



MSP Sector Analysis Manufacturing Surplus and Gap Overview

High Retirement Rates, Low Training Numbers

Multiple career pathways are needed in Manufacturing in Minneapolis-Saint Paul. Over 25% of workers in the industry are over 55 years of age, and the majority of workers identify as white male. The industry has grown more than anticipated; employment in manufacturing roles rose an average of 1.7% each year since 2014, compared to 1.3% nationally. Sector unemployment sits at about 4.2%, due in large part to less than one jobseeker per vacancy and record manufacturing vacancies (6,871) through Q4 of 2017. With 63,800 manufacturing positions open by 2020, employers should train workers and increase automation.

Top Occupations in Demand in the 7-County Metro

Top Manufacturing Job Titles Used by Employers	Manufacturing Occupations (sorted by industry 3-year training need)	Employment Q1 2018	Employment in Manuf. Industry Q1 2018	Average All-Industry Wage	Est. Avg. 3-Year Annual Occ./ Industry Growth	Est. 3-Year Industry Growth	Est. 3-Year Industry Training Need	Education or Skill Level	Occupation Type	Est. Hiring Difficulty/ Shortage	Future Automation Probability*	Pathway Impact
Manufacturing Associate, Medical Assembly	Team Assemblers	13,070	9,586	\$32,100	-1.6%/-2.1%	-602	2,414	Entry	Process	Low	High (97%)	Low
CNC Machinist, Mill Machinist, Milling & Grinding Machinist	Machinists	6,847	6,017	\$50,200	0.1%/0.01%	3	1,808	Skilled	Technical	Low	Mod. (65%)	Moderate
Production Worker, Laborer, Production Associate	Helpers--Production Workers	5,750	3,316	\$26,000	1.2%/-0.3%	-34	1,419	Entry	General	Surplus	Mod. (66%)	Low
Production Supervisors, Production Manager, Operations Supervisor, Kitting Lead	First-Line Supervisors of Production and Operating Workers	6,681	5,056	\$64,100	0%/-0.3%	-44	1,394	Skilled	Technical	Low	Low (1%)	Moderate
Electrical Assembler, General Assembly - Soldering, Machine Builder - Electrical	Electrical and Electronic Equipment Assemblers	5,771	5,222	\$34,300	-2.5%/-3%	-394	1,236	Accessible	Process	Surplus	High (95%)	Low
Material Handler, Package Handler, Order Picker/Packer	Laborers and Freight, Stock, and Material Movers, Hand	28,955	2,766	\$32,600	0.8%/-0.2%	-19	1,095	Entry	General	Surplus	High (85%)	Low
Chemical Receiving Operator, Dimensional Technician	Inspectors, Testers, Sorters, Samplers, and Weighers	6,211	4,016	\$41,600	-1.2%/-2%	-237	1,079	Accessible	Process	Surplus	High (98%)	Low
Associate Machine Operator, Packaging Line Worker	Packaging & Filling Machine Operators & Tenders	4,839	2,993	\$32,300	0.3%/-0.1%	-5	1,007	Entry	Process	Low	High (98%)	Low
Assembler Welder, Production TIG Welder, Spot Welder, Robotic Mig Welder	Welders, Cutters, Solderers, & Brazers	4,163	2,806	\$45,200	0.4%/0%	1	884	Skilled	Technical	Low	High (94%)	Moderate
Digital Print Operator, Machine Operator	Printing Press Operators	4,114	3,441	\$45,000	-1.2%/-1.4%	-143	869	Skilled	Technical	Surplus	High (83%)	Low
Quality Engineer, Supplier Performance Engineer, Manufacturing/Process Engineer	Industrial Engineers	5,700	4,055	\$93,100	0.7%/0.5%	66	862	Advanced	Engineering	High	Low (3%)	High
Total (includes 139 occupations)		194,701	109,177	\$46,900	-0.1%	-143	32,180					

*Source for Likelihood of Automation: Frey & Osborne, BLS <https://www.bloomber.com/graphics/2017-job-risk/>

