SUPPLY AND DEMAND ANALYSIS

Transportation Pathways

2022

MINNESOTA STATE
Transportation Center of Excellence

Developed for the Minnesota State Transportation Center of Excellence by RealTime Talent

January 2023

AUTOMOTIVE TECHNOLOGY

Supply & Demand Analysis

2022

MINNESOTA STATE
Transportation Center of Excellence

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, 2022Q3[1]

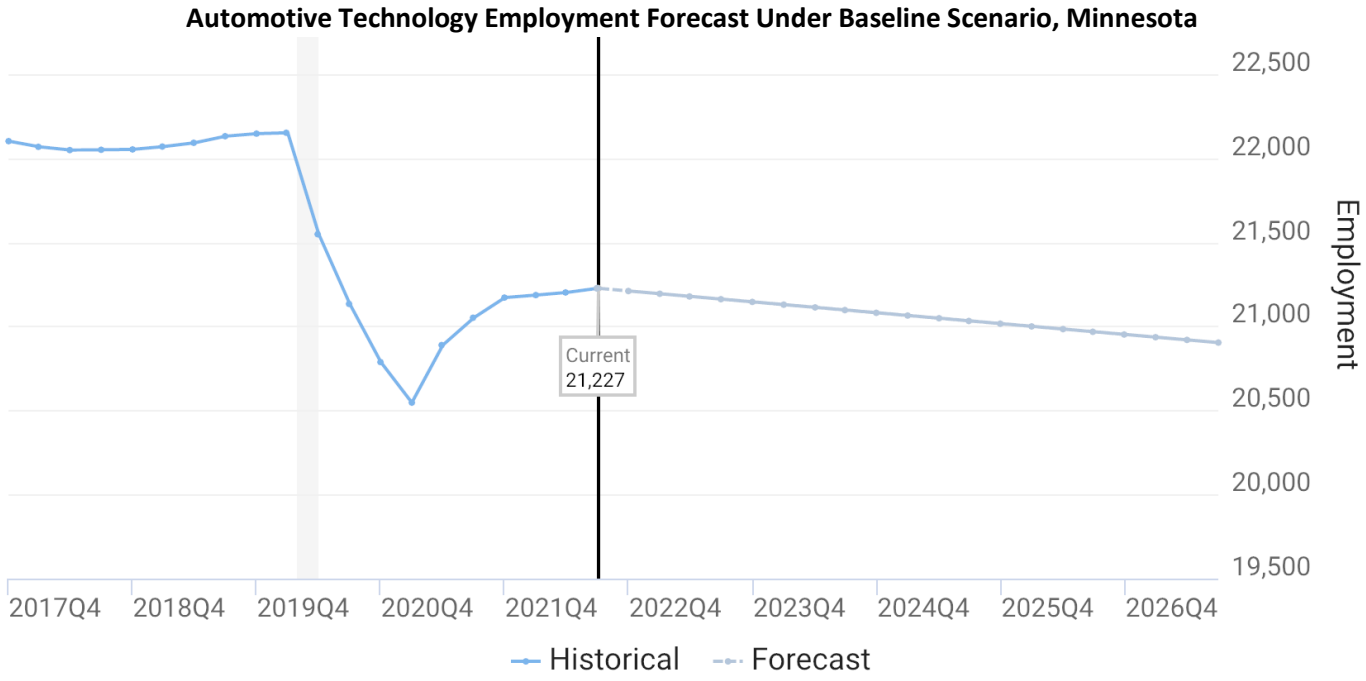
	Current						5-Year History		5-Year Baseline Forecast				
Occupation	**Empl**	**Avg Ann Wages[2]**	**LQ**	**Unempl**	**Unempl Rate**	**Online Job Ads[3]**	**Empl Change**	**Ann %**	**Total Demand**	**Exits**	**Transfers**	**Empl Growth**	**Ann % Growth**
Automotive Technology Pathway	21,227	$66,900	1.02	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
Note: Figures may not sum due to rounding.
1. Data based on a four-quarter moving average unless noted otherwise.
2. Wage data represent the average for all Covered Employment
3. Data represent found online ads active within the last thirty days in the selected region; data represents a sampling rather than the complete universe of postings. Ads lacking zip code information but designating a place (city, town, etc.) may be assigned to the zip code with greatest employment in that place for queries in this analytic. Due to alternative county-assignment algorithms, ad counts in this analytic may not match that shown in RTI (nor in the popup window ad list).

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

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.

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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

		CURRENT			10-YEAR DEMAND			
NAICS Code	Industry Title	% 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.

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

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, 2022Q3[1]

		Current						1-Year History		1-Year Forecast		5-Year Baseline Forecast				
SOC	Occupation	Empl	Avg Ann Wages[2]	LQ	Unempl	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.

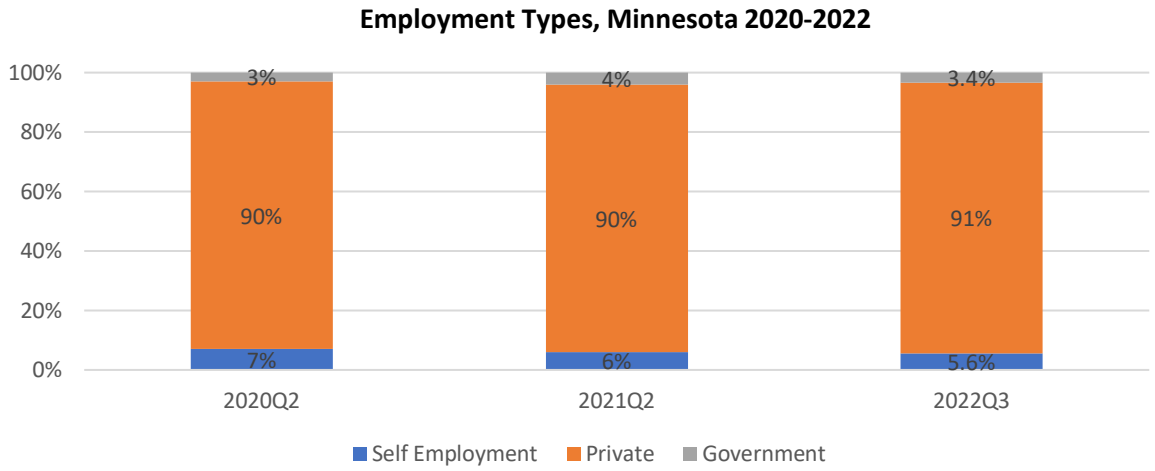
Occupation Wages, Average Annual in Minnesota, 2022Q3

					Percentiles				
SOC	Occupation	Mean	Entry Level	Experienced	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.

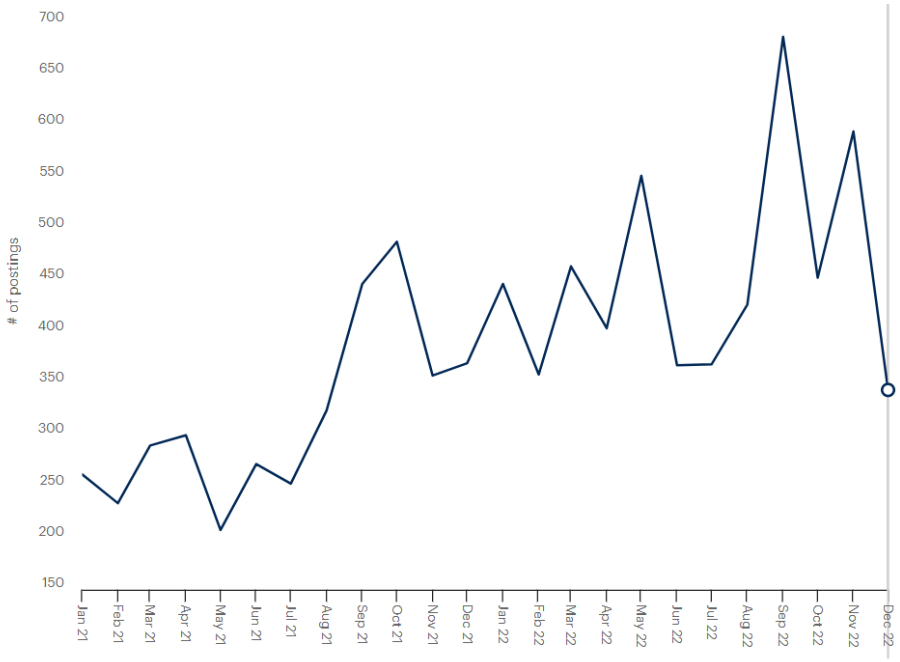


Job Posting Trends

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.

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

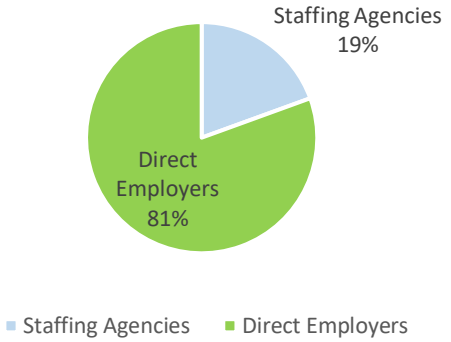
Volume of Career Pathway Online Job Postings in 2021 and 2022



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



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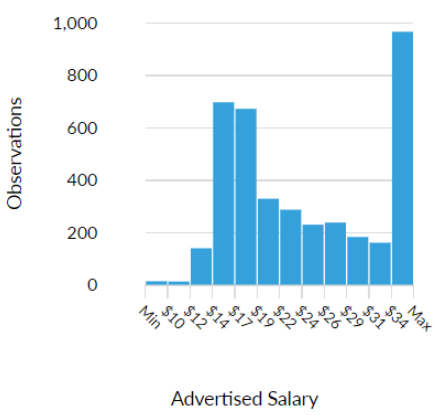
New Job Postings by Industry or Employer Type

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



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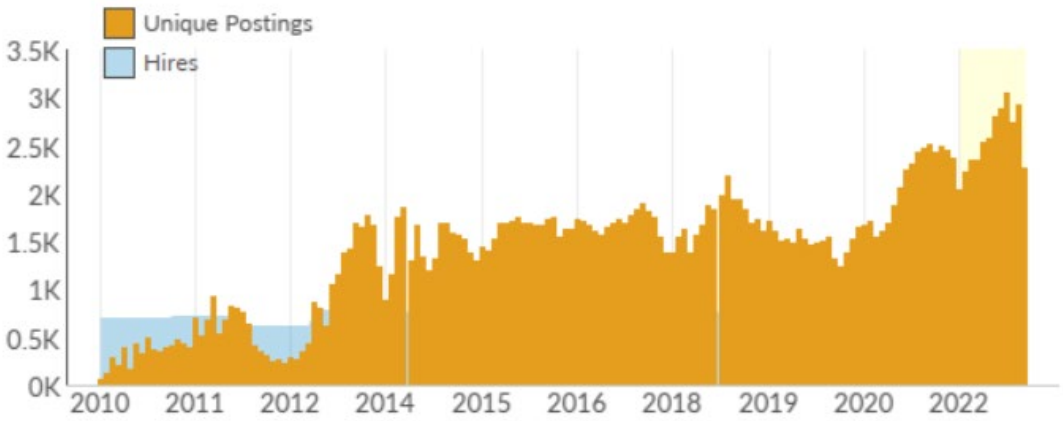
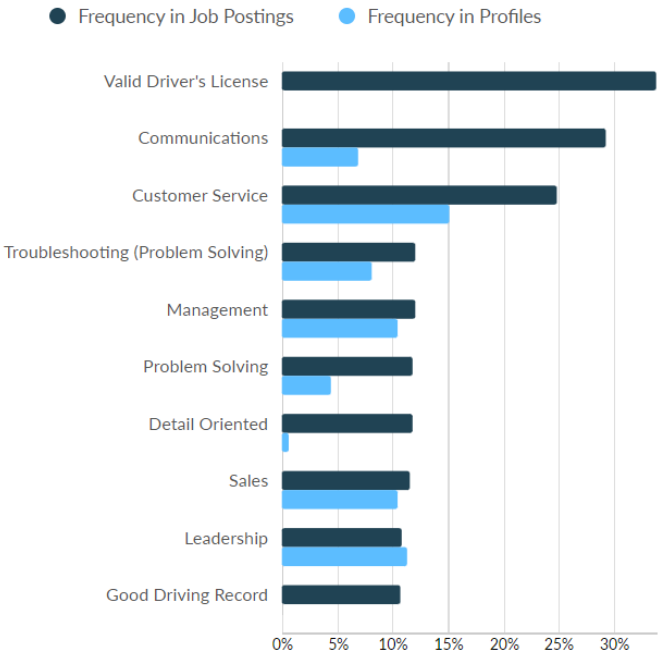
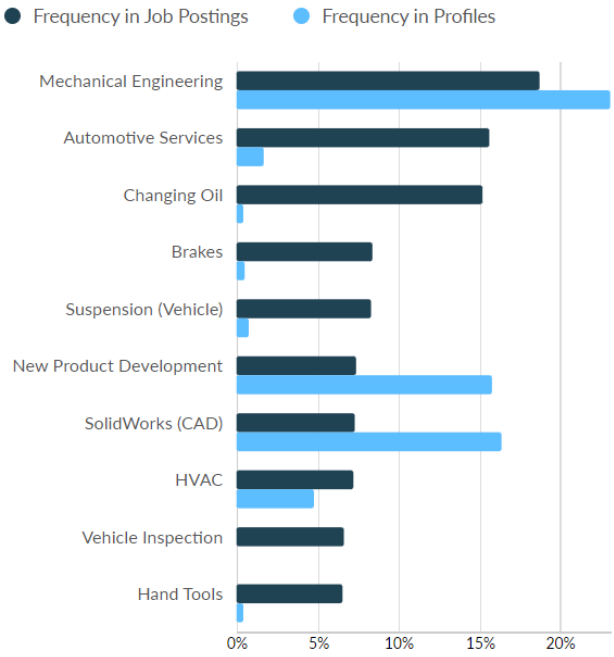
Monthly Ratio of Unique Job Postings to Estimated Hires



Top Common Skills



Top Specialized Skills



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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

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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

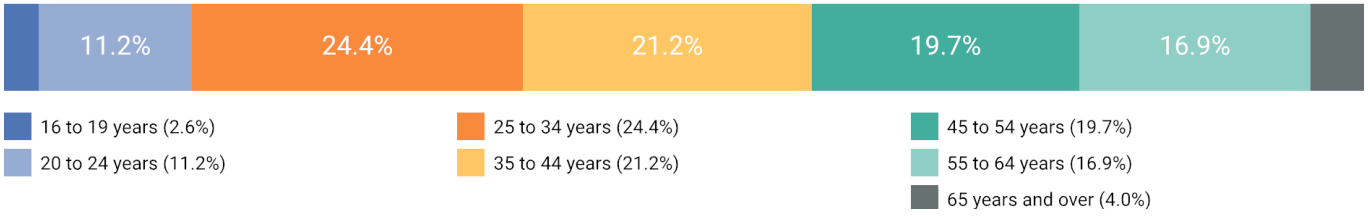
		Empl (Place of Residence)								Overall Occupation[1]		
SOC	Occupation	< High School	High School	Some College	2-Year	4-Year	Master's	PhD	Total Empl	Underemployed	Unemployed	Unempl Rate
17-2141	Mechanical Engineers	0.2%	1.9%	3.2%	8.9%	60.2%	21.6%	3.9%	6,160	N/A	88	1.4%
17-3027	Mechanical Engineering 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.

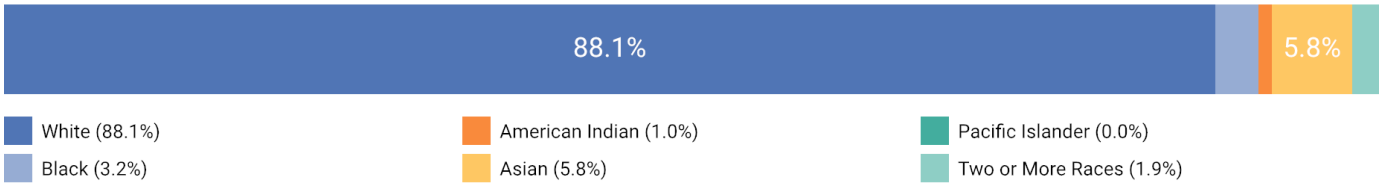
Workforce Demographics

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.

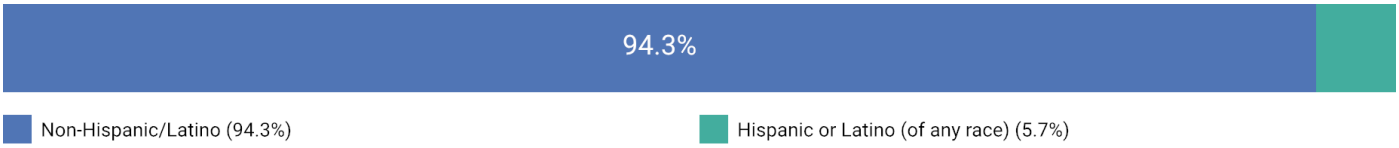
Automotive Technology Workforce Age Demographics, 2022Q3



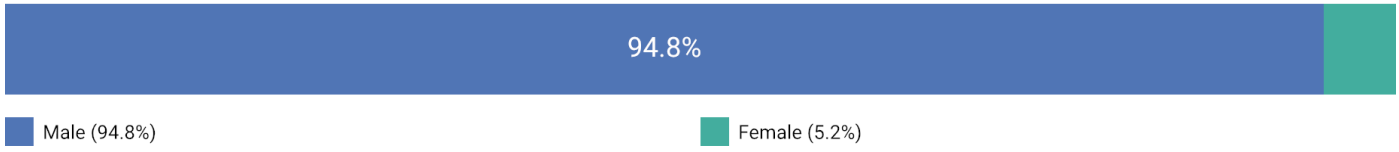
Automotive Technology Workforce Race Demographics, 2022Q3



Automotive Technology Workforce Ethnicity Demographics, 2022Q3



Automotive Technology Workforce Gender Demographics, 2022Q3



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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 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

[2] NCES IPEDS 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

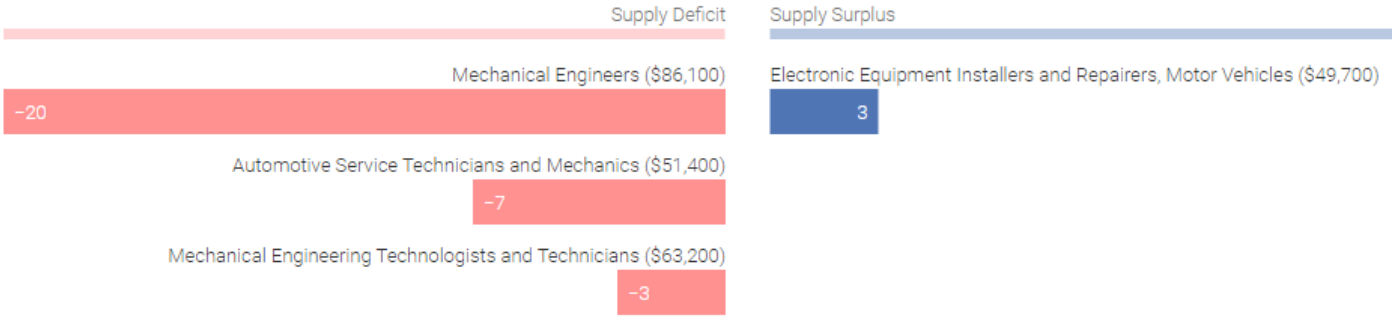
Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/10/2022 at talentneuronplan.gartner.com

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.

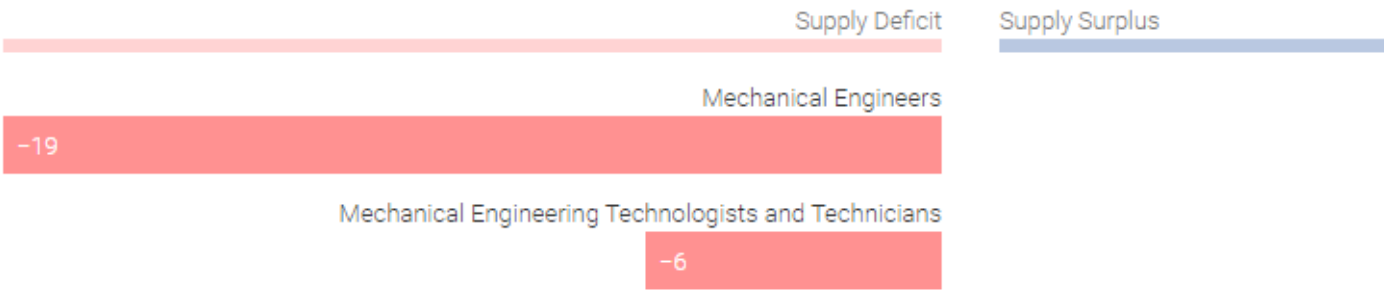
Estimated Occupation Gaps over Five Years in Minnesota



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

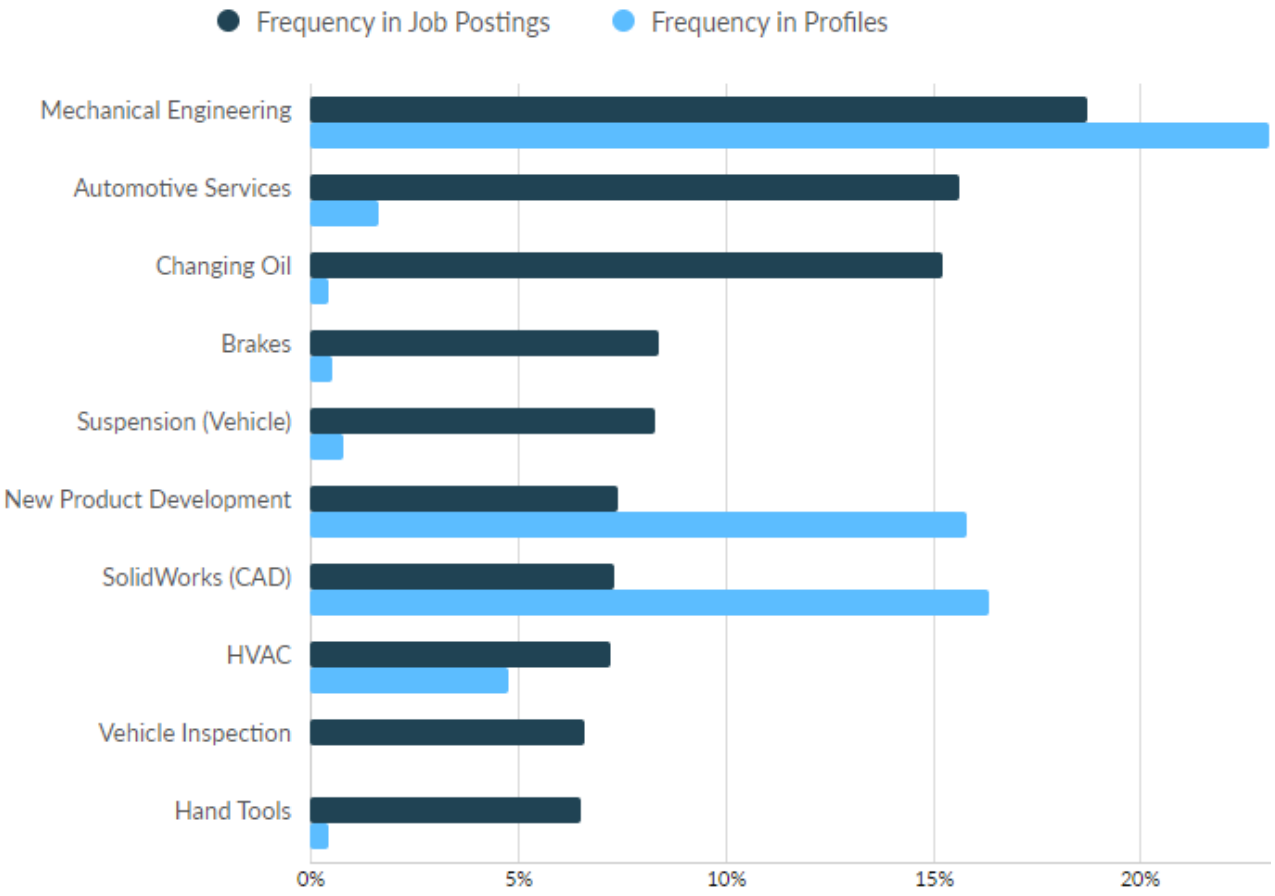


Skill Misalignments

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.

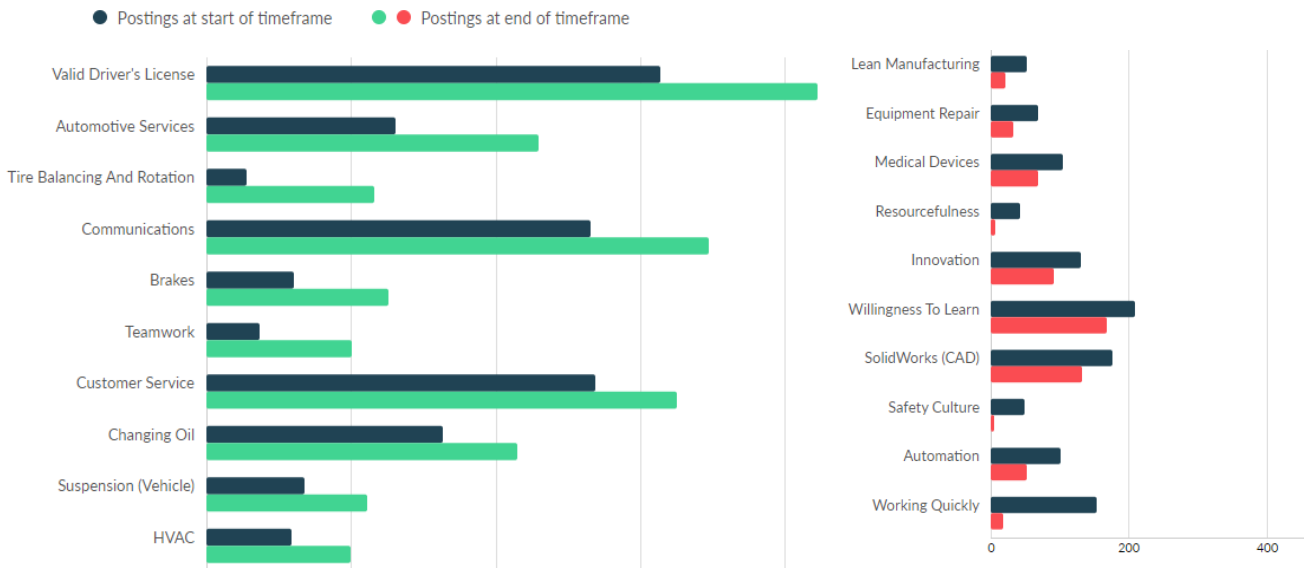
Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/10/2022 at talentneuronplan.gartner.com

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.

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

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	

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

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.

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

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	• 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	• Mechanical Engineering	6,313	Y	15.3%	2.2%	8.6%	61.1%	0	Y	24.4%	14.8%
Mechanical Engineering Technologists and Technicians	• 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	• 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%**

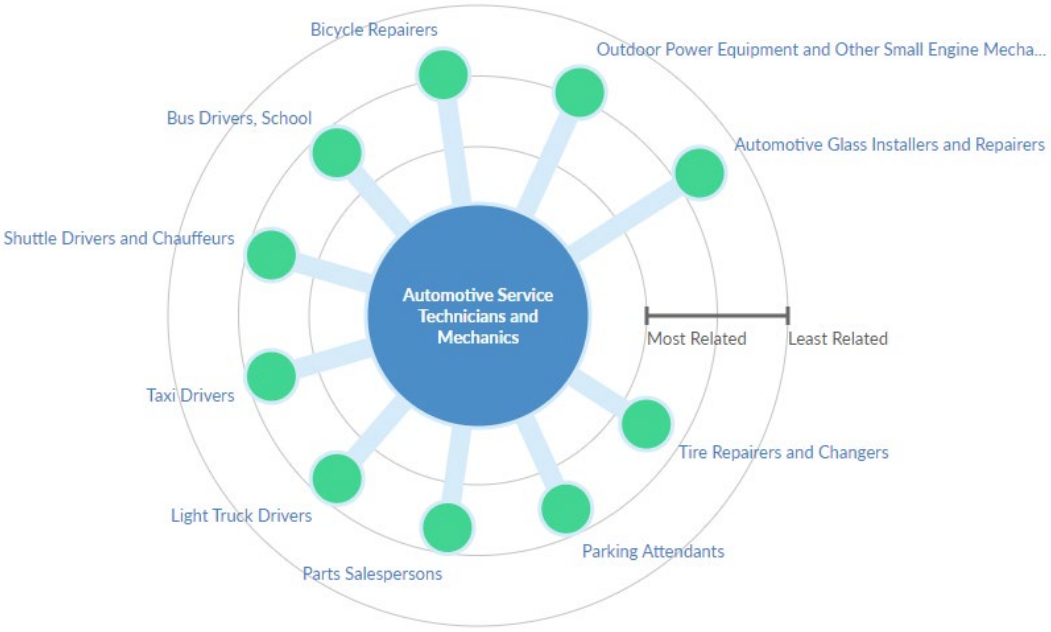
NOTE: Red highlighting indicates lower than overall share of workforce or graduate pool, or existence of occupation or award gap. *Related programs may overlap among occupations within the pathway or across other Transportation career pathways. Only those programs most tightly aligned to the occupation 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.

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

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

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

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

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

AVIATION

Supply & Demand Analysis

2022

MINNESOTA STATE
Transportation Center of Excellence

Introduction and Sector Overview

This report highlights the importance of the Aviation and Drone Technology career pathway for Minnesota's Transportation Industry. Professionals in Aviation and Drone Technology work in diverse roles from piloting, air traffic controlling, and aircraft maintenance technician, as well as designing, servicing, or piloting drones.[1] In all, about 9,162 people work in Aviation and Drone Technology roles in Minnesota as of the third quarter of 2022—a 7.5% increase (642 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, Aviation and Drone Technology employment is anticipated to grow moderately in Minnesota by about 86 total jobs (0.2% annually). Total baseline demand for Aviation and Drone Technology talent is anticipated to be around 4,615 professionals needed to fill positions due to job exits and transfers, such as retirements and job changes.

Transportation Pathways in Minnesota – Baseline Forecast, 2022Q3[1]

	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.

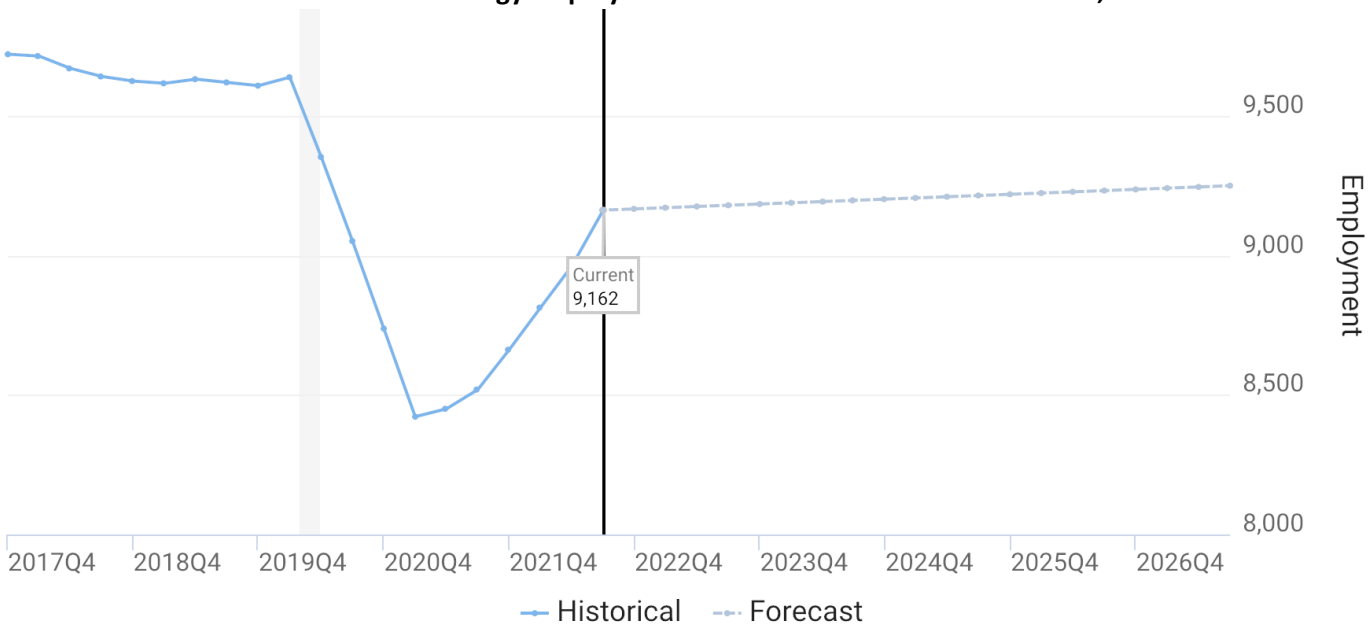
Source: JobsEQ®
Data as of 2023Q3 unless noted otherwise
Note: Figures may not sum due to rounding.
1. Data based on a four-quarter moving average unless noted otherwise.
2. Wage data represent the average for all Covered Employment
3. Data represent found online ads active within the last thirty days in the selected region; data represents a sampling rather than the complete universe of postings. Ads lacking zip code information but designating a place (city, town, etc.) may be assigned to the zip code with greatest employment in that place for queries in this analytic. Due to alternative county-assignment algorithms, ad counts in this analytic may not match that shown in RTI (nor in the popup window ad list).

[1] Drone Technology careers were added to the Aviation Pathway in this report, but were not included in the prior 2020 version of this report. Another way that this pathway has been described in other reports is Aviation and Drone Technology Pathway.

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/21/2023 at talentneuronplan.gartner.com

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 Aviation and Drone Technology careers 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 has improved since 2021's estimates, with a baseline forecast of about 0.2% growth in overall employment by the second quarter of 2027.

