

SUPPLY AND DEMAND ANALYSIS

2023 Transportation Pathways Overview

Published February 2024



MINNESOTA STATE
Transportation Center of Excellence



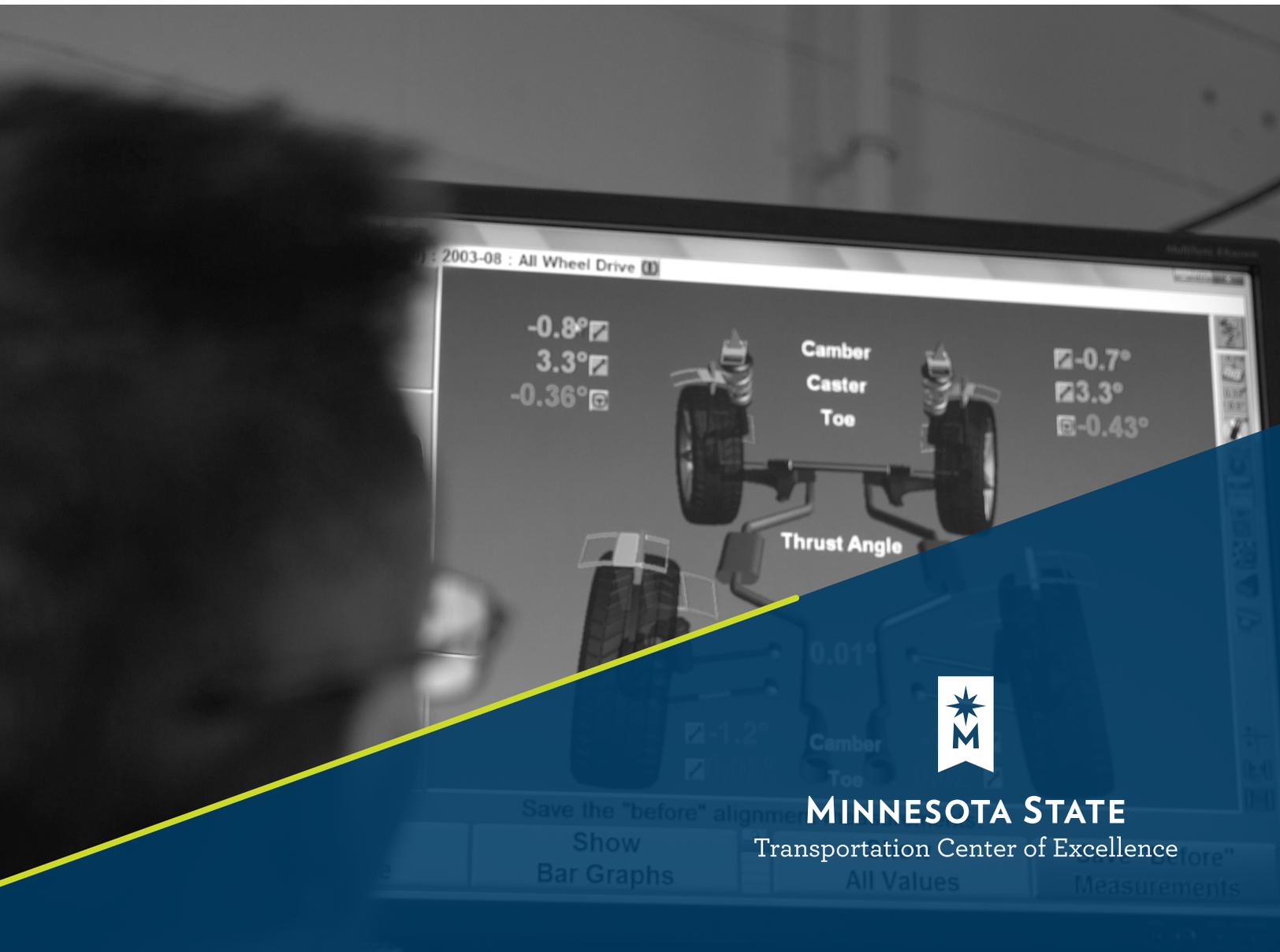
**Developed for the Minnesota State
Transportation Center of Excellence
by RealTime Talent**

Published February 2024

AUTOMOTIVE TECHNOLOGY

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Introduction and Sector Overview

This report highlights the importance of the Automotive Technology career pathway for Minnesota’s Transportation Industry. Professionals in Automotive Technology work in diverse roles from automotive service technicians to farm equipment mechanics, serving industries as diverse as Navigational Manufacturing and Automobile Dealerships. In all, about 20,884 people work in Automotive Technology roles in Minnesota as of the second quarter of 2023—a 0.9% increase (192 workers) from a year prior in the second quarter of 2022.

Overall employment in Minnesota grew by nearly 60,301 workers (2.0%) between the second quarter of 2022 and the second quarter of 2023. Over the past five years, employment grew by about 11,603 workers, or an 0.1% average annual growth in total employment. Over the next five years, overall employment is forecast to remain flat (0.0% average annual growth), while all Transportation Occupations together forecast moderate growth of 0.1% average annual growth. Automotive Technology employment is anticipated to grow slightly in Minnesota by about 60 total jobs over the next five years (0.1% on average annually) due to a tight talent pool. Total baseline demand for Automotive Technology talent is anticipated to be around 9,072 professionals needed to fill positions due to job exits and transfers, such as retirements and job changes.

Transportation Pathways in Minnesota – Baseline Forecast, 2023Q2¹

Occupation	Current					5-Year History		5-Year Baseline Forecast				
	Empl	Avg Ann Wages ²	LQ	Unempl	Unempl Rate	Empl Change	Ann % Change	Total Demand	Exits	Transfers	Empl Change	Ann % Change
Automotive Technology Pathway	20,884	\$68,300	0.97	236	1.1%	-586	-0.6%	9,072	3,184	5,828	60	0.1%
Aviation and Drone Technology Pathway	9,370	\$125,500	0.87	135	1.5%	69	0.1%	4,559	1,602	2,976	-19	0.0%
Collision Repair Pathway	7,307	\$52,800	1.10	227	3.1%	188	0.5%	3,442	1,213	2,305	-77	-0.2%
Diesel Equipment and Truck Pathway	12,161	\$64,200	1.01	153	1.3%	152	0.3%	5,635	1,954	3,724	-43	-0.1%
Marine and Power Sports Pathway	4,284	\$48,700	0.84	159	3.7%	68	0.3%	2,574	926	1,673	-25	-0.1%
Truck Driving Pathway*	97,603	\$51,800	0.95	3,280	3.3%	2,561	0.5%	61,265	26,466	33,538	1,261	0.3%
Transportation Occupations	133,108	\$60,700	0.93	3,418	2.6%	3,212	0.5%	73,669	27,527	45,162	981	0.1%
Total - All Occupations	3,075,767	\$66,100	1.00	87,730	2.9%	11,603	0.1%	1,746,576	727,900	1,016,920	1,756	0.0%

*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 2023Q2 unless noted otherwise

