

AUTOMOTIVE TECHNOLOGY

Supply & Demand Analysis
2022



MINNESOTA STATE
Transportation Center of Excellence

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Introduction and Sector Overview

This report highlights the importance of the Automotive Technology career pathway for Minnesota's Transportation Industry. Professionals in Automotive Technology work in diverse roles from automotive service technicians to farm equipment mechanics, serving industries as diverse as Navigational Manufacturing and Automobile Dealerships. In all, about 21,227 people work in Automotive Technology roles in Minnesota as of the third quarter of 2022—a -1.8% decrease (387 workers) from a year prior.

Overall employment in Minnesota has grown by nearly 118,000 workers (4.0%) between the second quarter of 2021 and the third quarter of 2022, and the five-year forecast recovered with a 45,970 expansion of employment over five years as of the most current baseline forecasts, or about 0.3% average annual growth. During this time frame, Automotive Technology employment is anticipated to drop moderately in Minnesota by about -325 total jobs (-0.3% annually) due to a tight talent pool. Total baseline demand for Automotive Technology talent is anticipated to be around 8,677 professionals needed to fill positions due to job exits and transfers, such as retirements and job changes.

Transportation Pathways in Minnesota – Baseline Forecast, 2022Q3¹

	Current						5-Year History		5-Year Baseline Forecast				
Occupation	Empl	Avg Ann Wages ²	LQ	Unempl	Unempl Rate	Online Job Ads ³	Empl Change	Ann %	Total Demand	Exits	Transfers	Empl Growth	Ann % Growth
Automotive Technology Pathway	21,227	\$66,900	1.02	387	1.8%	1,183	-819	-0.8%	8,677	3,181	5,821	-279	-0.4%
Aviation and Drone Technology Pathway	9,162	\$115,200	0.86	139	1.5%	313	-531	-1.1%	4,615	1,584	2,945	86	0.2%
Collision Repair Pathway	6,757	\$54,100	1.05	177	2.6%	359	-44	-0.1%	3,236	1,128	2,142	-34	-0.1%
Diesel Equipment and Truck Pathway	12,518	\$61,900	1.06	230	1.8%	593	-458	-0.7%	6,135	2,048	3,894	192	0.3%
Marine and Power Sports Pathway	4,799	\$46,200	0.95	205	4.2%	75	95	0.4%	3,046	1,062	1,946	38	0.2%
Truck Driving Pathway*	98,845	\$51,200	0.93	2,607	2.6%	6,446	5,748	1.2%	63,838	27,225	34,298	2,315	0.5%
Transportation Occupations	145,613	\$58,000	0.96	3,444	2.4%	8,585	1,899	0.3%	84,921	33,955	48,916	2,050	0.3%
Total - All Occupations	3,038,766	\$63,700	1.00	68,550	2.3%	170,185	-11,615	-0.1%	1,800,961	734,547	1,020,444	45,970	0.3%

*This pathway includes School Bus Driver careers as of 2022, which were not included in the 2020 or 2021 estimates of career pathway employment or demand.

Source: [JobsEQ®](#)

Data as of 2023Q3 unless noted otherwise

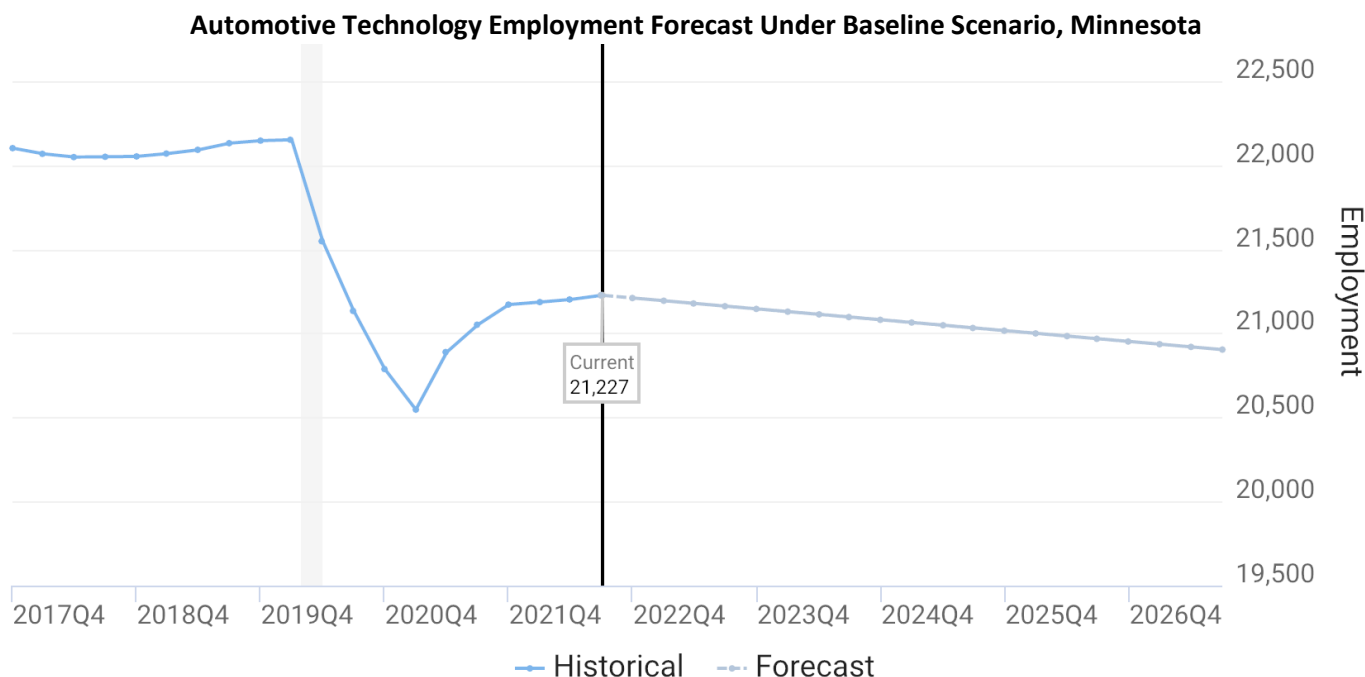
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Minnesota saw a strong job market throughout 2022 and elevated recruitment among employers across most sectors. As the available talent pool was exhausted, unemployment rates dropped dramatically across critical roles and in many scenarios demand far outpaced talent supply. Forecasting future needs under current conditions with an eye to anticipated talent pipelines into Automotive Technology suggest that there may be shortages of talent across a large share of occupations in this career pathway unless more talent decides to enter the field. The pathway forecast soured since estimates in late 2020, but now remains consistent with 2021 estimates with a baseline forecast of about -0.3% average annual decline in overall employment by the second quarter of 2027. Following an initially strong recovery in early 2021, 2022 saw relatively flat employment numbers quarter-to-quarter.



Source: JobsEQ®, Data as of 2022Q3, The shaded areas of the graph represent national recessions.

Industry/Occupation Mix

Automotive Technology talent is primarily concentrated in the Automotive Repair and Maintenance industry (25.8%), increasing in its concentration from estimates in 2021 by another 1.8 percentage points. The next highest industry of employment concentration is Automobile Dealers (21.6%), but are important across a wide range of transportation, manufacturing, and agriculture sub-industries. These top industries also account for the most total demand for this talent over the next ten years.