Aviation and Drone Technology Employment Forecast Under Baseline Scenario, Minnesota



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

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/21/2023 at talentneuronplan.gartner.com

Industry/Occupation Mix

Aviation and Drone Technology talent is primarily concentrated in the Scheduled Air Transportation Industry (39.7%) but are critical to a wide range of air transportation and aerospace industries in Minnesota, beginning to rise to the pre-pandemic volumes of Aviation and Drone Technology talent employment.

Top Industry Distribution for Aviation and Drone Technology Pathway Occupations in Minnesota

		CURRENT			10-YEAR DEMAND			
NAICS Code	Industry Title	% of Occ Empl	Empl	Avg Ann Wages	Exits	Transfers	Empl Growth	Total Demand
4811	Scheduled Air Transportation	39.7%	3,640	$118,300	1,447	2,807	105	4,359
4881	Support Activities for Air Transportation	10.4%	950	$72,000	322	575	93	990
5413	Architectural, Engineering, and Related Services	4.4%	400	$97,200	101	172	-27	247
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	4.1%	377	$111,100	101	169	-17	252
9261	Administration of Economic Programs	4.0%	364	$135,700	122	243	-17	348
4812	Nonscheduled Air Transportation	3.3%	305	$103,100	118	227	10	354
4921	Couriers and Express Delivery Services	3.2%	293	$99,400	103	194	33	330
5511	Management of Companies and Enterprises	3.0%	274	$109,200	78	139	2	220
5613	Employment Services	2.7%	246	$60,100	84	141	10	235
3364	Aerospace Product and Parts Manufacturing	2.5%	225	$61,500	78	128	-43	163
6219	Other Ambulatory Health Care Services	1.8%	164	$81,500	61	116	1	178
5417	Scientific Research and Development Services	1.2%	106	$116,400	28	48	8	84
9211	Executive, Legislative, and Other General Government Support	1.1%	99	$94,900	31	58	-3	85
3391	Medical Equipment and Supplies Manufacturing	1.1%	98	$90,300	26	44	2	73
5416	Management, Scientific, and Technical Consulting Services	1.0%	93	$103,100	26	45	11	81
9231	Administration of Human Resource Programs	0.9%	85	$110,400	25	46	-2	69
5415	Computer Systems Design and Related Services	0.9%	83	$117,900	24	41	14	79
9281	National Security and International Affairs	0.8%	77	$121,200	24	45	-5	64
9221	Justice, Public Order, and Safety Activities	0.8%	77	$110,500	23	42	-5	60
3344	Semiconductor and Other Electronic Component Manufacturing	0.8%	70	$114,100	18	30	-1	47
n/a	All Others	12.4%	1,136	n/a	330	581	5	916

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.

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/21/2023 at talentneuronplan.gartner.com

Talent Demand Detail

Employment and Wage Overview

Of all occupations found in the Aviation and Drone Technology pathway, the specific occupations of Airline Pilots, Air Traffic Controllers, and Electro-Mechanical and Mechatronics Techs are uniquely concentrated in Minnesota to a higher degree than seen in the nation overall. On average, Aviation careers pay about $115,200 per year—about $51,500 higher than the average wage statewide across all positions. There is significant variation in average wages across this field, with Airline Pilots with the highest average wages at $139,700 compared to Aircraft Structure, Surfaces, Rigging, and Systems Assemblers at $61,800 annually.

Aviation Pathway in Minnesota – Baseline Forecast, 2022Q3[1]

		Current						1-Year History		1-Year Forecast		5-Year Baseline Forecast				
SOC	Occupation	Empl	Avg Ann Wages[2]	LQ	Unempl	Unempl Rate	Online Job Ads[3]	Empl Change	Ann %	Empl Change	Ann %	Total Demand	Exits	Transfers	Empl Change	Ann % Change
53-2011	Airline Pilots, Copilots, and Flight Engineers	2,970	$139,700	1.74	36	1.2%	1	333	12.6%	9	0.3%	1,927	632	1,248	47	0.3%
49-3011	Aircraft Mechanics and Service Technicians	2,041	$85,300	0.75	24	1.2%	51	188	10.2%	10	0.5%	863	302	510	50	0.5%
17-2199	Engineers, All Other	1,981	$116,200	0.62	18	1.0%	80	9	0.5%	0	0.0%	632	237	396	-1	0.0%
53-2012	Commercial Pilots	636	$133,800	0.68	7	1.2%	38	61	10.6%	3	0.4%	418	136	269	13	0.4%
53-2021	Air Traffic Controllers	575	$154,000	1.48	16	2.8%	6	-15	-2.6%	-1	-0.2%	298	100	203	-5	-0.2%
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	290	$61,800	0.42	21	7.1%	5	33	12.9%	-4	-1.3%	141	60	99	-18	-1.3%
17-3024	Electro-Mechanical and Mechatronics Technologists and Technicians	288	$64,400	1.22	4	1.4%	87	-3	-1.2%	-2	-0.7%	126	49	86	-9	-0.7%
53-2022	Airfield Operations Specialists	182	$65,000	0.69	5	2.7%	7	17	10.4%	1	0.5%	103	33	66	5	0.5%
53-1041	Aircraft Cargo Handling Supervisors	126	$69,200	0.64	1	0.9%	1	12	11.0%	0	0.4%	78	23	52	2	0.4%
49-2091	Avionics Technicians	73	$76,200	0.19	5	5.9%	37	7	10.3%	0	0.5%	30	12	15	2	0.5%
	Aviation and Drone Technology Pathway	**9,162**	**$115,200**	**0.86**	**139**	**1.5%**	**313**	**642**	**7.5%**	**17**	**0.2%**	**4,615**	**1,584**	**2,945**	**86**	**0.2%**
	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®
Data as of 2022Q3 unless noted otherwise
Note: Figures may not sum due to rounding.
1. Data based on a four-quarter moving average unless noted otherwise.
2. Wage data represent the average for all Covered Employment
3. Data represent found online ads active within the last thirty days in the selected region; data represents a sampling rather than the complete universe of postings. Ads lacking zip code information but designating a place (city, town, etc.) may be assigned to the zip code with greatest employment in that place for queries in this analytic. Due to alternative county-assignment algorithms, ad counts in this analytic may not match that shown in RTI (nor in the popup window ad list).

The Aviation and Drone Technology pathway saw wage averages drop from the prior year's estimates due in part to a greater influx of lower wage positions.[2] Entry-level wages in the pathways far exceed the average entry-level wages observed across all occupations statewide, paying an average of $79,800 annually for entry-level talent.

[2] 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.

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/21/2023 at talentneuronplan.gartner.com

Occupation Wages, Average Annual in Minnesota, 2022Q3

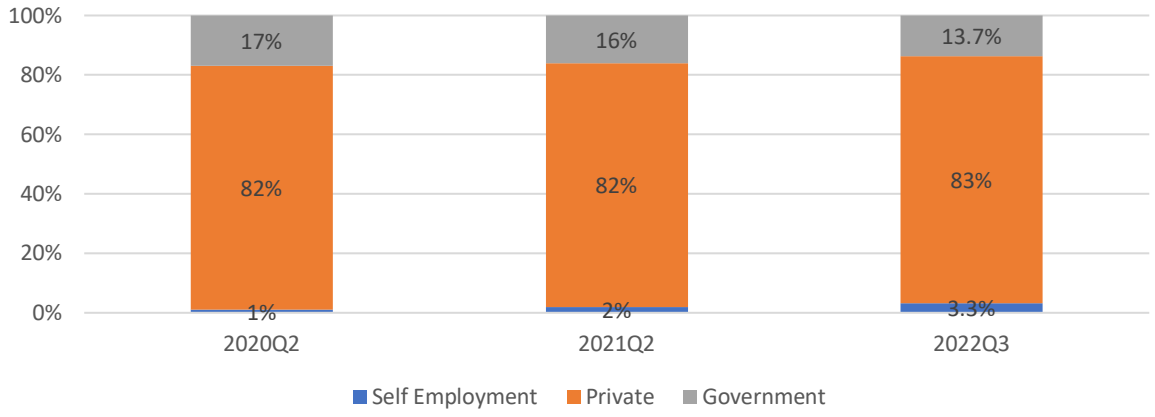
					Percentiles				
SOC	Occupation	Mean	Entry Level	Experienced	10%	25%	50% (Median)	75%	90%
17-2199	Engineers, All Other	$116,200	$79,000	$134,800	$71,900	$93,000	$112,000	$132,700	$163,500
17-3024	Electro-Mechanical and Mechatronics Technologists and Technicians	$64,400	$48,600	$72,400	$47,400	$52,500	$63,100	$76,000	$83,200
49-2091	Avionics Technicians	$76,200	$54,000	$87,200	$48,700	$63,000	$69,100	$81,700	$96,800
49-3011	Aircraft Mechanics and Service Technicians	$85,300	$51,400	$102,200	$45,400	$62,500	$78,600	$118,700	$128,800
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	$61,800	$37,800	$73,800	$35,100	$43,500	$54,000	$78,000	$89,000
53-1041	Aircraft Cargo Handling Supervisors	$69,200	$50,500	$78,600	$48,900	$52,800	$52,900	$81,100	$102,000
53-2011	Airline Pilots, Copilots, and Flight Engineers	$139,700	$108,400	$155,300	$108,400	$108,500	$109,200	$137,300	$173,500
53-2012	Commercial Pilots	$133,800	$68,700	$166,300	$59,800	$86,500	$122,600	$160,100	$218,700
53-2021	Air Traffic Controllers	$154,000	$107,900	$177,100	$86,300	$142,600	$164,500	$181,400	$195,900
53-2022	Airfield Operations Specialists	$65,000	$38,700	$78,100	$35,600	$44,900	$57,800	$75,800	$91,300
	Aviation and Drone Technology Pathway	**$115,200**	**$79,800**	**$132,800**	**$74,700**	**$89,300**	**$102,100**	**$130,300**	**$157,200**
	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 83% of people employed in Aviation and Drone Technology careers in Minnesota work for private employers, while only about 3.3% are self-employed (a slight increase over the past three years). The remaining 13.7% work for state, federal, or local government entities (mostly federal). The share employed by government agencies has declined considerably over the past few years.

Employment Types, Minnesota 2020-2022



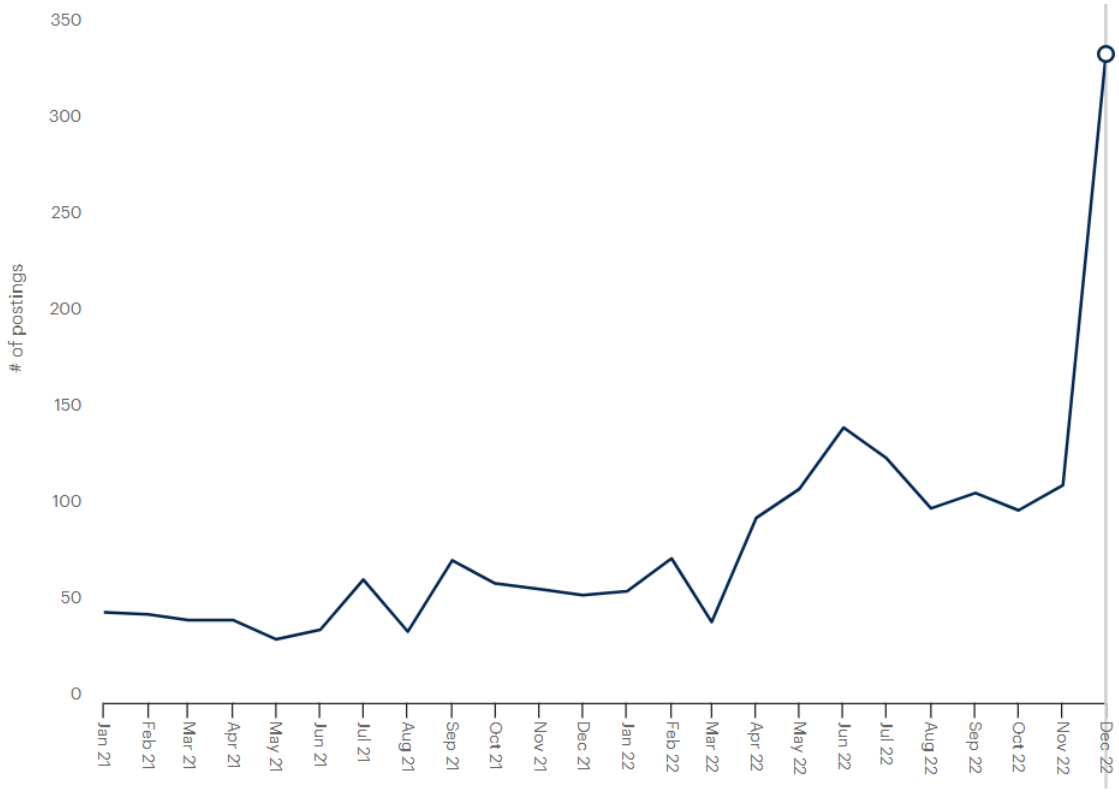
Job Posting Trends

Data in this section focuses on jobs newly advertised between January 1 and December 31, 2022 in Aviation and Drone 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. Incredibly, there were 1,412 new jobs advertised in Aviation careers during this time frame, an increase of 135% from the prior 12-month period (2021; a 138% increase among direct employers) and the first turnaround in demand since the

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/21/2023 at talentneuronplan.gartner.com

onset of the COVID-19 pandemic. The largest number of job postings over the past two years were advertised in December 2022. The majority of postings were advertised in December 2022. Volume of posted positions advertised by staffing and temp agencies in the Aviation and Drone Technology pathway grew at a slightly lower rate than those of direct employers. Posted wages increased to an average $19.66 per hour as of 2022, and there was about 1 hire per every 3 unique job postings advertised based on Lightcast estimates.

Volume of Career Pathway Online Job Postings in 2021 and 2022

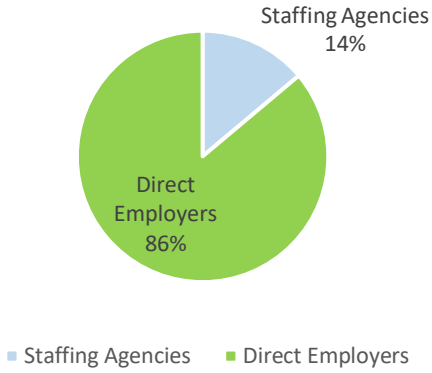


Top Employers by Volume of New Job Postings, With Change from Prior Year

	Employer	Percent Change between 2021 and 2022
1.	U.S. Customs & Border Protection	0%
2.	Army	63%
3.	Air Evac Lifeteam	2,533%
4.	Delta Air Lines	48%
5.	I.K. Hofmann	New Entrant
6.	Signature Aviation	93%
7.	United Airlines	0%
8.	Aerotek	0%
9.	U.S. Navy	283%
10.	Elliott Aviation	450%

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/21/2023 at talentneuronplan.gartner.com

New Job Postings Advertised in Minnesota by Employer Type



New Job Postings by Industry or Employer Type

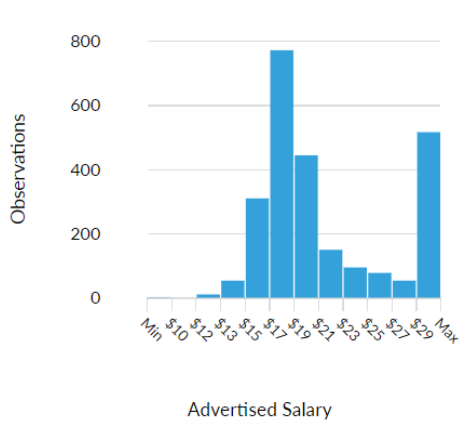
Industry	Total/Unique (Jan 2022 - Dec 2022)	Posting Intensity	Median Posting Duration
Manufacturing	5,546 / 1,496	4 : 1	28 days
Administrative and Support and Waste Management and Remediation Services	3,215 / 1,280	3 : 1	23 days
Professional, Scientific, and Technical Services	1,098 / 577	2 : 1	23 days
Retail Trade	996 / 422	2 : 1	21 days
Wholesale Trade	778 / 300	3 : 1	26 days
Health Care and Social Assistance	605 / 198	3 : 1	23 days
Finance and Insurance	385 / 151	3 : 1	21 days
Transportation and Warehousing	236 / 124	2 : 1	31 days
Other Services (except Public Administration)	379 / 124	3 : 1	31 days
Real Estate and Rental and Leasing	262 / 97	3 : 1	26 days

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/21/2023 at talentneuronplan.gartner.com

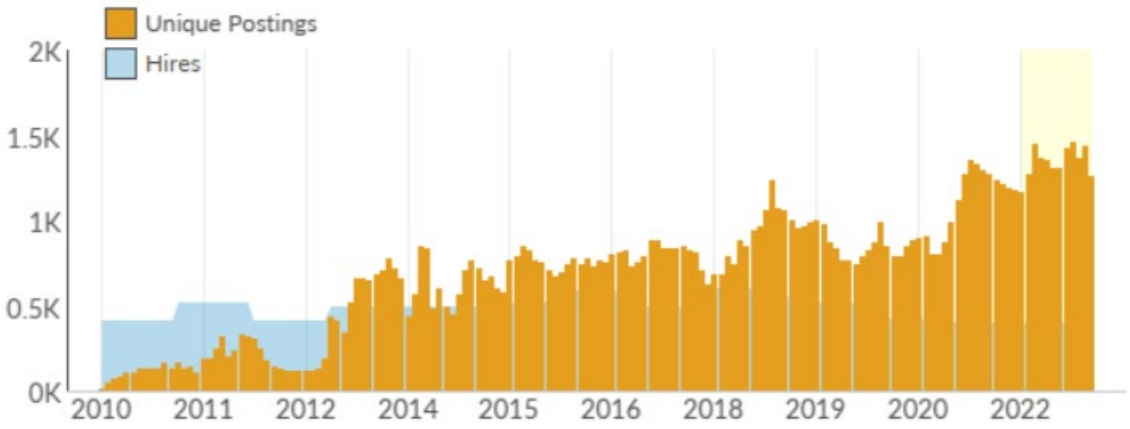
Pathway Advertised Salary Range

$19.66/hr

Median Advertised Salary

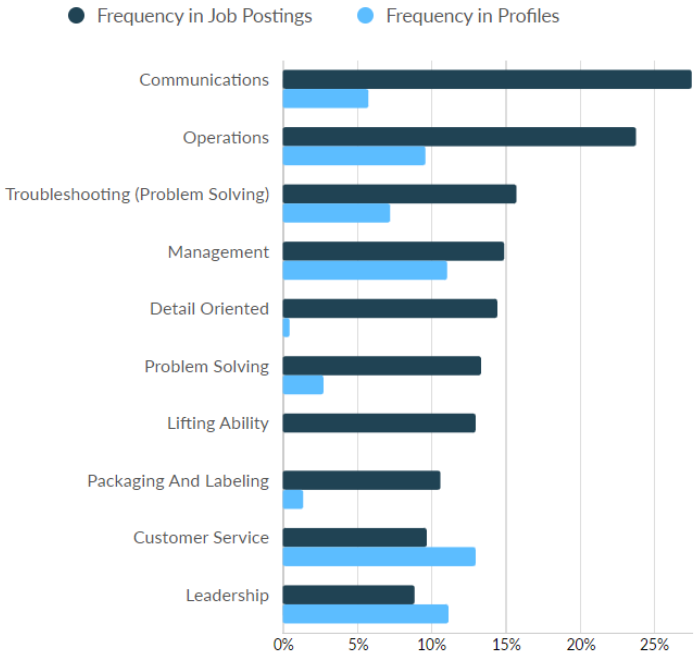


Monthly Ratio of Unique Job Postings to Estimated Hires

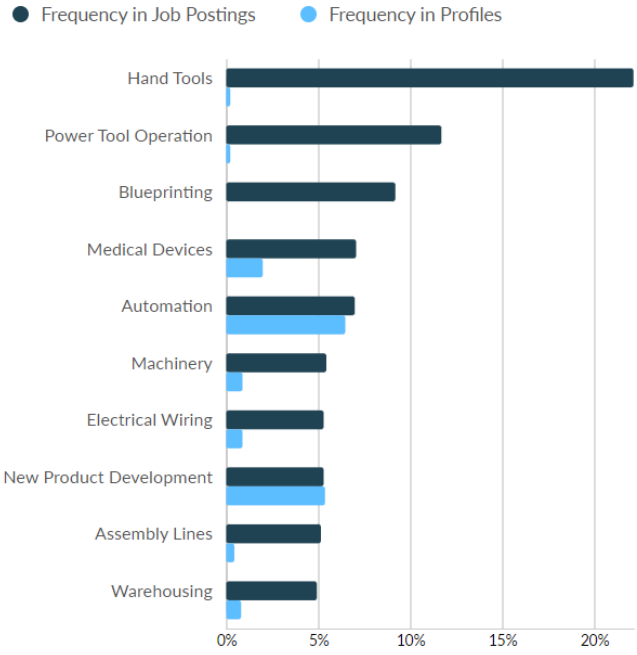


Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/21/2023 at talentneuronplan.gartner.com

Top Common Skills



Top Specialized Skills



Top Certifications and Qualifications

Qualification	Postings with Qualification
Airframe & Powerplant (A&P) Certificate	126
Master Of Business Administration (MBA)	63
Professional Engineer	57
FAA Instrument Rating	56
Airline Transport Pilot Licence	39
Engineer in Training	36
Forklift Certification	35
Security Clearance	32
Product Certification	31
American Medical Technologists (AMT) Certification	24

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/21/2023 at talentneuronplan.gartner.com

Talent Supply Detail

Talent Unemployment, Underemployment, and Educational Attainment

At an overall pathway unemployment rate of 1.5%, there are about 139 unemployed Aviation and Drone Technology professionals statewide. An additional 986 Aviation professionals are underemployed—meaning they are working in roles for which they are overqualified by education or experience.

Aviation and Drone Technology Pathway in Minnesota

		Empl (Place of Residence)								Overall Occupation[1]		
SOC	Occupation	< High School	High School	Some College	Two-Year	Four-Year	Master's	PhD	Total Empl	Underemployed	Unemployed	Unempl Rate
17-2199	Engineers, All Other	0.2%	1.3%	3.2%	6.1%	54.8%	26.1%	8.4%	1,861	0	18	1.0%
17-3024	Electro-Mechanical and Mechatronics Technologists and Technicians	1.8%	17.4%	20.7%	29.3%	25.8%	3.9%	1.2%	275	78	4	1.4%
49-2091	Avionics Technicians	0.8%	16.3%	29.4%	33.6%	17.3%	2.6%	0.0%	73	14	5	5.9%
49-3011	Aircraft Mechanics and Service Technicians	1.6%	18.4%	26.4%	32.6%	17.4%	2.5%	0.9%	1,977	0	24	1.2%
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	9.6%	42.7%	21.2%	13.9%	10.9%	1.3%	0.4%	281	33	21	7.1%
53-1041	Aircraft Cargo Handling Supervisors	3.6%	27.5%	22.1%	16.8%	24.2%	4.8%	0.9%	124	39	1	0.9%
53-2011	Airline Pilots, Copilots, and Flight Engineers	0.2%	1.7%	5.3%	5.6%	67.2%	16.4%	3.5%	2,902	0	36	1.2%
53-2012	Commercial Pilots	0.2%	2.1%	6.1%	6.8%	66.2%	15.4%	3.2%	596	0	7	1.2%
53-2021	Air Traffic Controllers	0.1%	6.9%	17.5%	16.0%	49.8%	8.7%	0.9%	562	313	26	2.8%
53-2022	Airfield Operations Specialists	0.1%	7.0%	17.6%	16.7%	49.3%	8.5%	0.8%	189	98	5	2.7%
	Aviation and Drone Technology Pathway	**0.9%**	**8.1%**	**12.1%**	**14.1%**	**47.8%**	**13.5%**	**3.5%**	**8,840**	**986**	**139**	**1.5%**
	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

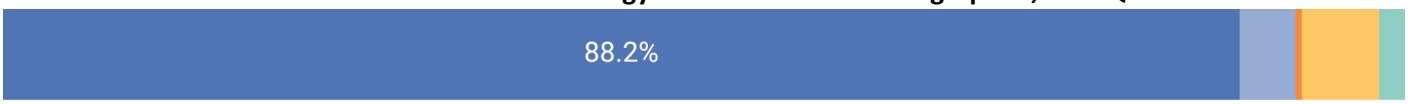
The Aviation and Drone Technology pathway has the smallest share of its workforce under the age of 25 out of all the Transportation pathways (4.6%), and 5% are over 64 years old. The largest demographic group by race are White, representing 88.2% of the total pathway's workforce, with the next largest cohort being Asian talent representing 5.6% of the workforce. About 3.3% of the pathway's workforce are Hispanic or Latinx, and 9.2% are female.

Aviation and Drone Technology Workforce Age Demographics, 2022Q3

16 to 19 years (0.4%)
20 to 24 years (4.2%)
25 to 34 years (22.0%)
35 to 44 years (25.7%)
45 to 54 years (22.5%)
55 to 64 years (20.2%)
65 years and over (5.0%)

Data for Aviation and Drone Technology Pathway, Minnesota
Source: JobsEQ®. Data as of 2022Q3.

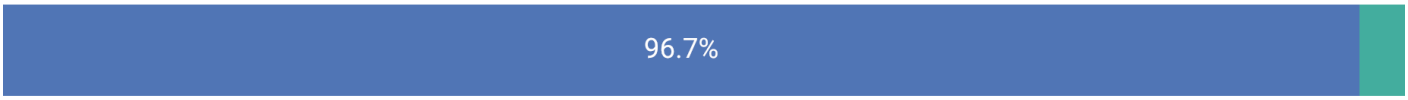
Aviation and Drone Technology Workforce Race Demographics, 2022Q3



White (88.2%)
Black (4.1%)
American Indian (0.4%)
Asian (5.6%)
Pacific Islander (0.0%)
Two or More Races (1.8%)

Data for Aviation and Drone Technology Pathway, Minnesota
Source: JobsEQ®. Data as of 2022Q3.

Aviation and Drone Technology Workforce Ethnicity Demographics, 2022Q3



Non-Hispanic/Latino (96.7%)
Hispanic or Latino (of any race) (3.3%)

Data for Aviation and Drone Technology Pathway, Minnesota
Source: JobsEQ®. Data as of 2022Q3.

Aviation and Drone Technology Workforce Gender Demographics, 2022Q3

Male (90.8%)
Female (9.2%)

Data for Aviation and Drone Technology Pathway, Minnesota
Source: JobsEQ®. Data as of 2022Q3.

Graduate Demographics

Postsecondary program diversity varies by program across the Aviation and Drone Technology pathway. Automation Engineering Technology postsecondary programs have the largest number of African American and Hispanic students who conferred awards in SY2021. All programs have an overrepresentation of male students.

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/21/2023 at talentneuronplan.gartner.com

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
01.0205	Agricultural Mechanics and Equipment/Machine Technology/Technician	6	0	0	0	0	0	6	0	6	0
14.0101	Engineering, General	51	2	1	0	2	3	43	0	44	7
14.1201	Engineering Physics/Applied Physics	11	1	1	0	0	0	9	0	9	2
14.1301	Engineering Science	7	2	1	0	0	0	4	0	6	1
14.2701	Systems Engineering	19	2	2	0	1	1	9	4	11	8
14.3601	Manufacturing Engineering	53	5	4	0	4	1	32	7	38	15
14.3901	Geological/Geophysical Engineering	7	0	0	0	0	0	7	0	5	2
14.4201	Mechatronics, Robotics, and Automation Engineering	0	0	0	0	0	0	0	0	0	0
14.9999	Engineering, Other	30	2	0	0	2	1	22	3	16	14
15.0000	Engineering Technologies/Technicians, General	30	1	6	0	1	0	21	1	26	4
15.0303	Electrical, Electronic, and Communications Engineering Technology/Technician	102	0	6	0	24	2	62	8	94	8
15.0403	Electromechanical/Electromechanical Engineering Technology/Technician	0	0	0	0	0	0	0	0	0	0
15.0404	Instrumentation Technology/Technician	37	0	2	0	2	2	28	3	35	2
15.0405	Robotics Technology/Technician	33	1	2	0	3	1	26	0	28	5
15.0406	Automation Engineer Technology/Technician	188	2	14	1	9	13	141	8	166	22
15.0499	Electromechanical Technologies/Technicians, Other	9	0	0	0	0	0	8	1	9	0
15.0805	Mechanical/Mechanical Engineering Technology/Technician	1	0	0	0	0	0	1	0	1	0
15.1502	Engineering Design	13	0	3	0	0	1	8	1	6	7
15.1601	Nanotechnology	0	0	0	0	0	0	0	0	0	0
15.9999	Engineering/Engineering-Related Technologies/Technicians, Other	8	1	2	0	2	0	2	1	3	5
47.0607	Airframe Mechanics and Aircraft Maintenance Technology/Technician	45	0	3	1	3	2	33	3	41	4
47.0608	Aircraft Powerplant Technology/Technician	55	0	3	0	3	3	46	0	52	3
47.0609	Avionics Maintenance Technology/Technician	3	0	0	0	0	0	3	0	3	0
49.0102	Airline/Commercial/Professional Pilot and Flight Crew	14	0	0	0	1	1	12	0	12	2
49.0104	Aviation/Airway Management and Operations	3	0	1	0	0	1	1	0	2	1
52.0203	Logistics, Materials, and Supply Chain Management	46	1	11	0	9	2	22	1	32	14
	All Aviation and Drone Technology Postsecondary Programs	**771**	**20**	**62**	**2**	**66**	**34**	**546**	**41**	**645**	**126**

NCES IPEDS 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

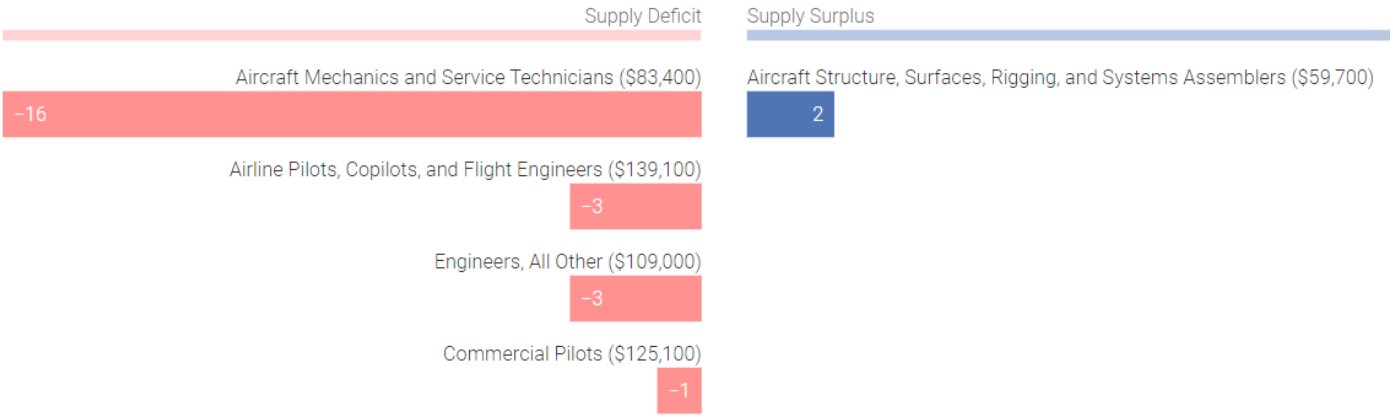
Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/21/2023 at talentneuronplan.gartner.com

Talent Gap Analysis

Occupation Gaps

By 2027, it is likely that Minnesota will see a growing shortage of talent in five critical Aviation and Drone Technology occupations (shown in red below). The estimated annual shortage of Aircraft Mechanics and Service Technicians has continued to worsen since 2020 estimates, while the other shortages shown below have improved slightly.

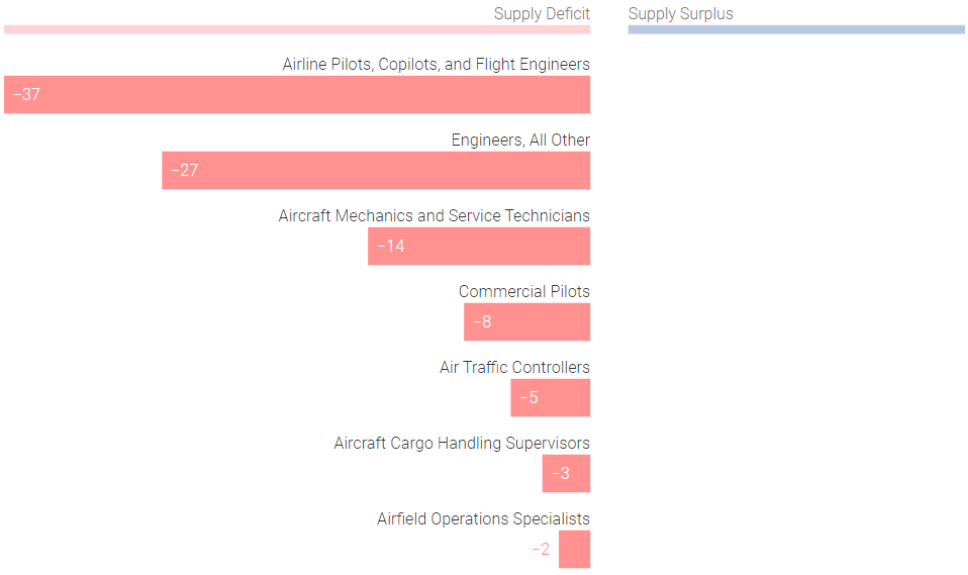
Estimated Occupation Gaps over Five Years in Minnesota



Award Gaps

Minnesota postsecondary institutions are underproducing credentials for Pilots and Aircraft Mechanics 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 Airline Pilots, Commercial Pilots, Aircraft Mechanics, and Aircraft Technicians out of existing programs, or building new two-year programs aligned to these occupations may be warranted.