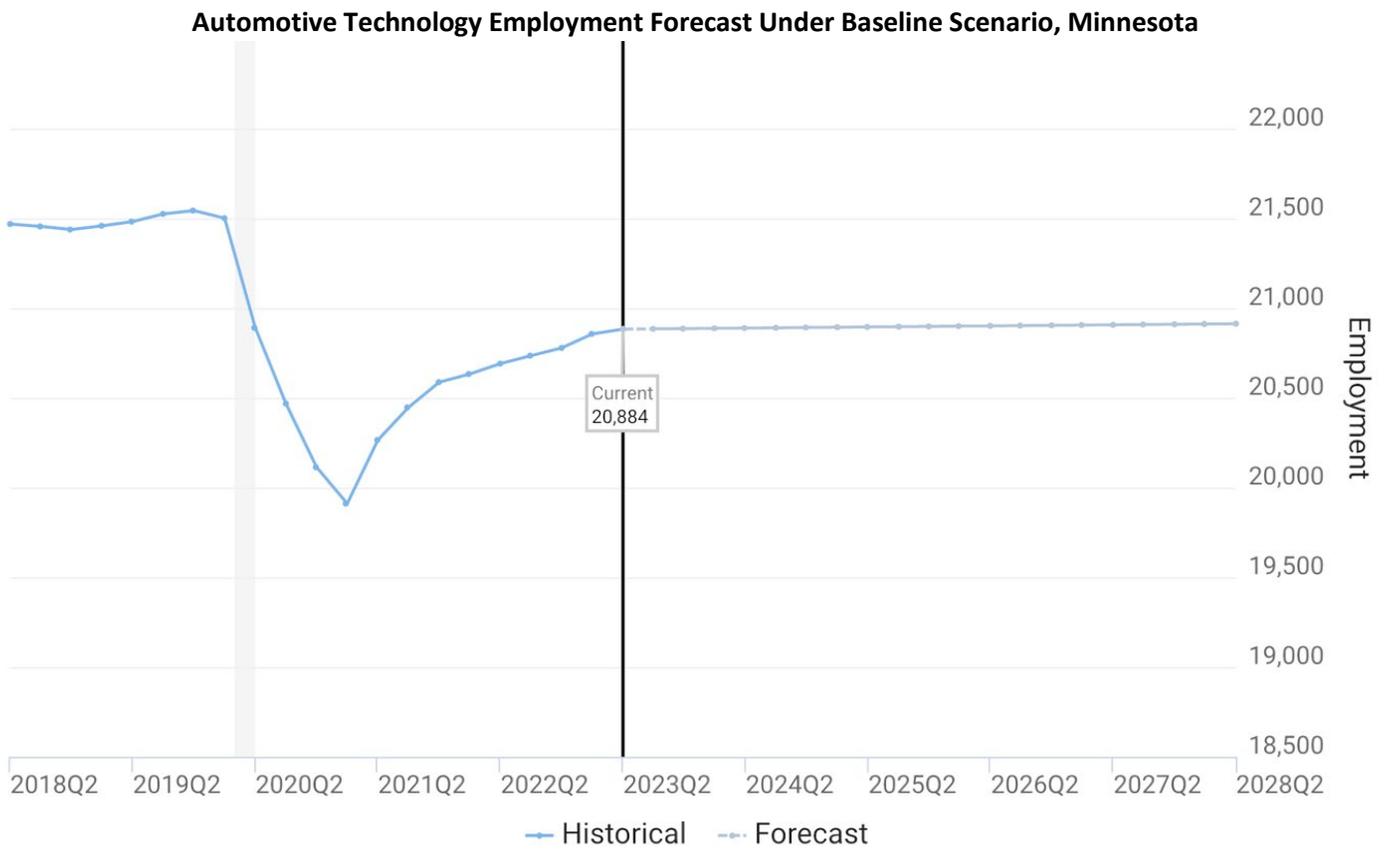
Note: Figures may not sum due to rounding.

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).

Minnesota’s job market cooled somewhat in 2023 from 2021 and 2022’s strong recoveries. Unemployment rates have begun to rise again as the market stabilizes and shifts in response to new realities. 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. Current forecasts estimate about 0.1% average annual growth in overall employment through the second quarter of 2028. Following an initially strong recovery in early 2021, 2022 saw relatively flat employment growth quarter-to-quarter.



Source: JobsEQ®, Data as of 2023Q2, 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 1/2/2024 at talentneuronplan.gartner.com. Industry detail, skill and certification analysis, wage trends, and posting to hire analysis are from the Lightcast 2023Q4 dataset accessed at analyst.lightcast.io

Industry/Occupation Mix

Automotive Technology talent is primarily concentrated in the Automotive Repair and Maintenance industry (25.7%), decreasing in its concentration from estimates in 2022 by one percentage point. The next highest industry of employment concentration is Automobile Dealers (22.4%), but Automotive Technology talent are important across a wide range of transportation, manufacturing, and agriculture sub-industries. These top industries (Automotive Repair and Maintenance, and Automobile Dealers) account for the most total demand for this talent over the next ten years.

Top Industry Distribution for Automotive Technology Pathway Occupations in Minnesota

NAICS Code	Industry Title	CURRENT		10-YEAR DEMAND				Total Demand
		% of Occ Empl	Empl	Avg Ann Wages	Exits	Transfers	Empl Growth	
8111	Automotive Repair and Maintenance	25.7%	5,357	\$51,500	1,854	3,338	-113	5,078
4411	Automobile Dealers	22.4%	4,671	\$58,800	1,650	2,970	95	4,715
5413	Architectural, Engineering, and Related Services	5.1%	1,070	\$95,700	242	461	21	725
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	4.2%	877	\$99,300	197	376	27	600
4413	Automotive Parts, Accessories, and Tire Retailers	4.2%	867	\$47,400	292	528	-54	767
3339	Other General Purpose Machinery Manufacturing	2.7%	573	\$94,700	129	247	33	409
3331	Agriculture, Construction, and Mining Machinery Manufacturing	1.7%	352	\$94,700	78	150	13	241
5511	Management of Companies and Enterprises	1.6%	343	\$102,600	81	155	45	281
4571	Gasoline Stations	1.6%	324	\$49,000	106	190	-43	253
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	1.5%	311	\$58,300	107	194	15	316
5417	Scientific Research and Development Services	1.3%	267	\$113,800	64	122	34	220
9211	Executive, Legislative, and Other General Government Support	1.1%	239	\$59,800	78	142	-9	212
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	1.1%	236	\$71,500	57	108	0	165
3391	Medical Equipment and Supplies Manufacturing	1.1%	236	\$87,600	56	106	18	180
4552	Warehouse Clubs, Supercenters, and Other General Merchandise Retailers	1.1%	221	\$54,600	74	133	-19	188
5613	Employment Services	1.0%	217	\$79,300	58	107	12	177
3332	Industrial Machinery Manufacturing	1.0%	202	\$94,700	46	87	13	146
4853	Taxi and Limousine Service	0.9%	195	\$54,900	66	118	-14	170
3335	Metalworking Machinery Manufacturing	0.9%	193	\$80,200	41	79	2	122
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	0.9%	188	\$78,600	42	81	17	140
-	All Others	18.9%	3,944	-	1,051	1,963	37	3,051

Source: JobsEQ®
 Data as of 2023Q2. 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

Motor Vehicle Electronic Equipment Installers, Mechanical Engineering Technicians, and Mechanical Engineers are uniquely concentrated in Minnesota to a higher degree than seen in the nation overall. On average, Automotive Technology careers pay about \$68,300 per year—about \$2,200 higher than the average wage statewide across all positions. Demand was high over the past year, seeing employment growth of 0.9% since the second quarter of 2022. Two occupations in the Automotive Technology pathway have either very low or zero unemployment, meaning that there are no unemployed trained professionals in that occupation. Mechanical Engineers has a very low unemployment rate of 0.6% while Electrical and Electronics Installers and Repairers has an unemployment rate of 0%.

