over 535 manufacturing executives are surveyed, representing a broad mix of manufacturers by region, employee count and annual revenue. <https://www.enterpriseminnesota.org/state-of-manufacturing/>

The Manufacturers Alliance and MPMA completed The Workforce Trends Survey – 2021. This survey covers issues of critical importance to Minnesota manufacturing firms and summarizes comments from 209 companies with a combined total of over 60,000 employees. Participating firms have on average 296 employees (median 107 employees) and an average annual revenue of \$427.4 million (median annual revenue of \$26.7 million). <https://www.mfrall.com/wp-content/uploads/2021/04/2021MfgWorkforceTrendsReport.pdf>

Workforce development is a cornerstone of the [mission](#) of the Minnesota Precision Manufacturing Association. Building a skilled workforce for the manufacturing industry is more important than ever, with over 70% of Minnesota manufacturers saying that the inability to attract qualified workers is limiting their ability to grow. MPMA champions strategies to help manufacturers attract and retain skilled workers and advocates for strengthening technical education to train the next generation. <https://www.mpma.com/page/workforcedevelopment>