Estimated Award Gaps, Minnesota 2022Q3

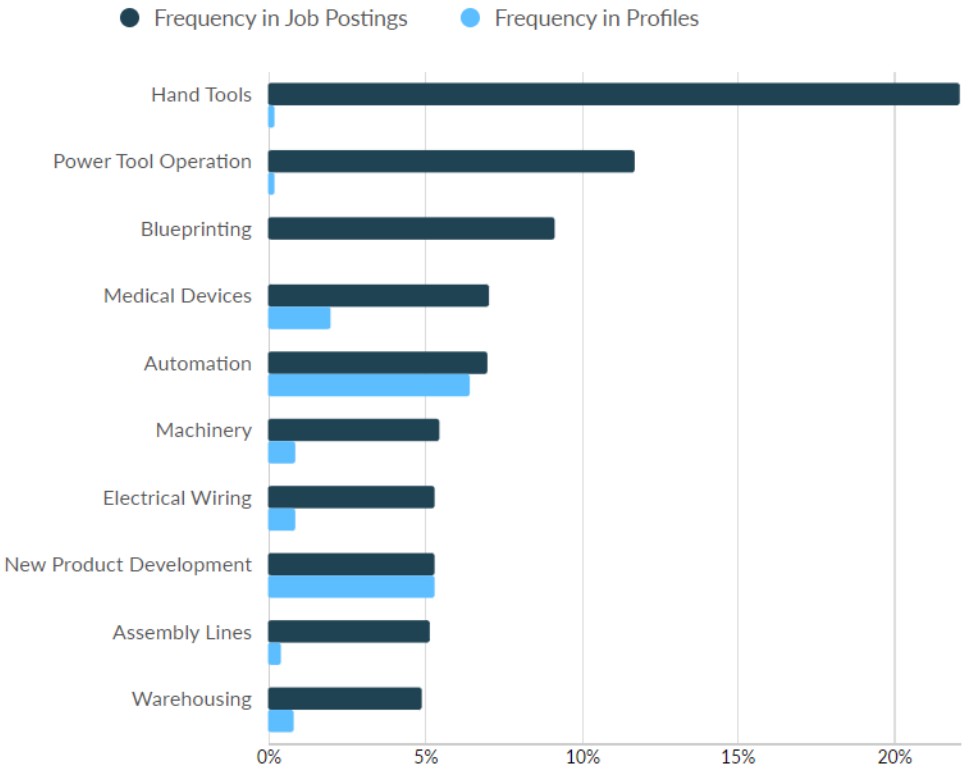


Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/21/2023 at talentneuronplan.gartner.com

Skill Misalignments

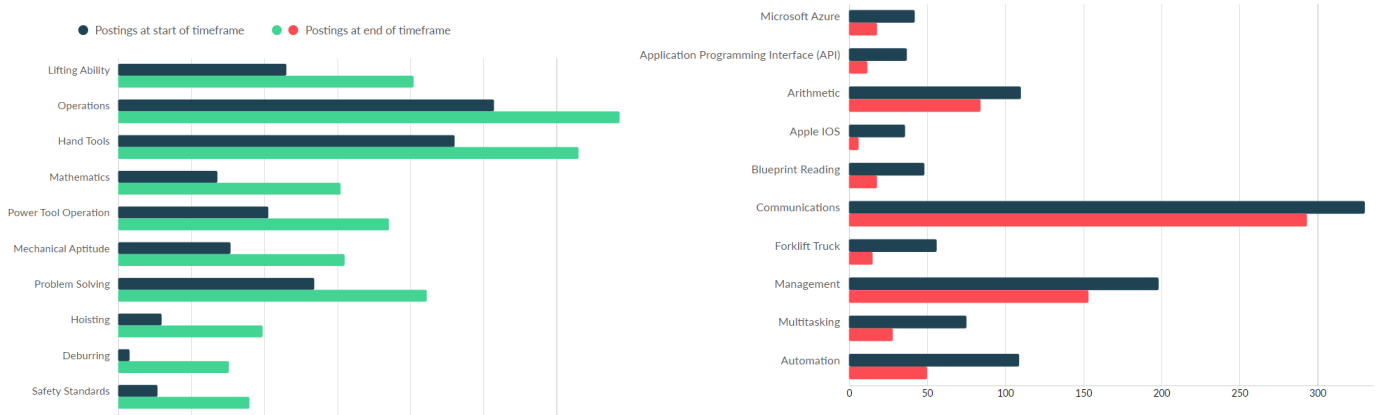
A number of specialized skills are more frequent in job postings than in candidate profiles found online. Ability to use hand tools, power tools, and blueprints are all named more frequently in Aviation and Drone Technology talent online job postings than in talent profiles.

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



Several baseline requirements, such as physical skills, mathematical and mechanical aptitude, and knowledge of safety standards 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 1/21/2023 at talentneuronplan.gartner.com

High Need, High Demand Pathways

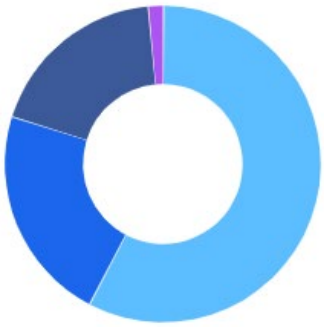
There were about 771 awards conferred at 29 different Minnesota postsecondary institutions in programs aligned to Aviation and Drone Technology careers in SY2021. Among these 300 were at the Associate level, and 142 were certificates that could be earned in less than two years. The average school had about 27 completions, but range from one to 90 completions. Four institutions offered programs remotely (14% of institutions), with 44 awards obtained remotely in 2021 (6% of all pathway completions).

Programs mapping to this career pathway are diverse and several align to other occupations outside of this career pathway, namely in STEM and Manufacturing clusters.

Aviation and Drone 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	Post Bacc.	Masters	Total Awards
15.0406	Automation Engineer Technology/Technician	25	35	111	17	0	0	0	188
15.0303	Electrical, Electronic, and Communications Engineering Technology/Technician	21	6	58	8	9	0	0	102
47.0608	Aircraft Powerplant Technology/Technician	39	0	16	0	0	0	0	55
14.3601	Manufacturing Engineering	0	0	0	0	27	16	10	53
14.0101	Engineering, General	0	0	0	0	48	1	2	51
52.0203	Logistics, Materials, and Supply Chain Management	0	0	8	0	38	0	0	46
47.0607	Airframe Mechanics and Aircraft Maintenance Technology/Technician	2	0	23	20	0	0	0	45
15.0404	Instrumentation Technology/Technician	0	0	35	2	0	0	0	37
15.0405	Robotics Technology/Technician	1	0	31	0	0	0	1	33
15.0000	Engineering Technologies/Technicians, General	0	0	5	0	25	0	0	30
14.9999	Engineering, Other	0	0	0	0	0	9	21	30
14.2701	Systems Engineering	0	0	0	0	0	0	19	19
49.0102	Airline/Commercial/Professional Pilot and Flight Crew	0	0	8	0	6	0	0	14
15.1502	Engineering Design	0	0	0	0	0	0	13	13
14.1201	Engineering Physics/Applied Physics	0	0	0	0	11	0	0	11
15.0499	Electromechanical Technologies/Technicians, Other	9	0	0	0	0	0	0	9
15.9999	Engineering/Engineering-Related Technologies/Technicians, Other	0	0	0	0	0	0	8	8
14.1301	Engineering Science	0	0	0	0	7	0	0	7
14.3901	Geological/Geophysical Engineering	0	0	0	0	5	0	2	7
01.0205	Agricultural Mechanics and Equipment/Machine Technology/Technician	0	1	1	4	0	0	0	6
49.0104	Aviation/Airway Management and Operations	0	0	3	0	0	0	0	3
47.0609	Avionics Maintenance Technology/Technician	3	0	0	0	0	0	0	3
15.0805	Mechanical/Mechanical Engineering Technology/Technician	0	0	1	0	0	0	0	1
15.0403	Electromechanical/Electromechanical Engineering Technology/Technician	0	0	0	0	0	0	0	0
14.4201	Mechatronics, Robotics, and Automation Engineering	0	0	0	0	0	0	0	0
15.1601	Nanotechnology	0	0	0	0	0	0	0	0
	Total	**100 (13.0%)**	**42 (5.4%)**	**300 (38.9%)**	**51 (6.6%)**	**176 (22.8%)**	**26 (3.4%)**	**76 (9.9%)**	**771**

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/21/2023 at talentneuronplan.gartner.com



Institution Type	Completions (2021)	Market Share
Public, 2-year	444	57.6%
Public, 4-year or above	171	22.2%
Private not-for-profit, 4-year or above	144	18.7%
Private for-profit, 4-year or above	12	1.6%

Over half (57.6%) of awards were conferred by public two-year institutions, with Hennepin Technical College and Minneapolis Community and Technical College together comprising 23% of SY2021 awards conferred. Completions are up overall by 39.4% from 2012.

Aviation and Drone Technology Postsecondary Program Awards by Institution, SY2021

Institution	Completions (2021)	Growth % YOY (2021)	Market Share (2021)	IPEDS Tuition & Fees (2021)	Completions Tren (2017-202
Hennepin Technical College	90	-23.1%	11.7%	$5,741	
Minneapolis Community and Technical College	87	123.1%	11.3%	$5,906	
Dunwoody College of Technology	62	-13.9%	8.0%	$23,863	
University of St Thomas	52	-10.3%	6.7%	$48,329	
Minnesota State University-Mankato	46	-14.8%	6.0%	$9,146	
Ridgewater College	40	-11.1%	5.2%	$5,914	
South Central College	38	-35.6%	4.9%	$5,966	
Lake Superior College	36	28.6%	4.7%	$5,616	
Metropolitan State University	32	3.2%	4.2%	$9,394	
Saint Cloud State University	30	57.9%	3.9%	$9,170	

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/21/2023 at talentneuronplan.gartner.com

University of Minnesota-Twin Cities	29	0.0%	3.8%	$15,254	
Central Lakes College-Brainerd	26	0.0%	3.4%	$5,954	
Bemidji State University	25	31.6%	3.2%	$9,806	
Alexandria Technical & Community College	24	-11.1%	3.1%	$5,910	
Northland Community and Technical College	22	-31.3%	2.9%	$6,052	
St Cloud Technical and Community College	21	31.3%	2.7%	$5,874	
Saint Paul College	17	88.9%	2.2%	$6,041	
Minnesota State College Southeast	14	366.7%	1.8%	$6,562	
University of Northwestern-St Paul	14	-30.0%	1.8%	$34,180	
Anoka Technical College	13	18.2%	1.7%	$6,075	
Academy College	12	20.0%	1.6%	$18,644	
Minnesota West Community and Technical College	11	-15.4%	1.4%	$6,286	
Minnesota State University Moorhead	7	75.0%	0.9%	$9,468	
Hamline University	7	133.3%	0.9%	$46,221	
Bethany Lutheran College	6	50.0%	0.8%	$28,660	
Century College	5	-16.7%	0.6%	$5,907	
University of Minnesota-Duluth	2	0.0%	0.3%	$13,850	
Saint Mary's University of Minnesota	2	Insf. Data	0.3%	$39,410	
Bethel University	1	-85.7%	0.1%	$40,080	

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/21/2023 at talentneuronplan.gartner.com

The clearest gap in program offerings is for Airline Pilots, which are both an area of talent shortages and where Minnesota institutions fall short of national award benchmarks. There were only 8 Associate-level and 6 Bachelor's-level graduates in the most recent school year. In addition, Airline Mechanics and Service Technicians have significant talent shortages and low graduate supplies to meet local demand.

Promising Approaches to Addressing Possible Misalignments

A variety of strategies may improve the outlook for transportation talent in need. In the Aviation and Drone Technology pathway, all have low talent diversity by gender—both among the workforce and new graduates. Many also have a higher than average share of their workforce that is over 45 years of age, and a much higher share of white talent than the overall workforce representation.

Most occupations with local talent shortages are also underproducing postsecondary graduates in comparison to national benchmarks. Electro-Mechanical and Mechatronics Technologists and Technicians have the largest number of annual graduate completions of certificate or two-year degrees in alignment, seemingly able to meet local demand. However, the diversity of graduates from these programs is low in comparison to postsecondary programs as a whole. Airline Pilots and Airline Mechanics, both mentioned above as important award gaps to address, also have low diversity in their workforce and graduate talent pools.

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/21/2023 at talentneuronplan.gartner.com

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)
Airline Pilots, Copilots, and Flight Engineers	• Airline/Commercial/Professional Pilot and Flight Crew	2,970	Y	6.7%	2.0%	4.7%	45.4%	8	Y	14.3%	14.3%
Aircraft Mechanics and Service Technicians	• Agricultural Mechanics and Equipment/Machine Technology/Technician • Airframe Mechanics and Aircraft Maintenance Technology/Technician	2,041	Y	9.7%	4.4%	3.2%	56.6%	51	Y	23.5%	7.8%
Engineers, All Other	• Engineering, General • Engineering Physics/Applied Physics • Engineering Science • Systems Engineering • Manufacturing Engineering • Geological/Geophysical Engineering • Mechatronics, Robotics, and Automation Engineering • Engineering, Other	1,981	Y	20.0%	2.5%	14.1%	54.9%	0	Y	21.3%	27.5%
Commercial Pilots*	• Airline/Commercial/Professional Pilot and Flight Crew	636	Y	4.2%	1.5%	4.5%	42.2%	8	Y	14.3%	14.3%
Air Traffic Controllers	• Aviation/Airway Management and Operations	575	N	19.1%	7.1%	19.5%	60.4%	3	Y	66.7%	33.3%
Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	• Aircraft Powerplant Technology/Technician	290	N	19.5%	6.3%	30.3%	80.0%	55	N	16.4%	5.5%
Electro-Mechanical and Mechatronics Technologists and Technicians	• Engineering Technologies/Technicians, General • Electrical, Electronic, and Communications Engineering Technology/Technician • Electromechanical/Electromechanical Engineering Technology/Technician • Instrumentation Technology/Technician • Robotics Technology/Technician • Automation Engineer Technology/Technician • Mechanical/Mechanical Engineering Technology/Technician • Engineering Design • Nanotechnology • Engineering/Engineering-Related Technicians, Other	288	N	12.4%	3.1%	21.9%	48.7%	365	N	28.3%	12.6%
Airfield Operations Specialists*	• Aviation/Airway Management and Operations	182	N	17.9%	6.8%	19.6%	60.3%	3	Y	66.7%	33.3%
Aircraft Cargo Handling Supervisors	• Logistics, Materials, and Supply Chain Management	126	N	20.1%	6.4%	25.8%	61.7%	8	Y	50.0%	30.4%
Avionics Technicians	• Avionics Maintenance Technology/Technician	73	N	13.6%	5.7%	4.4%	43.1%	3	N	0.0%	0.0%
Aviation and Drone Technology Pathway	**All 26 aligned programs**	**9,162**	**Y**	**11.8%**	**3.3%**	**9.2%**	**52.4%**	**771**	**Y**	**29.2%**	**16.3%**
All Occupations		**3,038,766**		**15.0%**	**5.2%**	**48.3%**	**56.5%**	**29,484**		**37.3%**	**65.6%**

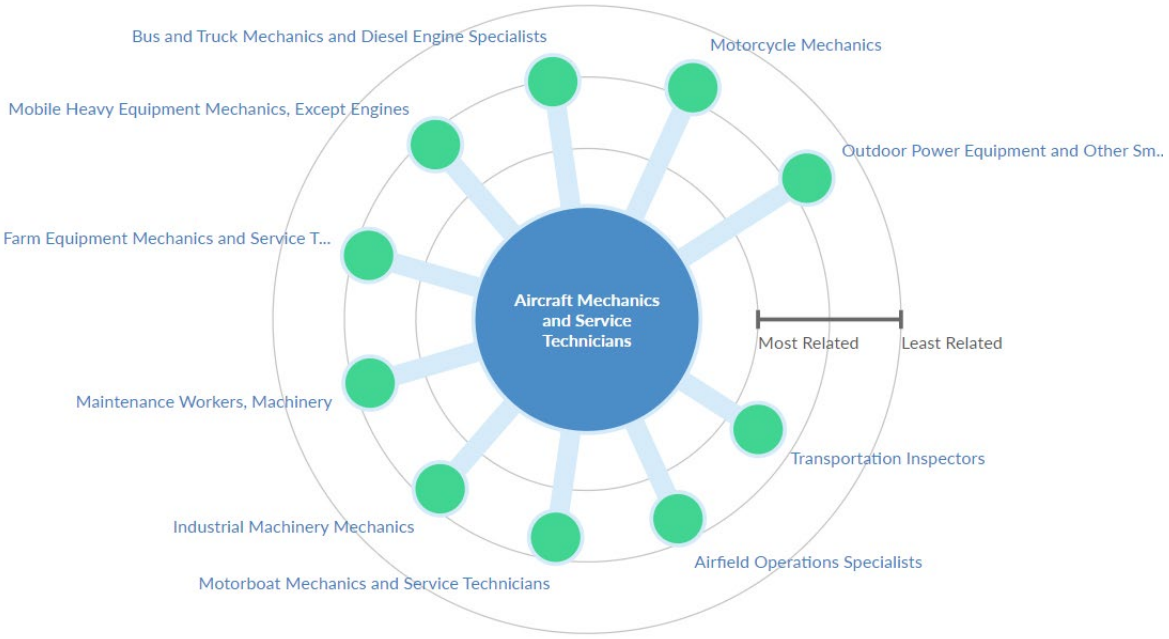
NOTE: Red highlighting indicates lower than overall share of workforce or graduate pool, or existence of occupation or award gap. *Related programs may overlap among occupations within the pathway or across other Transportation career pathways. Only those programs most tightly aligned to the occupation 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.

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/21/2023 at talentneuronplan.gartner.com

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 Aircraft Mechanics and Service Technicians occupation in skill demands that have highly relevant skill and experience overlap that would be strong feeder occupations for talent.

Feeder Occupations into Aircraft Mechanic and Service Technician Roles, 2023Q1



Occupation	Category	Relevance	Avg. Unique Monthly Postings from Jan 2022 - Dec 2022	Mea Salary Dif
Transportation Inspectors	Lateral Advancement	77%	6	-$7,96
Airfield Operations Specialists	Lateral Advancement	66%	2	-$8,40
Motorboat Mechanics and Service Technicians	Advancement	66%	1	-$11,88
Industrial Machinery Mechanics	Lateral Advancement	63%	108	-$10,44
Maintenance Workers, Machinery	Lateral Advancement	62%	3	-$10,78
Farm Equipment Mechanics and Service Technicians	Advancement	60%	7	-$16,84
Mobile Heavy Equipment Mechanics, Except Engines	Advancement	58%	33	-$6,95
Bus and Truck Mechanics and Diesel Engine Specialists	Advancement	52%	173	-$8,61
Motorcycle Mechanics	Advancement	41%	1	-$15,47
Outdoor Power Equipment and Other Small Engine Mechanics	Advancement	37%	4	-$25,43

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/21/2023 at talentneuronplan.gartner.com

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

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/21/2023 at talentneuronplan.gartner.com

COLLISION REPAIR

Supply & Demand Analysis

2022

MINNESOTA STATE
Transportation Center of Excellence

Introduction and Sector Overview

This report highlights the importance of the Collision Repair career pathway for Minnesota's Transportation Industry. Professionals in Collision Repair work in diverse roles from autobody repairers and glass installers to autobody painting, serving industries as diverse as Navigational Manufacturing and Automobile Dealerships. In all, about 6,757 people work in Collision Repair roles in Minnesota as of the third quarter of 2022—a slight decline (-107 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, Collision Repair employment is anticipated to decline slightly in Minnesota, declining by 34 total jobs (-0.1% annually) due to a tight talent pool. Total baseline demand for Collision Repair talent is anticipated to be around 3,236 professionals needed to fill positions due to job exits and transfers, such as retirements and job changes.

Transportation Pathways in Minnesota – Baseline Forecast, 2022Q3[1]

	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%**

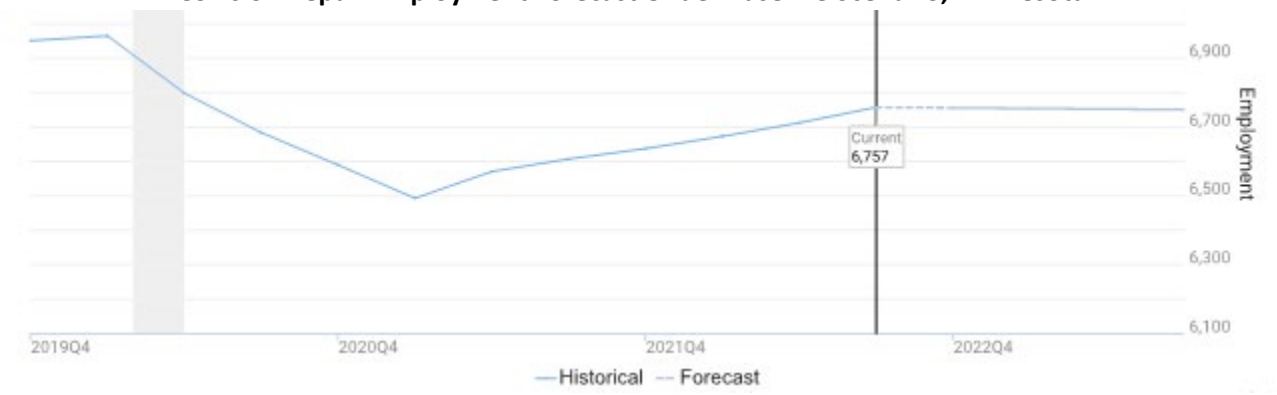
*This pathway includes School Bus Driver careers as of 2022, which were not included in the 2020 or 2021 estimates of career pathway employment or demand.

Source: JobsEQ®
Data as of 2023Q3 unless noted otherwise
Note: Figures may not sum due to rounding.
1. Data based on a four-quarter moving average unless noted otherwise.
2. Wage data represent the average for all Covered Employment
3. Data represent found online ads active within the last thirty days in the selected region; data represents a sampling rather than the complete universe of postings. Ads lacking zip code information but designating a place (city, town, etc.) may be assigned to the zip code with greatest employment in that place for queries in this analytic. Due to alternative county-assignment algorithms, ad counts in this analytic may not match that shown in RTI (nor in the popup window ad list).

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

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 Collision Repair 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 has soured since estimates in late 2020, with a baseline forecast of about -0.1% 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.

Collision Repair Employment Forecast Under Baseline Scenario, Minnesota



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Industry/Occupation Mix

Collision Repair talent is primarily concentrated in the Automotive Repair and Maintenance industry (45.2%), decreasing in its concentration from estimates in 2021 by 1.2 percentage points. The next highest industry of employment concentration is Automobile Dealers (7.5%), followed by general Coating, Engraving, Heat Treating, and Allied Activities as well as Architectural and Structural Metals Manufacturing employers.

Top Industry Distribution for Collision Repair Pathway Occupations in Minnesota

		CURRENT			5-YEAR DEMAND			
NAICS Code	Industry Title	% of Occ Empl	Empl	Avg Ann Wages	Exits	Transfers	Empl Growth	Total Demand
8111	Automotive Repair and Maintenance	45.2%	3,051	$55,100	550	915	-5	1,460
4411	Automobile Dealers	7.5%	506	$53,200	93	143	-17	218
3328	Coating, Engraving, Heat Treating, and Allied Activities	6.3%	423	$40,900	62	142	-10	194
3323	Architectural and Structural Metals Manufacturing	3.2%	215	$47,700	33	76	8	117
3339	Other General Purpose Machinery Manufacturing	2.8%	189	$47,700	27	62	-11	77
3331	Agriculture, Construction, and Mining Machinery Manufacturing	1.7%	118	$47,700	17	38	-8	47
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	1.7%	113	$47,700	17	39	1	57
3399	Other Miscellaneous Manufacturing	1.6%	111	$47,700	17	40	5	62
3219	Other Wood Product Manufacturing	1.4%	91	$39,800	14	32	2	48
3362	Motor Vehicle Body and Trailer Manufacturing	1.3%	89	$44,700	14	31	3	49
3369	Other Transportation Equipment Manufacturing	1.2%	83	$49,100	12	27	-6	33
3329	Other Fabricated Metal Product Manufacturing	1.2%	83	$47,700	12	29	0	41
3222	Converted Paper Product Manufacturing	1.2%	83	$55,100	12	28	-2	37
5613	Employment Services	1.2%	82	$35,200	12	28	-1	39
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	1.1%	75	$49,600	14	23	1	38
3261	Plastics Product Manufacturing	1.1%	73	$43,500	11	26	3	41
3332	Industrial Machinery Manufacturing	1.0%	66	$47,700	9	22	-4	27
3391	Medical Equipment and Supplies Manufacturing	1.0%	65	$48,300	10	23	2	35
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	0.9%	64	$41,900	10	23	3	35
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	0.9%	60	$47,700	8	19	-4	24
n/a	All Others	16.5%	1,117	n/a	173	375	-2	547

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.

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

Talent Demand Detail

Employment and Wage Overview

Of the three occupations found in the Collision Repair pathway, Coating, Painting, and Spraying Machine Setters, Operators, and Tenders are uniquely concentrated in Minnesota to a higher degree than seen in the nation overall. On average, Collision Repair careers pay about $54,100 per year (up from $46,900 last year)—about $9,600 below than the average wage statewide across all positions.

Collision Repair Pathway in Minnesota - Baseline Forecast, 2022Q3[1]

		Current						1-Year History		1-Year Forecast		5-Year Baseline Forecast				
SOC	Occupation	Empl	Avg Ann Wages[2]	LQ	Unempl	Unempl Rate	Online Job Ads[3]	Empl Change	Ann %	Empl Change	Ann %	Total Demand	Exits	Transfers	Empl Change	Ann % Change
51-9124	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	3,535	$51,200	1.17	96	2.7%	197	122	3.6%	-4	0.1%	1,720	527	1,212	-19	-0.1%
49-3021	Automotive Body and Related Repairers	2,863	$58,300	0.93	74	2.5%	132	25	0.9%	-4	-0.1%	1,347	554	810	-18	-0.1%
49-3022	Automotive Glass Installers and Repairers	359	$48,800	1.00	7	1.9%	38	2	0.6%	0	0.1%	169	47	121	2	0.1%
	Collision Repair Pathway	**6,757**	**$54,100**	**1.05**	**177**	**2.6%**	**367**	**150**	**2.3%**	**-7**	**-0.1%**	**3,236**	**1,128**	**2,142**	**-34**	**-0.1%**
	Total - All Occupations	**3,038,766**	**$63,700**	**1.00**	**68,550**	**2.3%**	**169,085**	**91,312**	**3.1%**	**9,139**	**0.3%**	**1,800,961**	**734,547**	**1,020,444**	**45,970**	**0.3%**

Source: JobsEQ®
Data as of 2022Q3 unless noted otherwise
Note: Figures may not sum due to rounding.
1. Data based on a four-quarter moving average unless noted otherwise.
2. Wage data are the average for all Covered Employment
3. Data represent found online ads active within the last thirty days in the selected region; data represents a sampling rather than the complete universe of postings. Ads lacking zip code information but designating a place (city, town, etc.) may be assigned to the zip code with greatest employment in that place for queries in this analytic. Due to alternative county-assignment algorithms, ad counts in this analytic may not match that shown in RTI (nor in the popup window ad list).

The Collision Repair pathway saw some significant wage gains across the pathway, with average wages rising by $7,200 from prior estimates.[2] Entry-level wages in the pathways exceed the average entry-level wages observed across all occupations statewide, paying an average of $37,900 annually for entry-level talent.

Occupation Wages, Average Annual in Minnesota, 2022Q3

					Percentiles				
SOC	Occupation	Mean	Entry Level	Experienced	10%	25%	50% (Median)	75%	90%
49-3021	Automotive Body and Related Repairers	$58,300	$40,300	$67,300	$37,700	$45,400	$52,500	$63,300	$79,100
49-3022	Automotive Glass Installers and Repairers	$48,800	$38,600	$53,900	$37,300	$41,800	$48,000	$53,600	$60,900
51-9124	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	$51,200	$35,800	$58,900	$33,900	$40,000	$48,400	$59,000	$67,800
	Collision Repair Pathway	**$54,100**	**$37,900**	**$62,200**	**$35,700**	**$42,400**	**$50,100**	**$60,600**	**$72,300**
	Total - All Occupations	**$63,700**	**$31,400**	**$79,800**	**$29,100**	**$35,700**	**$49,800**	**$75,000**	**$108,400**

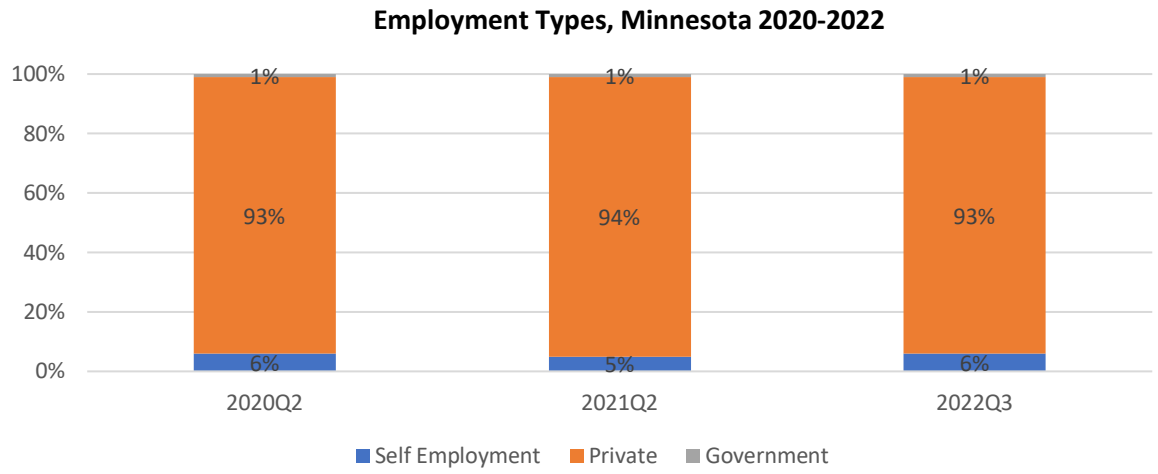
Source: JobsEQ®
Wage data represent the average for all Covered Employment

[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.

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

Employment Types

About 93% of people employed in Collision Repair careers in Minnesota work for private employers, while an estimated 6% are self-employed (a slight increase from 2021). The remaining 1% work for state, federal, or local government entities.

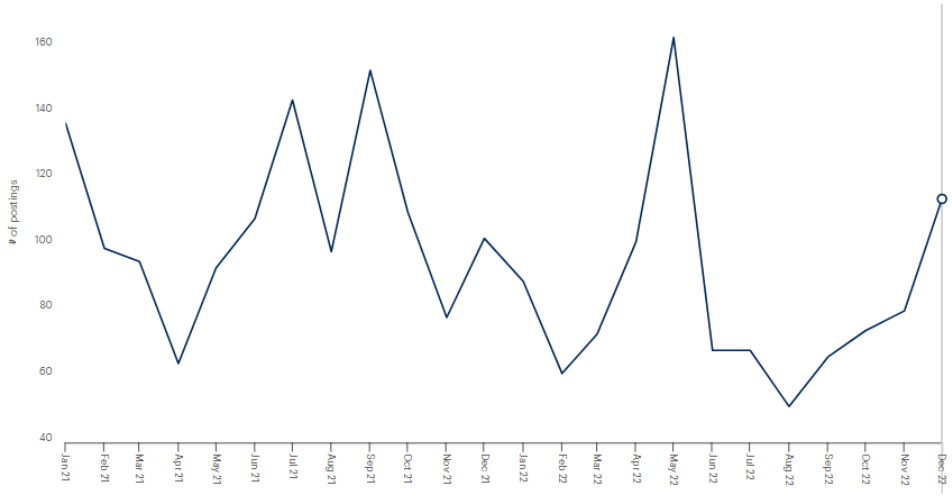


Job Posting Trends

Data in this section focuses on jobs newly advertised between January 1 and December 31, 2022 in Collision Repair 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 1,008 new jobs advertised in Collision Repair during this time frame, a drop of -21% from the prior 12-month period (2021), following what had been a 79% increase between 2020 and 2021. The share of posted positions advertised by staffing and temp agencies in the Collision Repair pathway increased in 2021 compared to 2020, implying dramatic increases in challenges finding talent in this career pathway and direct employers resorting to using new strategies to find talent, but dropped again in 2022 as the market cools. Posted wages increased to a median hourly rate of $22.46 as of 2022, and there was only one hire per every two unique job postings advertised based on Lightcast estimates.