SOC	Occupation	Current					5-Year Baseline Forecast				
		Empl	Avg Ann Wages ²	LQ	Unempl	Unempl Rate	Total Demand	Exits	Transfers	Empl Change	Ann % Change
49-3023	Automotive Service Technicians and Mechanics	13,467	\$54,600	0.91	179	1.3%	6,447	2,338	4,209	-100	-0.1%
17-2141	Mechanical Engineers	6,117	\$98,700	1.11	38	0.6%	2,061	630	1,229	202	0.7%
17-3027	Mechanical Engineering Technologists and Technicians	1,011	\$69,400	1.25	15	1.6%	466	174	308	-16	-0.3%
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	244	\$57,800	1.36	4	1.7%	77	35	68	-25	-2.2%
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	44	\$80,900	0.28	0	n/a	21	7	13	0	0.2%
Automotive Technology Pathway		20,884	\$68,300	0.97	236	1.1%	9,072	3,184	5,828	60	0.1%
Total - All Occupations		3,075,767	\$66,100	1.00	87,730	2.9%	1,746,576	727,900	1,016,920	1,756	0.0%

Source: [JobsEQ®](#)

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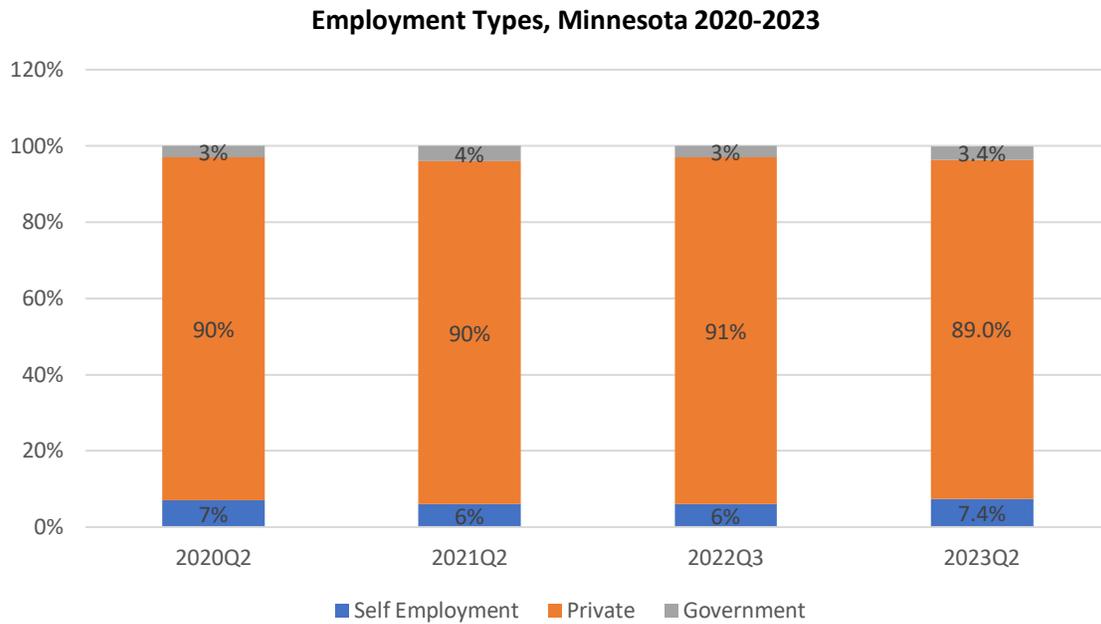
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Employment Types

About 89% of people employed in Automotive Technology in Minnesota work for private employers, while just over 7% are self-employed (a slight increase from 2022 and 2021). The remaining 3.4% work for state, federal, or local government entities.



Wage Analysis

Automotive Technology saw some significant wage gains across the pathway, with average wages rising by \$1,400 from prior estimates.¹ Entry-level wages in the pathways exceed the average entry-level wages observed across all occupations statewide by over \$13,000, paying an average of \$46,400 annually for entry-level talent. Education and training requirements vary across the different occupations in this pathway, with Mechanical Engineers requiring a Bachelor’s degree whereas Auto Electronic Equipment Installers, and Repairers typically requires a High School Diploma or equivalent. None of these occupations require previous work experience and three require some level of on-the-job training.

Automotive Technology Pathway Wages and Experience Level Requirements, MN, 2023Q2

SOC	Occupation	Empl Count	Mean	Entry Level	Experienced	Percentiles					Education and Training		
						10%	25%	50% (Median)	75%	90%	Typical Entry-Level Education	Previous Work Experience	Typical On-the-Job Training
17-2141	Mechanical Engineers	13,467	\$98,700	\$68,300	\$114,000	\$64,500	\$76,400	\$89,600	\$107,100	\$131,800	BA	None	None
17-3027	Mechanical Engineering Technologists and Technicians	6,117	\$69,400	\$51,700	\$78,200	\$48,700	\$58,100	\$69,000	\$80,300	\$91,400	AS	None	None
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	1,011	\$80,900	\$67,100	\$87,800	\$65,100	\$71,600	\$79,100	\$92,200	\$100,400	Certificate	None	Long-term OJT
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	244	\$57,800	\$41,500	\$65,900	\$39,500	\$46,600	\$57,500	\$69,700	\$78,300	HS/GED	None	Mod-term OJT
49-3023	Automotive Service Technicians and Mechanics	44	\$54,600	\$36,100	\$63,900	\$34,400	\$40,400	\$51,300	\$63,400	\$75,700	Certificate	None	Short-term OJT
	Automotive Technology Pathway	20,884	\$68,300	\$46,400	\$79,300	\$44,000	\$51,900	\$63,500	\$77,200	\$93,000			
	Total - All Occupations	3,075,767	\$66,100	\$32,800	\$82,700	\$30,300	\$37,500	\$51,700	\$77,900	\$113,000			

¹ Methodology for estimating wages changed between the 2022 and 2023 reports and are new as of the 2023Q2 dataset used here. They are estimated for the most current quarter of data available (2023Q2) using a combination of data from the Bureau of Labor Statistics and Chmura RTI wages, and no longer lag by a calendar year.

Wages in the Automotive Technology pathway vary across the three regions of Rural Greater Minnesota, Urban Greater Minnesota, and the 7-county MSP Metro. The MSP Metro region has the highest wages across experience levels and percentiles, and contains 57% of the pathway’s total statewide employment. The Rural Greater Minnesota region and the Urban Greater Minnesota region have very close average and median wage rates; Average Automotive Technology Pathway wages in the Greater Minnesota regions are nearly \$15,000 below the average pathway wages in the MSP Metro.

