

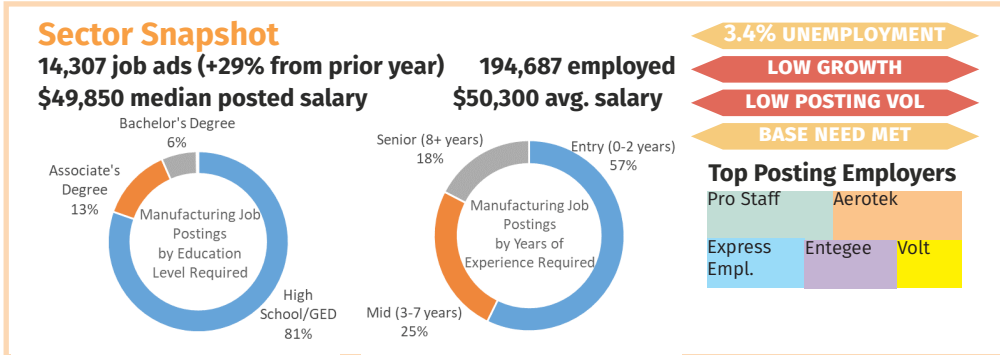
MSP Sector Analysis Manufacturing Needs and Top Strategies

Slowing Employment Growth & Shifting Demographics

Over the past two years alone, the share of manufacturing employees over the age of 55 has dropped from 26% to 21%, and the 25-34 age group has emerged as the largest age demographic. After a steady period of employment growth from 2014-2017 of about 1.7% each year, growth slowed to an average of 1% in 2018 and 2019. Sector unemployment sits at approximately 3.4%, or about 8,000 workers, with 5,541 manufacturing job vacancies (DEED JVS). With 104,529 openings to be filled by the second quarter of 2024, the region needs strategic talent attraction, development, and retention approaches.

Sector Demand in the Minneapolis-Saint Paul Metro, 2019Q2

9,500 POSSIBLE TALENT SHORTAGE BY 2024Q2



Top Strategies in Manufacturing by Key Occupation

Attract & Upskill	Possible 2024 Shortage	Est. Hiring Difficulty	Training Concentration*	Related 2017 Awards	Pathway Impact
Laborers/Material Movers	1,436	Low	-	-	Entry
Machinists**	492	Low	5% (v. low)	3	Dual Trn.
Welders, Cutters, Solderers	260	Low	50% (low)	221	Dual Trn.
Industrial Engineering Techs	178	High	13% (v. low)	45	Dual Trn.
Electrical/Electronic Eng. Techs	173	Moderate	37% (low)	26	Dual Trn.
Packaging/Filling Machine Ops	150	Low	-	-	Entry

Summary of Manufacturing Occupations

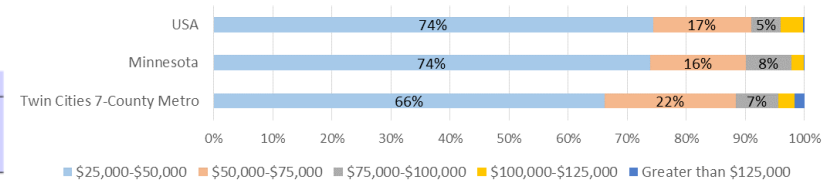
Manufacturing Training Needs	Top Occupations in Shortage by Training Needs (not exhaustive)	Current		5-Year Forecast (2024Q2)			Alternative
		Empl ¹	Online Job Ads ²	Change in Demand	Empl Growth	Ann % Growth	Possible Shortage ³
Entry: Do not require mechanical aptitude or experience, and can be performed after minimal to no on-the-job training	Laborers & Freight Movers; Packers & Packagers; Packaging & Filling Machine Operators; Production Workers	66,147	2,431	43,941	481	0.1%	2,022
Accessible: Require some prior mechanical aptitude and experience plus short-medium training	CNC Operators; Machine Setters; Plant & Machine Tool Operators	30,093	968	14,762	-1,545	-1.0%	502
Skilled: Mechanical aptitude is required; Typically require college or high school technical training	Machinists; Supervisors; Welders; Industrial Machinery Mechanics; Installation & Repair Workers	71,522	3,086	35,225	-411	-0.1%	3,756
Advanced: Engineering and other advanced education positions; Typically require 4+ year degree	Engineers & Engineering Technicians; Industrial Production Managers	26,921	1,519	10,387	475	0.4%	2,765
All Manufacturing Occupations		194,687	8,008	104,529	-785	-0.1%	9,500
Total - All Occupations		1,867,002	117,674	1,102,732	67,822	0.7%	166,000

Develop & Educate

Develop & Educate	Possible 2024 Shortage	Est. Hiring Difficulty	Training Concentration*	Related 2017 Awards	Pathway Impact
Industrial Engineers	885	High	58% (low)	127	BA/AS
Mechanical Engineers	538	Moderate	74% (mod.)	258	BA/BS
Supervisors of Mechanics	477	Moderate	155% (high)	55	Dual Trn.
Supervisors of Prod. Workers	466	Moderate	156% (high)	82	Dual Trn.
Electrical Engineers	367	High	82% (mod.)	246	BA/BS
Industrial Machinery Mechanics	302	Moderate	46% (low)	19	Dual Trn.