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

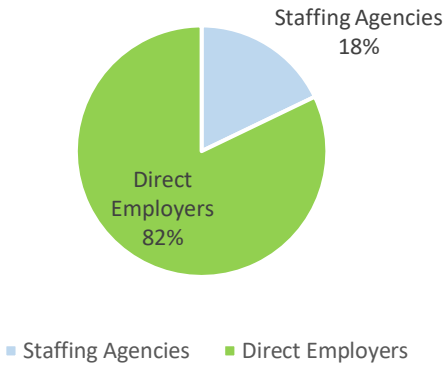
Volume of Career Pathway Online Job Postings in 2021 and 2022



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

	Employer	Percent Change between 2021 and 2022
1.	Caliber Collision Centers	-52%
2.	Safelite	331%
3.	GPAC	57%
4.	Safelite Autoglass	-63%
5.	Express Employment Professionals	-22%
6.	Walser Collision And Glass	19%
7.	Aerotek	38%
8.	Dent Wizard	450%
9.	Atlas Staffing Inc	100%
10.	Humanity	0%

New Job Postings Advertised in Minnesota by Employer Type



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

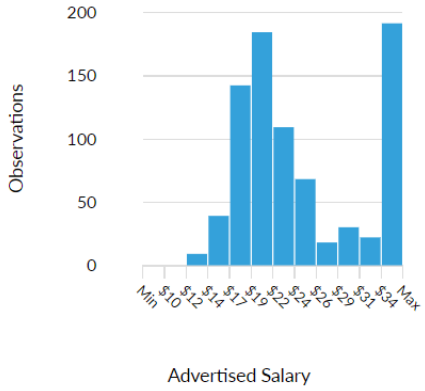
New Job Postings by Industry or Employer Type

Industry	Total/Unique (Jan 2022 - Dec 2022)	Posting Intensity	Median Posting Duration
Other Services (except Public Administration)	1,240 / 483	3 : 1	37 days
Manufacturing	574 / 270	2 : 1	32 days
Administrative and Support and Waste Management and Remediation Services	842 / 267	3 : 1	34 days
Retail Trade	429 / 142	3 : 1	35 days
Wholesale Trade	305 / 63	5 : 1	33 days
Construction	100 / 56	2 : 1	31 days
Professional, Scientific, and Technical Services	63 / 39	2 : 1	26 days
Real Estate and Rental and Leasing	42 / 16	3 : 1	44 days
Transportation and Warehousing	12 / 10	1 : 1	25 days
Health Care and Social Assistance	34 / 9	4 : 1	42 days

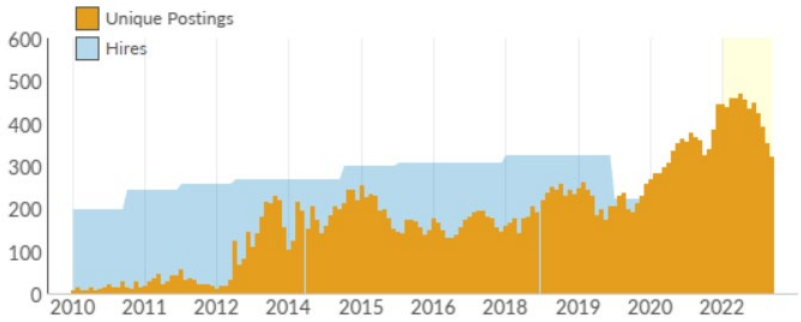
Pathway Advertised Salary Range

$22.46/hr

Median Advertised Salary

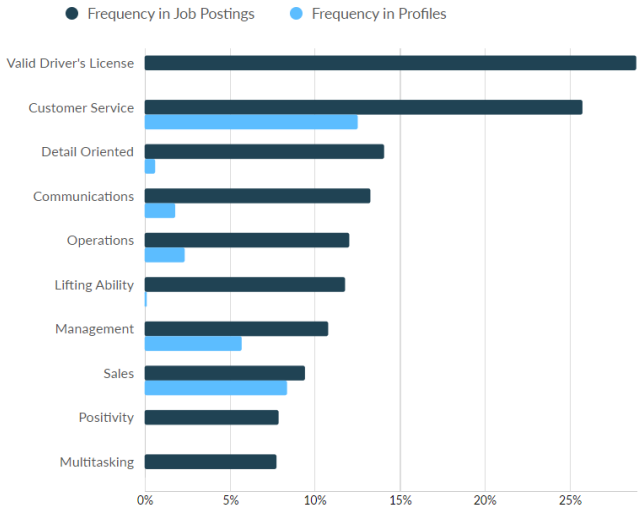


Monthly Ratio of Unique Job Postings to Estimated Hires

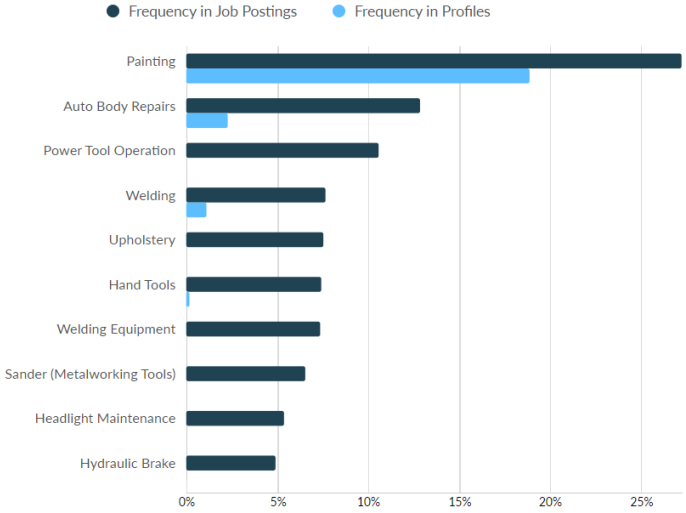


Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/10/2022 at talentneuronplan.gartner.com

Top Common Skills



Top Specialized Skills



Top Certifications and Qualifications

Qualification	Postings with Qualification
Automotive Service Excellence (ASE) Certification	69
HVAC Certification	17
Commercial Driver's License (CDL)	12
Security Clearance	11
Forklift Certification	5
ASE Parts Specialist	2
Board Certified/Board Eligible	2
CompTIA A+	2
30-Hour OSHA General Industry Card	1
CDL Class B License	1

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

Talent Supply Detail

Talent Unemployment, Underemployment, and Educational Attainment

At an overall pathway unemployment rate of 2.6%, there are about 177 unemployed Collision Repair professionals statewide. An additional 463 Collision Repair professionals are underemployed, meaning they are working in roles for which they are overqualified by education or experience.

Collision Repair Pathway in Minnesota

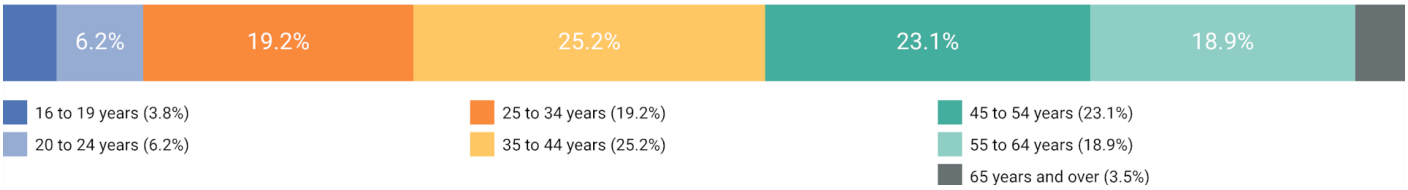
		Empl (Place of Residence)								Overall Occupation[1]		
SOC	Occupation	< High School	High School	Some College	2-Year	4-Year	Master's	PhD	Total Empl	Underemployed	Unemployed	Unempl Rate
49-3021	Automotive Body and Related Repairers	13.6%	46.4%	17.0%	16.9%	5.2%	0.7%	0.2%	2,836	279	96	2.5%
49-3022	Automotive Glass Installers and Repairers	10.3%	52.3%	25.2%	6.9%	4.6%	0.2%	0.6%	355	165	74	1.9%
51-9124	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	12.3%	47.4%	18.2%	13.1%	7.4%	1.4%	0.2%	3,484	19	7	2.7%
	Collision Repair Pathway	**12.7%**	**47.2%**	**18.1%**	**14.4%**	**6.3%**	**1.0%**	**0.2%**	**6,674**	**463**	**177**	**2.6%**
	Total - All Occupations	**4.9%**	**21.1%**	**15.4%**	**14.1%**	**30.4%**	**10.3%**	**3.8%**	**2,944,602**	**511,822**	**68550**	**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.

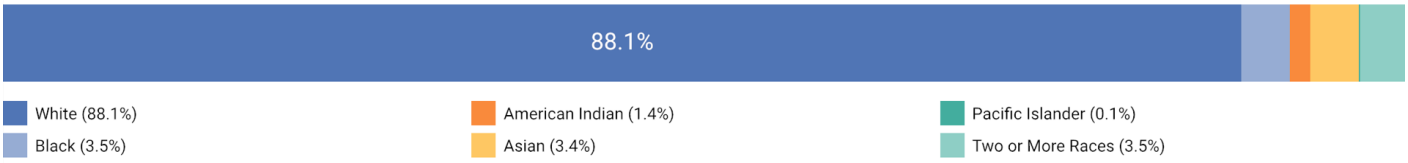
Workforce Demographics

About 10% of the Automotive Technology workforce is under the age of 25, and 3.5% 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 Black talent and Multiracial talent each representing 3.5% of the workforce. About 8.5% of the pathway's workforce are Hispanic or Latinx and 6.3% are female.

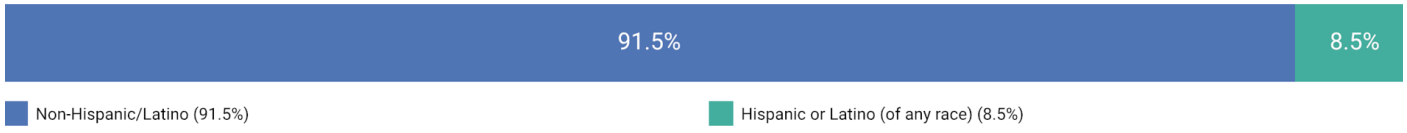
Collision Repair Workforce Age Demographics, 2022Q3



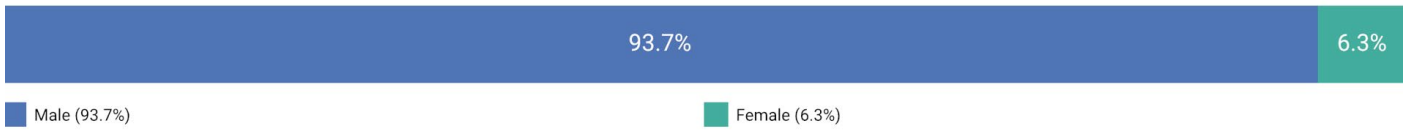
Collision Repair Workforce Race Demographics, 2022Q3



Collision Repair Workforce Ethnicity Demographics, 2022Q3



Collision Repair Workforce Gender Demographics, 2022Q3



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

Graduate Demographics

There is only one postsecondary program directly aligned to the Collision Repair pathway. There is an overrepresentation of male students and there are no international students in the Autobody/Collision and Repair Technology/Technician programs with completions in SY2021.[3] The Autobody/Collision and Repair Technology/Technician program is more diverse than some of the other transportation programs with 42% of program graduates being BIPOC.

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
47.0603	Autobody/Collision and Repair Technology/Technician	161	0	12	3	15	29	93	9	139	22
	All Collision Repair Postsecondary Programs	**161**	**0**	**12**	**3**	**15**	**29**	**93**	**9**	**139**	**22**

IPEDS SY2021 demographics by award conferred. Count of awards may double count individuals who obtained multiple credentials in the same calendar year. *NCES IPEDS 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

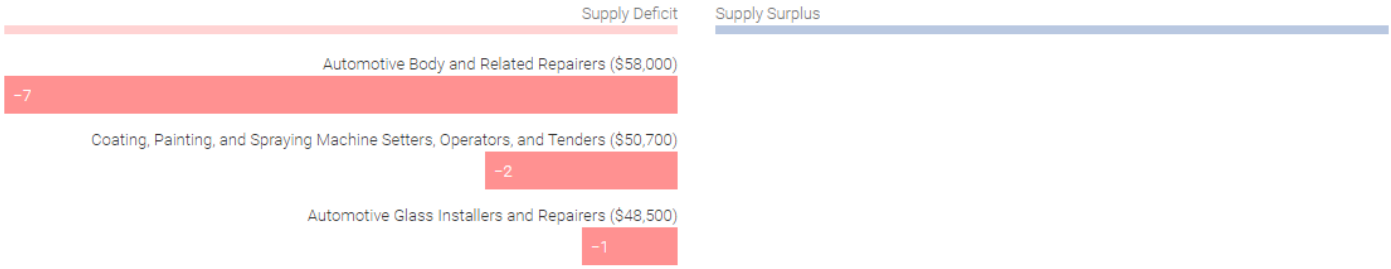
[3] NCES IPEDS refers to international students that do not have resident status in the United States as "nonresident aliens." This title aligns to Federal tax definitions and according to NCES IPEDS refers to "a person who is not a citizen or national of the United States and who is in this country 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

Talent Gap Analysis

Occupation Gaps

By 2027, it is likely that Minnesota will see a growing shortage of Auto Body Repairers, Coating, Painting, and Spraying Machine Setter, Operators and Tenders, and Automotive Glass Installers and Repairers (shown in red below). The estimated annual shortage in each of these occupations has worsened since 2021 estimates.

Estimated Occupation Gaps over Five Years in Minnesota



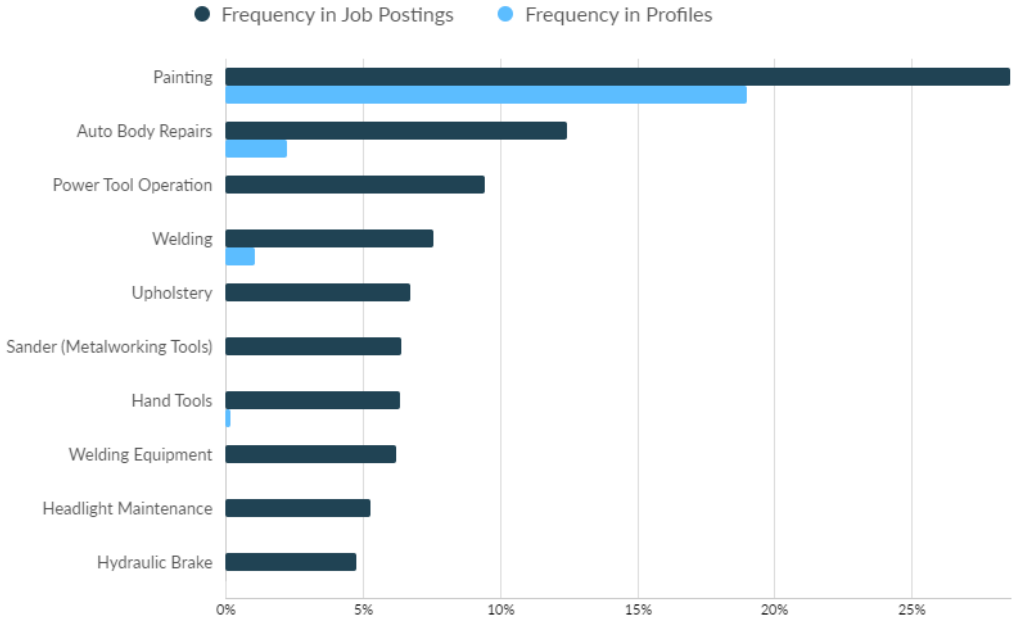
Award Gaps

There are no award gaps associated with the Collision Repair pathway. This occupation does not typically require a 2-year degree or higher, and Minnesota postsecondary institutions are not underproducing credentials for Collision Repair professionals.

Skill Misalignments

All specialized skills are more frequently found in job postings than in candidate profiles found online. Painting, Auto Body Repairs, Welding, and Hand Tools are all named more frequently in Collision Repair talent profiles online than they are mentioned in job postings.

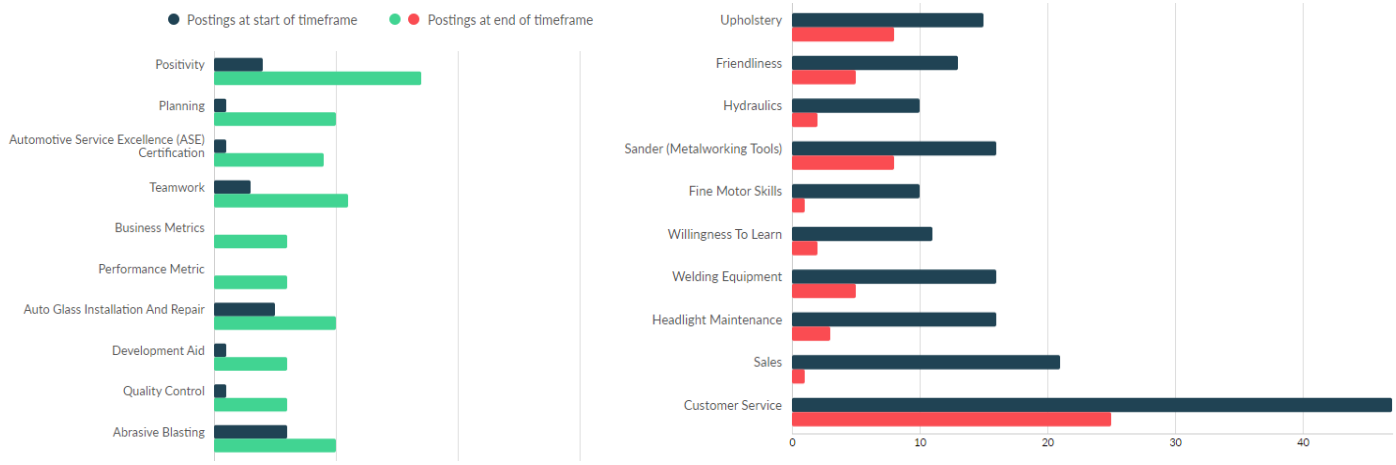
Percent of Pathway Job Postings and Online Talent Profiles Indicating Specialized Skills in Minnesota, 2022



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

Several baseline requirements, such as positivity, teamwork, planning, and auto glass installation and repair, and quality control 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

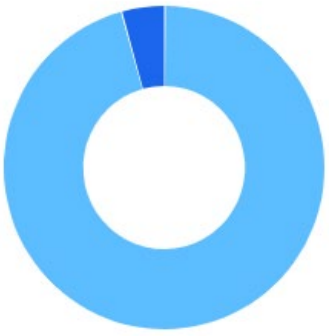


High Need, High Demand Pathways

There were about 161 awards conferred at 10 different Minnesota postsecondary institutions in programs aligned to Collision Repair careers in SY2021. Among, these 113 were certificates that could be earned in less than two years, 27 were at the Associate level, and 21 were certificates that could be earned in more than two years, but less than four years. The average school had about 16 completions, but range from two to 77 completions. No programs were delivered remotely.

Collision Repair 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
47.0603	Autobody/Collision and Repair Technology/Technician	76	37	27	21	0	0	0	161
	Total	**76 (47.2%)**	**37 (23.0%)**	**27 (16.8%)**	**21 (13.0%)**	**0 (0.0%**	**0 (0.0%)**	**0 (0.0%)**	**161 (100%)**



Institution Type	Completions (2021)	Market Share
Public, 2-year	154	95.7%
Private not-for-profit, 4-year or above	7	4.3%

Nearly all of the awards (95.7%) were conferred by public 2-year institutions. Just seven awards were conferred by private not-for-profit 4-year or above institutions. Completions are down overall by -12.5% from 2012.

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

Collision Repair Postsecondary Program Awards by Institution, SY2021

Institution	Completions (2021)	Growth % YOY (2021)	Market Share (2021)	IPEDS Tuition & Fees (2021)	Completions Trend (2017-2021)
Hennepin Technical College	77	140.6%	47.8%	$5,741	
Northland Community and Technical College	17	88.9%	10.6%	$6,052	
Century College	16	-5.9%	9.9%	$5,907	
Lake Superior College	16	128.6%	9.9%	$5,616	
Dakota County Technical College	10	-23.1%	6.2%	$6,208	
Ridgewater College	10	150.0%	6.2%	$5,914	
Dunwoody College of Technology	7	133.3%	4.3%	$23,863	
St Cloud Technical and Community College	4	-63.6%	2.5%	$5,874	
Minnesota State College Southeast	2	-60.0%	1.2%	$6,562	
South Central College	2	-75.0%	1.2%	$5,966	

While there are no award gaps for the Collision Repair pathway, there are talent shortages in each of the three occupations associated with the Collision Repair pathway. There is an opportunity for exploration of certificate, or 2-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 Collision Repair pathway, most occupations have low talent diversity by race and gender. All occupations in the Collision Repair pathway also have a lower share of their workforce that is over 45 years of age.

Postsecondary programs aligned to the Collision Repair pathway are not underproducing graduates in comparison to national benchmarks. However, all the occupations in the Collision Repair pathway are experiencing talent shortages, a low share of female workers and graduates, but have more diverse graduates by race and ethnicity. Coating, Painting, and Spraying Machine Setters, Operators, and Tenders have the highest volume of employment. Automotive Body and Related Repairers have the next highest volume of employment and the largest projected occupation gap.

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

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)
Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	• Autobody/Collision and Repair Technology/Technician	3,535	Y	9.3%	8.2%	2.9%	52.7%	161	N	42.2%	13.7%
Automotive Body and Related Repairers	• Autobody/Collision and Repair Technology/Technician	2,863	Y	12.3%	5.5%	5.3%	55.2%	161	N	42.2%	13.7%
Automotive Glass Installers and Repairers	• Autobody/Collision and Repair Technology/Technician	359	Y	14.0%	9.0%	9.1%	55.7%	161	N	42.2%	13.7%
Collision Repair Pathway	**All aligned programs**	**6,757**	**Y**	**11.9%**	**8.5%**	**6.3%**	**54.4%**	**161**	**N**	**42.2%**	**13.7%**
Total - All Occupations		**3,038,766**		**15.0%**	**5.2%**	**48.3%**	**56.5%**	**29,484**		**37.3%**	**65.6%**

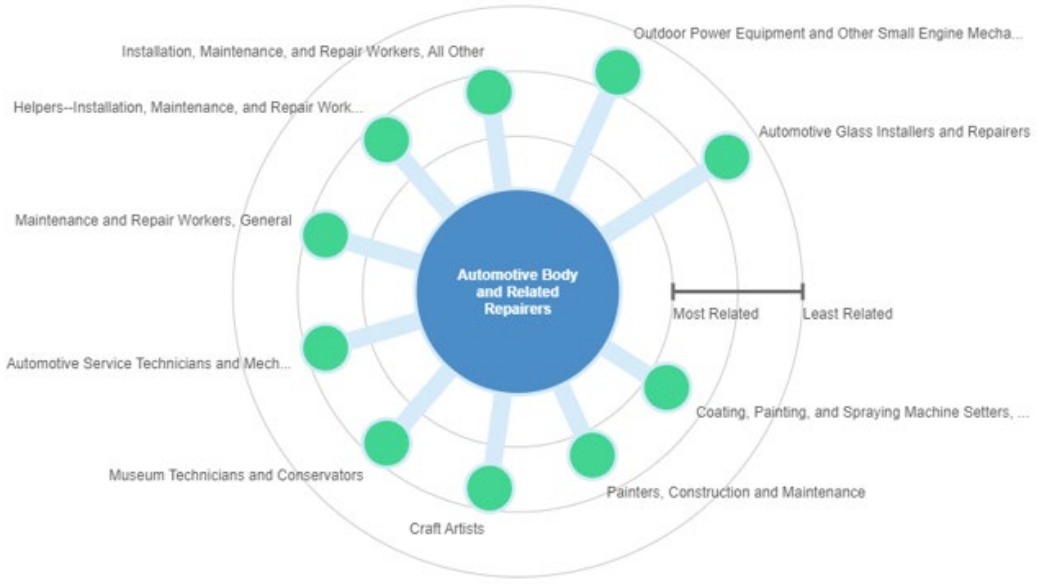
NOTE: Red highlighting indicates lower than overall share of workforce or graduate pool, or existence of occupation or award gap. *Related programs may overlap among occupations within the pathway or across other Transportation career pathways. Only those programs most tightly aligned to the occupation 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.

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

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 Collision Repair occupation in skill demands that have highly relevant skill and experience overlap that would be strong feeder occupations for talent.

Feeder Occupations into Automotive Body and Related Repairer Roles, 2023Q1



Occupation	Category	Relevance	Avg. Unique Monthly Postings from Jan 2022 - Dec 2022	Mean Salary Diff.
Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	Lateral Advancement	83%	38	-$13,683
Painters, Construction and Maintenance	Lateral Advancement	81%	87	-$11,701
Craft Artists	Lateral Advancement	67%	2	-$6,668
Museum Technicians and Conservators	Lateral Advancement	65%	3	-$7,771
Automotive Service Technicians and Mechanics	Advancement	65%	560	-$5,774
Maintenance and Repair Workers, General	Lateral Advancement	65%	1,210	-$10,354
Helpers--Installation, Maintenance, and Repair Workers	Lateral Advancement	65%	63	-$18,161
Installation, Maintenance, and Repair Workers, All Other	Lateral Advancement	64%	41	-$8,416
Outdoor Power Equipment and Other Small Engine Mechanics	Advancement	34%	4	-$14,832
Automotive Glass Installers and Repairers	Advancement	28%	7	-$12,984

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

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

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

DIESEL EQUIPMENT & TRUCK

Supply & Demand Analysis

2022

MINNESOTA STATE
Transportation Center of Excellence

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/18/2022 at talentneuronplan.gartner.com

Introduction and Sector Overview

This report highlights the importance of the Diesel, Equipment, and Truck career pathway for Minnesota's Transportation Industry. Professionals in Diesel, Equipment, and Truck careers work as Truck Mechanics, Diesel Specialists, Crane Operators, and Farm Equipment Mechanics serving a variety of industries. In all, about 12,518 people work in Diesel Equipment and Truck roles in Minnesota as of the third quarter of 2022—down about 371 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 to 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, Diesel, Equipment, and Truck pathway employment is anticipated to grow moderately by about 192 jobs (0.3% annually). Total baseline demand for Diesel, Equipment, and Truck talent is anticipated to be around 6,135 professionals needed to fill positions due to job exits and transfers, such as retirements and job changes.

Transportation Pathways in Minnesota – Baseline Forecast, 2022Q3[1]

	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%**

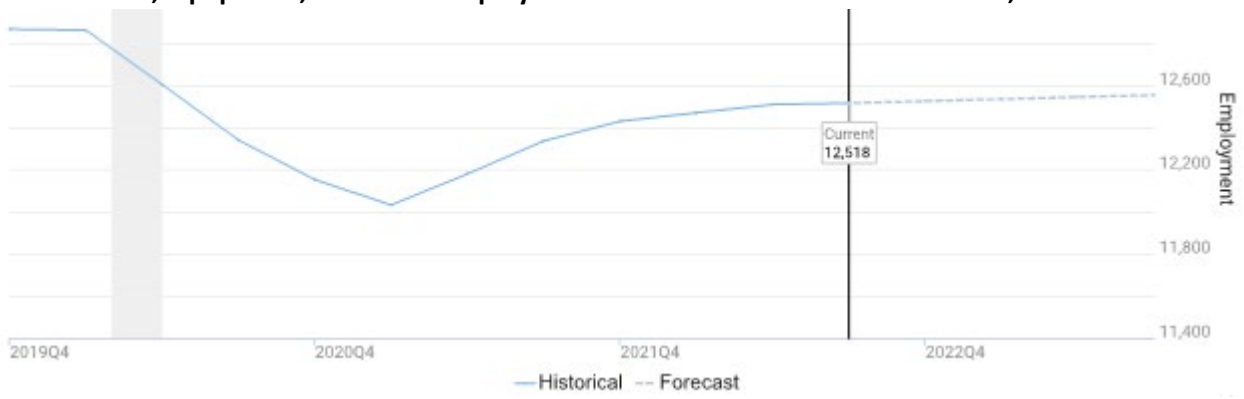
*This pathway includes School Bus Driver careers as of 2022, which were not included in the 2020 or 2021 estimates of career pathway employment or demand.

Source: JobsEQ®
Data as of 2023Q3 unless noted otherwise
Note: Figures may not sum due to rounding.
1. Data based on a four-quarter moving average unless noted otherwise.
2. Wage data represent the average for all Covered Employment
3. Data represent found online ads active within the last thirty days in the selected region; data represents a sampling rather than the complete universe of postings. Ads lacking zip code information but designating a place (city, town, etc.) may be assigned to the zip code with greatest employment in that place for queries in this analytic. Due to alternative county-assignment algorithms, ad counts in this analytic may not match that shown in RTI (nor in the popup window ad list).

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/18/2022 at talentneuronplan.gartner.com

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 Diesel, Equipment, and Truck careers 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 now shows a 0.3% growth in overall employment by the second quarter of 2027. This is up from last year's baseline estimates of 0.0%.

Diesel, Equipment, and Truck Employment Forecast Under Baseline Scenario, Minnesota



Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/18/2022 at talentneuronplan.gartner.com

Industry/Occupation Mix

Diesel, Equipment, and Truck talent is primarily concentrated in the Machinery, Equipment, and Supplies Merchant Wholesalers Industry (16.9%), decreasing in concentration in 2021 by 1.5 percentage points. The next highest industry of employment concentration is General Freight Trucking (8.9%), followed by Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers (5.1%). These top industries also account for the most total demand for this talent over the next ten years.

Top Industry Distribution for Diesel, Equipment, and Truck Pathway Occupations in Minnesota

		CURRENT			10-YEAR DEMAND			
NAICS Code	Industry Title	% of Occ Empl	Empl	Avg Ann Wages	Exits	Transfers	Empl Growth	Total Demand
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	16.9%	2,117	$53,000	709	1,383	209	2,300
4841	General Freight Trucking	8.9%	1,116	$57,900	360	639	-41	958
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	5.1%	636	$60,600	222	390	78	689
8111	Automotive Repair and Maintenance	4.8%	603	$54,500	199	351	5	556
4854	School and Employee Bus Transportation	4.5%	566	$53,100	193	340	43	576
2389	Other Specialty Trade Contractors	4.5%	561	$66,900	175	385	9	568
9211	Executive, Legislative, and Other General Government Support	3.5%	442	$58,900	145	263	5	413
2122	Metal Ore Mining	3.5%	437	$68,900	136	283	-11	408
2373	Highway, Street, and Bridge Construction	3.4%	432	$63,100	140	285	18	443
4842	Specialized Freight Trucking	2.6%	322	$57,900	105	187	-5	287
2123	Nonmetallic Mineral Mining and Quarrying	2.2%	277	$58,600	86	193	-3	277
2371	Utility System Construction	2.2%	271	$56,500	89	193	27	309
5621	Waste Collection	1.9%	241	$57,700	81	144	12	236
4882	Support Activities for Rail Transportation	1.9%	241	$63,800	75	147	-15	207
4851	Urban Transit Systems	1.8%	222	$62,600	74	131	8	214
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	1.7%	217	$56,800	70	131	-2	199
5321	Automotive Equipment Rental and Leasing	1.6%	200	$54,600	67	119	11	197
6111	Elementary and Secondary Schools	1.5%	189	$57,600	63	111	4	178
4821	Rail Transportation	1.5%	185	$85,700	59	116	2	178
5511	Management of Companies and Enterprises	0.8%	104	$61,600	34	62	1	97
n/a	All Others	25.1%	3,141	n/a	1,016	1,940	34	2,990

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 Diesel, Equipment, and Truck pathway, Farm Equipment Mechanics are particularly concentrated in Minnesota, with nearly double the concentration locally than seen in the nation overall. On average, careers in this pathway pay about $61,900—about $1,800 below than the average wage statewide across all positions. Demand was high over the past year, seeing employment growth of 1.5% since the third quarter of 2021. Employment will likely continue to grow statewide by about 0.3% through the third quarter of 2023.

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/18/2022 at talentneuronplan.gartner.com

Diesel, Equipment, and Truck Pathway in Minnesota – Baseline Forecast, 2022Q3[1]

		Current						1-Year History		1-Year Forecast		5-Year Baseline Forecast				
SOC	Occupation	Empl	Avg Ann Wages[2]	LQ	Unempl	Unempl Rate	Online Job Ads[3]	Empl Change	Ann %	Empl Change	Ann %	Total Demand	Exits	Transfers	Empl Change	Ann % Change
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	6,739	$61,500	1.19	142	2.1%	536	132	2.0%	12	0.2%	3,149	1,120	1,968	62	0.2%
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	2,209	$67,100	0.74	27	1.2%	3	50	2.3%	16	0.7%	1,162	365	718	80	0.7%
49-3041	Farm Equipment Mechanics and Service Technicians	1,718	$53,600	1.98	22	1.3%	25	54	3.3%	8	0.5%	873	280	551	41	0.5%
47-5022	Excavating and Loading Machine and Dragline Operators, Surface Mining	695	$65,700	0.95	5	0.8%	5	-54	-7.3%	1	0.1%	362	108	251	3	0.1%
49-3043	Rail Car Repairers	455	$60,200	1.14	5	1.2%	12	-11	-2.3%	0	-0.1%	214	73	143	-1	-0.1%
53-7021	Crane and Tower Operators	381	$75,900	0.43	13	3.2%	10	12	3.2%	1	0.2%	205	54	148	3	0.2%
47-5023	Earth Drillers, Except Oil and Gas	321	$57,400	0.98	16	4.9%	2	-3	-1.0%	1	0.2%	169	50	116	3	0.2%
	Diesel Equipment and Truck Pathway	**12,518**	**$61,900**	**1.06**	**230**	**1.8%**	**593**	**180**	**1.5%**	**38**	**0.3%**	**6,135**	**2,048**	**3,894**	**192**	**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®
Data as of 2021Q2 unless noted otherwise
Note: Figures may not sum due to rounding.
1. Data based on a four-quarter moving average unless noted otherwise.
2. Wage data are as of 2020 and represent the average for all Covered Employment
3. Data represent found online ads active within the last thirty days in the selected region; data represents a sampling rather than the complete universe of postings. Ads lacking zip code information but designating a place (city, town, etc.) may be assigned to the zip code with greatest employment in that place for queries in this analytic. Due to alternative county-assignment algorithms, ad counts in this analytic may not match that shown in RTI (nor in the popup window ad list).

Diesel, Equipment, and Truck careers saw some significant wage gains across the pathway, with average wages rising by about $6,000 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 $46,400 annually for entry-level talent.