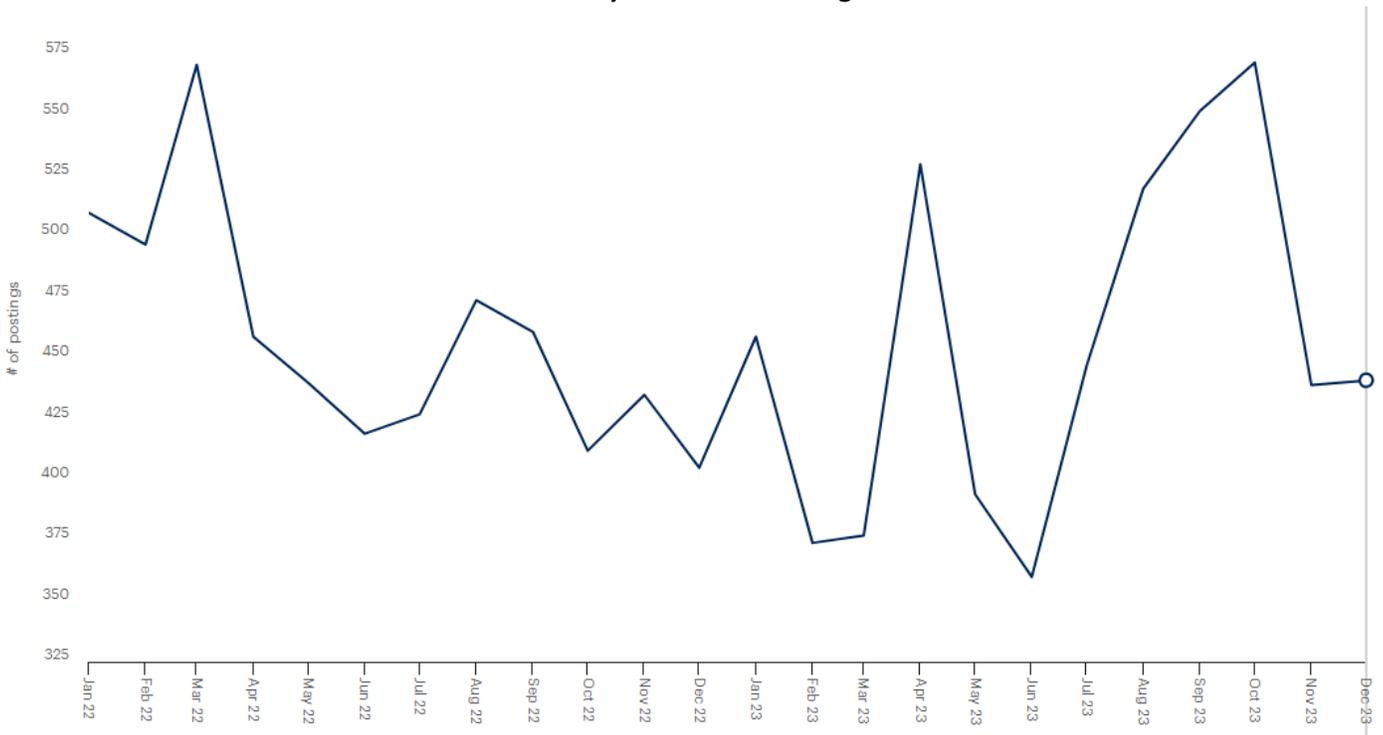
Automotive Technology Pathway Wages, 2023Q2

Region	Empl Count	Mean	Entry Level	Experienced	Percentiles				
					10%	25%	50% (Median)	75%	90%
Rural Greater Minnesota	5,475	\$59,600	\$41,800	\$68,400	\$39,900	\$46,200	\$56,400	\$67,900	\$78,100
Urban Greater Minnesota	3,157	\$59,700	\$41,400	\$68,900	\$39,400	\$46,000	\$56,600	\$70,100	\$80,600
MSP Metro	11,911	\$74,400	\$50,900	\$86,100	\$48,800	\$56,200	\$68,300	\$83,000	\$102,700
Minnesota	20,884	\$68,300	\$46,400	\$79,300	\$44,000	\$51,900	\$63,500	\$77,200	\$93,000

Job Posting Trends

Data in this section focuses on jobs newly advertised between January 1 and December 31, 2023 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 2023Q4 dataset. Overall, there were 5,465 new jobs advertised in Automotive Technology during this time frame, a slight decrease of -1% from the prior 12-month period (2022). Volume of positions advertised by staffing and temp agencies in the Automotive Technology pathway dropped further in 2023 to about 15% of all postings (compared to last year's 19%), implying a cooling of the market. Posted wages increased to an average \$24.55 per hour as of 2023, and there was only one hire per every one unique job posting advertised based on Lightcast estimates.

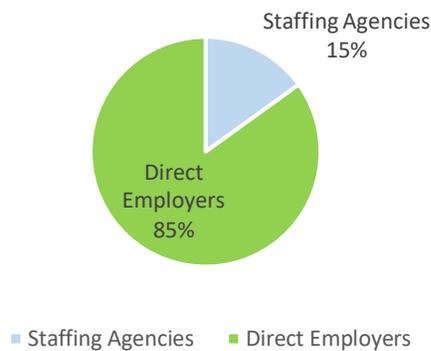
Volume of Career Pathway Online Job Postings in 2022 and 2023



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

Employer	Percent Change between 2022 and 2023
1. Valvoline	124%
2. Army	273%
3. CARxTire & Auto	241%
4. Firestone Complete Auto Care	12%
5. Honeywell	9%
6. Tire Choice Auto Service Centers	New Entrant
7. Kwik Trip	88%
8. Polaris	-54%
9. Lube-Tech	-29%
10. TGK Automotive	195%