Top Industry Distribution for Automotive Technology Pathway Occupations in Minnesota

NAICS Code	Industry Title	CURRENT			10-YEAR DEMAND			
		% of Occ Empl	Empl	Avg Ann Wages	Exits	Transfers	Empl Growth	Total Demand
8111	Automotive Repair and Maintenance	25.8%	5,481	\$48,300	1,864	3,357	-303	4,919
4411	Automobile Dealers	21.6%	4,588	\$55,600	1,584	2,851	-123	4,311
5413	Architectural, Engineering, and Related Services	5.5%	1,159	\$86,500	258	491	-32	717
4413	Automotive Parts, Accessories, and Tire Retailers	4.3%	918	\$45,000	315	569	-22	862
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	4.0%	851	\$90,900	186	355	-25	516
3339	Other General Purpose Machinery Manufacturing	2.6%	550	\$85,700	113	217	-50	280
5511	Management of Companies and Enterprises	1.9%	396	\$89,100	93	176	3	272
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	1.8%	374	\$55,600	132	240	45	417
3331	Agriculture, Construction, and Mining Machinery Manufacturing	1.6%	343	\$85,700	70	134	-38	166
4853	Taxi and Limousine Service	1.4%	295	\$48,700	90	161	-75	176
5613	Employment Services	1.4%	288	\$70,000	75	140	11	227
3391	Medical Equipment and Supplies Manufacturing	1.3%	280	\$80,000	66	126	16	208
4571	Gasoline Stations	1.3%	274	\$47,400	81	145	-83	143
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	1.1%	243	\$71,400	61	114	5	180
9211	Executive, Legislative, and Other General Government Support	1.1%	241	\$55,600	74	134	-41	167
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	1.0%	216	\$71,500	47	91	19	158
3332	Industrial Machinery Manufacturing	0.9%	194	\$85,700	40	77	-17	100
5417	Scientific Research and Development Services	0.9%	189	\$96,000	47	88	20	155
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	0.8%	175	\$85,700	36	68	-19	85
3335	Metalworking Machinery Manufacturing	0.8%	174	\$72,200	38	73	12	123
n/a	All Others	18.8%	3,998	n/a	1,088	2,025	55	3,169
Source: JobsEQ® Data as of 2022Q3 except wages which are as of 2022. Note that occupation-by-industry wages represent adjusted national data and may not be consistent with regional, all-industry occupation wages shown elsewhere in JobsEQ. Note: Figures may not sum due to rounding.								

Talent Demand Detail

Employment and Wage Overview

Of all occupations found in the Automotive Technology pathway, Motor Vehicle Electronic Equipment Installers, Mechanical Engineers, and Mechanical Engineering Technicians are uniquely concentrated in Minnesota to a higher degree than seen in the nation overall. On average, Automotive Technology careers pay about \$66,900 per year—about \$3,200 higher than the average wage statewide across all positions. Demand was high over the past year, seeing employment growth of 0.8% since the third quarter of 2021. However, employment may contract statewide by about -0.3% through the third quarter of 2023.

Automotive Technology Pathway in Minnesota – Baseline Forecast, 2022Q3¹

		Current						1-Year History		1-Year Forecast		5-Year Baseline Forecast				
SOC	Occupation	Empl	Avg Ann Wages ²	LQ	Unempl	Rate	Online Job Ads ³	Empl Change	Ann %	Empl Change	Ann %	Total Demand	Exits	Transfers	Empl Change	Ann % Change
49-3023	Automotive Service Technicians and Mechanics	13,649	\$54,800	0.98	281	2.0%	707	-134	-1.0%	-56	-0.4%	6,274	2,340	4,213	-279	-0.4%
17-2141	Mechanical Engineers	6,313	\$93,200	1.11	88	1.4%	409	298	5.0%	-3	0.0%	1,844	629	1,227	-13	0.0%
17-3027	Mechanical Engineering Technologists and Technicians	1,003	\$68,400	1.20	13	1.4%	19	27	2.7%	-1	-0.1%	477	174	309	-6	-0.1%
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	216	\$53,800	1.23	4	1.8%	12	-14	-6.1%	-6	-2.8%	60	30	58	-28	-2.8%
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	45	\$82,500	0.23	1	1.7%	36	-2	-3.8%	0	0.3%	22	7	14	1	0.3%
Automotive Technology Pathway		21,227	\$66,900	1.02	387	1.8%	1,183	175	0.8%	-66	-0.3%	8,677	3,181	5,821	-325	-0.3%
Total - All Occupations		3,038,766	\$63,700	1.00	68,550	2.3%	170,185	91,312	3.1%	9,139	0.3%	1,800,961	734,547	1,020,444	45,970	0.3%

Source: [JobsEQ®](#)

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Automotive Technology saw some significant wage gains across the pathway, with average wages rising by \$5,600 from prior estimates.¹ Entry-level wages in the pathways exceed the average entry-level wages observed across all occupations statewide, paying an average of \$44,500 annually for entry-level talent.

¹ Methodology for estimating wages changed between the 2021 and 2022 reports and are new as of the 2022Q3 dataset used here. They are estimated for the most current quarter of data available (2022Q3) using a combination of data from the Bureau of Labor Statistics and Chmura RTI wages, and no longer lag by a calendar year.

Occupation Wages, Average Annual in Minnesota, 2022Q3

SOC	Occupation	Mean	Entry Level	Experienced	Percentiles				
					10%	25%	50% (Median)	75%	90%
17-2141	Mechanical Engineers	\$93,200	\$66,000	\$106,800	\$61,200	\$75,200	\$87,200	\$104,200	\$127,700
17-3027	Mechanical Engineering Technologists and Technicians	\$68,400	\$48,100	\$78,600	\$46,900	\$52,200	\$64,200	\$79,900	\$94,800
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	\$82,500	\$59,500	\$94,000	\$52,600	\$72,000	\$84,600	\$95,900	\$105,000
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	\$53,800	\$37,500	\$62,000	\$36,700	\$40,200	\$48,400	\$61,900	\$77,300
49-3023	Automotive Service Technicians and Mechanics	\$54,800	\$34,300	\$65,000	\$31,400	\$39,700	\$50,500	\$62,300	\$75,800
	Automotive Technology Pathway	\$66,900	\$44,500	\$78,100	\$41,100	\$50,900	\$62,100	\$75,700	\$92,200
	Total - All Occupations	\$63,700	\$31,400	\$79,800	\$29,100	\$35,700	\$49,800	\$75,000	\$108,400

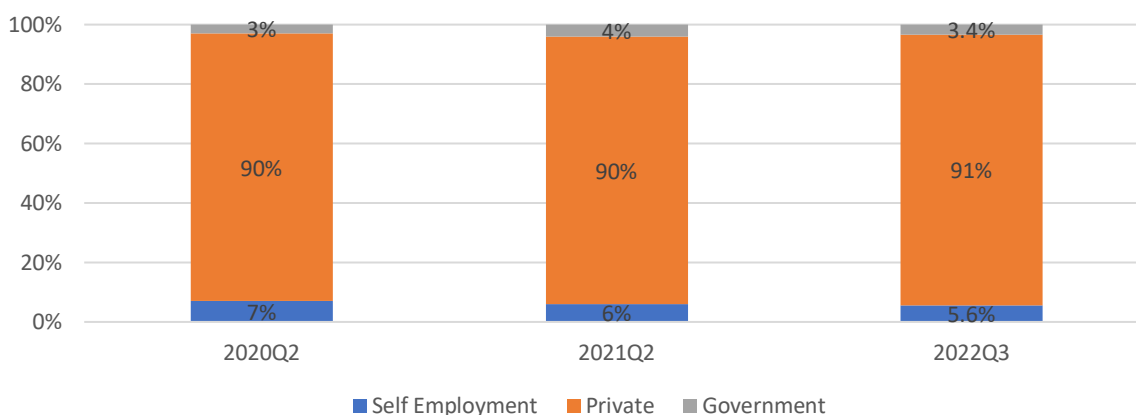
Source: [JobsEQ®](#)

Wage data represent the average for all Covered Employment

Employment Types

About 91% of people employed in Automotive Technology in Minnesota work for private employers, while nearly 6% are self-employed (a slight decrease from 2021). The remaining 3.4% work for state, federal, or local government entities. The share of talent that is self-employed has been declining moderately over the past three years.