Occupation Wages, Average Annual in Minnesota, 2022Q3

					Percentiles				
SOC	Occupation	Mean	Entry Level	Experienced	10%	25%	50% (Median)	75%	90%
47-5022	Excavating and Loading Machine and Dragline Operators, Surface Mining	$65,700	$48,300	$74,300	$45,800	$54,200	$65,800	$77,600	$84,500
47-5023	Earth Drillers, Except Oil and Gas	$57,400	$40,800	$65,700	$38,800	$45,800	$57,500	$65,300	$72,000
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	$61,500	$46,600	$68,900	$45,200	$50,500	$59,900	$71,400	$82,000
49-3041	Farm Equipment Mechanics and Service Technicians	$53,600	$39,400	$60,600	$36,800	$44,600	$51,700	$61,400	$66,500
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	$67,100	$51,700	$74,800	$48,800	$57,500	$65,700	$76,300	$84,300
	Diesel Equipment and Truck Pathway	**$61,900**	**$46,400**	**$69,600**	**$44,400**	**$51,200**	**$60,400**	**$71,300**	**$80,500**
	Total - All Occupations	**$63,700**	**$31,400**	**$79,800**	**$29,100**	**$35,700**	**$49,800**	**$75,000**	**$108,400**

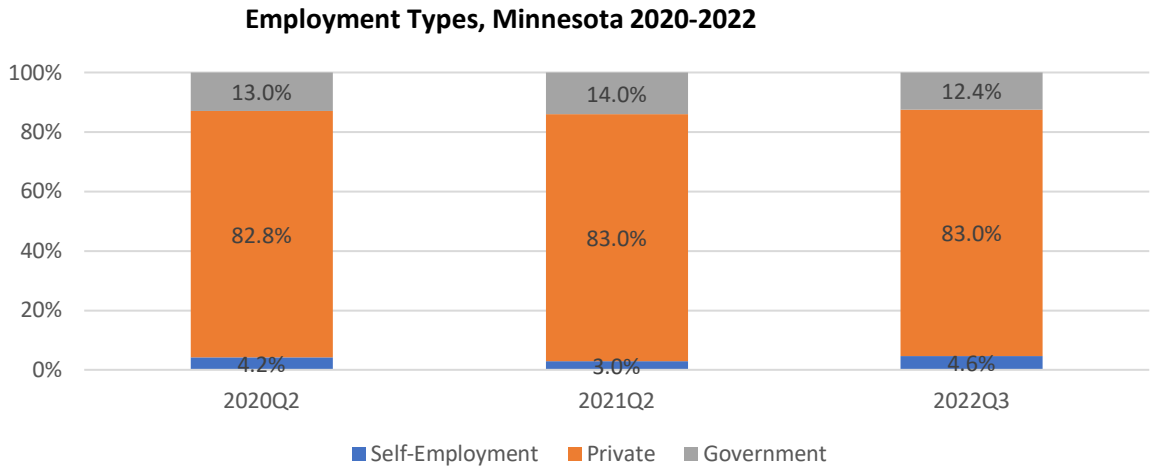
Source: JobsEQ®
Wage data represent the average for all Covered Employment

[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.

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/18/2022 at talentneuronplan.gartner.com

Employment Types

About 83% of people employed in Diesel, Equipment, and Truck careers in Minnesota work for private employers, while an estimated 4.6% are self-employed (a slight increase from 2021). The remaining 12.4% work for state, federal, or local government entities (a slight decrease from 2021).

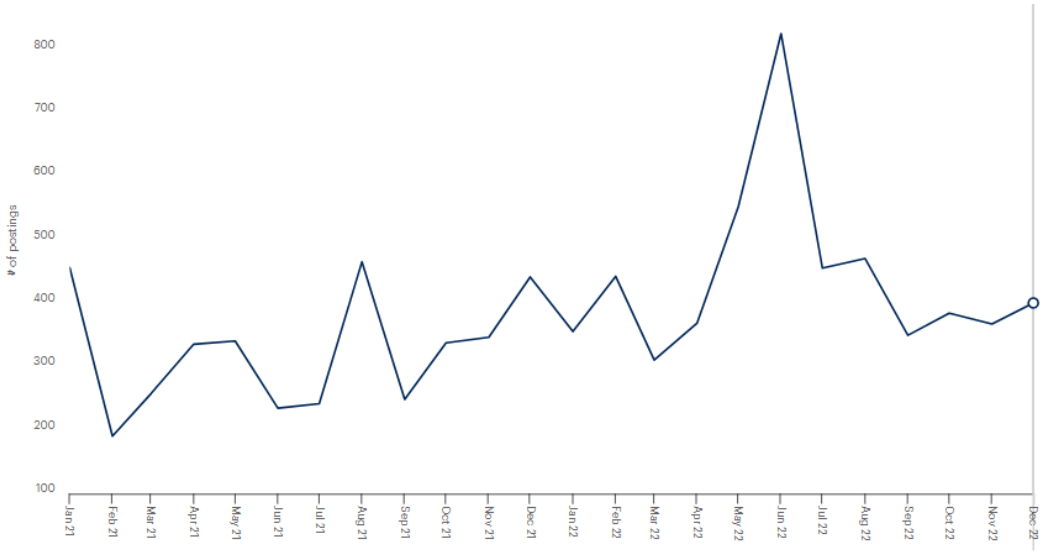


Job Posting Trends

Data in this section focuses on jobs newly advertised between January 1 and December 31, 2022 in Diesel, Equipment, and Truck 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 5,272 new jobs advertised in Diesel, Equipment, and Truck pathway careers during this time frame, an increase of 36% from the prior 12-month period (2021). The share of posted positions advertised by staffing and temp agencies in the Diesel, Equipment, and Truck pathway increased again to 18% up from 10% in 2021, implying dramatic increases in challenges finding talent in this career pathway and direct employers resorting to using new strategies to find talent. Posted wages increased to an average $28.03 per hour as of 2022, and there was only three hires per every one unique job posting advertised based on Lightcast estimates.

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/18/2022 at talentneuronplan.gartner.com

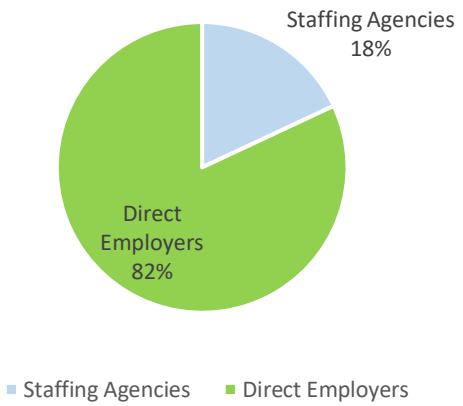
Volume of Career Pathway Online Job Postings in 2021 and 2022



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

	Employer	Percent Change between 2021 and 2022
1.	Labor Services	NA – New Entrant
2.	Sysco	27%
3.	XPO Logistics, Inc.	126%
4.	United Natural Foods, Inc.	NA – New Entrant
5.	Waste Connections	0%
6.	Waste Management	-40%
7.	GPAC	74%
8.	Ryder	149%
9.	Republic Services, Inc.	183%
10.	Carvana	NA – New Entrant

New Job Postings Advertised in Minnesota by Employer Type



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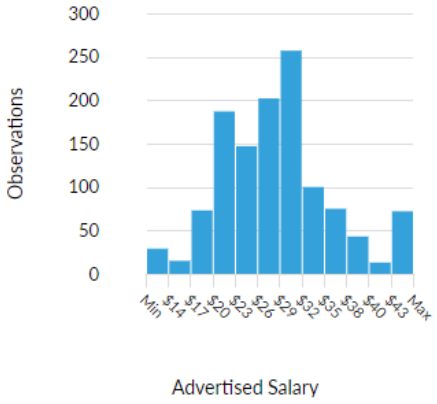
New Job Postings by Industry or Employer Type

Industry	Total/Unique (Jan 2022 - Dec 2022)	Posting Intensity	Median Posting Duration
Administrative and Support and Waste Management and Remediation Services	917 / 442	2 : 1	31 days
Wholesale Trade	1,265 / 373	3 : 1	31 days
Transportation and Warehousing	1,753 / 343	5 : 1	20 days
Manufacturing	565 / 231	2 : 1	33 days
Construction	870 / 179	5 : 1	26 days
Real Estate and Rental and Leasing	395 / 132	3 : 1	23 days
Retail Trade	277 / 131	2 : 1	31 days
Other Services (except Public Administration)	201 / 121	2 : 1	31 days
Information	83 / 47	2 : 1	26 days
Professional, Scientific, and Technical Services	107 / 30	4 : 1	21 days

Pathway Advertised Salary Range

$28.03/hr

Median Advertised Salary



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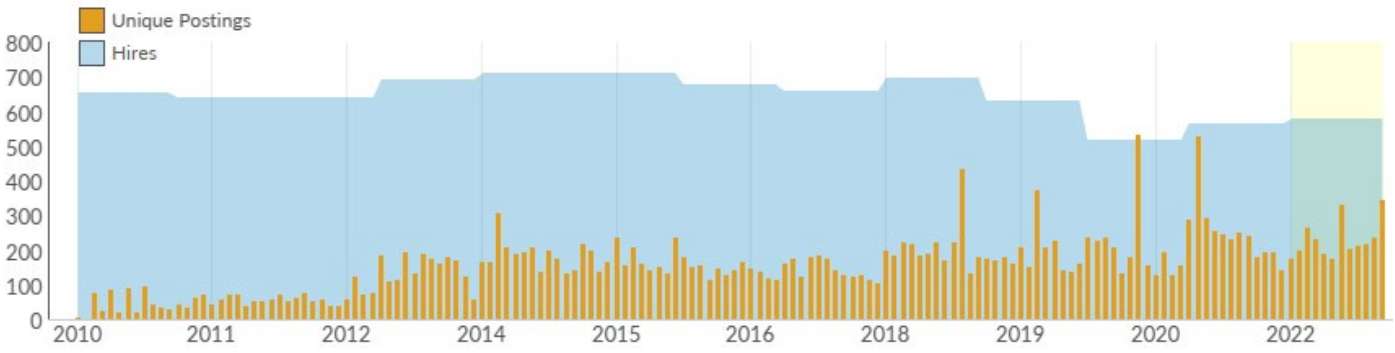
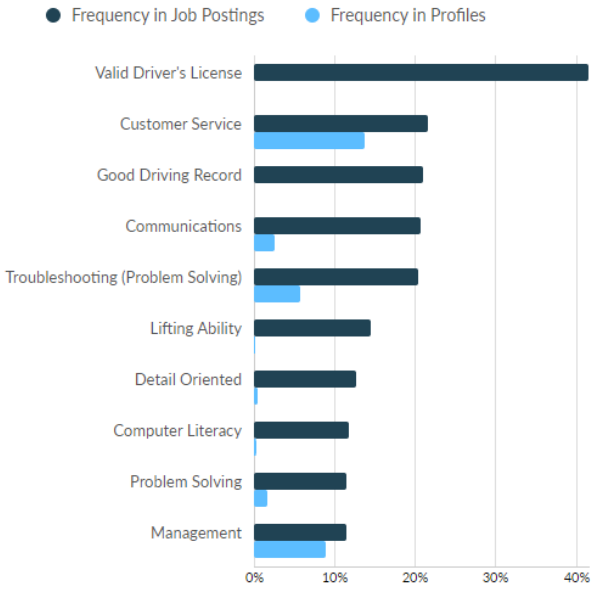
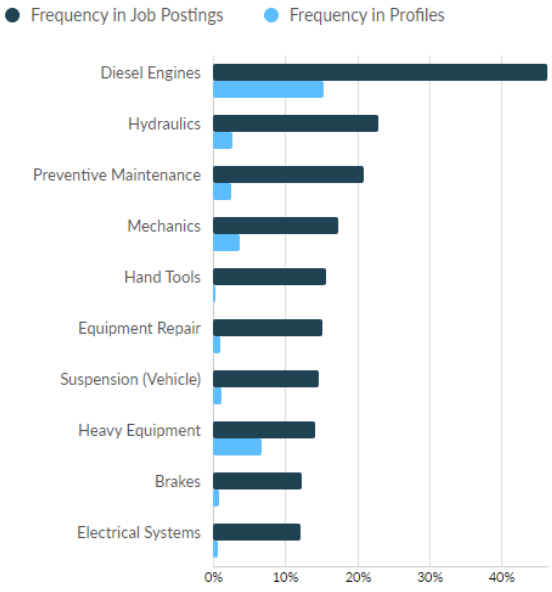
Monthly Ratio of Unique Job Postings to Estimated Hires



Top Common Skills



Top Specialized Skills



Top Certifications and Qualifications

Qualification	Postings with Qualification
Commercial Driver's License (CDL)	407
Automotive Service Excellence (ASE) Certification	267
CDL Class A License	151
CDL Class B License	79
HVAC Certification	56
DOT Certification	38
10-Hour OSHA General Industry Card	32
Forklift Certification	26
Tanker Endorsement	23
Product Certification	21

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Talent Supply Detail

Talent Unemployment, Underemployment, and Educational Attainment

At an overall pathway unemployment rate of 1.8%, there are about 230 unemployed Diesel Equipment Truck professionals statewide. An additional 743 Diesel Equipment Truck professionals are underemployed—meaning they are working in roles for which they are overqualified by education or experience.

Diesel, Equipment, and Truck 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
47-5022	Excavating and Loading Machine and Dragline Operators, Surface Mining	11.4%	53.0%	17.6%	10.8%	6.9%	0.2%	0.2%	685	46	5	0.8%
47-5023	Earth Drillers, Except Oil and Gas	11.4%	52.6%	17.7%	10.8%	7.1%	0.2%	0.2%	313	23	16	4.9%
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	7.3%	42.0%	19.4%	24.9%	5.6%	0.6%	0.2%	6,562	394	142	2.1%
49-3041	Farm Equipment Mechanics and Service Technicians	6.1%	43.8%	19.3%	25.2%	4.7%	0.7%	0.2%	1,702	75	22	1.3%
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	6.3%	42.9%	19.9%	24.1%	5.6%	0.9%	0.3%	2,158	139	27	1.2%
49-3043	Rail Car Repairers	6.7%	42.5%	19.7%	23.5%	6.1%	1.0%	0.4%	447	34	5	1.2%
53-7021	Crane and Tower Operators	5.7%	54.2%	19.6%	12.3%	7.0%	1.1%	0.2%	384	32	13	3.2%
	Diesel Equipment and Truck Pathway	**7.2%**	**43.7%**	**19.3%**	**23.2%**	**5.6%**	**0.7%**	**0.2%**	**12,251**	**743**	**230**	**1.8%**
	Total - All Occupations	**4.9%**	**21.1%**	**15.4%**	**14.1%**	**30.4%**	**10.3%**	**3.8%**	**2,944,602**	**511822**	**65850**	**2.3%**

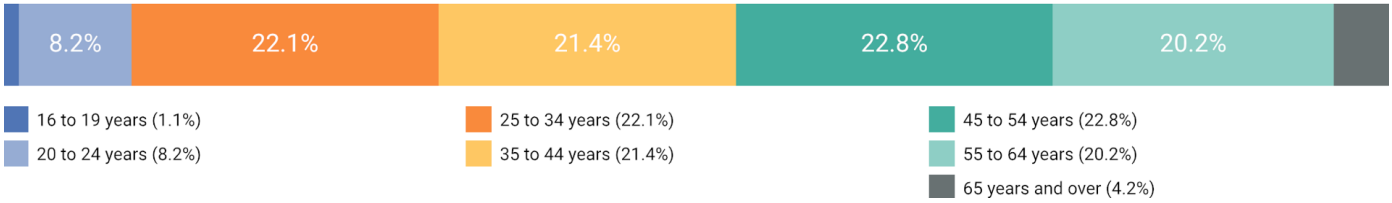
Source: JobsEQ®
Data as of 2022Q3 unless noted otherwise
Note: Figures may not sum due to rounding.
1. "Overall occupation" characteristics refer to attributes across all individuals in those occupations, not just those limited to the demographic categories shown in this table.

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/18/2022 at talentneuronplan.gartner.com

Workforce Demographics

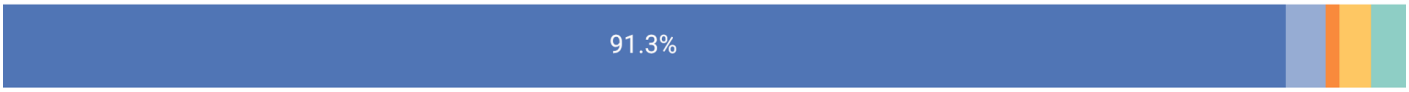
About 9.3% of the Diesel Equipment Truck workforce is under the age of 25, and 4.2% are over 64 years old. The largest demographic group by race are White, representing 91.3% of the total pathway's workforce, with the next largest cohort Black talent representing 2.8% of the workforce. Nearly 5% of the pathway's workforce are Hispanic or Latinx, and less than 2% are female.

Diesel, Equipment, and Truck Workforce Age Demographics, 2022Q3



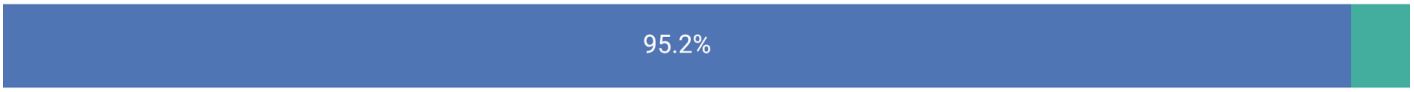
16 to 19 years (1.1%)
20 to 24 years (8.2%)
25 to 34 years (22.1%)
35 to 44 years (21.4%)
45 to 54 years (22.8%)
55 to 64 years (20.2%)
65 years and over (4.2%)

Diesel, Equipment, and Truck Workforce Race Demographics, 2022Q3



White (91.3%)
Black (2.8%)
American Indian (1.0%)
Asian (2.3%)
Pacific Islander (0.0%)
Two or More Races (2.6%)

Diesel, Equipment, and Truck Workforce Ethnicity Demographics, 2022Q3



Non-Hispanic/Latino (95.2%)
Hispanic or Latino (of any race) (4.8%)

Diesel, Equipment, and Truck Workforce Gender Demographics, 2022Q3

Male (98.3%)
Female (1.7%)

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/18/2022 at talentneuronplan.gartner.com

Graduate Demographics

Postsecondary program diversity varies by program across the Diesel, Equipment, and Truck pathway. Medium/Heavy Vehicle and Truck Technology/Technician programs are the most diverse by race and ethnicity. However, all programs have an overrepresentation of male students.

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
01.0201	Agricultural Mechanization, General	5	0	0	0	0	0	5	0	5	0
01.0204	Agricultural Power Machinery Operation	0	0	0	0	0	0	0	0	0	0
01.0205	Agricultural Mechanics and Equipment/Machine Technology/Technician	6	0	0	0	0	0	6	0	6	0
47.0302	Heavy Equipment Maintenance Technology/Technician	30	0	0	3	0	1	25	1	28	2
47.0399	Heavy/Industrial Equipment Maintenance Technologies/Technicians, Other	0	0	0	0	0	0	0	0	0	0
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
49.0202	Construction/Heavy Equipment/Earthmoving Equipment Operation	80	0	0	1	0	0	78	1	80	0
	All Diesel, Equipment, and Truck Postsecondary Programs	**289**	**0**	**10**	**7**	**8**	**8**	**247**	**9**	**276**	**13**

IPEDS SY2021 demographics by award conferred. Count of awards may double count individuals who obtained multiple credentials in the same calendar year. *NCES IPEDS 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

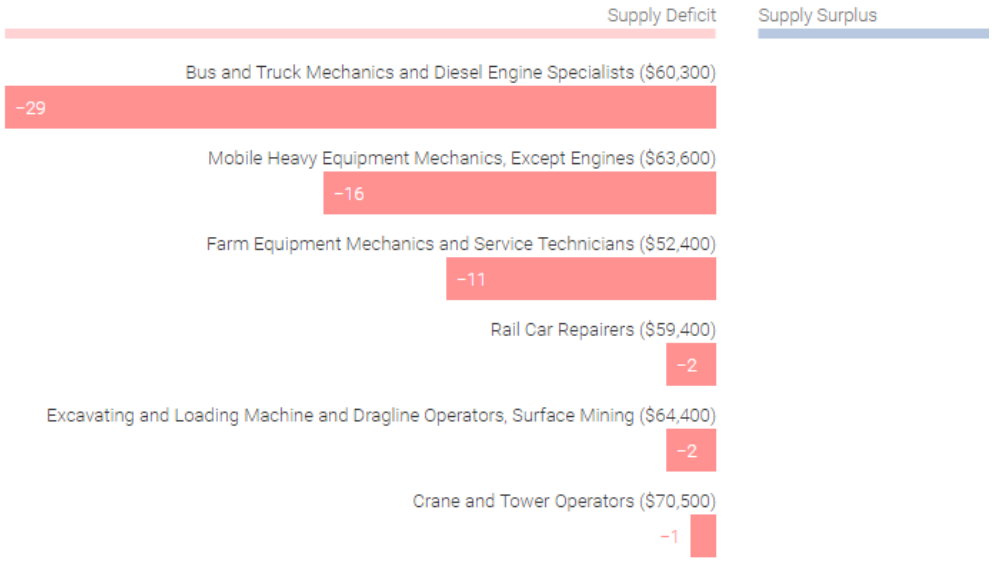
Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/18/2022 at talentneuronplan.gartner.com

Talent Gap Analysis

Occupation Gaps

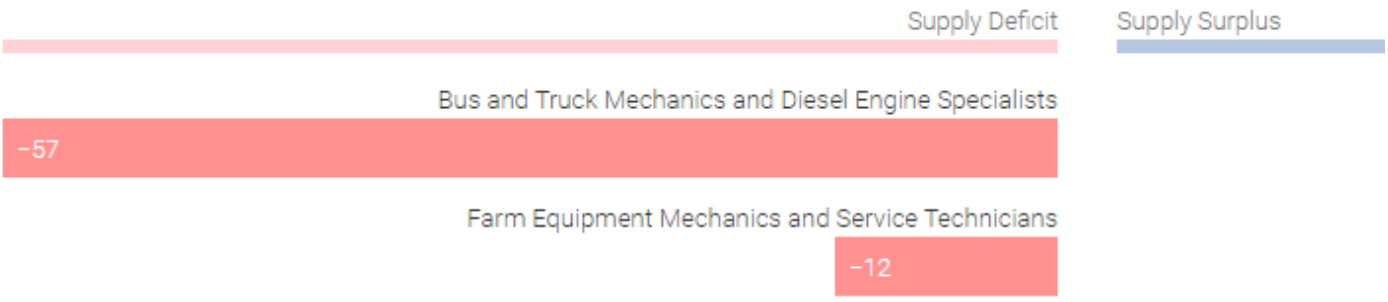
By 2027, it is likely that Minnesota will see a growing shortage of talent across all occupations in the Diesel, Equipment, and Truck pathway (shown in red below). The estimated annual shortage of Bus and Truck Mechanics in particular has worsened since 2021 estimates.

Estimated Occupation Gaps over Five Years in Minnesota



Award Gaps

Minnesota postsecondary institutions are underproducing credentials for Bus and Truck Mechanics and Diesel Engine Specialists and Farm Equipment Mechanics and Service 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 Bus and Truck Mechanics, Diesel Engine Specialists, and Farm Equipment Mechanics out of existing programs, or building new two- and four-year programs aligned to these occupations may be warranted.

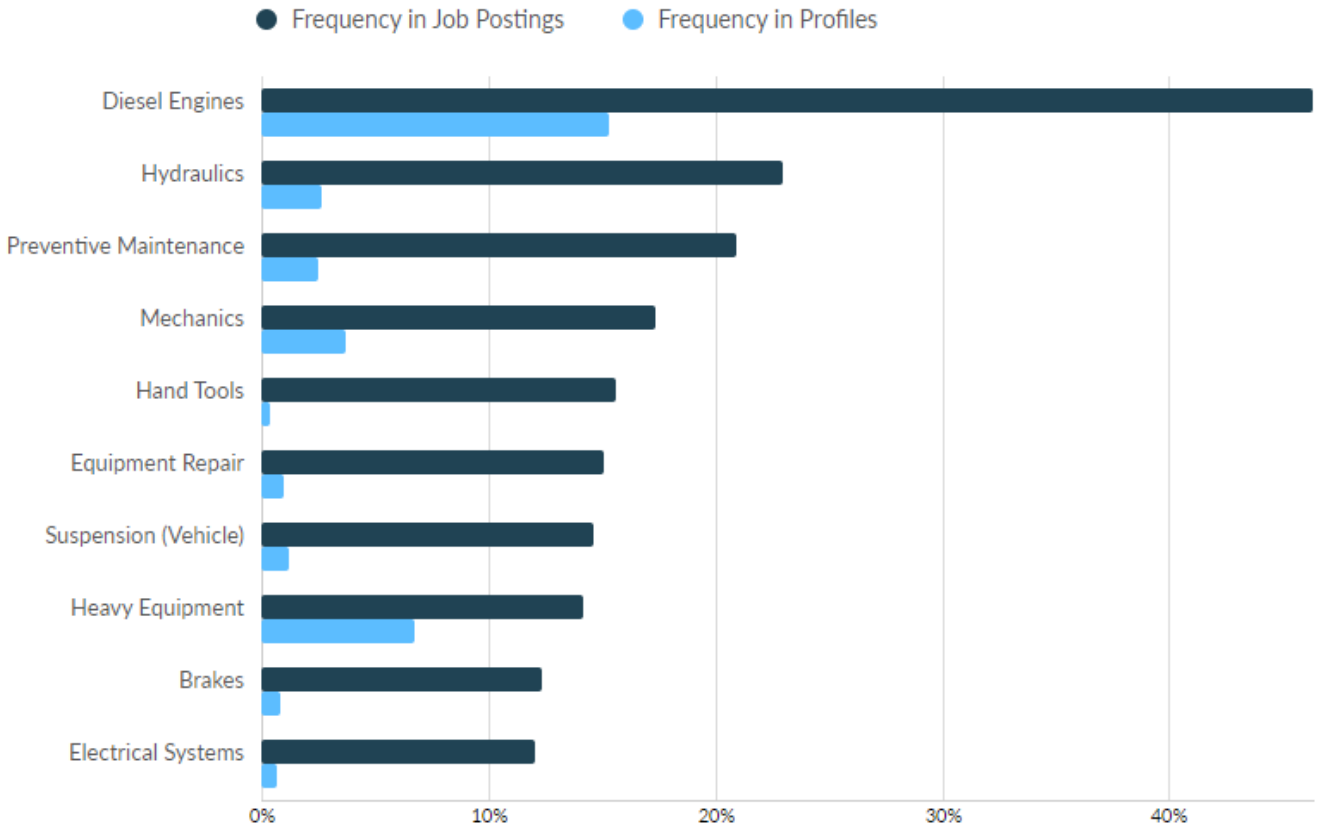


Skill Misalignments

All of these specialized skills are more frequent in job postings than in candidate profiles found online. Diesel Engines, Hydraulics, Preventative Maintenance, and Mechanics are all named more frequently in Diesel Equipment job postings than in the talent profiles of individuals currently employed or seeking work in these roles.

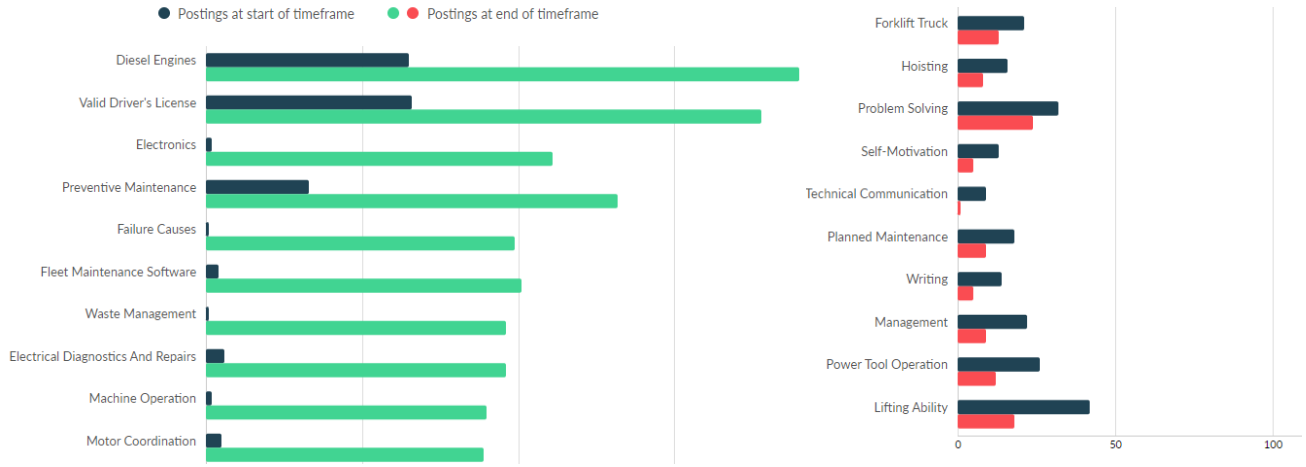
Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/18/2022 at talentneuronplan.gartner.com

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, experience with diesel engines, knowledge of performing preventative maintenance, and electronics 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



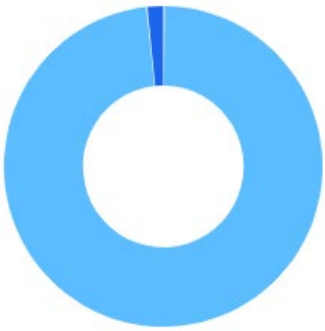
Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/18/2022 at talentneuronplan.gartner.com

High Need, High Demand Pathways

There were about 289 awards conferred at 14 different Minnesota postsecondary institutions in programs aligned to Diesel Equipment Truck careers in SY2021. Among these, 117 were at the Associate level, and 41 were certificates that could be earned in less than two years. The average school had about 20 completions, but range from two to 101 completions. No programs were delivered remotely.

Diesel Equipment 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
47.0605	Diesel Mechanics Technology/Technician	3	33	43	14	0	0	0	93
49.0202	Construction/Heavy Equipment/Earthmoving Equipment Operation	0	0	0	80	0	0	0	80
47.0613	Medium/Heavy Vehicle and Truck Technology/Technician	0	4	51	20	0	0	0	75
47.0302	Heavy Equipment Maintenance Technology/Technician	0	0	22	8	0	0	0	30
01.0205	Agricultural Mechanics and Equipment/Machine Technology/Technician	0	1	1	4	0	0	0	6
01.0201	Agricultural Mechanization, General	0	0	0	0	5	0	0	5
01.0204	Agricultural Power Machinery Operation	0	0	0	0	0	0	0	0
	Total	**3 (1.0%)**	**38 (13.1%)**	**117 (40.5%)**	**126 (43.6%)**	**5 (1.7%)**	**0 (0.0%)**	**0 (0.0%)**	**289**



Institution Type	Completions (2021)	Market Share
Public, 2-year	284	98.3%
Public, 4-year or above	5	1.7%

All awards were conferred by public institutions, and all but five awards were conferred by public four-year institutions. Central Lake College-Brainerd had the largest number of completions in SY2021, comprising 34.9% of related awards conferred. Completions are up 3.6% from 2012.

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/18/2022 at talentneuronplan.gartner.com

Diesel Equipment Postsecondary Program Awards by Institution, SY2021

Institution	Completions (2021)	Growth % YOY (2021)	Market Share (2021)	IPEDS Tuition & Fees (2021)	Completions Trend (2017-2021)
Central Lakes College-Brainerd	101	124.4%	34.9%	$5,954	
Dakota County Technical College	44	-6.4%	15.2%	$6,208	
Alexandria Technical & Community College	33	-10.8%	11.4%	$5,910	
Hennepin Technical College	27	58.8%	9.3%	$5,741	
Minnesota West Community and Technical College	23	0.0%	8.0%	$6,286	
St Cloud Technical and Community College	12	-33.3%	4.2%	$5,874	
Riverland Community College	10	-16.7%	3.5%	$6,060	
Hibbing Community College	10	-9.1%	3.5%	$5,773	
Saint Paul College	9	50.0%	3.1%	$6,041	
Minnesota State Community and Technical College	6	-57.1%	2.1%	$5,862	

The clearest gap in program offerings is for Farm Equipment Mechanics, which are both an area of talent shortages and where Minnesota institutions fall short of national award benchmarks. There were only six Certificate or Associate-level Agricultural Mechanics and Equipment Machine Technician graduates in the most recent school year and only five Bachelor's-level Agricultural Mechanization, General graduates in the most recent school year. There were no Agricultural Power Machinery Operation competitions. All three of these programs (CIP 01.0205, 01.0201, and 01.0204) 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 diesel equipment talent in need. In the Diesel, Equipment, and Truck 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.

Postsecondary programs aligned to Farm Equipment Mechanics and Service Technicians and Bus and Truck Mechanics and Diesel Engine Specialists are underproducing graduates in comparison to national benchmarks. These two occupations are also experiencing talent shortages, a low share of female workers and graduates, and Farm Equipment Mechanics and Service Technicians have a low share of BIPOC graduates. Bus and Truck Mechanics and Diesel Engine Specialists have the highest volume of employment and the highest number related graduates; there were 79 diesel graduates specifically from Diesel Mechanics Technology/Technician programs in Minnesota during the 2021 school year, plus another 55 graduates of Medium/Heavy Vehicle and Truck Technology/Technician programs—both of which are counted in the table below.