New Job Postings Advertised in Minnesota by Employer Type

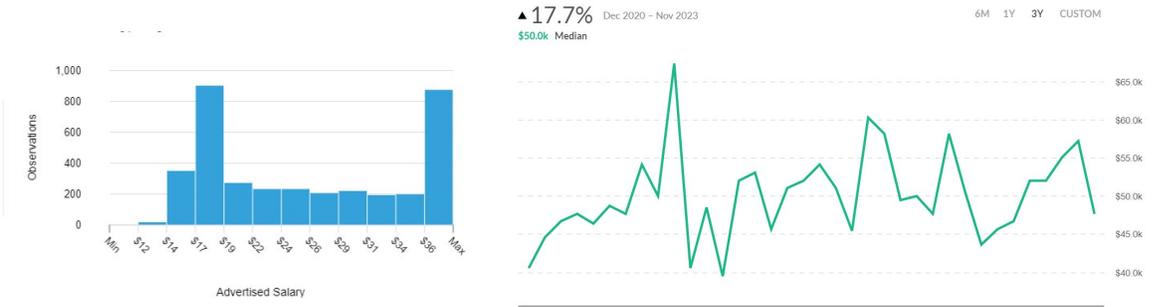


New Job Postings by Industry or Employer Type

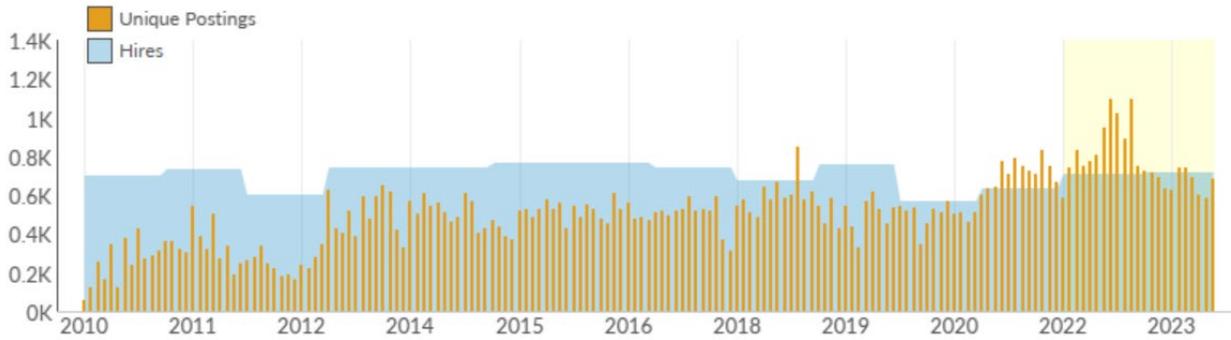
Industry	Total/Unique (Jan 2023 - Dec 2023)	Posting Intensity	Median Posting Duration
New Car Dealers	1,612 / 626	3 : 1	29 days
All Other Automotive Repair and Maintenance	2,769 / 580	5 : 1	30 days
Employment Placement Agencies	1,035 / 579	2 : 1	25 days
General Automotive Repair	1,724 / 338	5 : 1	26 days
Engineering Services	273 / 171	2 : 1	25 days
Tire Dealers	536 / 141	4 : 1	34 days
Tire Manufacturing (except Retreading)	569 / 136	4 : 1	30 days
All Other General Merchandise Retailers	761 / 136	6 : 1	30 days
Temporary Help Services	271 / 125	2 : 1	23 days
Automobile and Light Duty Motor Vehicle Manufacturing	396 / 121	3 : 1	23 days

Pathway Advertised Salary Range

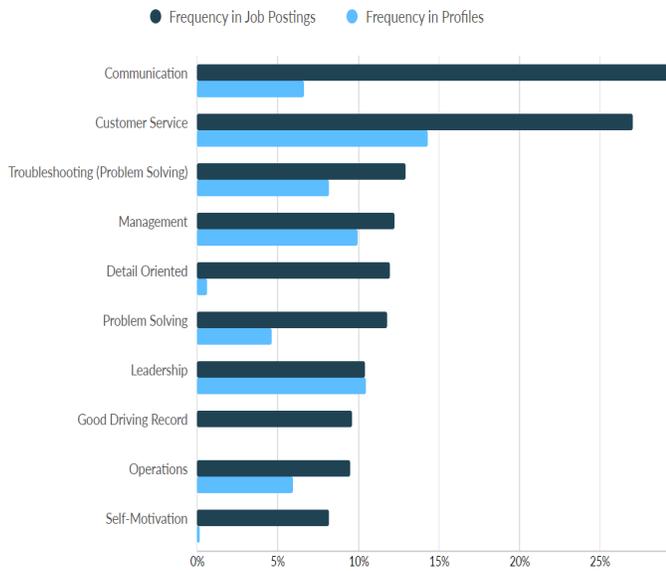
\$24.55/hr
Median Advertised Salary



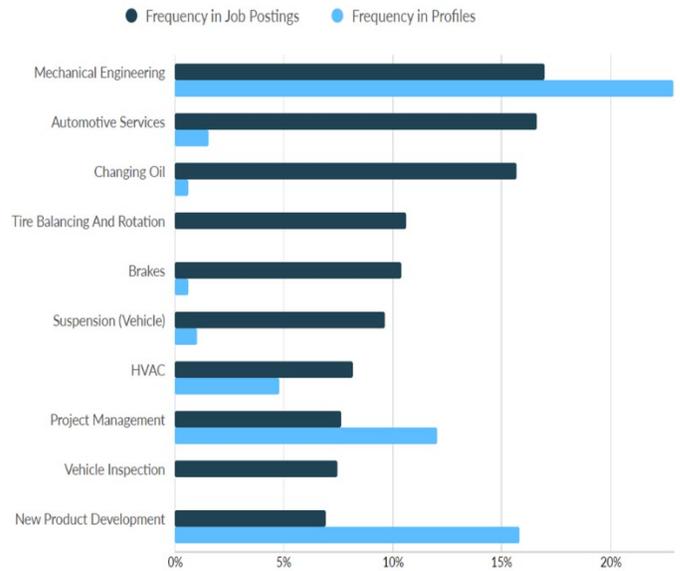
Monthly Ratio of Unique Job Postings to Estimated Hires



Top Common Skills



Top Specialized Skills



Top Certifications and Qualifications

Top Qualifications

Qualification	Postings with Qualification
Valid Driver's License	3,19
Automotive Service Excellence (ASE) Certification	90
Professional Engineer (PE) License	19
Commercial Driver's License (CDL)	16
Engineer in Training	6
Security Clearance	6
CDL Class A License	5
LEED Accredited Professional (AP)	4
CDL Class B License	3
Forklift Certification	3

Talent Supply Detail

Talent Unemployment, Underemployment, and Educational Attainment

At an overall pathway unemployment rate of 1.1%, there are about 236 unemployed Automotive Technology professionals statewide. An additional 1,357 Automotive Technology professionals are underemployed—meaning they are working in roles for which they are overqualified by education or experience.²

Automotive Technology Pathway in Minnesota

SOC	Occupation	Empl (Place of Residence)								Overall Occupation ¹		
		< 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%	3.1%	8.9%	60.1%	21.8%	4.0%	5,954	N/A	38	0.6%
17-3027	Mechanical Engineering Technologists and Technicians	1.8%	17.3%	20.5%	29.6%	25.8%	3.9%	1.2%	978	274	15	1.6%
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	3.9%	24.1%	22.9%	27.8%	20.0%	1.0%	0.3%	43	8	0	1.0%
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	4.0%	23.9%	22.8%	27.4%	20.7%	1.0%	0.3%	244	50	4	1.7%
49-3023	Automotive Service Technicians and Mechanics	9.1%	39.2%	19.6%	23.3%	7.7%	0.7%	0.4%	13,267	1,025	179	1.3%
	Automotive Technology Pathway	6.1%	27.1%	14.9%	19.4%	24.0%	7.0%	1.5%	20,486	1,357	236	1.1%
	Total - All Occupations	4.8%	20.9%	15.2%	14.1%	30.7%	10.4%	3.9%	2,976,622	526,677	87,730	2.9%

Source: JobsEQ®

Data as of 2023Q2 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.

² Chmura adopts the New York Fed methodology of counting as underemployed only those who have acquired at least a Bachelor's degree and yet are working in an occupation that does not typically require a Bachelor's degree. In Occupation Diversity, the only occupations shown in the Underemployment table are "non-college jobs", as designated by the New York Fed. Per the New York Fed, "a job is classified as a college job if 50 percent or more of the people working in that job indicate that at least a bachelor's degree is necessary; otherwise, the job is classified as a non-college job."