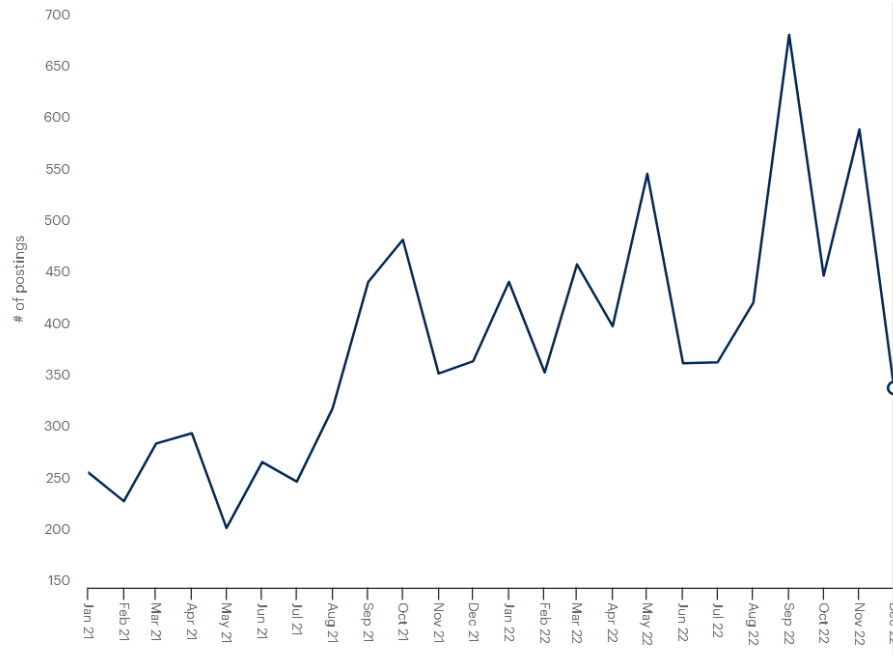
Employment Types, Minnesota 2020-2022



Job Posting Trends

Data in this section focuses on jobs newly advertised between January 1 and December 31, 2022 in Automotive Technology roles across Minnesota. Volume of total job postings, employer types (direct versus staffing), and top employers by unique job posting volumes comes from Gartner TalentNeuron; industry detail, skill and certification analysis, wage trends, and posting to hire analysis are from the Lightcast 2022Q4 dataset. Overall, there were 5,469 new jobs advertised in Automotive Technology during this time frame, an increase of 44% from the prior 12-month period (2021). Volume of posted positions advertised by staffing and temp agencies in the Automotive Technology pathway dropped in 2022 to about 19% of all postings following what was a significant increase in 2021, implying a cooling of the market. Posted wages increased to an average \$22.49 per hour as of 2022, and there was only one hire per every three unique job postings advertised based on Lightcast estimates.

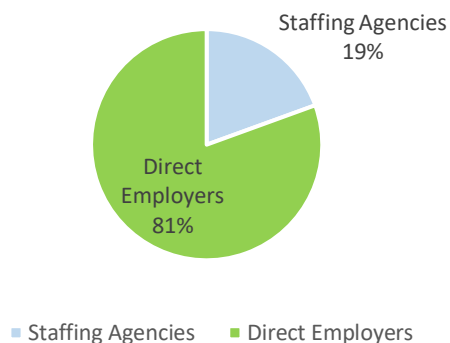
Volume of Career Pathway Online Job Postings in 2021 and 2022



Top Employers by Volume of New Job Postings, With Change from Prior Year

Employer		Percent Change between 2021 and 2022
1.	Honeywell	68%
2.	Sun Auto Tire & Service	0%
3.	CommScope	108%
4.	Polaris	63%
5.	Lube-Tech	0%
6.	Actalent	1900%
7.	Xcel Energy	35%
8.	McQuay International	67%
9.	Twin City Fan Companies, LTD.	0%
10.	GE POWER	295%