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/18/2022 at talentneuronplan.gartner.com

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)
Excavating and Loading Machine and Dragline Operators, Surface Mining	• Construction/Heavy Equipment/Earthmoving Equipment Operation	685	Y	7.7%	9.4%	5.0%	23.8%	80	N	2.5%	0%
Earth Drillers, Except Oil and Gas	• Construction/Heavy Equipment/Earthmoving Equipment Operation	313	Y	8.1%	9.5%	5.3%	53.3%	80	N	2.5%	0%
Bus and Truck Mechanics and Diesel Engine Specialists	• Diesel Mechanics Technology/Technician • Medium/Heavy Vehicle and Truck Technology/Technician	6,562	Y	10.2%	4.6%	1.3%	52.9%	168	Y	44.8%	13.6%
Farm Equipment Mechanics and Service Technicians	• Agricultural Mechanics and Equipment/Machine Technology/Technician • Agricultural Mechanization, General • Agricultural Power Machinery Operation	1,702	Y	4.9%	4.5%	1.4%	57.3%	6	Y	0%	0%
Mobile Heavy Equipment Mechanics, Except Engines	• Heavy Equipment Maintenance Technology/Technician • Agricultural Mechanics and Equipment/Machine Technology/Technician	2,158	Y	7.3%	3.9%	1.4%	58.5%	32	N	16.6%	6.6%
Rail Car Repairers	• Heavy Equipment Maintenance Technology/Technician	447	Y	10.2%	4.5%	1.5%	59.5%	30	N	16.6%	6.6%
Crane and Tower Operators	• Construction/Heavy Equipment/Earthmoving Equipment Operation	384	Y	7.7%	1.4%	1.4%	42.6%	80	N	2.5%	0%
Diesel Equipment and Truck Pathway	**All nine aligned programs**	**12,251**	**Y**	**8.7%**	**4.8%**	1.7%	**52.8%**	**284**	**Y**	**14.5%**	**4.5%**
All Occupations		**2,944,602**		**15.0%**	**5.2%**	**48.3%**	**56.5%**	**29,484**		**37.3%**	**65.6%**

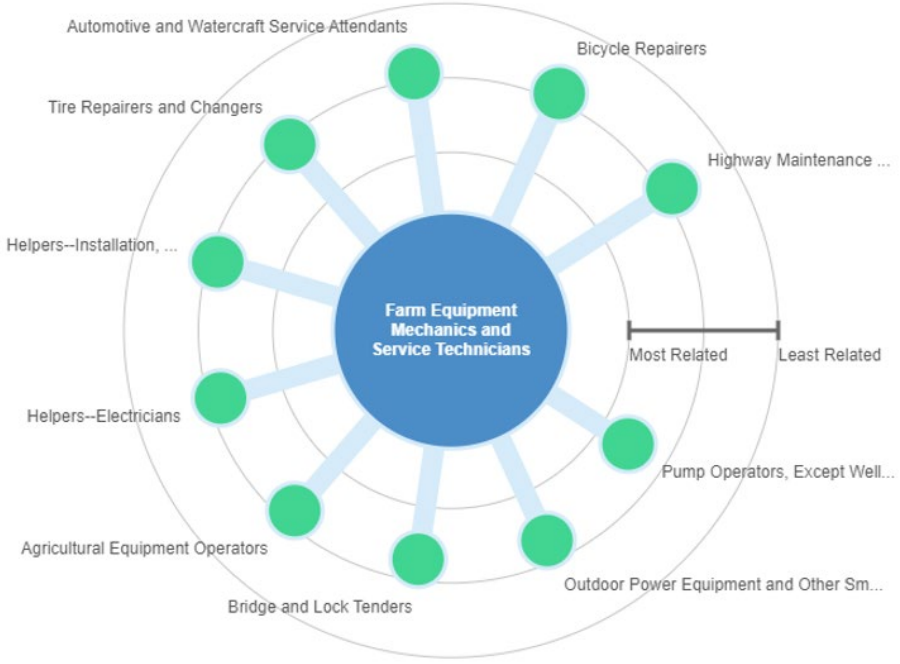
NOTE: Red highlighting indicates lower than overall share of workforce or graduate pool, or existence of occupation or award gap. *Related programs may overlap among occupations within the pathway or across other Transportation career pathways. Only those programs most tightly aligned to the occupation 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.

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/18/2022 at talentneuronplan.gartner.com

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 Diesel, Equipment, and Truck sector that share high demand. The graphic below offers several careers related to the Farm Equipment Mechanic occupation in skill demands that have highly relevant skill and experience overlap that would be strong feeder occupations for talent. Agricultural Equipment Operators is the most logical source for career advancement into Farm Equipment Mechanic roles.

Feeder Occupations into Farm Equipment Mechanic Roles, 2023Q1



Occupation	Category	Relevance	Avg. Unique Monthly Postings from Jan 2022 - Dec 2022	Mean Salary Diff.
Pump Operators, Except Wellhead Pumpers	Lateral Transition	78%	3	+$33
Outdoor Power Equipment and Other Small Engine Mechanics	Advancement	65%	4	-$8,592
Bridge and Lock Tenders	Lateral Advancement	64%	1	-$9,288
Agricultural Equipment Operators	Lateral Advancement	59%	12	-$14,163

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/18/2022 at talentneuronplan.gartner.com

MARINE & POWERSPORTS

Supply & Demand Analysis

2022

MINNESOTA STATE
Transportation Center of Excellence

Introduction and Sector Overview

This report highlights key opportunities in the Marine and Power Sports career pathway for Minnesota's Transportation Industry. Professionals in Marine and Power Sports work in diverse roles from industrial equipment maintenance, outdoor power equipment maintenance, and small engine, motorboat, and motorcycle mechanics, serving a variety of industries. In all, about 4,799 people work in Marine and Power Sports roles in Minnesota as of the third quarter of 2022—a 4.2% increase (193 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, Marine and Power Sports employment is anticipated to remain relatively stable in Minnesota, rising by about 38 total jobs (0.2% annually) due to a tight talent pool. Total baseline demand for Marine and Power Sports talent is anticipated to be around 3,046 professionals needed to fill positions due to job exits and transfers, such as retirements and job changes.

Transportation Pathways in Minnesota – Baseline Forecast, 2022Q3[1]

	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%**

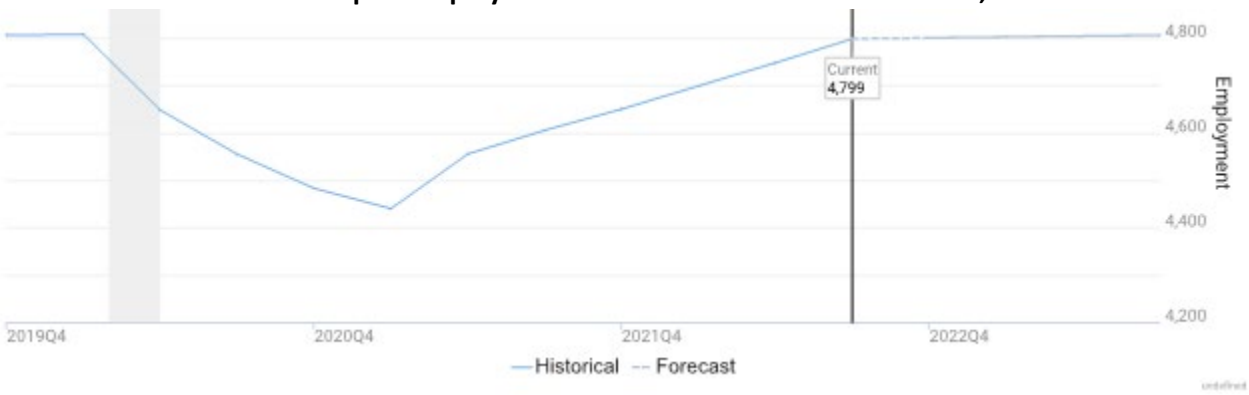
*This pathway includes School Bus Driver careers as of 2022, which were not included in the 2020 or 2021 estimates of career pathway employment or demand.

Source: JobsEQ®
Data as of 2023Q3 unless noted otherwise
Note: Figures may not sum due to rounding.
1. Data based on a four-quarter moving average unless noted otherwise.
2. Wage data represent the average for all Covered Employment
3. Data represent found online ads active within the last thirty days in the selected region; data represents a sampling rather than the complete universe of postings. Ads lacking zip code information but designating a place (city, town, etc.) may be assigned to the zip code with greatest employment in that place for queries in this analytic. Due to alternative county-assignment algorithms, ad counts in this analytic may not match that shown in RTI (nor in the popup window ad list).

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

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 Marine and Power Sports 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 0.2% average annual growth 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.

Marine and Power Sport Employment Forecast Under Baseline Scenario, Minnesota



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

Industry/Occupation Mix

Marine and Power Sports talent is primarily concentrated in the Other Motor Vehicle Dealers industry (16.4%), increasing in its concentration from estimates in 2021 by another 4.2 percentage points. The next highest industry of employment concentration is Gasoline Stations (10.3%). These top industries also account for the most total demand for this talent over the next ten years.

Top Industry Distribution for Marine and Power Sports Pathway Occupations in Minnesota

		CURRENT			10-YEAR DEMAND			
NAICS Code	Industry Title	% of Occ Empl	Empl	Avg Ann Wages	Exits	Transfers	Empl Growth	Total Demand
4412	Other Motor Vehicle Dealers	16.4%	785	$41,600	322	517	40	879
4571	Gasoline Stations	10.3%	494	$31,300	245	475	-64	656
8111	Automotive Repair and Maintenance	9.7%	463	$31,100	249	482	16	747
4411	Automobile Dealers	6.9%	333	$33,700	178	346	8	533
4552	Warehouse Clubs, Supercenters, and Other General Merchandise Retailers	5.0%	240	$32,800	130	251	17	398
7139	Other Amusement and Recreation Industries	5.0%	239	$41,400	103	176	16	296
8114	Personal and Household Goods Repair and Maintenance	4.6%	221	$41,800	92	148	21	261
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	3.7%	178	$65,000	54	107	-5	156
4442	Lawn and Garden Equipment and Supplies Retailers	3.3%	158	$40,400	65	103	6	174
4881	Support Activities for Air Transportation	2.9%	138	$34,000	76	147	15	238
4551	Department Stores	2.3%	110	$32,700	60	115	8	183
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	2.0%	95	$49,100	36	60	-2	94
5617	Services to Buildings and Dwellings	1.8%	89	$45,500	36	57	2	94
4451	Grocery and Convenience Retailers	1.8%	87	$32,200	44	86	-7	124
4441	Building Material and Supplies Dealers	1.5%	71	$40,100	29	46	1	75
9211	Executive, Legislative, and Other General Government Support	1.4%	67	$53,900	26	49	-1	74
8112	Electronic and Precision Equipment Repair and Maintenance	0.7%	33	$60,800	11	21	2	34
3221	Pulp, Paper, and Paperboard Mills	0.6%	31	$81,300	9	17	-6	20
4413	Automotive Parts, Accessories, and Tire Retailers	0.6%	30	$33,100	16	30	0	46
2382	Building Equipment Contractors	0.6%	29	$64,500	9	18	-1	26
n/a	All Others	18.9%	908	n/a	337	641	10	989

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.

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

Talent Demand Detail

Employment and Wage Overview

Of all occupations found in the Marine and Power Sports pathway, Motorcycle Mechanics and Motorboat Mechanics and Service Technicians are uniquely concentrated in Minnesota to a higher degree than seen in the nation overall. On average, Marine and Power Sports careers pay about $46,200 per year (up from $41,900 last year)—well below the average wage statewide across all positions. Demand was high over the past year, seeing employment growth of 4.2% since the third quarter of 2021. However, employment may increase at a lower rate, about 0.2% through the third quarter of 2023.

Marine and Power Sports Pathway in Minnesota - Baseline, 2022Q3[1]

		Current						1-Year History		1-Year Forecast		5-Year Baseline Forecast				
SOC	Occupation	Empl	Avg Ann Wages[2]	LQ	Unempl	Unempl Rate	Online Job Ads[3]	Empl Change	Ann %	Empl Change	Ann %	Total Demand	Exits	Transfers	Empl Change	Ann % Change
53-6031	Automotive and Watercraft Service Attendants	1,906	$34,500	0.85	71	3.7%	7	82	4.5%	-1	-0.1%	1,474	503	978	-7	-0.1%
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	880	$75,000	0.90	23	2.7%	29	-19	-2.1%	-1	-0.1%	397	135	267	-5	-0.1%
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	724	$44,200	1.02	44	5.9%	20	29	4.1%	2	0.3%	391	147	234	10	0.3%
49-3051	Motorboat Mechanics and Service Technicians	568	$47,900	1.16	35	6.0%	15	45	8.5%	4	0.8%	329	118	188	23	0.8%
49-3052	Motorcycle Mechanics	480	$43,700	1.55	31	6.1%	1	22	4.9%	1	0.3%	259	97	155	7	0.3%
53-6032	Aircraft Service Attendants	205	$37,600	0.76	1	0.5%	3	32	18.5%	2	0.9%	175	56	110	9	0.9%
53-5022	Motorboat Operators	36	$51,100	0.52	0	n/a	n/a	2	6.9%	0	0.6%	21	6	14	1	0.6%
16420	**Marine and Power Sports Pathway**	**4,799**	**$46,200**	**0.95**	**205**	**4.2%**	**75**	**193**	**4.2%**	**7**	**0.2%**	**3,046**	**1,062**	**1,946**	**38**	**0.2%**
	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®
Data as of 2022Q3 unless noted otherwise
Note: Figures may not sum due to rounding.
1. Data based on a four-quarter moving average unless noted otherwise.
2. Wage data are the average for all Covered Employment
3. Data represent found online ads active within the last thirty days in the selected region; data represents a sampling rather than the complete universe of postings. Ads lacking zip code information but designating a place (city, town, etc.) may be assigned to the zip code with greatest employment in that place for queries in this analytic. Due to alternative county-assignment algorithms, ad counts in this analytic may not match that shown in RTI (nor in the popup window ad list).

Marine and Power Sports saw some moderate wage gains across the pathway, with average wages rising by $4,300 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 $34,900 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.

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

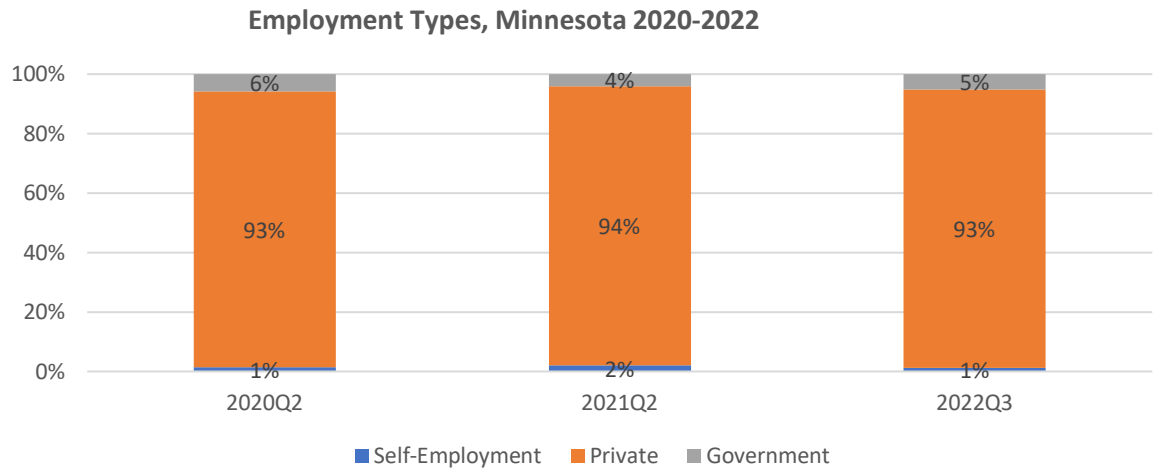
Occupation Wages, Average Annual in Minnesota, 2022Q3

					Percentiles				
SOC	Occupation	Mean	Entry Level	Experienced	10%	25%	50% (Median)	75%	90%
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	$75,000	$57,000	$84,000	$53,700	$64,000	$74,700	$83,300	$96,000
49-3051	Motorboat Mechanics and Service Technicians	$47,900	$35,000	$54,400	$32,500	$39,700	$47,200	$52,200	$62,100
49-3052	Motorcycle Mechanics	$43,700	$30,600	$50,300	$29,800	$32,900	$40,200	$49,700	$60,800
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	$44,200	$32,400	$50,100	$30,400	$36,300	$43,500	$49,700	$56,000
53-5022	Motorboat Operators	$51,100	$33,600	$59,800	$32,100	$37,200	$44,600	$57,000	$72,400
53-6031	Automotive and Watercraft Service Attendants	$34,500	$27,300	$38,100	$25,700	$29,800	$32,600	$38,000	$44,600
53-6032	Aircraft Service Attendants	$37,600	$29,300	$41,700	$26,100	$33,800	$37,500	$40,500	$40,500
16420	**Marine and Power Sports Pathway**	**$46,200**	**$34,900**	**$51,800**	**$32,800**	**$38,800**	**$44,700**	**$51,100**	**$59,500**
00-0000	**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 93% of people employed in Marine and Power Sports careers in Minnesota work for private employers (a slight decrease from 2021), while an estimated 1% are self-employed. The remaining 5% work for state, federal, or local government entities – this share has been declining moderately over the past three years.

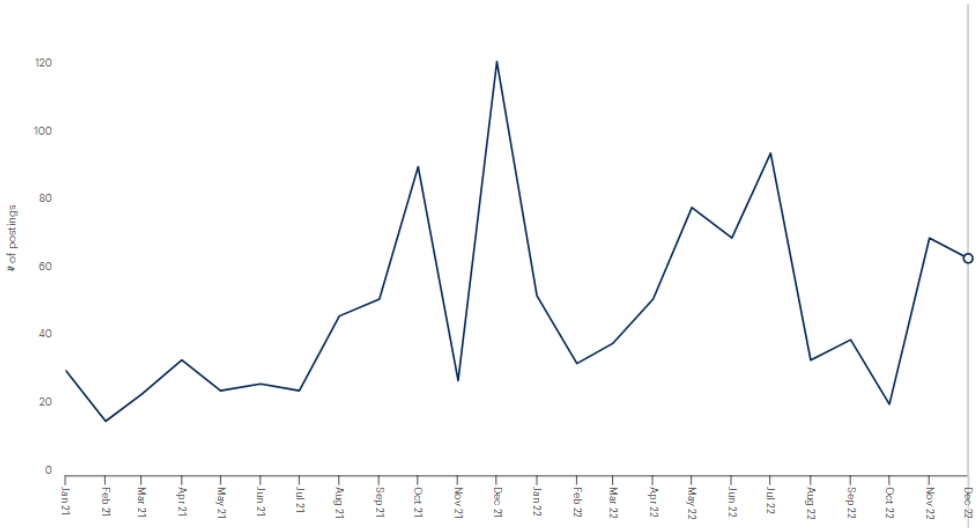


Job Posting Trends

Data in this section focuses on jobs newly advertised between January 1 and December 31, 2022 in Marine and Power Sports 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 650 new jobs advertised in Marine and Power Sports during this time frame, an increase of 25% from the prior 12-month period (2021). The total share of posted positions advertised by staffing and temp agencies in the Marine and Power Sports pathway increased to 16% in 2022 compared to 5% in 2021. Posted wages decreased to an average $20.00 per hour as of 2022, and there were six hires per every one unique job posting advertised based on Lightcast estimates.

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

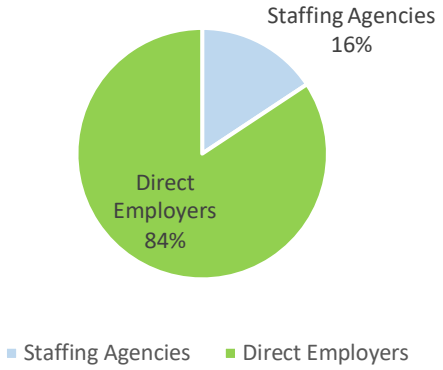
Volume of Career Pathway Online Job Postings in 2021 and 2022



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

	Employer	Percent Change between 2021 and 2022
1.	Walmart	3,360%
2.	GPAC	7,600%
3.	Xcel Energy	-11%
4.	Ryder	357%
5.	Army	-19%
6.	PENSKE	-14%
7.	Neighbor Storage	-24%
8.	University of Minnesota	N/A – New Entrant
9.	L&M Fleet Supply	1,200%
10.	John Deere	0%

New Job Postings Advertised in Minnesota by Employer Type



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

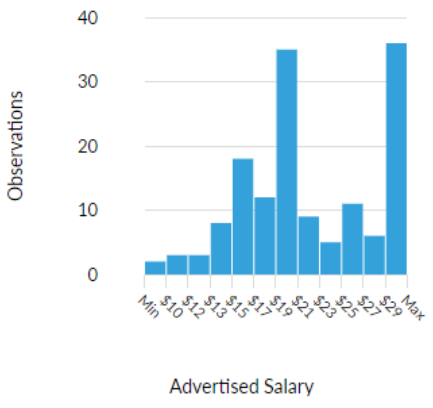
New Job Postings by Industry or Employer Type

Industry	Total/Unique (Jan 2022 - Dec 2022)	Posting Intensity	Median Posting Duration
Retail Trade	995 / 276	4 : 1	53 days
Real Estate and Rental and Leasing	115 / 36	3 : 1	23 days
Administrative and Support and Waste Management and Remediation Services	58 / 29	2 : 1	44 days
Wholesale Trade	28 / 14	2 : 1	22 days
Public Administration	28 / 14	2 : 1	41 days
Construction	21 / 10	2 : 1	39 days
Utilities	21 / 9	2 : 1	32 days
Transportation and Warehousing	34 / 6	6 : 1	25 days
Manufacturing	12 / 5	2 : 1	n/a
Information	6 / 4	2 : 1	n/a

Pathway Advertised Salary Range

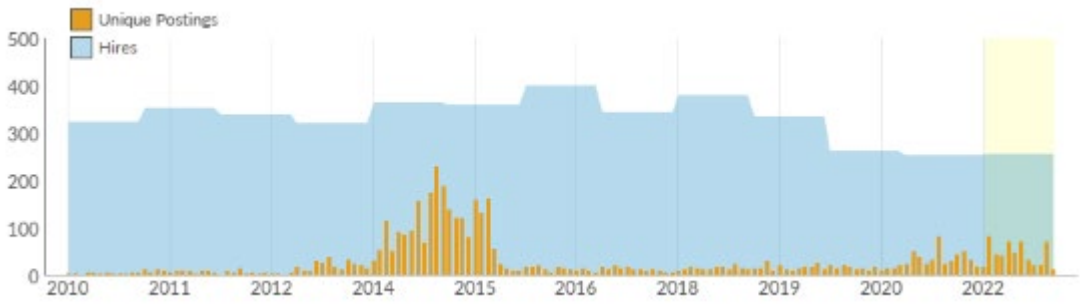
$20.00/hr

Median Advertised Salary

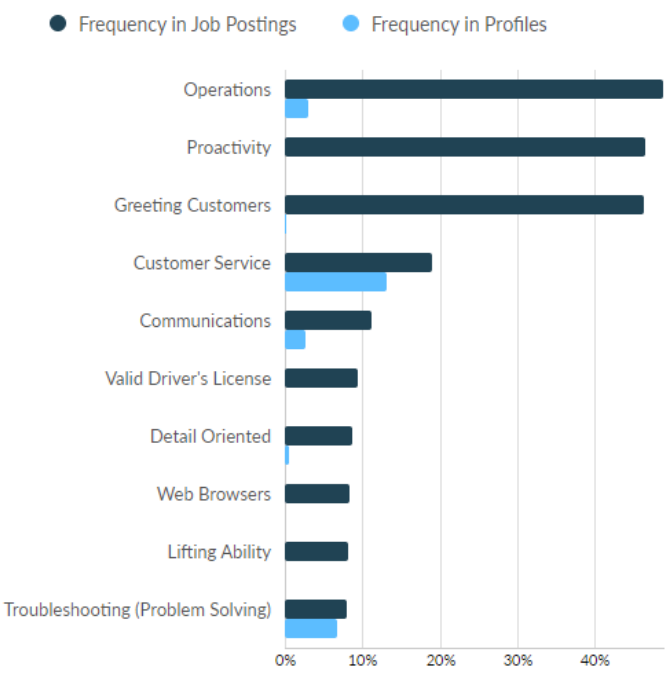


Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/10/2022 at talentneuronplan.gartner.com

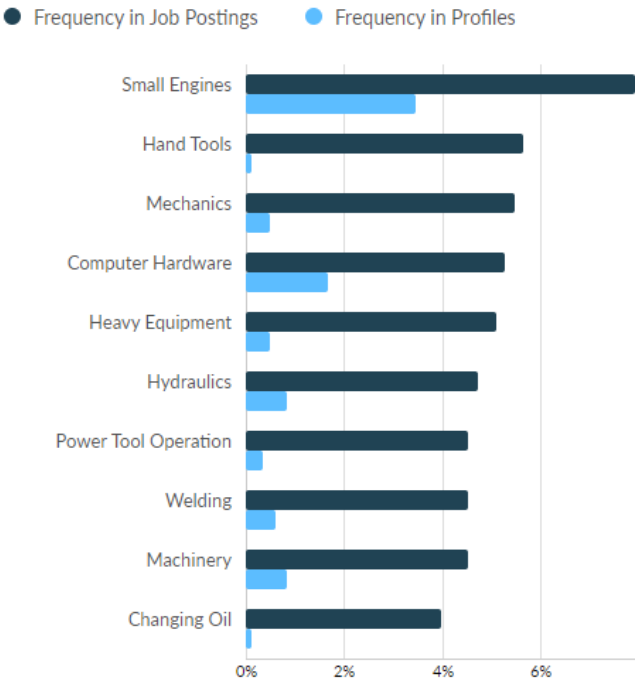
Monthly Ratio of Unique Job Postings to Estimated Hires



Top Common Skills



Top Specialized Skills



Top Certifications and Qualifications

Qualification	Postings with Qualification
CDL Class A License	41
Commercial Driver's License (CDL)	36
CDL Class B License	15
Automotive Service Excellence (ASE) Certification	10
Tanker Endorsement	5
DOT Certification	2
Advanced Burn Life Support	2
30-Hour OSHA General Industry Card	1
Certified Marine Technician	1
Basic Life Support (BLS) Certification	1

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

Talent Supply Detail

Talent Unemployment, Underemployment, and Educational Attainment

At an overall pathway unemployment rate of 4.2%, there are about 205 unemployed Marine and Power Sports professionals statewide. An additional 524 Marine and Power Sports professionals are underemployed—meaning they are working in roles for which they are overqualified by education or experience.

Marine and Power Sports 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
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	4.0%	23.9%	23.0%	27.0%	20.8%	1.0%	0.3%	849	188	23	2.7%
49-3051	Motorboat Mechanics and Service Technicians	7.5%	41.7%	23.3%	18.3%	6.7%	0.9%	1.6%	557	45	35	6.0%
49-3052	Motorcycle Mechanics	7.3%	42.2%	23.3%	18.4%	6.4%	0.9%	1.5%	474	34	31	6.1%
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	7.7%	41.5%	23.1%	18.1%	6.9%	1.0%	1.7%	704	64	44	5.9%
53-5022	Motorboat Operators	5.2%	26.9%	22.5%	10.5%	26.2%	6.9%	1.8%	34	11	0	1.5%
53-6031	Automotive and Watercraft Service Attendants	8.1%	44.1%	21.6%	16.1%	8.6%	1.5%	0.0%	1,865	157	71	3.7%
53-6032	Aircraft Service Attendants	8.9%	41.8%	21.6%	15.4%	10.4%	1.9%	0.0%	199	25	1	0.5%
	Marine and Power Sports Pathway	**7.2%**	**39.4%**	**22.4%**	**18.8%**	**10.3%**	**1.2%**	**0.7%**	**4,681**	**524**	**205**	**4.2%**
	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%**

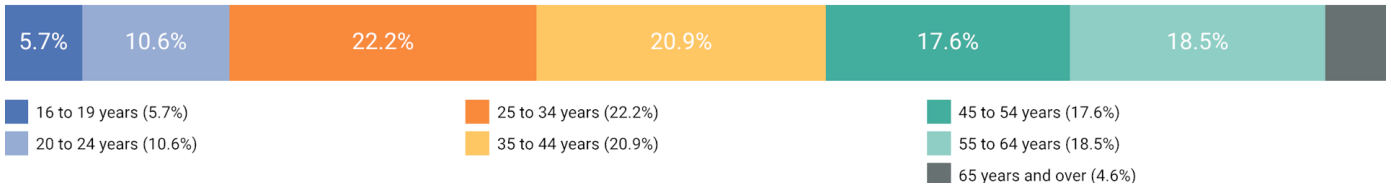
Source: JobsEQ®
Data as of 2022Q3 unless noted otherwise
Note: Figures may not sum due to rounding.
1. "Overall occupation" characteristics refer to attributes across all individuals in those occupations, not just those limited to the demographic categories shown in this table.

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

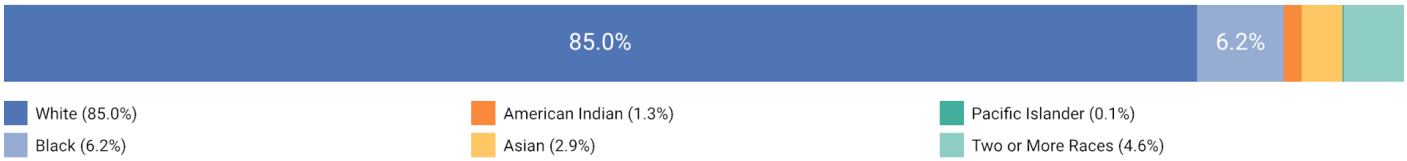
Workforce Demographics

Talent in this career field is relatively young overall. About 16.3% of the Marine and Power Sports workforce is under the age of 25, and 4.6% are over 64 years old. The largest demographic group by race are White, representing 85% of the total pathway's workforce, with the next largest cohort being Black talent representing 6.2% of the workforce. Just over 5% of the pathway's workforce are Hispanic or Latinx, and 8.9% are female.

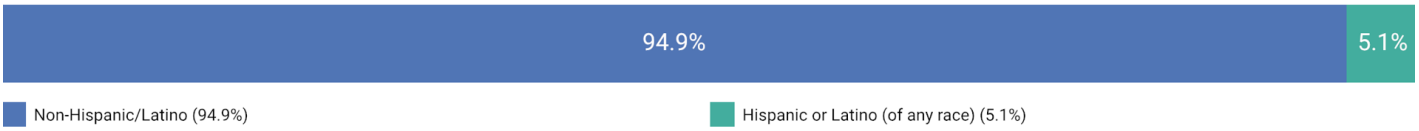
Marine and Power Sports Workforce Age Demographics, 2022Q3



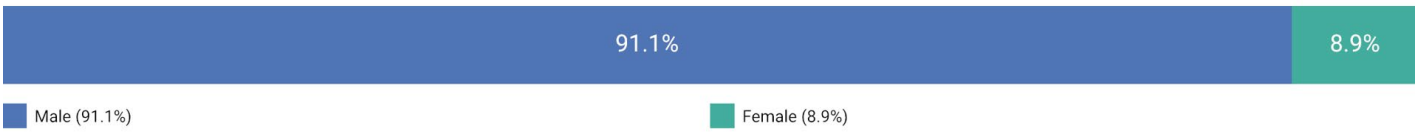
Marine and Power Sports Workforce Race Demographics, 2022Q3



Marine and Power Sports Workforce Ethnicity Demographics, 2022Q3



Marine and Power Sports Workforce Gender Demographics, 2022Q3



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

Graduate Demographics

Postsecondary program diversity varies by program across the Marine and Power Sports pathway. There are no international students, and all programs have an overrepresentation of male students. Electrical, Electronic, and Communication Engineering Technology/Technician has the most diverse graduates.[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
15.0303	Electrical, Electronic, and Communications Engineering Technology/Technician	102	0	6	0	24	2	62	8	94	8
47.0103	Communications Systems Installation and Repair Technology/Technician	0	0	0	0	0	0	0	0	0	0
47.0104	Computer Installation and Repair Technology/Technician	3	0	0	1	0	0	2	0	3	0
47.0605	Diesel Mechanics Technology/Technician	93	0	1	2	0	3	86	1	89	4
47.0606	Small Engine Mechanics and Repair Technology/Technician	15	0	0	0	1	0	14	0	14	1
47.0611	Motorcycle Maintenance and Repair Technology/Technician	6	0	0	0	1	0	5	0	6	0
47.0616	Marine Maintenance/Fitter and Ship Repair Technology/Technician	64	0	0	0	3	1	60	0	62	2
	All Marine and Power Sports Postsecondary Programs	**283**	**0**	**7**	**3**	**29**	**6**	**229**	**9**	**268**	**15**

IPEDS SY2021 demographics by award conferred. Count of awards may double count individuals who obtained multiple credentials in the same calendar year. *NCES IPEDS 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

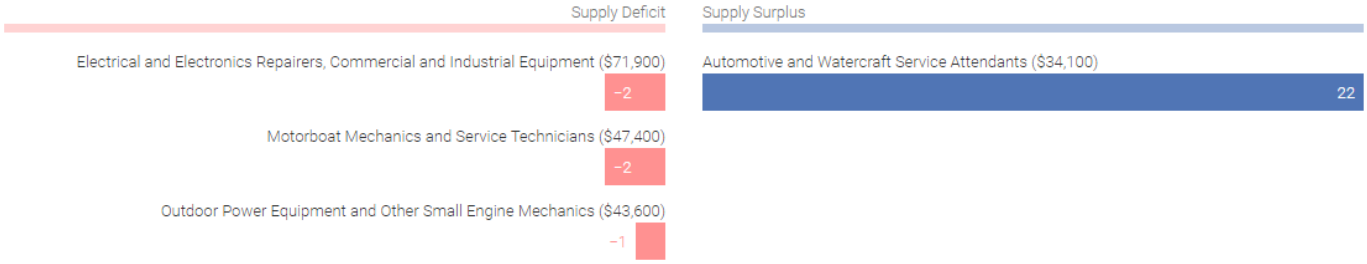
[2] NCES IPEDS refers to international students that do not have resident status in the United States as "nonresident aliens." This title aligns to Federal tax definitions and according to NCES IPEDS refers to "a person who is not a citizen or national of the United States and who is in this country 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

Talent Gap Analysis

Occupation Gaps

By 2027, it is likely that Minnesota will see a growing shortage of Electrical and Electronics Repairers, Commercial and Industrial Equipment, Motorboat and Service Technicians, and Outdoor Power Equipment and Other Small Engines Mechanics (shown in red below). The estimated annual shortage of talent in each of these occupations has worsened since and 2021 estimates.

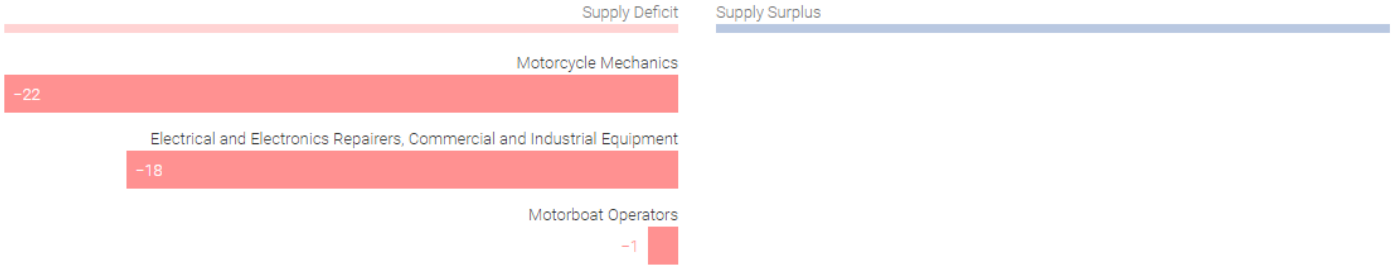
Estimated Occupation Gaps over Five Years in Minnesota



Award Gaps

Minnesota postsecondary institutions are underproducing credentials for Motorcycle Mechanics, Electrical and Electronics Repairers, Commercial and Industrial Equipment, and Motorboat Operators 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 individuals able to work on small engines as well as Electrical and Electronics Repairers out of existing programs may be warranted.