*Training Concentration indicates the share of talent employed with related postsecondary certificate or credential compared to the nation.
**CNC Programmers and Machine Operators are tracked separately, and have additional training needs with moderate expected worker shortages.

Wage Distribution by Percent Employed in Manufacturing, 2019Q2



Summary of Manufacturing Sub-Industries

Industry (includes occupations from any career pathway)	Current			History		5-Year Forecast (2024Q2)			Alternative	
	Empl	Avg Ann Wages	LQ	5-Year Empl Change	5-Year Ann %	Total Demand	Empl Growth	Ann % Growth	Ann % Growth	Possible Shortage*
Food & Product Manufacturing	59,782	\$66,811	0.94	2,081	0.7%	29,792	-2,426	-0.8%	0.2%	548
Fabrication Manufacturing	43,044	\$71,000	1.38	1,738	0.8%	20,664	-957	-0.4%	0.6%	1,228
Assembly Manufacturing	42,141	\$100,645	1.10	1,237	0.6%	16,567	-2,079	-1.0%	0.0%	19
Medical Device Manufacturing	18,625	\$87,922	2.53	2,252	2.6%	9,604	201	0.2%	1.2%	1,189
Furniture, Clothing, Jewelry, Other	11,682	\$54,404	0.86	1,146	2.1%	5,647	-388	-0.7%	0.3%	181
All Manufacturing Industry	175,274	\$77,332	1.14	8,455	1.0%	82,302	-5,621	-0.6%	0.4%	3,000
Total - All Industries	1,867,002	\$64,180	1.00	136,947	1.5%	1,103,643	67,822	0.7%	1.8%	166,000

1 - Employment data modeled by JobsDQ based on BLS Occupational Employment Statistics on a four-quarter moving average unless noted otherwise. 2 - Data represent online job ads active within the last 30 days in the region, estimated with JobsEQ. 3 - Possible 5-year forecast possible shortage includes current vacancies, occupation gaps modeled by JobsEQ, and alternative employment growth modeling under favorable economic growth conditions. Indicates additional needed talent to maintain historic rates of GDP growth. May not sum due to rounding.

Educational Awards for Production Occupations by Program, 2017

Program Title	Certificate	AA/AS	BA/BS	Post-graduate	Total Awards
Welding Technology/Welder	210	27	0	0	237
CNC Machinist	81	147	0	0	228
Operations Management & Supervision	4	0	123	0	127
Autobody/Collision & Repair Technician	37	34	0	0	71
Orthotist/Prosthetist	3	33	3	13	52
Baking and Pastry Arts/Baker/Pastry Chef	14	34	0	0	48
Aircraft Powerplant Technology/Technician	19	13	0	0	32
Biomedical Technology/Technician	4	28	0	0	32
Food Preparation/Professional Cooking/ Kitchen Assistant	31	0	0	0	31
Electrical, Electronic & Communications Engineering Technology/Technician	0	29	0	0	29
Airframe Mechanics & Aircraft Maintenance Technology/Technician	19	5	0	0	24
Cabinetmaking and Millwork	16	6	0	0	22
Sheet Metal Technology/Sheetworking	15	4	0	0	19
Apparel & Textile Manufacture	14	0	0	0	14
Quality Control Technology/Technician	9	0	0	0	9
Furniture Design & Manufacturing	0	0	5	0	5
Machine Tool Technology/Machinist	5	0	0	0	5
Tool and Die Technology/Technician	0	5	0	0	5
Prepress/Desktop Publishing & Digital Imaging Design	0	4	0	0	4
Chemical Technology/Technician	0	1	0	0	1
All Production Occupation Programs	481	370	131	13	995
Share of Total Awards	48%	37%	13%	1%	

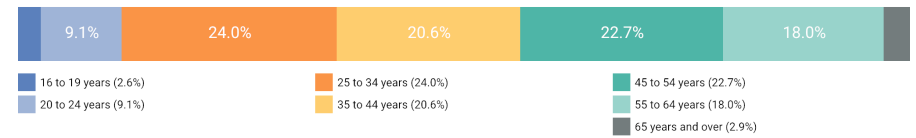
Workforce Training Program Graduates, 2016-2017