New Job Postings Advertised in Minnesota by Employer Type

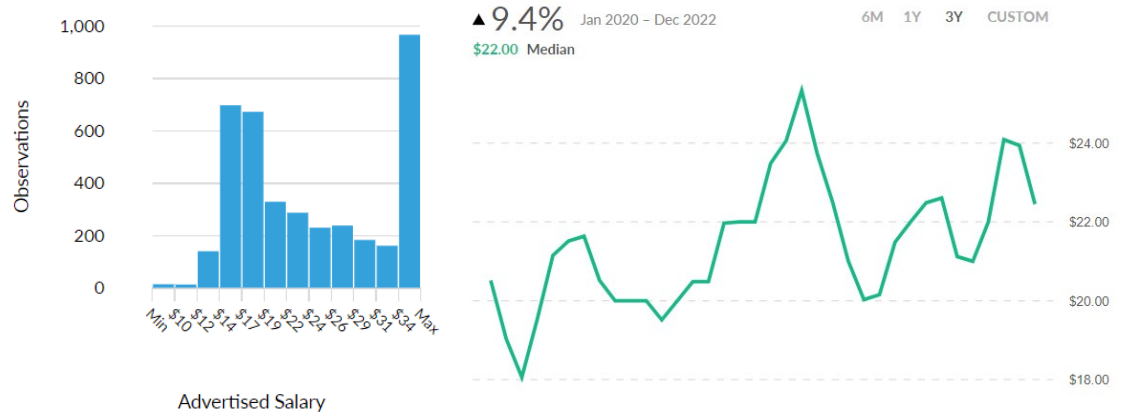


New Job Postings by Industry or Employer Type

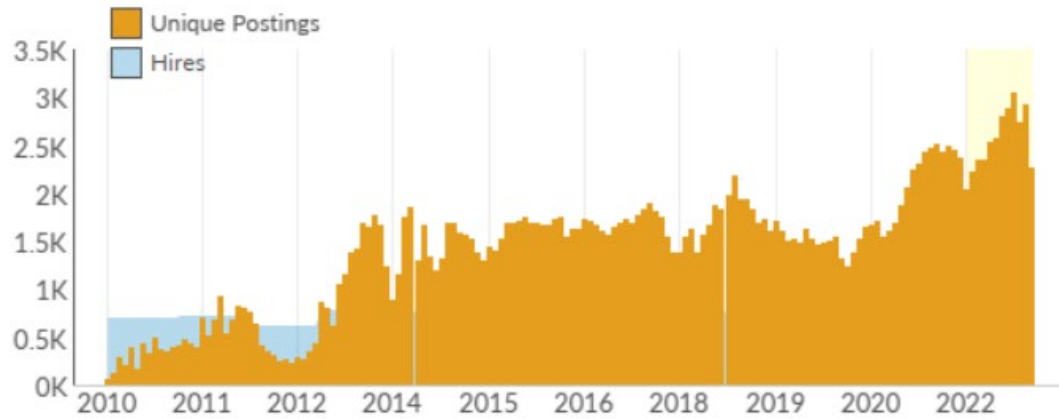
Industry	Total/Unique (Jan 2022 - Dec 2022)	Posting Intensity	Median Posting Duration
All Other Automotive Repair and Maintenance	3,848 / 683	6 : 1	23 days
Employment Placement Agencies	1,149 / 535	2 : 1	28 days
New Car Dealers	860 / 454	2 : 1	32 days
Automobile Manufacturing	780 / 351	2 : 1	31 days
Department Stores	1,215 / 342	4 : 1	34 days
General Automotive Repair	811 / 243	3 : 1	28 days
Engineering Services	371 / 219	2 : 1	28 days
Tire Dealers	362 / 188	2 : 1	41 days
Temporary Help Services	439 / 180	2 : 1	23 days
All Other General Merchandise Stores	652 / 179	4 : 1	39 days

Pathway Advertised Salary Range

\$22.49/hr
Median Advertised Salary

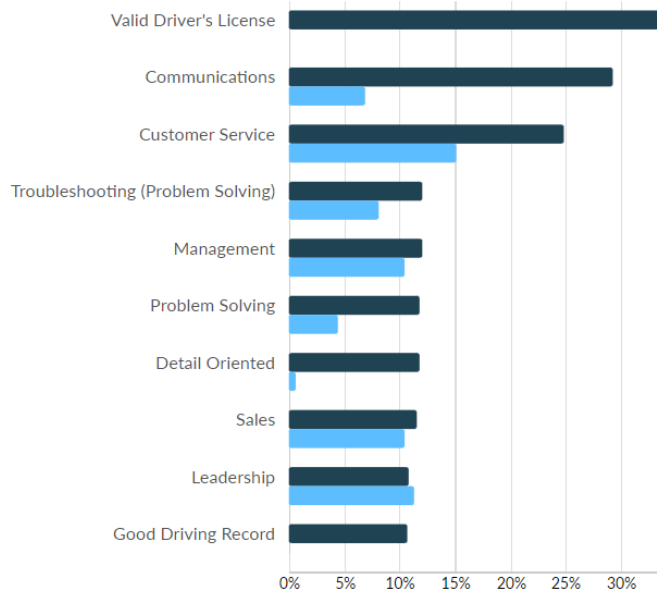


Monthly Ratio of Unique Job Postings to Estimated Hires



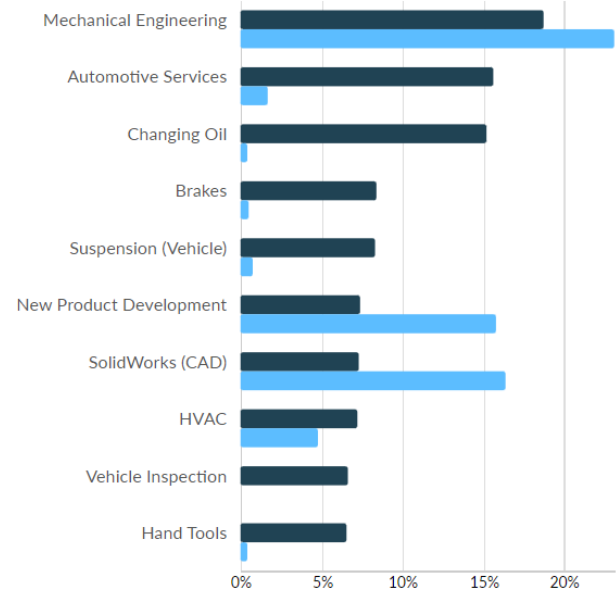
Top Common Skills

● Frequency in Job Postings ● Frequency in Profiles



Top Specialized Skills

● Frequency in Job Postings ● Frequency in Profiles



Top Certifications and Qualifications

Qualification	Postings with Qualification
Automotive Service Excellence (ASE) Certification	767
Commercial Driver's License (CDL)	176
Professional Engineer	152
Licensed Professional Engineer	97
CDL Class A License	74
Engineer in Training	74
Security Clearance	61
Project Management Professional Certification	31
CDL Class B License	29
LEED Accredited Professional (AP)	29

Talent Supply Detail

Talent Unemployment, Underemployment, and Educational Attainment

At an overall pathway unemployment rate of 1.8%, there are about 387 unemployed Automotive Technology professionals statewide. An additional 1,336 Automotive Technology professionals are underemployed—meaning they are working in roles for which they are overqualified by education or experience.

Automotive Technology Pathway in Minnesota

		Empl (Place of Residence)								Overall Occupation ¹		
SOC	Occupation	< High School	High School	Some College	2-Year	4-Year	Master's	PhD	Total Empl	Underemployed	Unemployed	Unempl Rate
17-2141	Mechanical Engineers	0.2%	1.9%	3.2%	8.9%	60.2%	21.6%	3.9%	6,160	N/A	88	1.4%
17-3027	Mechanical Engineering Technologists and Technicians	1.8%	17.4%	20.8%	29.5%	25.5%	3.9%	1.1%	969	269	13	1.4%
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	3.9%	24.1%	23.3%	27.7%	19.7%	0.9%	0.3%	46	8	1	1.7%
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	4.0%	24.1%	23.1%	27.4%	20.1%	1.0%	0.3%	213	43	4	1.8%
49-3023	Automotive Service Technicians and Mechanics	9.2%	39.3%	19.9%	23.0%	7.5%	0.7%	0.4%	13,435	1,015	281	2.0%
Automotive Technology Pathway		6.2%	27.0%	15.1%	19.2%	24.1%	7.0%	1.5%	20,823	1,336	387	1.8%
Total - All Occupations		4.9%	21.1%	15.4%	14.1%	30.4%	10.3%	3.8%	2,944,602	511,822	68,550	2.3%

Source: JobsEQ®

Data as of 2022Q3 unless noted otherwise

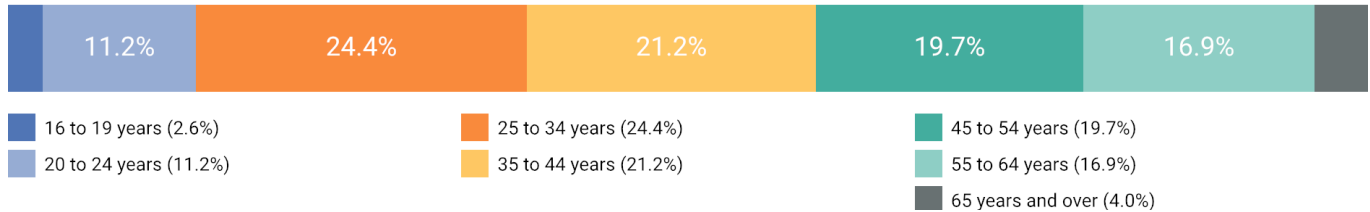
Note: Figures may not sum due to rounding.

1. "Overall occupation" characteristics refer to attributes across all individuals in those occupations, not just those limited to the demographic categories shown in this table.