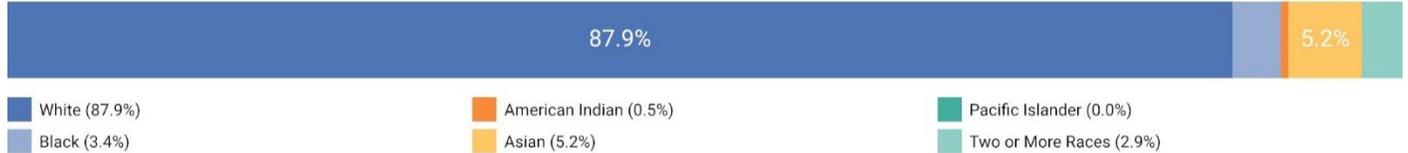
Workforce Demographics

About 12.5% (13.8% in the prior year) of the Automotive Technology workforce is under the age of 25, and 4.5% (4% in the previous year) are over 64 years old. The Automotive Technology workforce has aged slightly from the previous year. The largest demographic group by race are White, representing 87.9% of the total pathway's workforce, with the next largest cohort being Asian talent, representing 5.2% of the workforce. Just over 6% of the pathway's workforce are Hispanic or Latinx, and 5% are female (a slight decrease from the prior year's 5.2%). The percentage of the workforce that is BIPOC has increased slightly from the previous year by 0.2 percentage points.

Automotive Technology Workforce Age Demographics, 2022Q3



Automotive Technology Workforce Race Demographics, 2022Q3



Automotive Technology Workforce Ethnicity Demographics, 2022Q3



Automotive Technology Workforce Gender Demographics, 2022Q3

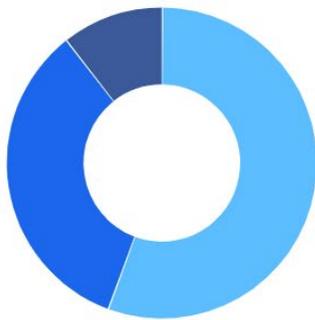


Aligned Postsecondary Programs

There were about 1,455 awards conferred at 27 different Minnesota postsecondary institutions in programs aligned to Automotive Technology careers in SY2022. Among, these 358 were at the Associate level, and 333 were certificates that could be earned in less than two years. The average school had about 50 completions, but range from two to 298 completions. No programs were delivered remotely.

Automotive Technology Postsecondary Program Awards by Level, SY2022

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	476	68	22	566
47.0604	Automobile/Automotive Mechanics Technology/Technician	65	92	133	91	0	0	0	381
15.0406	Automation Engineer Technology/Technician	21	32	100	11	0	0	0	164
15.1103	Hydraulics and Fluid Power Technology/Technician	56	21	44	39	0	0	0	160
47.0605	Diesel Mechanics Technology/Technician	0	33	35	22	0	0	0	90
47.0613	Medium/Heavy Vehicle and Truck Technology/Technician	4	9	38	21	0	0	0	72
15.0803	Automotive Engineering Technology/Technician	0	0	0	0	14	0	0	14
15.0805	Mechanical/Mechanical Engineering Technology/Technician	0	0	8	0	0	0	0	8
47.0614	Alternative Fuel Vehicle Technology/Technician	0	0	0	0	0	0	0	0
	Total	146 (10.0%)	187 (12.8%)	358 (24.6%)	184 (12.65%)	490 (33.7%)	68 (4.7%)	22 (1.5%)	1,455



Institution Type	Completions (2022)	Market Share
Public, 2-year	758	55.5%
Public, 4-year or above	462	33.8%
Private not-for-profit, 4-year or above	145	10.6%

Just over half (55.5%) of SY2022 awards were conferred at public two-year institutions, with Hennepin Technical College with the largest number of completions in SY2022, followed by the University of Minnesota, Twin Cities, comprising 21.8% and 19.7% respectively of related awards conferred. Completions are up overall by 1% from 2018.

Automotive Technology Postsecondary Program Awards by Institution, SY2022

Completions by Institution

Institution	Completions (2022)	Growth % YOY (2022)	Market Share (2022)	IPEDS Tuition & Fees (2022)	Completions Tren (2018-2022)
Hennepin Technical College	298	21.6%	21.8%	\$5,881	
University of Minnesota-Twin Cities	269	-5.6%	19.7%	\$15,859	
University of Minnesota-Duluth	109	-9.9%	8.0%	\$14,126	
University of St Thomas	100	-4.8%	7.3%	\$50,366	
Dakota County Technical College	74	17.5%	5.4%	\$6,419	
St Cloud Technical and Community College	53	39.5%	3.9%	\$6,075	
Minnesota State University-Mankato	50	-10.7%	3.7%	\$9,444	
Central Lakes College-Brainerd	45	25.0%	3.3%	\$6,140	
Century College	42	90.9%	3.1%	\$6,105	
Saint Cloud State University	34	-5.6%	2.5%	\$10,117	
Dunwoody College of Technology	33	50.0%	2.4%	\$24,611	
Saint Paul College	32	14.3%	2.3%	\$6,318	
Pine Technical & Community College	30	66.7%	2.2%	\$4,643	
South Central College	26	-31.6%	1.9%	\$6,146	
Alexandria Technical & Community College	21	-12.5%	1.5%	\$6,107	
Minnesota West Community and Technical College	21	-8.7%	1.5%	\$6,484	
Minnesota State College Southeast	21	61.5%	1.5%	\$7,490	
Ridgewater College	19	-17.4%	1.4%	\$6,114	
Riverland Community College	15	15.4%	1.1%	\$6,249	
Minnesota State Community and Technical College	14	-36.4%	1.0%	\$5,900	
Northland Community and Technical College	14	-56.3%	1.0%	\$6,244	
Bethel University	12	Insf. Data	0.9%	\$41,270	
Anoka Technical College	10	-44.4%	0.7%	\$6,075	
Lake Superior College	9	0.0%	0.7%	\$6,404	
Rochester Community and Technical College	9	50.0%	0.7%	\$5,670	
Minnesota North College	3	-78.6%	0.2%	\$5,970	
Northwest Technical College	2	-60.0%	0.1%	\$6,226	

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.³ Overall, the total number of international students increased by three from the previous school year. There was a greater increase for the total number of female graduates, with an additional 37 female graduates in programs aligned to the Automotive Technology pathway.