Industry Detail

	Current			3-Year History		3-Year Forecast (Baseline)				
	Employment Q4 2017	Avg. Annual Wages	Location Quotient	Total 3-Year Employment Change	7-County Metro	Exits (incl. retirements)	Transfers (occupation changes)	Est. Training Need Q1 2021	Est. Employment Change Q1 2021	Est. Avg. Annual Growth
Food & Product Manufacturing	60,203	\$64,034	0.96	1,417	0.8%	7,479	12,154	18,115	-1,519	-0.8%
Fabrication Manufacturing	41,832	\$70,293	1.38	40	0.0%	4,436	8,230	12,059	-596	-0.5%
Assembly Manufacturing	41,864	\$99,943	1.12	170	0.1%	4,037	7,180	9,936	-1,274	-1.0%
Medical Device Manufacturing / Med Tech	17,632	\$85,824	2.45	1,218	2.4%	1,981	3,359	5,460	120	0.2%
Furniture, Clothing, Jewelry, & Other	11,215	\$53,393	0.82	428	1.3%	1,410	2,092	3,300	-196	-0.6%
All Manufacturing Industry	172,747	\$75,808	1.14	3,273	0.6%	19,343	33,015	48,870	-3,402	-0.7%
Total - All Industries	1,839,839	\$0,902	1.00	89,119	1.7%	260,687	347,553	648,233	39,993	0.7%

Top Employers Recruiting

2018Q1 Manufacturing jobs advertised by direct employers

- Medtronic (258)
- Honeywell (119)
- Integer (91)
- UTC Aerospace Systems (87)
- VISION (87)

Top Skills/Experience

- Blueprints (reading/writing)
- Medical Device Production
- Good Manufacturing Practice
- Quality Systems
- Lean Manufacturing



Target Occupations to Cultivate Talent Supply

Attract & Upskill	Est. 3-Year Supply Gap (or Surplus)	Training Concentration	Est. 3-Year Occ. Training Need	% College Educated Nationwide	Occupation Type	Est. Hiring Difficulty/Shortage	Pathway Impact
• Machinists*	(12) ↑	1% (v. low)	2,087	25-50%	Technical	Low	Dual Trn.
• Welders, Cutters, Solderers & Brazers	(21) ↓	56% (low)	1,381	25-50%	Technical	Low	Dual Trn.
• Sheet Metal Workers	9	275% (high)	547	25-50%	Technical	Mod.	Entry
• Electrical/Electronic Eng. Techs	(9)	32% (v. low)	466	50-75%	Engineering	Mod.	Dual Trn.
• Industrial Engineering Techs	(6)	16% (v. low)	401	50-75%	Engineering	High	Dual Trn.

Suggestions

- Develop clear pathways for high school graduates to enter into an “earn and learn” model. Only about 900 high school graduates statewide enter the Manufacturing industry each year, which is 5% of all recent graduates that enter the workforce**
- Expand Dual Training models, such as the PIPELINE Program, which provided career advancement training to 162 metro manufacturing employees in 2016 and 2017
- Improve graduate job placement outcomes of DEED P2P, Dislocated Worker, and MFIP participants

Develop & Educate	Est. Annual Supply Gap (or Surplus)	Training Concentration	Est. 3-Year Occ. Training Need	% College Educated Nationwide	Occupation Type	Est. Hiring Difficulty/Shortage	Pathway Impact
• Industrial Engineers	99	50% (low)	1,250	75%+	Engineering	High	High
• Supervisors of Mechanics, Installers, & Repairers	63 ↑	172% (high)	1,221	50-75%	Technical	High	High
• Mechanical Engineers	78 ↑	70% (mod.)	950	75%+	Engineering	High	High
• Industrial Machinery Mechanics	45 ↑	84% (mod.)	941	25-50%	Technical	High	High
• Electrical Engineers	42 ↓	70% (mod.)	631	75%+	Engineering	High	High