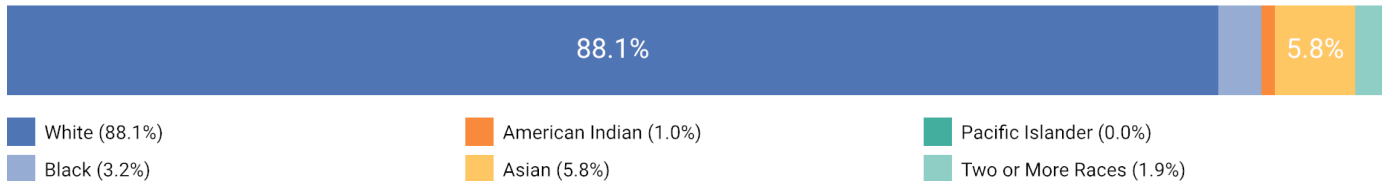
Workforce Demographics

About 13.8% of the Automotive Technology workforce is under the age of 25, and 4% are over 64 years old. The largest demographic group by race are White, representing 88.1% of the total pathway's workforce, with the next largest cohort being Asian talent representing 5.8% of the workforce. Nearly 6% of the pathway's workforce are Hispanic or Latinx, and 5.2% are female.

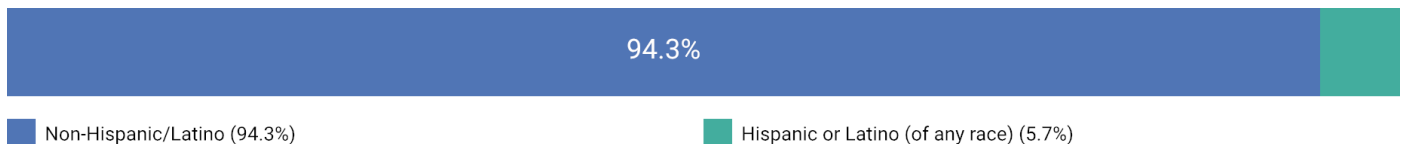
Automotive Technology Workforce Age Demographics, 2022Q3



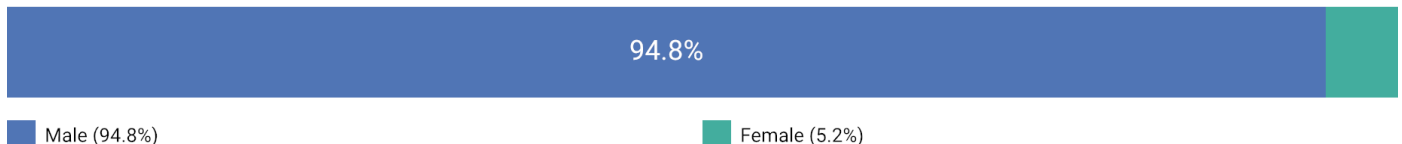
Automotive Technology Workforce Race Demographics, 2022Q3



Automotive Technology Workforce Ethnicity Demographics, 2022Q3



Automotive Technology Workforce Gender Demographics, 2022Q3



Graduate Demographics

Postsecondary program diversity varies by program across the Automotive Technology pathway. Mechanical Engineering programs have the largest number of international students, and all programs have an overrepresentation of male students.²

Race and Gender of Graduates Receiving Postsecondary Awards in SY2021, Minnesota

CIP Code	Description	All 2021 Graduates	International Student*	Black or African American, non-Hispanic	American Indian or Alaska Native	Asian, Native Hawaiian or Other Pacific Islander	Hispanic or Latino	White, non-Hispanic	Multiple or unknown race/ethnicity	Gender - Males	Gender - Females
14.1901	Mechanical Engineering	582	84	8	1	26	17	425	21	499	83
15.0406	Automation Engineer Technology/Technician	188	2	14	1	9	13	141	8	166	22
15.0803	Automotive Engineering Technology/Technician	25	4	1	0	0	0	18	2	24	1
15.0805	Mechanical/Mechanical Engineering Technology/Technician	1	0	0	0	0	0	1	0	1	0
15.1103	Hydraulics and Fluid Power Technology/Technician	104	0	25	0	0	0	69	10	98	6
47.0604	Automobile/Automotive Mechanics Technology/Technician	340	0	12	5	19	31	262	11	330	10
47.0605	Diesel Mechanics Technology/Technician	93	0	1	2	0	3	86	1	89	4
47.0613	Medium/Heavy Vehicle and Truck Technology/Technician	75	0	9	1	8	4	47	6	68	7
47.0614	Alternative Fuel Vehicle Technology/Technician	0	0	0	0	0	0	0	0	0	0
All Automotive Technology Postsecondary Programs		1,408	90	70	10	62	68	1,049	59	1,275	133

IPEDS SY2021 demographics by award conferred. Count of awards may double count individuals who obtained multiple credentials in the same calendar year. *[NCES IPEDS](https://nces.ed.gov/ipeds/report-your-data/race-ethnicity-definitions) refers to international students that do not have resident status in the United States as “nonresident aliens.” This title aligns to Federal tax definitions and according to NCES IPEDS refers to “a person who is not a citizen or national of the United States and who is in this country on a visa or temporary basis and does not have the right to remain indefinitely. Note: Nonresident aliens are reported separately, rather than in any of the racial/ethnic categories.” They are not included in calculations of BIPOC talent in this report as race and ethnicity information is not provided for these international students. The terminology of “international student” has been used in this report as it is more familiar to a common audience. <https://nces.ed.gov/ipeds/report-your-data/race-ethnicity-definitions>. For more information, view this article from Berkeley on tax filing status of international students. <https://internationaloffice.berkeley.edu/taxes/tax-filing-status>

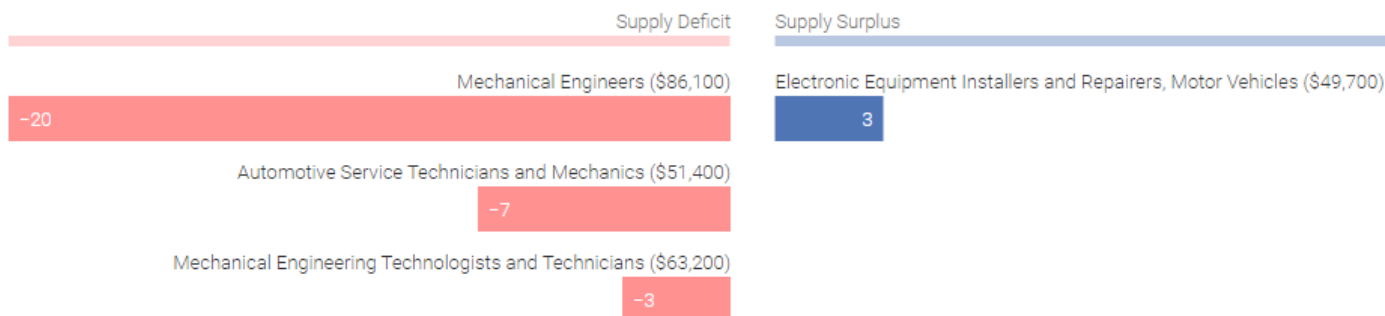
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Talent Gap Analysis

Occupation Gaps

By 2027, it is likely that Minnesota will see a growing shortage of Mechanical Engineers, Automotive Service Technicians, and Mechanical Engineering Technologists and Technicians (shown in red below). The estimated annual shortage of talent in each of these occupations has worsened since and 2021 estimates.