Race and Gender of Graduates Receiving Postsecondary Awards in SY2022, Minnesota

CIP Code	Description	All 2022 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	566	82	20	1	38	20	383	22	459	107
15.0406	Automation Engineer Technology/Technician	164	2	14	0	13	16	116	3	151	13
15.0803	Automotive Engineering Technology/Technician	14	4	0	0	0	1	9	0	13	1
15.0805	Mechanical/Mechanical Engineering Technology/Technician	8	0	0	0	0	0	8	0	8	0
15.1103	Hydraulics and Fluid Power Technology/Technician	160	0	2	0	44	14	98	2	143	17
47.0604	Automobile/Automotive Mechanics Technology/Technician	381	3	26	2	48	32	254	16	358	23
47.0605	Diesel Mechanics Technology/Technician	90	1	0	3	0	5	76	5	87	3
47.0613	Medium/Heavy Vehicle and Truck Technology/Technician	72	1	7	0	2	3	51	8	69	3
47.0614	Alternative Fuel Vehicle Technology/Technician	0	0	0	0	0	0	0	0	0	0
All Automotive Technology Postsecondary Programs		1,455	93	69	6	145	91	995	56	1,288	167

IPEDS SY2022 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>

Postsecondary programs aligned to all Automotive Technology pathway occupations except for Mechanical Engineering Technologists and Technicians are underproducing graduates in comparison to national benchmarks. Automotive Service Technicians, Mechanical Engineers, and Mechanical Engineering Technologists and Technicians are experiencing talent shortages. The nine aligned programs for the Automotive Technology pathway all have a low share of BIPOC graduates, and a low share of female graduates. The share of BIPOC graduates decreased by 0.3 percentage points from the 2021 school year. However, the share of graduates that are female increased from the 2021 school year (up from 9.4%). Automotive Service Technicians have the highest volume of employment and the highest number related graduates; there were 381 graduates specifically from Automotive Mechanic programs in Minnesota during the 2022 school year, plus another 90 graduates of Truck and Diesel Mechanic programs—both of which are counted in the table below.

Postsecondary Strategy Summary Table, Minnesota 2023

Occupation	Related Programs*	2023Q2 Empl	Workforce BIPOC by Race	Workforce Hispanic/Latinx	Workforce Female	Workforce Under 45	SY2022 Graduates (Certificate and AA/AS only)	Award Gap (All Award Levels)**	Graduates BIPOC by Race or Ethnicity (All Award Levels)	Graduates Female (All Award Levels)
Automotive Service Technicians and Mechanics	<ul style="list-style-type: none"> • Automobile/Automotive Mechanics Technology/Technician • Hydraulics and Fluid Power Technology/Technician • Diesel Mechanics Technology/Technician • Medium/Heavy Vehicle and Truck Technology/Technician 	13,267	11.2%	7.7%	3.0%	57.3%	703	Y	15.1%	3.2%
Mechanical Engineers	<ul style="list-style-type: none"> • Mechanical Engineering 	5,954	13.8%	2.9%	7.8%	56.2%	0	Y	6.9%	7.4%
Mechanical Engineering Technologists and Technicians	<ul style="list-style-type: none"> • Mechanical Engineering Technology/Technician • Automotive Engineering Technology/Technician • Automation Engineer Technology/Technician 	978	15.5%	3.0%	15.3%	50.9%	172	N	3.2%	0.1%
Electronic Equipment Installers and Repairers, Motor Vehicles	<ul style="list-style-type: none"> • Alternative Fuel Vehicle Technology/Technician 	244	11.5%	5.2%	4.4%	53.0%	0	Y	N/A	N/A
Electrical and Electronics Installers and Repairers, Transportation Equipment	N/A	43	10.7%	4.9%	4.4%	52.8%	N/A	Y	N/A	N/A
Automotive Technology Pathway	All nine aligned programs	20,486	12.1%	6.1%	5.0%	56.6%	875	Y	25.2%	11.5%
All Occupations		2,976,622	16.0%	5.4%	48.1%	56.7%	30,032		34.1%	66.0%

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.

Conclusion

The Automotive Technology pathway employment forecast improved slightly in 2023, now forecasting a slight increase of 0.1% average annual employment growth over the next five years. Of the five occupations included in the Automotive Technology pathway, Motor Vehicle Electronic Equipment Installers, Mechanical Engineering Technicians, and Mechanical Engineers are uniquely concentrated in Minnesota to a higher degree than seen in the nation overall, with location quotients of 1.36, 1.25, and 1.11 respectively. The percentage of people employed by private employers in Automotive Technology careers has decreased slightly from prior years (89% compared to 91% in 2022). Whereas the percentage of people who are self-employed increased from prior years from 6% in 2021 and 2022 to 7.4% in 2023. Average wages have increased significantly across the pathway statewide, rising by nearly \$1,500 from prior year estimates.

About 6.5% of workers employed in the Automotive Technology pathway in Minnesota are underemployed (about 1,357 underemployed people). While in prior years, the institution with the largest number of completions was the University of Minnesota-Twin Cities, Hennepin Technical College now has the largest number of completions in SY2022. The programs of Alternative Fuel Vehicle Technology/Technician, Mechanical Engineering Technology, and Automotive Engineering Technology are prime for exploration of certificate or two-year program growth or development given local employer demand and low award numbers. Each of the nine programs aligned with the Automotive Technology pathway have a low share of BIPOC graduates and a low share of female graduates, showcasing the opportunity to diversify student enrollment into these programs.

FAQ

How is employment forecast determined?

Forecast employment growth uses national projections from the Bureau of Labor Statistics, forecasts for 2022-2032, adapted for regional growth patterns by Chmura. Employment data are based on [occupation forecasts](#) and event-based forecasts if applicable. Forecasts are developed at the county level; therefore, for detailed (6-digit NAICS) ownership-specific industries, the forecast employment growth for a zip code or place (city, town, etc.) is taken from the forecast of the county to which it belongs.

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

AVIATION AND DRONE TECH

2023 Supply & Demand Analysis Overview

Published February 2024



MINNESOTA STATE
Transportation Center of Excellence

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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 9,370 people work in Aviation and Drone Technology roles in Minnesota as of the second quarter of 202—a 6.8% increase (593 workers) from a year prior.

Overall employment in Minnesota has grown by nearly 60,301 workers (2.0%) between the second quarter of 2022 and the second quarter of 2023, and the five-year forecast growth is flat at 0.0% and 1,756 expansion of employment as of the most current baseline forecasts. During this time frame, Aviation and Drone Technology employment is also anticipated to be flat in Minnesota (0.0% annually) and employment declining by about 19 total jobs. Total baseline demand for Aviation and Drone Technology talent is anticipated to be around 4,559 professionals needed to fill positions due to job exits and transfers, such as retirements and job changes.

Transportation Pathways in Minnesota – Baseline Forecast, 2023Q2¹

Occupation	Current					5-Year History		5-Year Baseline Forecast				
	Empl	Avg Ann Wages ²	LQ	Unempl	Unempl Rate	Empl Change	Ann %	Total Demand	Exits	Transfers	Empl Growth	Ann % Growth
Automotive Technology Pathway	20,884	\$68,300	0.97	236	1.1%	-586	-0.6%	9,072	3,184	5,828	60	0.1%
Aviation and Drone Technology Pathway	9,370	\$125,500	0.87	135	1.5%	69	0.1%	4,559	1,602	2,976	-19	0.0%
Collision Repair Pathway	7,307	\$52,800	1.10	227	3.1%	188	0.5%	3,442	1,213	2,305	-77	-0.2%
Diesel Equipment and Truck Pathway	12,161	\$64,200	1.01	153	1.3%	152	0.3%	5,635	1,954	3,724	-43	-0.1%
Marine and Power Sports Pathway	4,284	\$48,700	0.84	159	3.7%	68	0.3%	2,574	926	1,673	-25	-0.1%
Truck Driving Pathway*	97,603	\$51,800	0.95	3,280	3.3%	2,561	0.5%	61,265	26,466	33,538	1,261	0.3%
Transportation Occupations	133,108	\$60,700	0.93	3,418	2.6%	3,212	0.5%	73,669	27,527	45,162	981	0.1%
Total - All Occupations	3,075,767	\$66,100	1.00	87,730	2.9%	11,603	0.1%	1,746,576	727,900	1,016,920	1,756	0.0%

*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 2023Q2 unless noted otherwise

Note: Figures may not sum due to rounding.