Suggestions

- Create a one-year certificate program in machining including job training and internship rotations
- Link PIPELINE Program to educational opportunities that advance careers into management, mechanics, or engineering
- Fund 4-year education of promising high school and AA/AS students to continue their education through a 4-year degree
- Develop an effective academic pathway from AA/AS to BA/BS occupations in engineering and management roles

Retain

Suggestions

- Recorded salaries are dropping across most occupations in Manufacturing; revisit company salary levels
- Re-evaluate minimum qualifications for hires
- Invest in staff development, including credentialing, career planning, education, and internal advancement
- Provide part-time leadership opportunities to experienced workers to train in new hires

Training Program Graduates

Entry-Level Credential Programs	2 Year Completions (July 2015 - June 2017)			
	Enrollment	Completed	Credential/Graduates	Completed & Employed in Industry
Pathways to Prosperity Program	247	112	86	ND
Dislocated Worker Program	164	91	61	10

Less than 10 graduates obtaining credentials from either program secured employment in the Manufacturing industry. Less than 10 participants, if any, enrolled or completed WIOA Adult Programs in Manufacturing. From January 2016 - December 2017, 12 metro employers and 162 Advanced Manufacturing students/employees participated in the Pipeline Program's Dual Training Grant Program.

Key NIMS Credentials Issued, by Year

National Institute for Metalworking Skills (NIMS) - 3,625 credentials to date	2015	2016	2017	Total
CNC Drive Press Brake Skills II		1	1	2
CNC Lathe Operator	65	31	18	114
CNC Milling Operator	94	54	29	177
CNC Milling Skills II	1			1
CNC Milling Programming Setup & Ops.	28	21	1	50
CNC Turning Skills II	1			1
CNC Turning Programming Setup & Ops.	9	26	8	43
Drill Press Skills	12	1	2	15
EDM - Conventional/Plunge I	1			1
Grinding Skills	5	9	2	16
Grinding II	2			2
Job Planning, Benchwork & Layout	40	59	95	194
ITM: Basic Mechanical Systems		1		1
ITM: Hydraulic Systems		2		2
ITM: Mechanical Operations		5		5
Machine Maintenance II		5	4	9
Measurement, material & Safety	163	215	157	535
Metallforming I	9	8	8	25
Milling I	17	16	3	36
Milling II	2			2
Stamping II Operate w/Single Hit Tooling	1		2	3
Stamping II Operate w/Compound Dies	2		1	3
Stamping II Operate w/Progressive Dies	2		1	3
Stamping III Parts Inspection & QC	2			2
Stamping III Setup w/ Single Hit Tooling		1		1
Turning Ops.: Turning Between Centers	14	9	1	24
Turning Ops.: Turning Chucking Skills	7	13	1	21
Turning II: Chucking	2			2
Turning II: Turning Between Centers	2			2
All NIMS Credentials	481	477	334	1,292

For more information:

- Industry Contact: **Mike Slezak, DEED** (michael.slezak@state.mn.us)
- MSPWin Career Map: <http://mspwin.org/wp-content/uploads/2016/06/Career-Pathway-Maps.pdf>
- RealTime Talent Reports: realtimetalent.org/research/reports

*CNC Programmers and Operators are tracked separately, and have additional training needs with mow-moderate expected worker shortages. **15% of all graduates choose to work immediately upon completing high school. On average, they make the second highest average industry wage after Construction. Programs listed are explicitly tied to finance and awarded more than 10 degrees or certificates in 2016. Developed by Erin Olson (erin@realtimetalentmn.org). Published 6/1/2018 by RealTime Talent. Sources: TalentNeuron Recruit aggregate online job postings. www.wantedanalytics.com accessed June 1, 2018. Counts of job postings in Q 2018 by employer were available January - March 2018 in the 7-county Minneapolis-Saint Paul Metro. Includes staffing agencies, except where otherwise noted. Employment, wage, and education data modeled from IPEDS, OES, and BLS data by JobsEQ. 2016 completions and credentials include awards issued and are not counts of graduates.