Estimated Award Gaps, MN 2022Q3

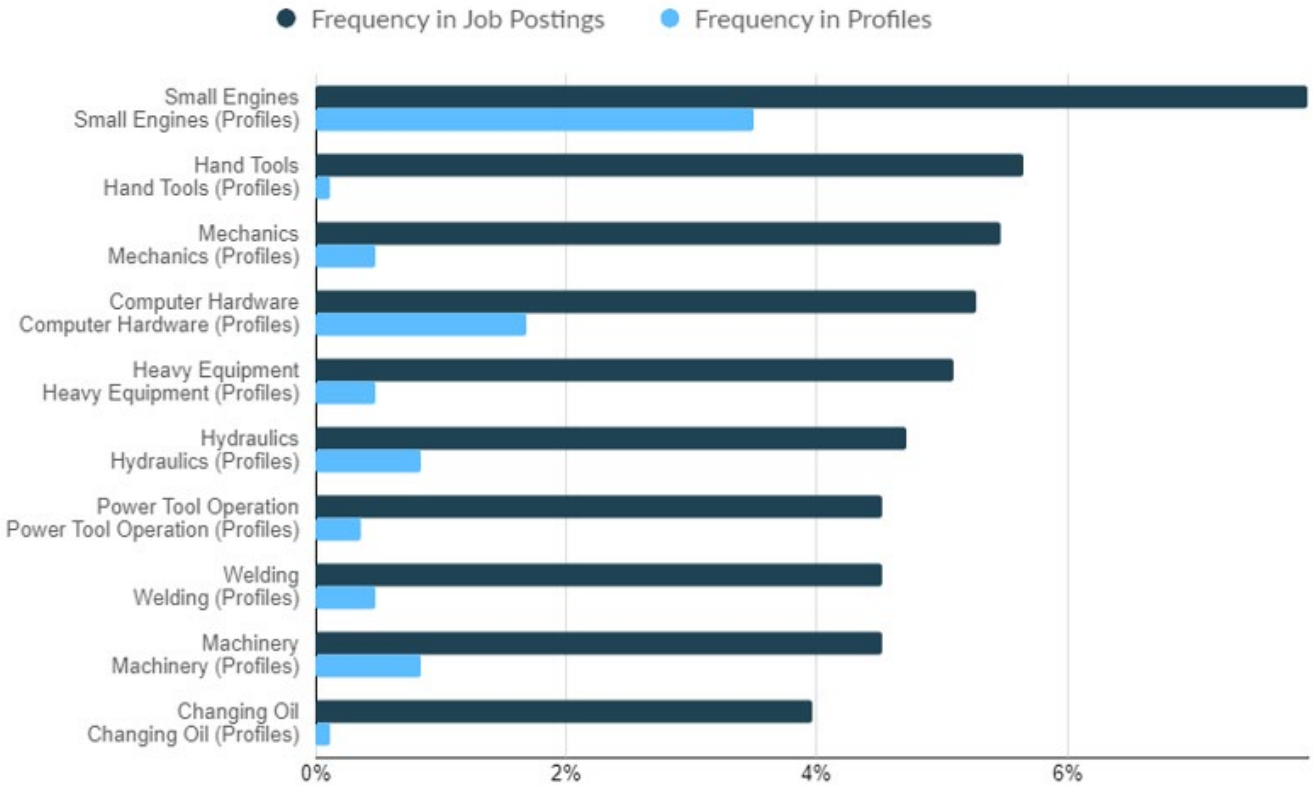


Skill Misalignments

All of these specialized skills are more frequent in job postings than in candidate profiles found online. Small Engines, Computer Hardware, Hydraulics, and Machinery are all named more frequently in Automotive Technology talent profiles online than they are mentioned in job postings.

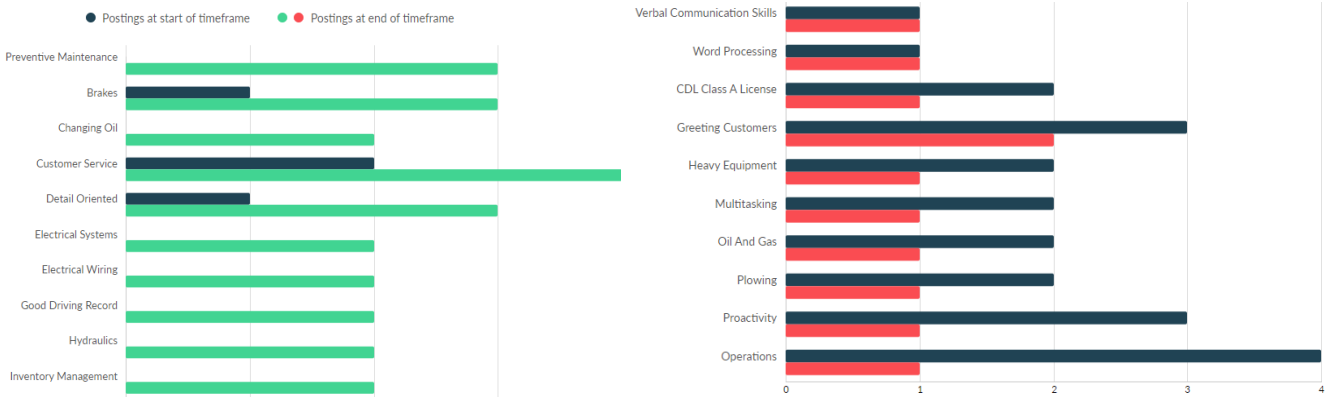
Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/10/2022 at talentneuronplan.gartner.com

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



Several baseline requirements, such customer service, preventative maintenance, brakes, and detail oriented 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). Volumes of postings remain low for jobs in this pathway, with multiple hires off of a single posting likely.

Pathway Hot and Cold Skills in Demand in Minnesota, 2022



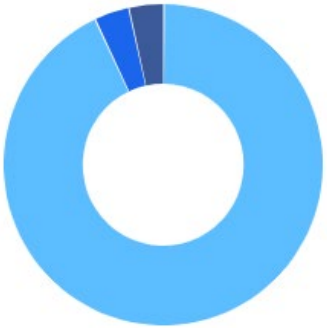
Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/10/2022 at talentneuronplan.gartner.com

High Need, High Demand Pathways

There were about 283 awards conferred at 12 different Minnesota postsecondary institutions in programs aligned to Marine and Power Sports careers in SY2021. Among, these 110 were at the Associate level, and 114 were certificates that could be earned in less than two years. The average school had about 23 completions but range from one to 58 completions. Only one institution delivered programs remotely, with two completions. The most closely-aligned programs fall in the center of this table, including Marine Maintenance, Small Engine Mechanics, and Motorcycle Maintenance programs which in total conferred 85 certificate and Associate degree awards statewide in SY2021.

Marine and Power Sports 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
15.0303	Electrical, Electronic, and Communications Engineering Technology/Technician	21	6	58	8	9	0	0	102
47.0605	Diesel Mechanics Technology/Technician	3	33	43	14	0	0	0	93
47.0616	Marine Maintenance/Fitter and Ship Repair Technology/Technician	6	24	9	25	0	0	0	64
47.0606	Small Engine Mechanics and Repair Technology/Technician	0	12	0	3	0	0	0	15
47.0611	Motorcycle Maintenance and Repair Technology/Technician	0	6	0	0	0	0	0	6
47.0104	Computer Installation and Repair Technology/Technician	2	1	0	0	0	0	0	3
47.0103	Communications Systems Installation and Repair Technology/Technician	0	0	0	0	0	0	0	0
	Total	**32 (11.3%)**	**82 (28.9%)**	**110 (38.9%)**	**50 (17.7%)**	**9 (3.2%)**	**0 (0%)**	**0 (0%)**	**283**



Institution Type	Completions (2021)	Market Share
Public, 2-year	263	92.9%
Public, 4-year or above	10	3.5%
Private not-for-profit, 4-year or above	10	3.5%

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

Nearly 93% of related pathway awards were conferred by public 2-year institutions and Hennepin Technical College had the largest number of completions in SY2021, comprising 20.5% of related awards conferred. Completions are down overall by 18.2% from 2012.

Marine and Power Sports Postsecondary Program Awards by Institution, SY2021

Institution	Completions (2021)	Growth % YOY (2021)	Market Share (2021)	IPEDS Tuition & Fees (2021)	Completions Trend (2017-2021)
Hennepin Technical College	58	45.0%	20.5%	$5,741	
Alexandria Technical & Community College	57	50.0%	20.1%	$5,910	
Central Lakes College-Brainerd	42	13.5%	14.8%	$5,954	
Minnesota West Community and Technical College	33	22.2%	11.7%	$6,286	
Lake Superior College	27	125.0%	9.5%	$5,616	
Anoka Technical College	13	18.2%	4.6%	$6,075	
Minnesota State Community and Technical College	11	-57.7%	3.9%	$5,862	
Minnesota State College Southeast	11	266.7%	3.9%	$6,562	
Riverland Community College	10	-16.7%	3.5%	$6,060	
Minnesota State University-Mankato	10	66.7%	3.5%	$9,146	
Dunwoody College of Technology	10	0.0%	3.5%	$23,863	
Ridgewater College	1	0.0%	0.4%	$5,914	

The clearest gap in program offerings is for Motorcycle Maintenance and Repair Technology/Technician and Computer Installation and Repair Technology/Technician, which are both an area of talent shortages and where Minnesota institutions fall short of national award benchmarks. There were only six certificates conferred for Motorcycle Maintenance in the most recent school year, and only three certificates conferred for Computer Installation and Repair Technology/Technician. There were no Communications Systems Installation and Repair Technology/Technician completions. All three of these programs (CIP 47.0611, 47.0104, and 47.0103) are prime for exploration of certificate or two-year program growth or development given local employer demand.

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

Promising Approaches to Addressing Possible Misalignments

A variety of strategies may improve the outlook for transportation talent in need. In the Marine and Power Sports pathway, most occupations have low talent diversity by race and gender. All occupations in the Marine and Power Sports pathway have well below average gender diversity. Most of the share of their workforce are below the age of 45.

Postsecondary programs aligned to Motorcycle Mechanics, Electrical and Electronic Repairers, Commercial and Industrial Equipment, and Motorboat Operators are underproducing graduates in comparison to national benchmarks. Motorcycle Mechanics and Electrical and Electronic Repairers, Commercial and Industrial Equipment are also experiencing talent shortages, and a low share of female workers and graduates. Electrical and Electronic Repairers, Commercial and Industrial Equipment have the highest volume of employment and the highest number related graduates; there were 102 graduates specifically from Electrical, Electronic, and Communications Engineering Technology/Technician programs in Minnesota during the 2021 school year, plus another three graduates of Computer Installation and Repair programs—both of which are counted in the table below. However, it is important to recognize that a relatively small share of graduates of these programs would map into the installation and repair of computer and electrical equipment in small engines, marine, or boating equipment.

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

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 and Watercraft Service Attendants	• Personal Watercraft/Boating Education (not offered in Minnesota)	1,906	N	19.4%	4.9%	12.5%	61.7%	N/A	N	N/A	N/A
Electrical and Electronics Repairers, Commercial and Industrial Equipment	• Electrical, Electronic, and Communications Engineering Technology/Technician • Computer Installation and Repair Technology/Technician • Communications Systems Installation and Repair Technology/Technician	880	Y	11.0%	5.2%	4.6%	53.1%	96	Y	72.5%	7.8%
Outdoor Power Equipment and Other Small Engine Mechanics	• Small Engine Mechanics and Repair Technology/Technician	724	Y	11.8%	5.4%	5.1%	60.9%	15	N	6.7%	6.7%
Motorboat Mechanics and Service Technicians	• Diesel Mechanics Technology/Technician • Marine Maintenance/Fitter and Ship Repair Technology/Technician • Small Engine Mechanics and Repair Technology/Technician	568	Y	10.3%	5.1%	5.1%	60.5%	172	N	20.5%	21.9%
Motorcycle Mechanics	• Small Engine Mechanics and Repair Technology/Technician • Motorcycle Maintenance and Repair Technology/Technician	480	Y	9.2%	4.4%	5.0%	59.8%	21	Y	23.4%	6.7%
Aircraft Service Attendants	N/A	205	N	27.2%	8.0%	24.5%	58.1%	N/A	N	N/A	N/A
Motorboat Operators	• Personal Watercraft/Boating Education (not offered in Minnesota)	36	N	20.0%	7.9%	23.1%	43.0%	N/A	Y	N/A	N/A
Marine and Power Sports Pathway	**All seven aligned programs**	**4,799**	**Y**	**15.0%**	**5.1%**	**8.9%**	**59.4%**	**236**	**Y**	**25.5%**	**9.4%**
Total - All Occupations		**3,038,766**		**15.0%**	**5.2%**	**48.3%**	**56.5%**	**29,484**		**37.3%**	**65.6%**

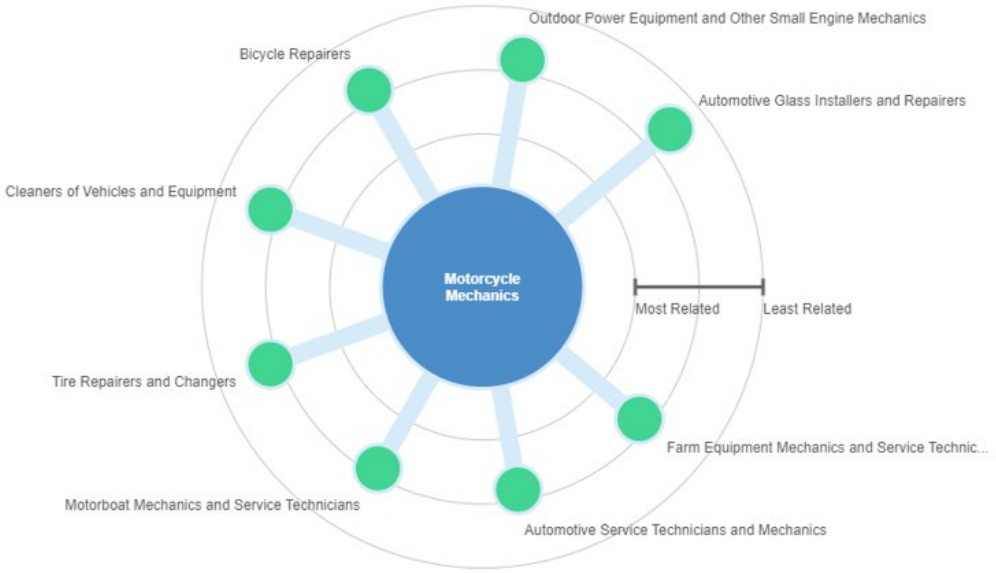
NOTE: Red highlighting indicates lower than overall share of workforce or graduate pool, or existence of occupation or award gap. *Related programs may overlap among occupations within the pathway or across other Transportation career pathways. Only those programs most tightly aligned to the occupation 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.

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

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 Motorcycle Mechanic occupation in skill demands that have highly relevant skill and experience overlap that would be strong feeder occupations for talent.

Feeder Occupations into Motorcycle Mechanic Roles, 2023Q1



Occupation	Category	Relevance	Avg. Unique Monthly Postings from Jan 2022 - Dec 2022	Mean Salary Diff.
Farm Equipment Mechanics and Service Technicians	Similar	59%	7	-$1,369
Automotive Service Technicians and Mechanics	Similar	59%	560	-$902
Motorboat Mechanics and Service Technicians	Similar	56%	1	+$3,594
Tire Repairers and Changers	Advancement	43%	42	-$16,739
Cleaners of Vehicles and Equipment	Lateral Advancement	43%	101	-$18,530
Bicycle Repairers	Advancement	42%	4	-$6,085
Outdoor Power Equipment and Other Small Engine Mechanics	Advancement	39%	4	-$9,960
Automotive Glass Installers and Repairers	Advancement	28%	7	-$8,111

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

TRUCK DRIVING

Supply & Demand Analysis

2022

MINNESOTA STATE
Transportation Center of Excellence

Introduction and Sector Overview

This report highlights the importance of the Truck Driving career pathway for Minnesota's Transportation Industry. Professionals in these careers work as heavy truck drivers, tractor drivers, bus drivers, sales truck drivers, and tank car drivers serving a variety of industries.[1] In all, about 98,845 work in Truck Driving roles in Minnesota as of the third quarter of 2022—a 4.2% increase 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, Truck Driving employment is anticipated to rise respectably in Minnesota by about 2,315 total jobs (0.5% annually) due to a tight talent pool. Total baseline demand for Truck Driving talent is anticipated to be around 63,858 professionals needed to fill positions due to job exits and transfers, such as retirements and job changes.

Transportation Pathways in Minnesota – Baseline Forecast, 2022Q3[1]

	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.

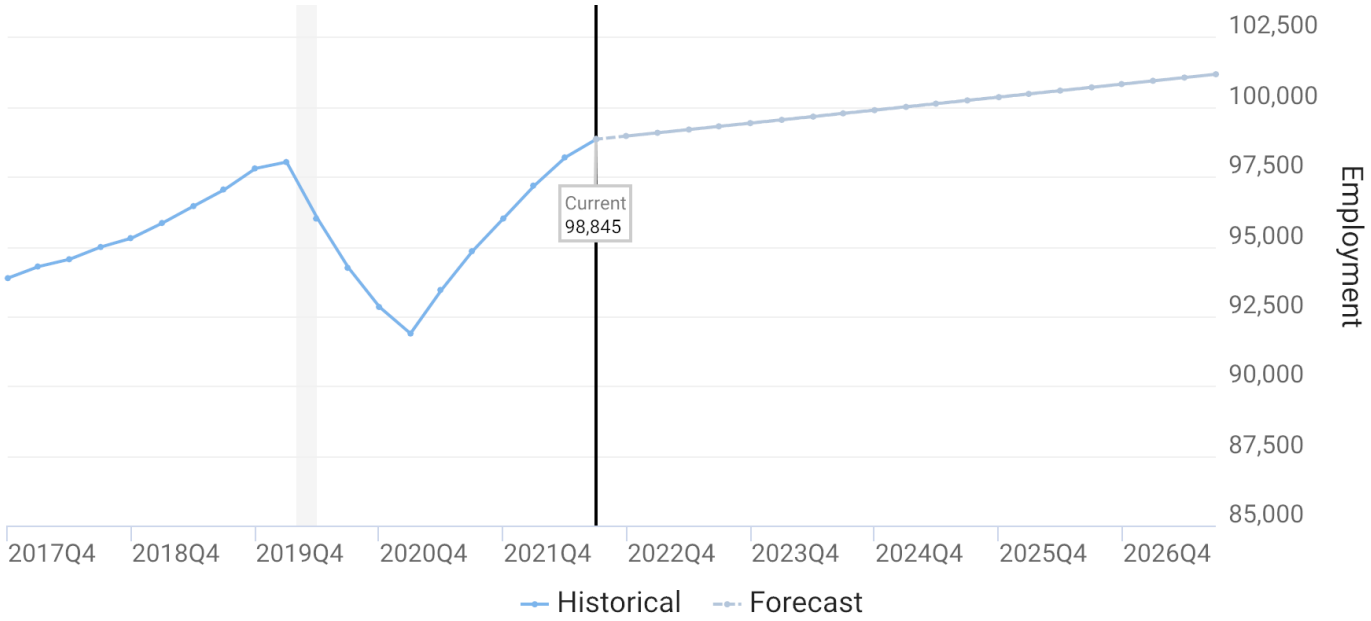
Source: JobsEQ®
Data as of 2023Q3 unless noted otherwise
Note: Figures may not sum due to rounding.
1. Data based on a four-quarter moving average unless noted otherwise.
2. Wage data represent the average for all Covered Employment
3. Data represent found online ads active within the last thirty days in the selected region; data represents a sampling rather than the complete universe of postings. Ads lacking zip code information but designating a place (city, town, etc.) may be assigned to the zip code with greatest employment in that place for queries in this analytic. Due to alternative county-assignment algorithms, ad counts in this analytic may not match that shown in RTI (nor in the popup window ad list).

[1] The occupation for School Bus Drivers was added to this pathway analysis as of 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

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 Truck Driving roles suggest that there may be long-term shortages of talent in several critical occupations in this career pathway unless more talent decides to enter the field. The pathway forecast soured since estimates in late 2020, but has recovered as of 2022 estimates to an 0.5% average annual growth through 2027.

Truck Driving Employment Forecast Under Baseline Scenario, Minnesota



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

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

Industry/Occupation Mix

Truck Driving talent is primarily concentrated in the General Freight Trucking industry (15.1%, down 0.6 percentage points) and School and Employee Bus Transportation (7.7%, up 0.3 percentage points). The industry demand for Truck Driving talent is diverse, from warehousing to restaurant and grocery industry needs.

Top Industry Distribution for Automotive Technology Pathway Occupations in Minnesota

		CURRENT			10-YEAR DEMAND			
NAICS Code	Industry Title	% of Occ Empl	Empl	Avg Ann Wages	Exits	Transfers	Empl Growth	Total Demand
4841	General Freight Trucking	15.1%	14,880	$54,100	6,792	10,545	-62	17,275
4854	School and Employee Bus Transportation	7.7%	7,629	$40,800	8,096	4,030	813	12,939
4921	Couriers and Express Delivery Services	6.5%	6,389	$62,400	3,118	4,830	900	8,848
4842	Specialized Freight Trucking	4.4%	4,368	$54,000	1,991	3,094	-25	5,059
7225	Restaurants and Other Eating Places	4.1%	4,065	$27,600	2,056	3,173	899	6,127
4931	Warehousing and Storage	3.8%	3,787	$51,000	1,512	3,104	542	5,159
4244	Grocery and Related Product Merchant Wholesalers	3.6%	3,533	$43,900	1,607	2,558	95	4,260
6111	Elementary and Secondary Schools	2.5%	2,508	$41,100	2,596	1,238	-35	3,799
4922	Local Messengers and Local Delivery	2.0%	1,979	$43,100	989	1,529	384	2,902
4859	Other Transit and Ground Passenger Transportation	1.9%	1,918	$34,400	1,614	1,108	221	2,944
4851	Urban Transit Systems	1.9%	1,854	$46,600	1,439	1,030	71	2,539
5613	Employment Services	1.8%	1,738	$41,500	683	1,353	82	2,118
4853	Taxi and Limousine Service	1.7%	1,727	$32,000	1,548	893	-38	2,403
9211	Executive, Legislative, and Other General Government Support	1.5%	1,476	$44,600	1,146	824	-2	1,968
4249	Miscellaneous Nondurable Goods Merchant Wholesalers	1.4%	1,377	$50,600	626	988	16	1,631
2389	Other Specialty Trade Contractors	1.4%	1,351	$54,700	615	956	-9	1,563
4413	Automotive Parts, Accessories, and Tire Retailers	1.3%	1,301	$29,700	596	923	6	1,525
2373	Highway, Street, and Bridge Construction	1.3%	1,247	$57,500	578	906	51	1,535
5621	Waste Collection	1.2%	1,147	$54,300	533	836	55	1,424
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	1.1%	1,041	$36,200	481	751	32	1,264
n/a	All Others	33.9%	33,530	n/a	15,860	23,959	712	40,531

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.

Pathway Detail

Of all occupations found in the Truck Driving pathway, Passenger Vehicle Drivers are uniquely concentrated in Minnesota to a higher degree than seen in the nation overall. On average, Truck Driving careers pay about $51,200 per year—about $12,500 below the average wage statewide across all positions. The Truck Driving Pathway saw

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

significant growth over the past year, increasing in total employment by 4.2%; however, the forecast for the coming year is more restrained for this pathway.

Truck Driving Pathway in Minnesota – Baseline Forecast, 2022Q3[1]

		Current						1-Year History		1-Year Forecast		5-Year Baseline Forecast				
SOC	Occupation	Empl	Avg Ann Wages[2]	LQ	Unempl	Unempl Rate	Online Job Ads[3]	Empl Change	Ann %	Empl Change	Ann %	Total Demand	Exits	Transfers	Empl Change	Ann % Change
53-3032	Heavy and Tractor-Trailer Truck Drivers	39,919	$59,400	0.97	781	2.0%	3,144	962	2.5%	57	0.1%	8,677	3,181	5,821	-325	-0.3%
53-3033	Light Truck Drivers	19,832	$50,000	0.92	383	2.0%	860	149	0.8%	124	0.6%	4,615	1,584	2,945	86	0.2%
53-3051	Bus Drivers, School	10,788	$45,000	1.25	566	5.1%	102	1,057	10.9%	64	0.6%	3,236	1,128	2,142	-34	-0.1%
53-7051	Industrial Truck and Tractor Operators	9,821	$51,600	0.61	313	3.2%	242	674	7.4%	48	0.5%	6,135	2,048	3,894	192	0.3%
53-3031	Driver/Sales Workers	9,758	$34,500	0.93	194	2.0%	1,851	498	5.4%	103	1.1%	3,046	1,062	1,946	38	0.2%
53-3053	Shuttle Drivers and Chauffeurs	4,900	$36,000	1.08	262	5.2%	212	674	15.9%	43	0.9%	63,838	27,225	34,298	2,315	0.5%
53-3052	Bus Drivers, Transit and Intercity	3,636	$49,200	1.17	106	2.9%	29	-6	-0.2%	18	0.5%	84,921	33,955	48,916	2,050	0.3%
53-7121	Tank Car, Truck, and Ship Loaders	191	$58,500	0.79	3	1.5%	5	5	2.8%	0	-0.2%	63,838	27,225	34,298	2,315	0.5%
	Truck Driving Pathway	**98,845**	**$51,200**	**0.93**	**2,607**	**2.6%**	**6,446**	**4,014**	**4.2%**	**457**	**0.5%**	**1,800,961**	**734,547**	**1,020,444**	**45,970**	**0.3%**
	Total - All Occupations	**3,038,766**	**$63,700**	**1.00**	**68,550**	**2.3%**	**170,185**	**91,312**	**3.1%**	**9,139**	**0.5%**	**8,677**	**3,181**	**5,821**	**-325**	**-0.3%**

Source: JobsEQ®
Data as of 2022Q3 unless noted otherwise
Note: Figures may not sum due to rounding.
1. Data based on a four-quarter moving average unless noted otherwise.
2. Wage data represent the average for all Covered Employment
3. Data represent found online ads active within the last thirty days in the selected region; data represents a sampling rather than the complete universe of postings. Ads lacking zip code information but designating a place (city, town, etc.) may be assigned to the zip code with greatest employment in that place for queries in this analytic. Due to alternative county-assignment algorithms, ad counts in this analytic may not match that shown in RTI (nor in the popup window ad list).

The Truck Driving pathway saw some moderate wage gains across the pathway.[2] Entry-level wages in the pathways exceed the average entry-level wages observed across all occupations statewide by about $5,000, with Truck Driving careers paying an average of $36,400 annually for entry-level talent.

Occupation Wages, Average Annual in Minnesota, 2022Q3

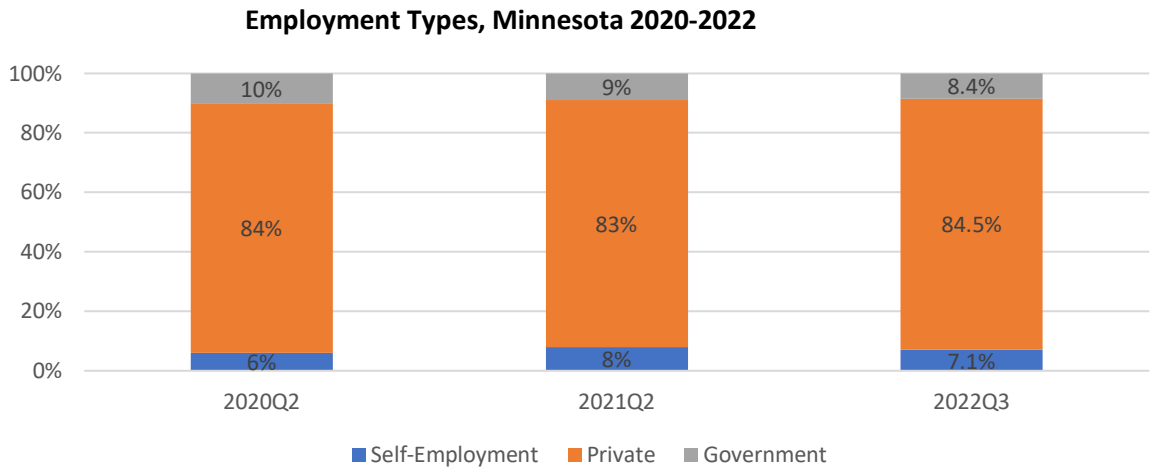
					Percentiles				
SOC	Occupation	Mean	Entry Level	Experienced	10%	25%	50% (Median)	75%	90%
53-3031	Driver/Sales Workers	$34,500	$24,700	$39,400	$23,900	$26,100	$30,900	$39,300	$50,900
53-3032	Heavy and Tractor-Trailer Truck Drivers	$59,400	$43,200	$67,500	$40,300	$49,000	$57,400	$66,600	$79,000
53-3033	Light Truck Drivers	$50,000	$32,200	$58,800	$28,700	$37,800	$48,700	$59,100	$77,500
53-3051	Bus Drivers, School	$45,000	$32,900	$51,000	$30,400	$37,400	$42,800	$50,300	$56,700
53-3052	Bus Drivers, Transit and Intercity	$49,200	$33,500	$57,100	$29,600	$39,600	$47,000	$60,600	$68,000
53-3053	Shuttle Drivers and Chauffeurs	$36,000	$27,400	$40,400	$25,600	$30,200	$35,700	$40,500	$44,300
53-7051	Industrial Truck and Tractor Operators	$51,600	$38,600	$58,000	$37,900	$41,100	$48,500	$56,100	$68,800
53-7121	Tank Car, Truck, and Ship Loaders	$58,500	$39,900	$67,800	$38,900	$42,800	$50,600	$73,300	$89,900
	Truck Driving Pathway	**$51,200**	**$36,400**	**$58,500**	**$33,900**	**$41,200**	**$49,100**	**$58,100**	**$70,400**
	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

[2] 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.

Employment Types

About 84.5% of people employed in Truck Driving roles in Minnesota work for private employers, while an estimated 7.1% are self-employed. The remaining 8.4% work for state, federal, or local government entities.



Job Posting Trends

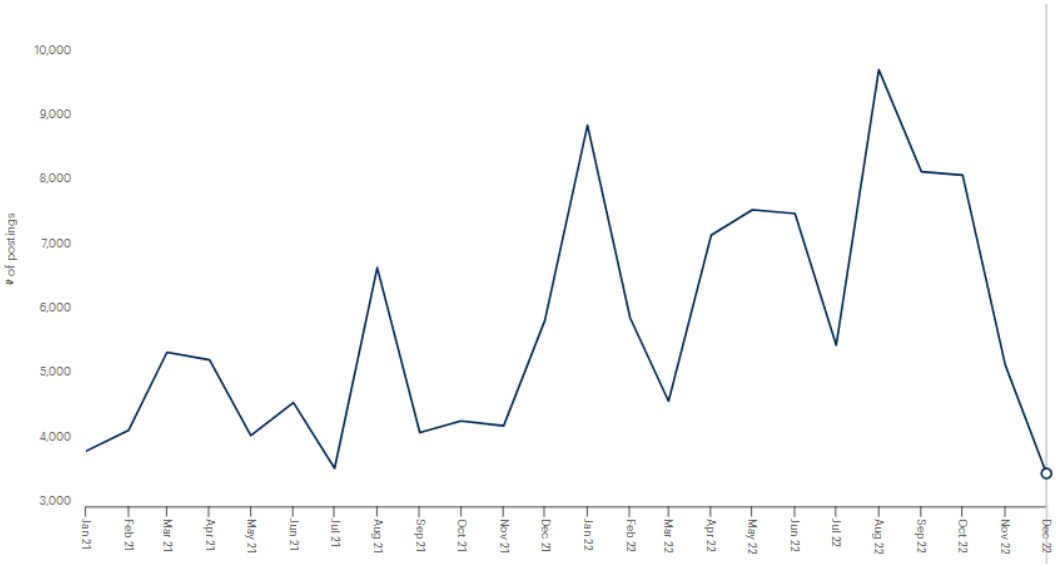
Data in this section focuses on jobs newly advertised between January 1 and December 31, 2022 in Truck Driving roles across Minnesota. Volume of total job postings, employer types (direct versus staffing), and top employers by unique job posting volumes comes from Gartner TalentNeuron; industry detail, skill and certification analysis, wage trends, and posting to hire analysis are from the Lightcast 2022Q4 dataset. Overall, there were 83,114 new jobs advertised in Truck Driving roles during this time frame, an increase of 46% from the prior 12-month period (2021). Volume of posted positions advertised by staffing and temp agencies in the Truck Driving pathway has remained consistent to trends in 2020 and 2021. Posted wages increased to an average $22.98 per hour as of 2022 ($23.85 median), and there were two hires per every one unique job posting advertised based on Lightcast estimates.