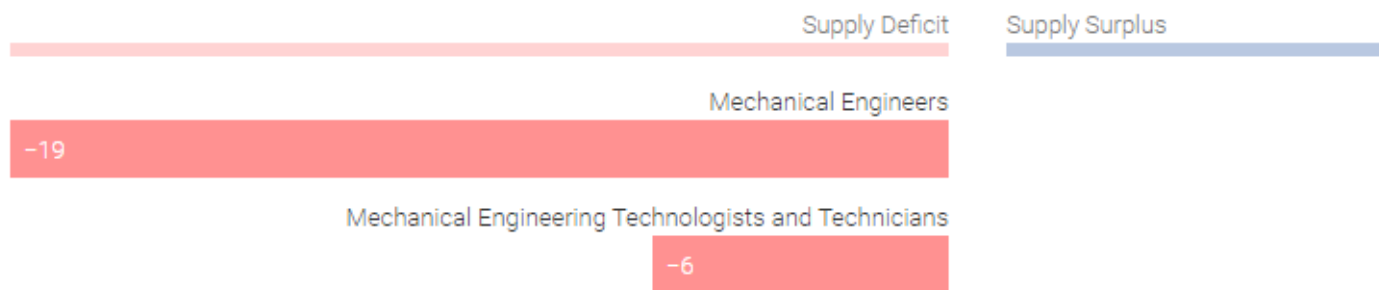
Estimated Occupation Gaps over Five Years in Minnesota



Award Gaps

Minnesota postsecondary institutions are underproducing credentials for Mechanical Engineers and Mechanical Engineering Technologists and Technicians when compared to national benchmarks for how many awards are typically conferred per local demand. This award gap coupled with the talent shortages highlighted above suggest that increasing the volume of Mechanical Engineers and Mechanical Engineering Techs out of existing programs, or building new two- and four-year programs aligned to these occupations may be warranted.

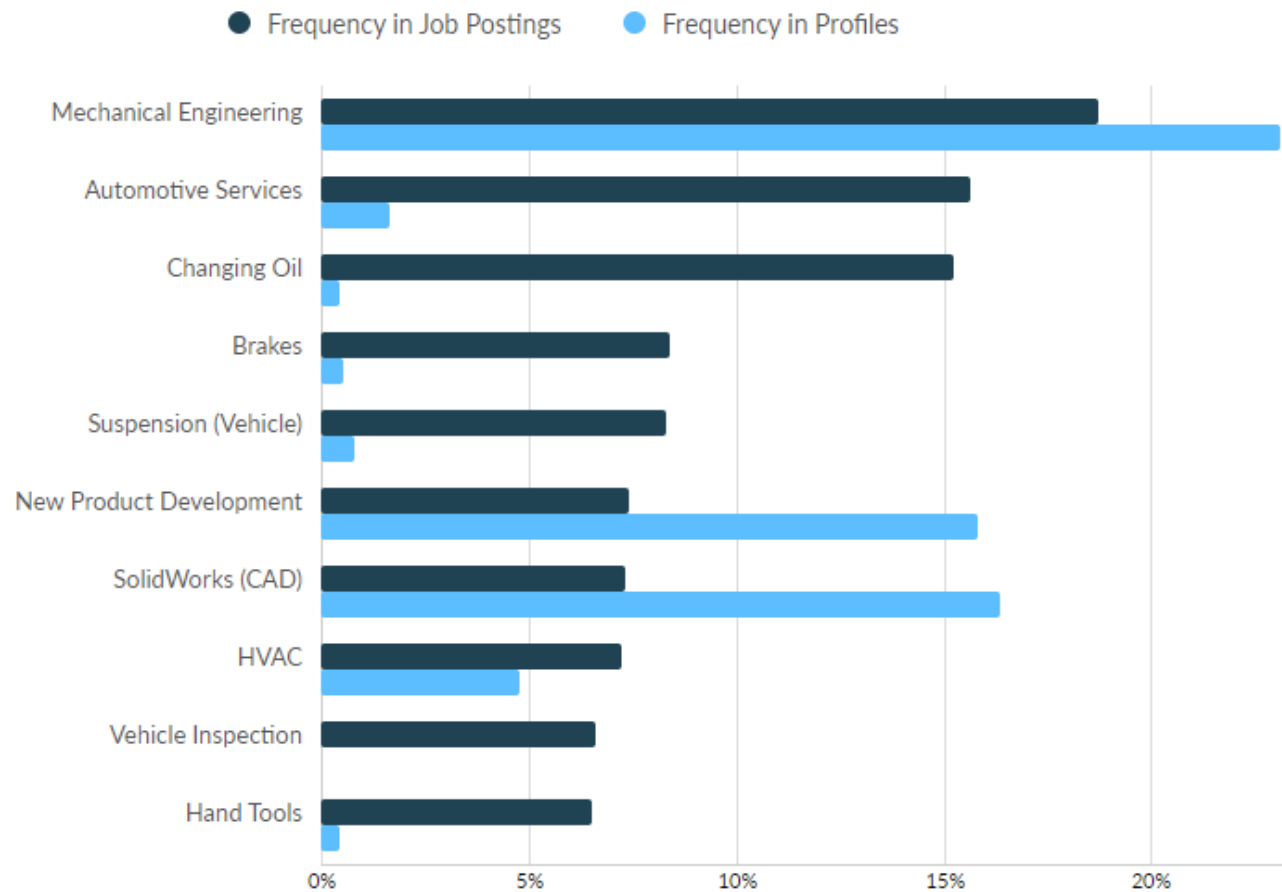
Estimated Award Gaps, Minnesota 2022Q3



Skill Misalignments

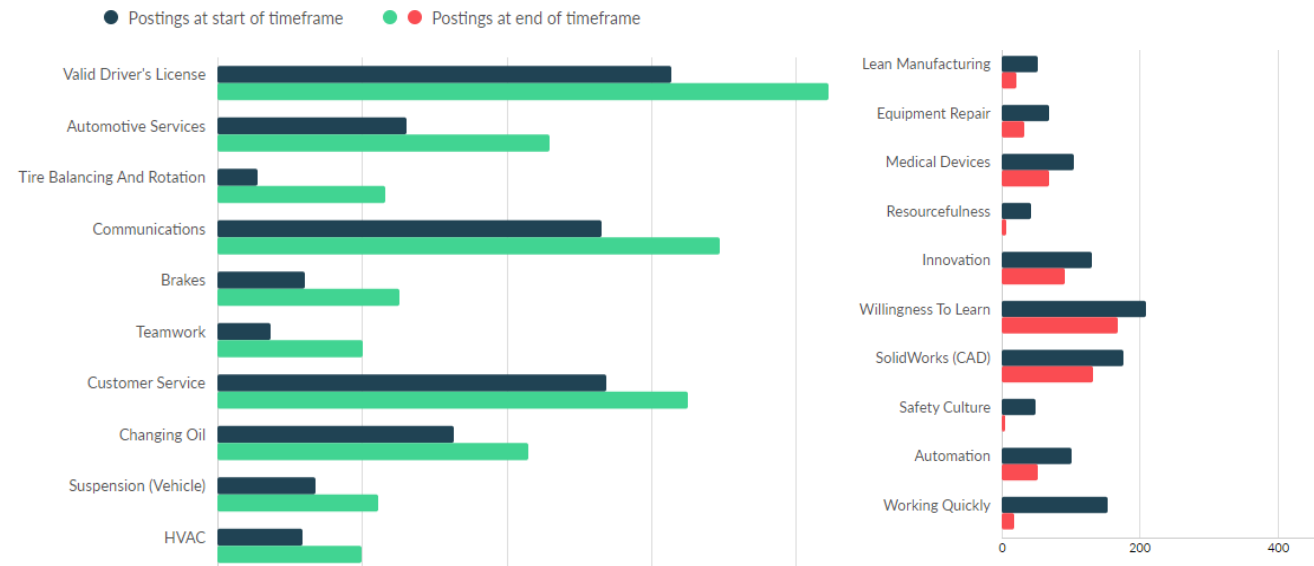
A number of specialized skills are more frequent in job postings than in candidate profiles found online, while others are found more frequently in profiles than they are mentioned in postings. Mechanical Engineering, New Product Development, and SolidWorks are all named more frequently in Automotive Technology talent profiles online than they are mentioned in job postings. In contrast, Automotive Services, changing oil, brake work, suspension, and vehicle inspection are all sought by employers in higher volume than they are observed in talent that is active online.