Metro (left number) & Statewide (right number) | Aligned to Manufacturing Sector Careers Only

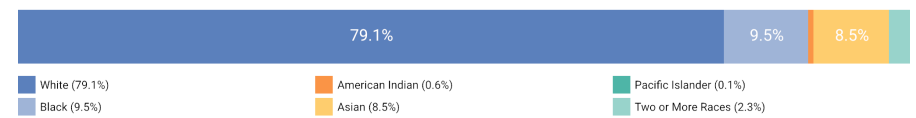
Completed Entry-Level Manufacturing Programs	People of Color	Female	People with Disabilities	All Graduates
Pathways to Prosperity Program	116 170	36 54	19 48	148 289
Dislocated Worker Program	19 25	20 29	ND 15	101 204
WIOA Adult Program	11 21	ND 20	ND 18	18 82
Attained a Credential from Entry-Level Programs	People of Color	Female	People with Disabilities	All Graduates
Pathways to Prosperity Program	78% 65%	92% 80%	74% 58%	80% 61%
Dislocated Worker Program	79% 80%	70% 66%	ND 67%	66% 59%
WIOA Adult Program	ND ND	ND 60%	ND 61%	ND 66%

Manufacturing Employee Demographics*

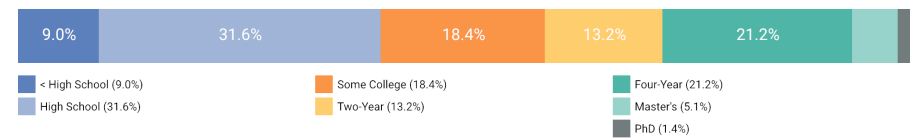
Age



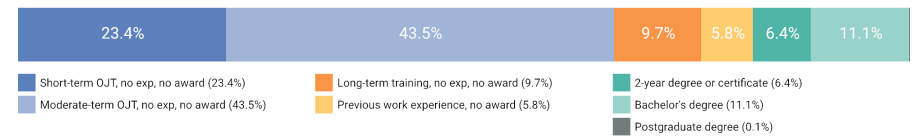
Race



Educational Attainment



Education and Training Requirements



Graduate Employment Outcomes

89% Graduates of Production Programs Remain in MN & Work | 30% Graduates of Color
Regional Certificate, 2-Year, and 4-Year Program Graduates, 2015 (CIP 47-48)**

Instructional Program	2014-2015		Employment 2 Years Later (2017)		
	Graduates	Graduates employed in MN	% Grads with reported wages In MN	Full-time year-round median wage	% working full-time & year-round
Precision Metalworking (CIP 48.05)	400	364	91%	\$41,184	57%
Woodworking (CIP 48.07)	23	18	78%	\$31,011	56%
Heavy/Industrial Equipment Maint. Tech. (CIP 47.03)	18	17	94%	\$53,404	71%
Vehicle Maintenance & Repair Technologies (CIP 47.06)	303	265	87%	\$37,040	67%
All Precision Production & Mechanic/Repair Tech. Programs	744 ↑	664 ↑	89% ↑	\$39,482 ↓	61% ↓

RealTime Talent Reports: realtimetalent.org/research/reports

*Demographic data from 7-county metro-level U.S. Census Bureau by occupation; educational and education/training requirements are estimates for manufacturing occupations based on BLS data. **Graduate Employment Outcomes from MN DEED, for Twin Cities Manufacturing graduates from July 2014-June 2015. Only includes data on graduates that had reported wages in MN 2 years after graduation; does not include students that found work out of state, were self-employed, or continued their education. Does not include programs with small numbers of graduates, where data was withheld for privacy. IPEDS Graduate Awards, 2016-17 school year. DEED WorkforceOne data includes Twin Cities metro participants enrolled between 1/1/2016 and 12/31/2017, limited to participants who exited on or prior to 9/30/2018. NA = Not Applicable, ND = Not disclosable; suppressed due to small cell size (<10). Developed by Erin Olson (erin@realtimetalentmn.org). Published 10/17/2019 by RealTime Talent. Sources: TalentNeuron Recruit aggregate online job postings. www.wantedanalytics.com accessed 10/10/2019, including estimates of hiring difficulty based on talent supply. Counts of job postings in Q2 2019 by employer were available April 1 - June 30, 2019 in the 7-county Minneapolis-Saint Paul metro. Includes staffing agencies. Percent change in job postings are the change from the same quarter in the prior year. Employment, wage, and education data modeled from IPEDS, OES, and BLS data by JobsEQ. People of color color calculations do not include nonresident aliens (international students) for which race or ethnicity is not determined. Some overlap in counts of graduates from formal education, dual-training, and bootcamps may exist, as some students may have participated in multiple programs.