A look at all job postings that required a Commercial Drivers' License (CDL) upon hire resulted in a total of 56,485 unique job postings in Minnesota in 2022, representing 5% of all postings and an increase of 51% from 2021's demand for a CDL credential. In addition to the Truck Driving pathway careers analyzed in this report, 63 other occupations that often require a CDL including:

- Maintenance and Repair Workers
- Highway Maintenance Workers
- Laborers and Freight, Stock, or Material Movers
- Supervisors of Mechanics, Installers, or Repairers
- Construction Laborers
- Supervisors of Construction Trades and Extraction Workers
- Electrical Power-Line Installers and Repairers
- Operating Engineers and Other Construction Equipment Operators
- Telecommunications Equipment Installers and Repairers
- Rotary Drill Operators, Oil and Gas

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

Volume of Career Pathway Online Job Postings in 2021 and 2022

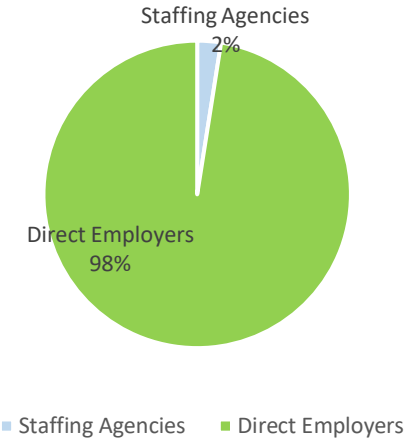


Top Employers by Volume of New Job Postings, With Change from Prior Year

	Employer	Percent Change between 2021 and 2022
1.	National Petroleum Trucking	2,408%
2.	Delivery Drivers Inc.	5,330%
3.	UPS	580%
4.	Amazon	205%
5.	Marten Transport	190%
6.	DART	167%
7.	Marvins Inc.	35,340%
8.	Hogan Transports	37%
9.	Ashley Distribution Services Ltd.	1,858%
10.	Sysco	90%

Note: Employer posting table does not include gig economy careers, such as UberEATS, goPuff, or Instacart

New Job Postings Advertised in Minnesota by Employer Type



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

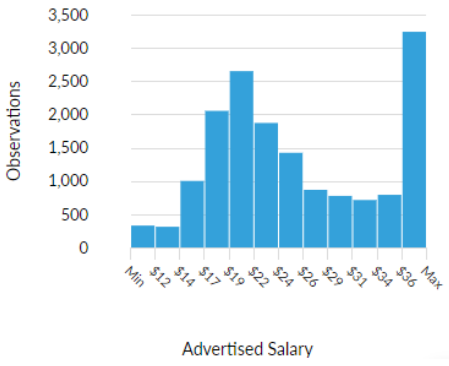
New Job Postings by Industry or Employer Type

Industry	Total/Unique (Jan 2022 - Dec 2022)	Posting Intensity	Median Posting Duration
Transportation and Warehousing	29,517 / 6,693	4 : 1	21 days
Retail Trade	9,310 / 2,520	4 : 1	26 days
Wholesale Trade	10,054 / 2,392	4 : 1	27 days
Manufacturing	7,454 / 2,255	3 : 1	27 days
Administrative and Support and Waste Management and Remediation Services	5,498 / 2,146	3 : 1	28 days
Accommodation and Food Services	7,661 / 1,615	5 : 1	32 days
Construction	1,287 / 513	3 : 1	28 days
Professional, Scientific, and Technical Services	2,058 / 482	4 : 1	27 days
Real Estate and Rental and Leasing	1,105 / 393	3 : 1	33 days
Health Care and Social Assistance	963 / 370	3 : 1	31 days

Pathway Advertised Salary Range

$23.85/hr

Median Advertised Salary



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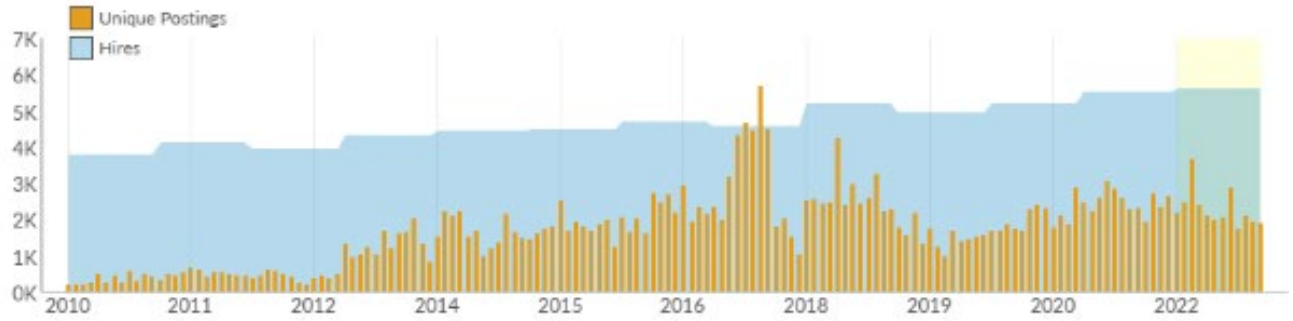
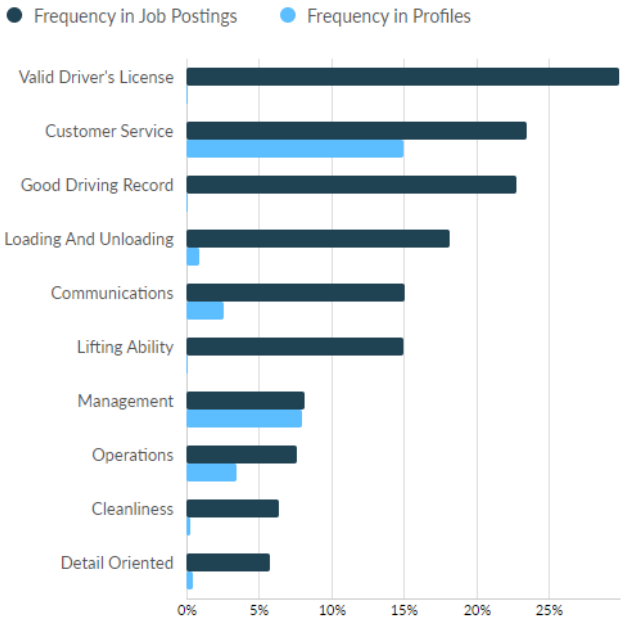
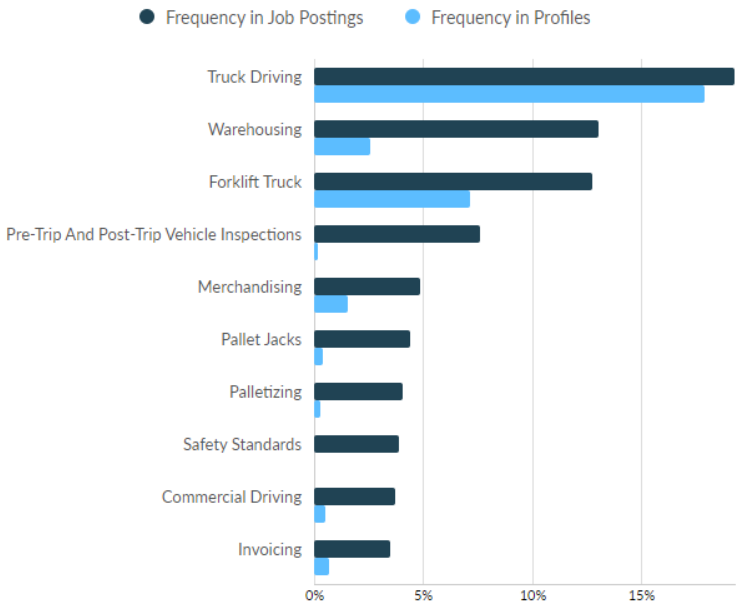
Monthly Ratio of Unique Job Postings to Estimated Hires



Top Common Skills



Top Specialized Skills



Top Certifications and Qualifications

Qualification	Postings with Qualification
CDL Class A License	5,655
Commercial Driver's License (CDL)	5,565
CDL Class B License	1,505
Hazmat Endorsement	894
Tanker Endorsement	796
Doubles Endorsement	372
Forklift Certification	358
DOT Certification	259
Triples Endorsement	170
Transportation Worker Identification Credential (TWIC) Card	117

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

Talent Supply Detail

Talent Unemployment, Underemployment, and Educational Attainment

At an overall pathway unemployment rate of 2.6%, there are about 2,607 unemployed Truck Driving professionals statewide. An additional 12,888 Truck Driving professionals are underemployed, meaning they are working in roles for which they are overqualified by education or experience.

Truck Driving Pathway in Minnesota

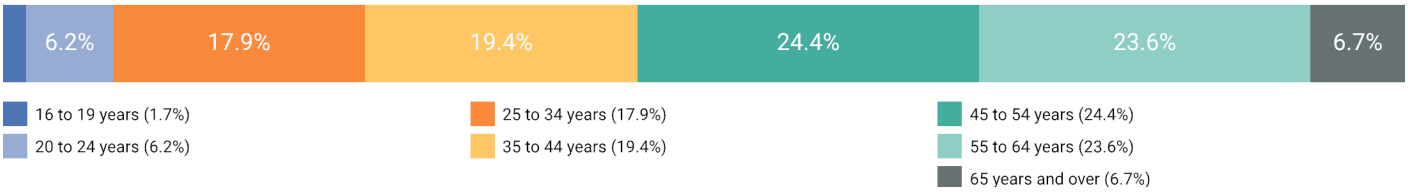
		Empl (Place of Residence)								Overall Occupation[1]		
SOC	Occupation	< High School	High School	Some College	2-Year	4-Year	Master's	PhD	Total Empl	Underemployed	Unemployed	Unempl Rate
53-3031	Driver/Sales Workers	9.2%	43.8%	20.4%	12.3%	12.1%	1.8%	0.4%	9,507	1,249	194	2.0%
53-3032	Heavy and Tractor-Trailer Truck Drivers	9.0%	44.0%	20.4%	12.6%	11.9%	1.7%	0.4%	38,843	4,583	781	2.0%
53-3033	Light Truck Drivers	9.2%	43.0%	20.4%	12.3%	12.7%	1.9%	0.4%	19,128	2,659	383	2.0%
53-3051	Bus Drivers, School	4.1%	37.4%	23.9%	16.3%	14.3%	3.2%	0.9%	10,548	1,665	566	5.1%
53-3052	Bus Drivers, Transit and Intercity	4.7%	36.2%	23.3%	15.7%	16.5%	3.0%	0.6%	3,516	621	106	2.9%
53-3053	Shuttle Drivers and Chauffeurs	6.2%	29.8%	19.4%	12.8%	24.0%	5.8%	2.0%	4,768	1,314	262	5.2%
53-7051	Industrial Truck and Tractor Operators	12.3%	49.6%	19.2%	10.9%	6.7%	0.8%	0.4%	9,437	778	313	3.2%
53-7121	Tank Car, Truck, and Ship Loaders	11.6%	47.4%	17.1%	12.2%	10.2%	1.3%	0.2%	191	19	191	1.5%
	Truck Driving Pathway (2023 Update)	**8.6%**	**42.6%**	**20.7%**	**12.9%**	**12.6%**	**2.1%**	**0.5%**	**95,937**	**12,888**	**2,607**	**2.6%**
	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.

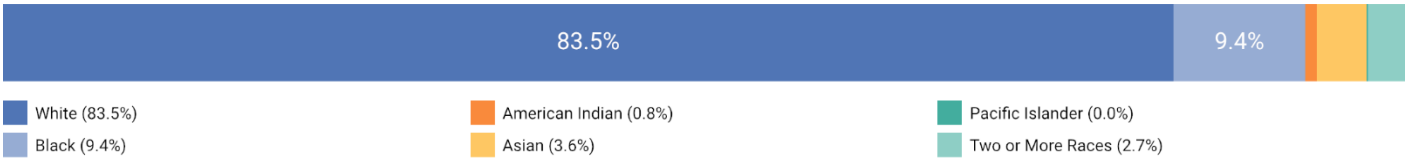
Workforce Demographics

The Truck Driving workforce is older on average than the workforce as a whole in Minnesota. About 7.9% of the Truck Driving workforce is under the age of 25, and 6.7% are over 64 years old. The largest demographic group by race are White, representing 83.5% of the total pathway's workforce, with the next largest cohort being Black talent representing 9.4% of the workforce. About 6.5% of the pathway's workforce are Hispanic or Latinx, and 13.1% are female.

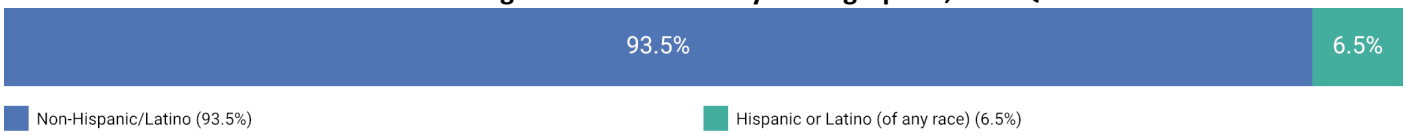
Truck Driving Workforce Age Demographics, 2022Q3



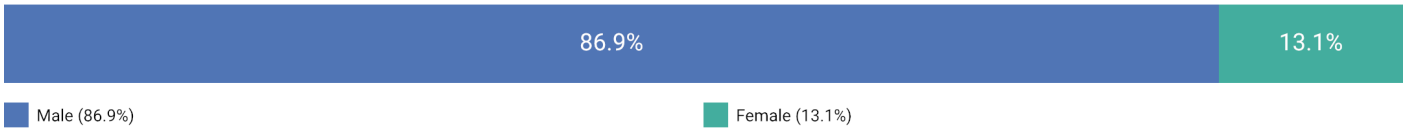
Truck Driving Workforce Race Demographics, 2022Q3



Truck Driving Workforce Ethnicity Demographics, 2022Q3



Truck Driving Workforce Gender Demographics, 2022Q3



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

Graduate Demographics

Nearly 87% of students who obtained a truck driving or trucking instructor certificate from an accredited program reporting to NCES IPEDS in SY2021 were male, and 76.2% were non-Hispanic White students, aligning closely to the overall workforce demographics of the pathway.[3] In addition, there are many truck driving schools and academies in Minnesota which culminate in preparation for the knowledge test and road test. Of the twelve published on the Minnesota Department of Public Safety's website, six are in the seven-county MSP metro area.[4] There are over three million people in Minnesota with drivers' licenses, but an estimate of commercial licenses was unavailable at the time of the writing of this report. Other resources available online publish comprehensive lists of CDL schools in Minnesota.[5]

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
49.0205	Truck and Bus Driver/Commercial Vehicle Operator and Instructor	84	1	3	0	2	8	64	6	73	11
	Truck Driving Postsecondary Programs, Percent	**100%**	**1.2%**	**3.6%**	**0.0%**	**2.4%**	**9.5%**	**76.2%**	**7.1%**	**86.9%**	**13.1%**

IPEDS SY2021 demographics by award conferred. Count of awards may double count individuals who obtained multiple credentials in the same calendar year. *NCES IPEDS 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

[3] NCES IPEDS 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

[4] Minnesota Department of Public Safety. Licensed Truck Driver Training Schools. November 2022. https://dps.mn.gov/divisions/dvs/forms-documents/Documents/LicensedTruckDriverTrainingList.pdf

[5] CDL Training Today. https://cdltrainingtoday.com/schools/mn/

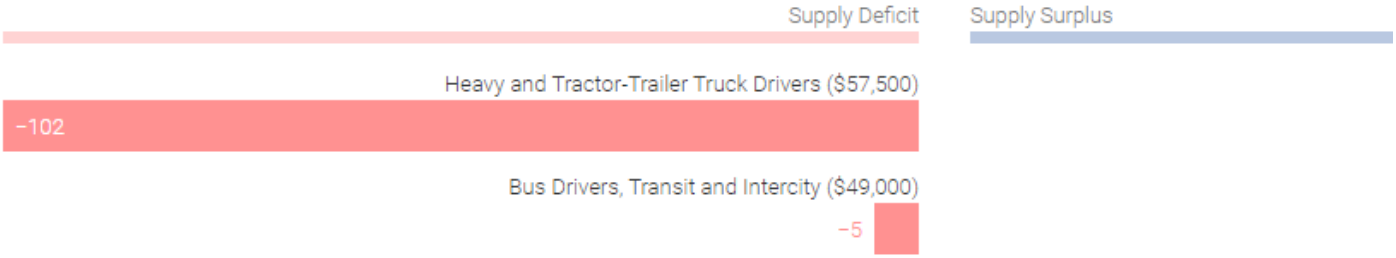
Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/10/2022 at talentneuronplan.gartner.com

Talent Gap Analysis

Occupation Gaps

By 2027, both Heavy and Tractor-Trailer Truck Drivers and Transit Bus Drivers are now forecast to have talent shortages in the short- and long-term, breaking from last year's evaluation of local talent pool sufficiency. In addition, the location of talent in relation to opportunities available may not be fully aligned.

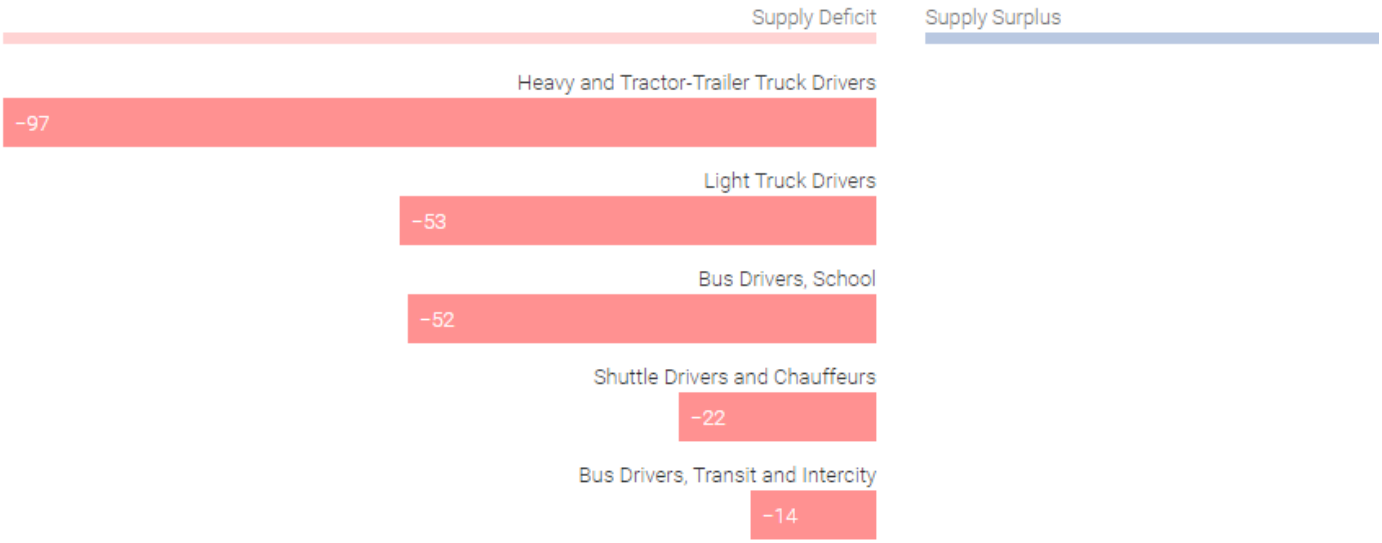
Estimated Occupation Gaps over Five Years, Minnesota 2022Q3



Award Gaps

Minnesota postsecondary institutions are underproducing Truck Driver certificates 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 graduates out of existing Truck and Bus Driver programs, or building new two- and four-year programs that would fill the shortages of new talent needed to enter into the occupations listed below.

Estimated Award Gaps, Minnesota 2022Q3

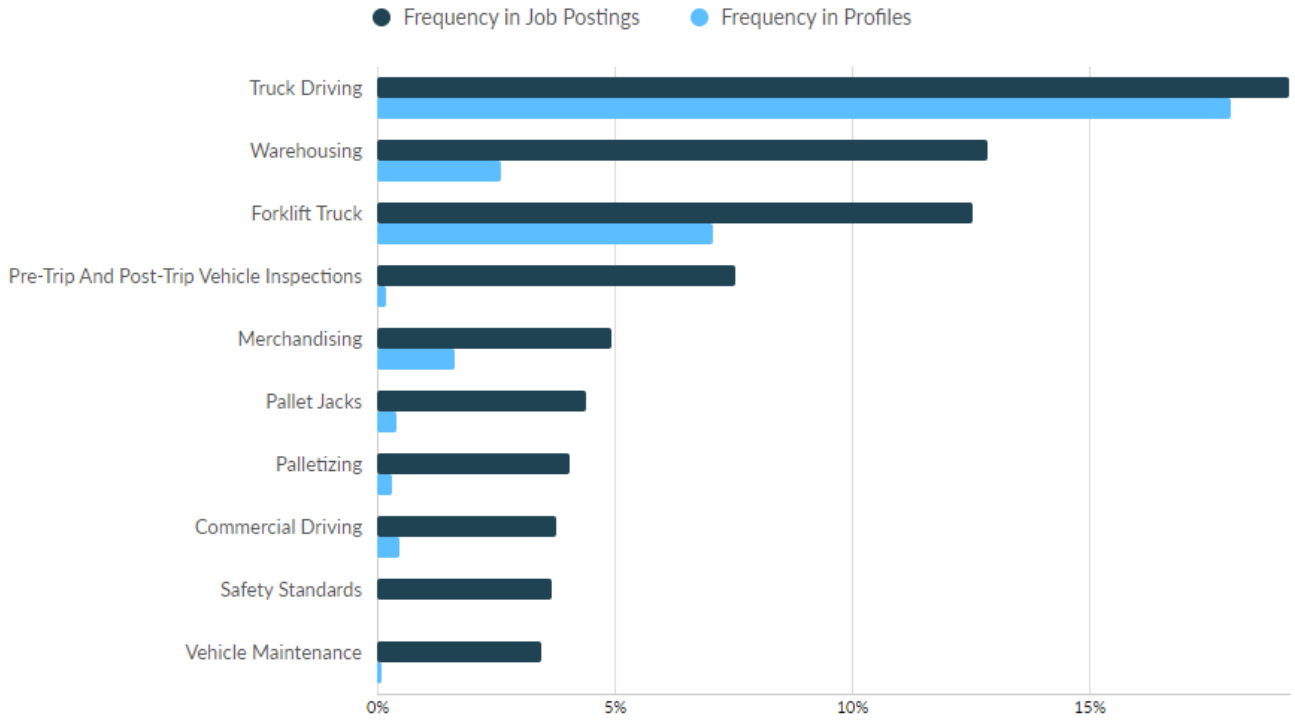


Source: RealTime Talent analysis of Chmura Economics JobsEQ®, http://www.chmuraecon.com/jobseq/. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/10/2022 at talentneuronplan.gartner.com

Skill Misalignments

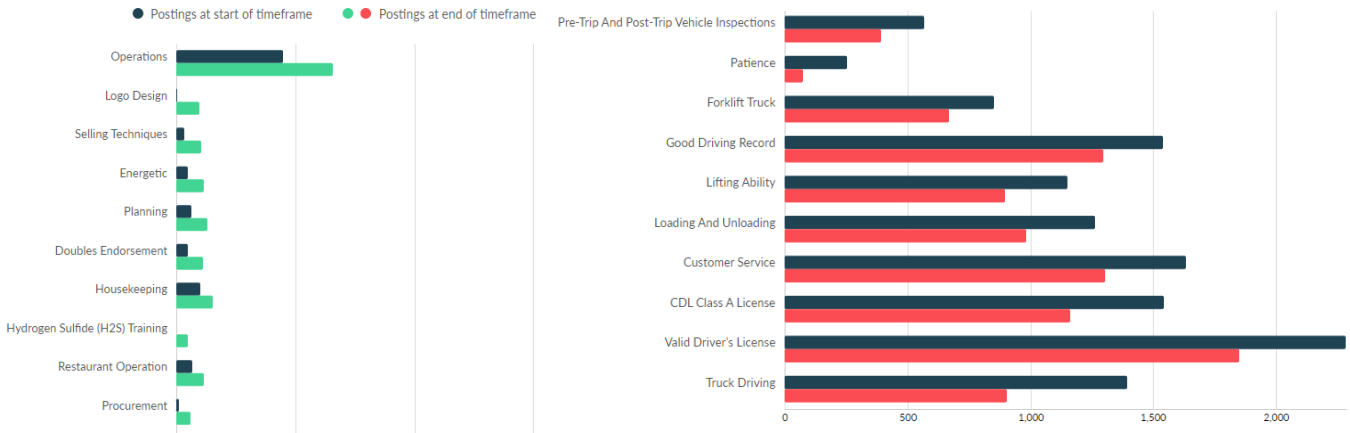
A number of specialized skills are more frequent in job postings than in candidate profiles found online, while others are found more frequently in profiles than they are mentioned in postings. Experience in warehousing, operating forklifts, inspecting vehicles, and merchandising are all more frequently referenced in job postings online than they are mentioned in talent profiles.

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



Several baseline requirements, such as operations, sales, and planning have been trending up at the close of 2022, while several core skills mentioned above are less frequent now in job postings than in prior years. 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). Overall, having a valid driver's license, a good driving record, and strong customer service skills have remained the top three most consistent requirements listed in job postings.

Pathway Hot and Cold Skills in Demand in Minnesota, 2022



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High Need, High Demand Pathways

There were a total of 84 awards conferred at three different Minnesota postsecondary institutions in programs aligned to Truck Driving careers in SY2021. All of these awards were short-term certificates. The average school had about 28 completions, ranging from 25 to 30 completions. No programs were delivered remotely. In all, there are twelve driving training schools in Minnesota that train in CDL Class A, B, or C and offer preparation for knowledge tests and road tests, according to the Minnesota Department of Public Safety. These are listed in the Frequently Asked Questions section at the end of this report.[6]

Truck Driving 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
49.0205	Truck and Bus Driver/Commercial Vehicle Operator and Instructor	84	0	0	0	0	0	0	84
	Total	**84 (100%)**	**0**	**0**	**0**	**0**	**0**	**0**	**84**

	Completions (2021)	% Completions	Institutions (2021)	% Institutions
All Programs	84	100%	3	100%
Distance Offered Programs	0	0%	0	0%
Non-Distance Offered Programs	84	100%	3	100%

All awards were conferred by public two-year institutions in SY2021.Completions are down overall by 57.1% from 2012.

Truck Driving Postsecondary Program Awards by Institution, SY2021

Institution	Completions (2021)	Growth % YOY (2021)	Market Share (2021)	IPEDS Tuition & Fees (2021)	Completions Trend (2017-2021)
Riverland Community College	30	-3.2%	35.7%	$6,060	
Alexandria Technical & Community College	29	61.1%	34.5%	$5,910	
Minnesota State College Southeast	25	8.7%	29.8%	$6,562	

A current list of CDL training schools associated with postsecondary institutions[7] in Minnesota include:

- Interstate Truck Driving School
- Alexandria Technical & Community College
- Century College
- Dakota County Technical College

[6] Minnesota Department of Public Safety. Licensed Truck Driver Training. November 2022. https://dps.mn.gov/divisions/dvs/forms-documents/Documents/LicensedTruckDriverTrainingList.pdf

[7] CDL Training Today. https://cdltrainingtoday.com/schools/mn/

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

- Minnesota State College – Southeast Technical
- Riverland Community College
- St. Cloud Technical & Community College
- Transportation Center for Excellence
- Lake Superior College
- Central Lakes College

Drivers are most severely needed in the Heavy Truck Driving space, though shortages exist across the spectrum of commercial driver and bus driver opportunities. All three institutions offering truck driving programs may consider growth 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 Truck Driving pathway, all occupations have low talent diversity by gender. Many also have a higher than average share of their workforce that is over 45 years of age. Similarly, graduate diversity and graduate volumes are lagging.

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

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)
Heavy and Tractor-Trailer Truck Drivers		39,919	Y	13.9%	6.2%	8.1%	45.2%	84	Y	22.6%	13.1%
Light Truck Drivers		19,832	N	16.6%	6.6%	8.1%	46.4%	84	Y	22.6%	13.1%
Bus Drivers, School		10,788	N	17.4%	4.9%	30.1%	39.9%	84	Y	22.6%	13.1%
Industrial Truck and Tractor Operators		9,821	N	19.2%	10.4%	10.0%	57.5%	84	N	22.6%	13.1%
Drivers/Sales Workers		9,758	N	16.8%	6.5%	8.5%	46.2%	N/A	N	N/A	N/A
Shuttle Drivers and Chauffeurs		4,900	N	23.2%	5.5%	30.2%	41.9%	84	Y	22.6%	13.1%
Bus Drivers, Transit and Intercity		3,636	Y	24.4%	3.8%	42.0%	23.4%	84	Y	22.6%	13.1%
Tank Car, Truck, and Ship Loaders		191	N	14.6%	7.4%	21.2%	53.3%	NA	N	N/A	N/A
Truck Driving Pathway	**Truck and Bus Driver/Commercial Vehicle Operator and Instructor**	**21,227**	**Y**	**16.5%**	**6.5%**	**13.1%**	**45.2%**	**84**	**Y**	**22.6%**	**13.1%**
All Occupations		**3,038,766**		**15.0%**	**5.2%**	**48.3%**	**56.5%**	**29,484**		**37.3%**	**65.6%**

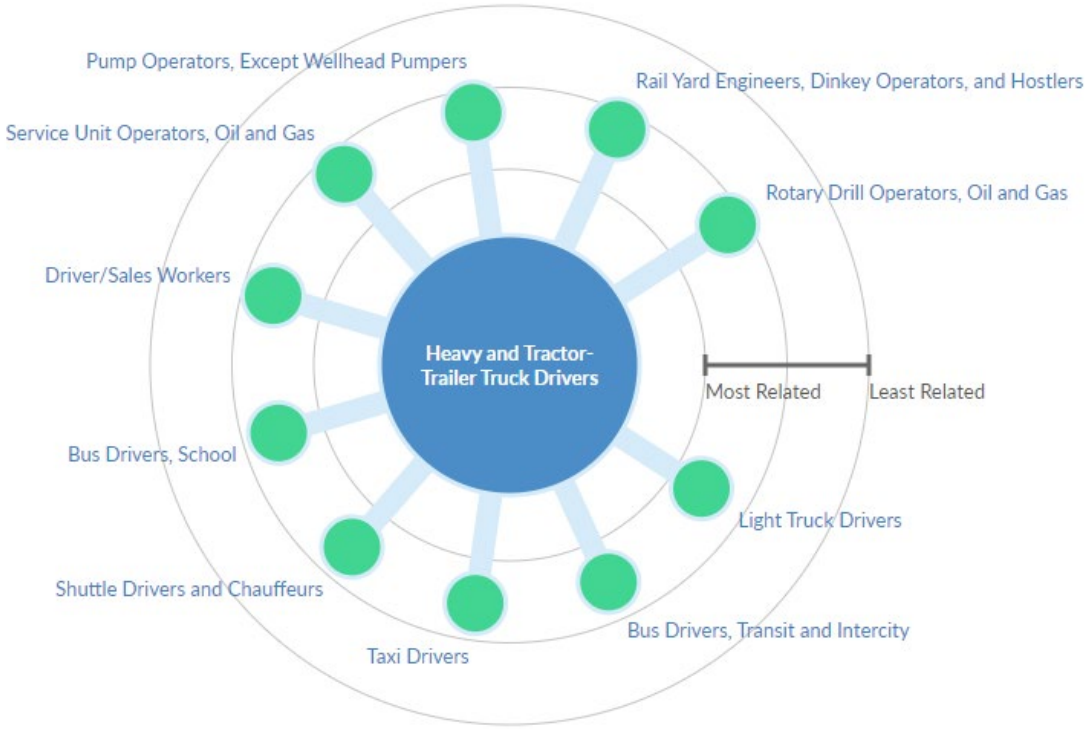
NOTE: Red highlighting indicates lower than overall share of workforce or graduate pool, or existence of occupation or award gap. *There is only one program associated with occupations in this career pathway. For this reason, the Graduate and Demographics columns have identical information.

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

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 Heavy and Tractor-Trailer Truck occupation in skill demands that have highly relevant skill and experience overlap that would be strong feeder occupations for talent.

Feeder Occupations into Heavy and Tractor-Trailer Truck Driver Roles, 2023Q1



Occupation	Category	Relevance	Avg. Unique Monthly Postings from Jan 2022 - Dec 2022	Mean Salary Diff.
Light Truck Drivers	Advancement	80%	356	-$27,639
Bus Drivers, Transit and Intercity	Advancement	74%	34	-$28,942
Taxi Drivers	Advancement	73%	33	-$31,978
Shuttle Drivers and Chauffeurs	Advancement	73%	32	-$31,978
Bus Drivers, School	Advancement	73%	26	-$31,978
Driver/Sales Workers	Advancement	69%	510	-$31,542
Service Unit Operators, Oil and Gas	Lateral Advancement	65%	0	-$17,927
Pump Operators, Except Wellhead Pumpers	Lateral Advancement	64%	3	-$21,519
Rail Yard Engineers, Dinkey Operators, and Hostlers	Lateral Advancement	61%	0	-$23,596
Rotary Drill Operators, Oil and Gas	Lateral Advancement	61%	3	-$12,533

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

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.

What has been updated since the 2021 report?

Several occupation codes were updated recently by the Bureau of Labor Statistics, giving new SOC codes and descriptors to several occupations within the Transportation sector. The only pathway that had a SOC code that was split into multiple new codes was the Truck Driving Pathway. The table below indicates what old SOC codes have been replaced with. School Bus Drivers was added to the search, but was excluded in prior versions of this report in 2020 and 2021.

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

SOC (OLD)	Occupation (OLD)	SOC (OLD)	Occupation (NEW)
53-3032	Heavy and Tractor-Trailer Truck Drivers	53-3032	Heavy and Tractor-Trailer Truck Drivers
53-3033	Light Truck Drivers	53-3033	Light Truck Drivers
53-3058	Passenger Vehicle Drivers, Except Bus Drivers, Transit and Intercity	53-3053	Shuttle Drivers and Chauffeurs
53-7051	Industrial Truck and Tractor Operators	53-7051	Industrial Truck and Tractor Operators
53-3031	Driver/Sales Workers	53-3031	Driver/Sales Workers
53-3052	Bus Drivers, Transit and Intercity	53-3052	Bus Drivers, Transit and Intercity
53-7121	Tank Car, Truck, and Ship Loaders	53-7121	Tank Car, Truck, and Ship Loaders
		53-3051	Bus Drivers, School
	Truck Driving Pathway		

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

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