Percent of Pathway Job Postings and Online Talent Profiles Indicating Specialized Skills in Minnesota, 2022



Several baseline requirements, such as holding a valid driver’s license, strong communication skills, and knowledge of tire balancing and rotation have been trending up at the close of 2022. The chart below indicates skills that have increased in frequency in online job postings between January and December 2022 (shown in green) and those that have declined in frequency (shown in red).

Pathway Hot and Cold Skills in Demand in Minnesota, 2022



Source: RealTime Talent analysis of Chmura Economics JobsEQ®, <http://www.chmuraecon.com/jobseq/>. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/10/2022 at talentneuronplan.gartner.com

High Need, High Demand Pathways

There were about 1,408 awards conferred at 26 different Minnesota postsecondary institutions in programs aligned to Automotive Technology careers in SY2021. Among, these 355 were at the Associate level, and 234 were certificates that could be earned in less than two years. The average school had about 54 completions, but range from five to 285 completions. No programs were delivered remotely.

Automotive Technology Postsecondary Program Awards by Level, SY2021

CIP Code	Title	Certificate < 1 Yr	Certificate 1+ but < 2 Yr	Associate's	Certificate 2+ but < 4 Yr	Bachelor's	Master's	Doctorate	Total Awards
14.1901	Mechanical Engineering	0	0	0	0	477	80	25	582
47.0604	Automobile/Automotive Mechanics Technology/Technician	41	69	109	121	0	0	0	340
15.0406	Automation Engineer Technology/Technician	25	35	111	17	0	0	0	188
15.1103	Hydraulics and Fluid Power Technology/Technician	8	16	40	40	0	0	0	104
47.0605	Diesel Mechanics Technology/Technician	3	33	43	14	0	0	0	93
47.0613	Medium/Heavy Vehicle and Truck Technology/Technician	0	4	51	20	0	0	0	75
15.0803	Automotive Engineering Technology/Technician	0	0	0	0	25	0	0	25
15.0805	Mechanical/Mechanical Engineering Technology/Technician	0	0	1	0	0	0	0	1
47.0614	Alternative Fuel Vehicle Technology/Technician	0	0	0	0	0	0	0	0
	Total	77 (5.5%)	157 (11.2%)	355 (25.2%)	212 (15.1%)	502 (35.7%)	80 (5.7%)	25 (1.8%)	1,408



Institution Type	Completions (2021)	Market Share
Public, 2-year	783	55.6%
Public, 4-year or above	498	35.4%
Private not-for-profit, 4-year or above	127	9.0%

Just over half (55.6%) of awards were conferred by public two-year institutions, however the University of Minnesota, Twin Cities had the largest number of completions in SY2021, comprising 20.2% of related awards conferred. Completions are up overall by 7.2% from 2012.

Automotive Technology Postsecondary Program Awards by Institution, SY2021

Institution	Completions (2021)	Growth % YOY (2021)	Market Share (2021)	IPEDS Tuition & Fees (2021)	Completions Tren (2017-2021)
University of Minnesota-Twin Cities	285	-0.3%	20.2%	\$15,254	
Hennepin Technical College	245	33.2%	17.4%	\$5,741	
University of Minnesota-Duluth	121	-8.3%	8.6%	\$13,850	
University of St Thomas	105	-19.8%	7.5%	\$48,329	
Dakota County Technical College	63	6.8%	4.5%	\$6,208	
Alexandria Technical & Community College	57	-10.9%	4.0%	\$5,910	
Central Lakes College-Brainerd	57	-10.9%	4.0%	\$5,954	
Minnesota State University-Mankato	56	-16.4%	4.0%	\$9,146	
Minnesota West Community and Technical College	46	-6.1%	3.3%	\$6,286	
South Central College	38	-34.5%	2.7%	\$5,966	
St Cloud Technical and Community College	38	-9.5%	2.7%	\$5,874	
Saint Cloud State University	36	-14.3%	2.6%	\$9,170	
Northland Community and Technical College	32	100.0%	2.3%	\$6,052	
Minnesota State Community and Technical College	28	3.7%	2.0%	\$5,862	
Saint Paul College	28	-15.2%	2.0%	\$6,041	
Ridgewater College	23	-8.0%	1.6%	\$5,914	
Riverland Community College	23	35.3%	1.6%	\$6,060	
Century College	22	-26.7%	1.6%	\$5,907	
Dunwoody College of Technology	22	-47.6%	1.6%	\$23,863	
Pine Technical & Community College	18	-33.3%	1.3%	\$4,489	

The clearest gap in program offerings is for Mechanical Engineering Technicians, which are both an area of talent shortages and where Minnesota institutions fall short of national award benchmarks. There were only 25 Bachelor's-level Automotive Engineering Technology graduates in the most recent school year, and only one Associate-level award conferred for Mechanical Engineering Technology. There were no Alternative Fuel Vehicle Technology completions. All three of these programs (CIP 15.0803, 15.0805, and 47.0614) are prime for exploration of certificate or two-year program growth or development given local employer demand.

Promising Approaches to Addressing Possible Misalignments

A variety of strategies may improve the outlook for transportation talent in need. In the Automotive Technology pathway, most occupations have low talent diversity by race and gender. Many also have a higher than average share of their workforce that is over 45 years of age. In fact, one-hundred percent of Electrical and Electronics Installers and Repairers in Minnesota are between the ages of 55 and 64 years of age.

Postsecondary programs aligned to Mechanical Engineers and Mechanical Engineering Technologists are underproducing graduates in comparison to national benchmarks. These two occupations are also experiencing talent shortages and have a low share of BIPOC graduates, and a low share of female workers and graduates. Automotive Service Technicians have the highest volume of employment and the highest number related graduates; there were 454 graduates specifically from Automotive Mechanic programs in Minnesota during the 2021 school year, plus another 168 graduates of Truck and Diesel Mechanic programs—both of which are counted in the table below.

Postsecondary Strategy Summary Table, Minnesota 2022

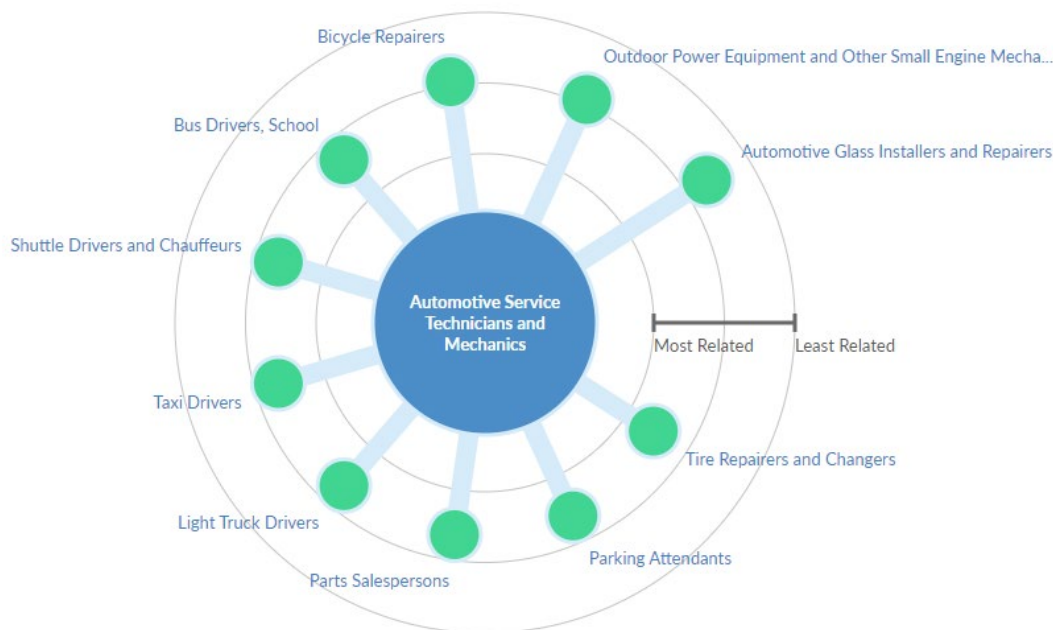
Occupation	Related Programs*	2022Q3 Empl	Talent Shortage	Workforce BIPOC by Race	Workforce Hispanic/Latinx	Workforce Female	Workforce Under 45	SY2021 Graduates (Certificate and AA/AS only)	Award Gap (All Award Levels)**	Graduates BIPOC by Race or Ethnicity (All Award Levels)	Graduates Female (All Award Levels)
Automotive Service Technicians and Mechanics	<ul style="list-style-type: none"> Automobile/Automotive Mechanics Technology/Technician Hydraulics and Fluid Power Technology/Technician Diesel Mechanics Technology/Technician Medium/Heavy Vehicle and Truck Technology/Technician 	13,649	Y	10.4%	7.6%	2.4%	59.9%	622	N	24.2%	4.4%
Mechanical Engineers	<ul style="list-style-type: none"> Mechanical Engineering 	6,313	Y	15.3%	2.2%	8.6%	61.1%	0	Y	24.4%	14.8%
Mechanical Engineering Technologists and Technicians	<ul style="list-style-type: none"> Mechanical Engineering Technology/Technician Automotive Engineering Technology/Technician Automation Engineer Technology/Technician 	1,003	Y	11.7%	3.1%	21.7%	48.5%	189	Y	25.2%	10.7%
Electronic Equipment Installers and Repairers, Motor Vehicles	<ul style="list-style-type: none"> Alternative Fuel Vehicle Technology/Technician 	216	N	10.6%	5.1%	4.6%	41.3%	0	N	N/A	N/A
Electrical and Electronics Installers and Repairers, Transportation Equipment	N/A	45	N	10.4%	4.9%	4.5%	0.0%	N/A	N	N/A	N/A
Automotive Technology Pathway	All nine aligned programs	21,227	Y	11.9%	5.7%	5.2%	59.4%	801	Y	25.5%	9.4%
All Occupations		3,038,766		15.0%	5.2%	48.3%	56.5%	29,484		37.3%	65.6%

NOTE: Red highlighting indicates lower than overall share of workforce or graduate pool, or existence of occupation or award gap. *Related programs may overlap among occupations within the pathway or across other Transportation career pathways. Only those programs most tightly aligned to the occupation in question are listed in this column. **Award gaps are estimated based on a wider alignment of programs than what is illustrated in this table.

Career Pathway Opportunities

When considering occupations that have significant skill and experience overlap with the occupations of highest need in this pathway, the majority have low employment numbers or are other careers in the Transportation sector that share high demand. The graphic below offers several careers related to the Automotive Service Technician occupation in skill demands that have highly relevant skill and experience overlap that would be strong feeder occupations for talent.

Feeder Occupations into Automotive Service Technician Roles, 2023Q1



Occupation	Category	Relevance	Avg. Unique Monthly Postings from Jan 2022 - Dec 2022	Mean Salary Diff.
Tire Repairers and Changers	Advancement	78%	42	-\$15,837
Parking Attendants	Lateral Advancement	69%	48	-\$18,555
Parts Salespersons	Lateral Advancement	68%	85	-\$9,806
Light Truck Drivers	Lateral Advancement	67%	356	-\$6,554
Taxi Drivers	Lateral Advancement	67%	33	-\$10,893
Shuttle Drivers and Chauffeurs	Lateral Advancement	67%	32	-\$10,893
Bus Drivers, School	Lateral Advancement	67%	26	-\$10,893
Bicycle Repairers	Advancement	47%	4	-\$5,183
Outdoor Power Equipment and Other Small Engine Mechanics	Advancement	46%	4	-\$9,058
Automotive Glass Installers and Repairers	Advancement	33%	7	-\$7,210

FAQ

What is a location quotient?

A location quotient (LQ) is a measurement of concentration in comparison to the nation. An LQ of 1.00 indicates a region has the same concentration of an industry (or occupation) as the nation. An LQ of 2.00 would mean the region has twice the expected employment compared to the nation and an LQ of 0.50 would mean the region has half the expected employment in comparison to the nation.

What is a cluster?

A cluster is a geographic concentration of interrelated industries or occupations. If a regional cluster has a location quotient of 1.25 or greater, the region is considered to possess a competitive advantage in that cluster.

What is separation demand?

Separation demand is the number of jobs required due to separations—labor force exits (including retirements) and turnover resulting from workers moving from one occupation into another. Note that separation demand does not include all turnover—it does not include when workers stay in the same occupation but switch employers. The total projected demand for an occupation is the sum of the separation demand and the growth demand (which is the increase or decrease of jobs in an occupation expected due to expansion or contraction of the overall number of jobs in that occupation).

What is the difference between industry wages and occupation wages?

Industry wages and occupation wages are estimated via separate data sets, often the time periods being reported do not align, and wages are defined slightly differently in the two systems (for example, certain bonuses are included in the industry wages but not the occupation wages). It is therefore common that estimates of the average industry wages and average occupation wages in a region do not match exactly.

What is NAICS?

The North American Industry Classification System (NAICS) is used to classify business establishments according to the type of economic activity. The NAICS Code comprises six levels, from the “all industry” level to the 6-digit level. The first two digits define the top level category, known as the “sector,” which is the level examined in this report.

What is SOC?

The Standard Occupational Classification system (SOC) is used to classify workers into occupational categories. All workers are classified into one of over 804 occupations according to their occupational definition. To facilitate classification, occupations are combined to form 22 major groups, 95 minor groups, and 452 occupation groups. Each occupation group includes detailed occupations requiring similar job duties, skills, education, or experience.

Who created this report?

This report was developed by RealTime Talent for the Transportation Center of Excellence. If you have questions about the data found in this report, or are interested in learning more, please contact the Senior Director of Strategic Research, Erin Olson at erin@realtimetalentmn.org or visit the RealTime Talent website at www.realtimetalent.org