1. Data based on a four-quarter moving average unless noted otherwise.

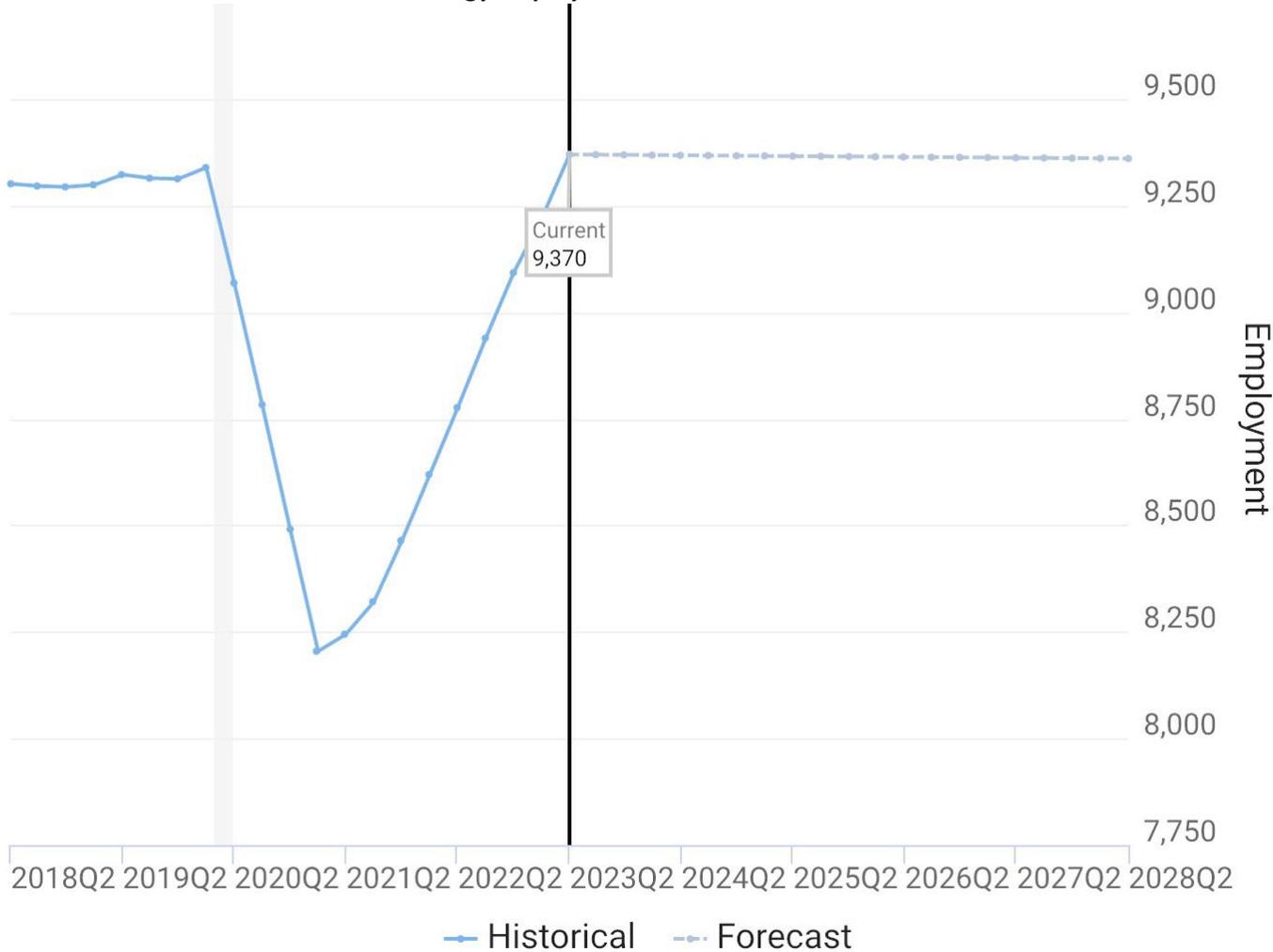
2. Wage data represent the average for all Covered Employment

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.

Minnesota saw a strong job market throughout 2023 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 soured slightly from 2022's estimates, with no change in overall employment forecast by the second quarter of 2028. However, overall employment volumes have reached pre-pandemic levels as of 2023Q2 estimates.

Aviation and Drone Technology Employment Forecast Under Baseline Scenario, Minnesota



Source: JobsEQ®.Data as of 2023Q2,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 1/10/2024 at talentneuronplan.gartner.com Industry detail, skill and certification analysis, wage trends, and posting to hire analysis are from the Lightcast 2023Q4 dataset accessed at analyst.lightcast.io

Industry/Occupation Mix

Aviation and Drone Technology talent is primarily concentrated in the Scheduled Air Transportation Industry (38.4%) 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

NAICS Code	Industry Title	CURRENT		10-YEAR DEMAND				Total Demand
		% of Occ Empl	Empl	Avg Ann Wages	Exits	Transfers	Empl Growth	
4811	Scheduled Air Transportation	38.4%	3,595	\$157,100	1,372	2,649	-22	3,998
4881	Support Activities for Air Transportation	10.3%	968	\$81,400	315	565	12	892
5413	Architectural, Engineering, and Related Services	4.8%	447	\$105,600	123	208	-3	329
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	3.8%	356	\$111,300	98	166	-17	247
4812	Nonscheduled Air Transportation	3.8%	353	\$127,700	140	272	7	420
5511	Management of Companies and Enterprises	3.7%	350	\$120,600	119	219	21	359
9261	Administration of Economic Programs	3.5%	330	\$148,200	111	221	-11	321
3364	Aerospace Product and Parts Manufacturing	2.9%	271	\$77,000	95	157	-38	215
5613	Employment Services	2.7%	255	\$72,000	81	137	-12	206
4921	Couriers and Express Delivery Services	2.5%	234	\$126,800	83	160	28	271
6219	Other Ambulatory Health Care Services	1.8%	169	\$94,400	65	125	-5	185
9211	Executive, Legislative, and Other General Government Support	1.2%	110	\$100,900	35	67	-3	99
5417	Scientific Research and Development Services	1.1%	104	\$119,300	29	50	4	83
9231	Administration of Human Resource Programs	1.0%	90	\$120,000	27	48	1	76
5415	Computer Systems Design and Related Services	0.9%	87	\$120,100	26	44	12	82
3391	Medical Equipment and Supplies Manufacturing	0.9%	86	\$102,700	22	38	1	61
3344	Semiconductor and Other Electronic Component Manufacturing	0.9%	82	\$107,000	22	37	2	62
6115	Technical and Trade Schools	0.9%	82	\$131,500	32	61	-2	92
9221	Justice, Public Order, and Safety Activities	0.8%	76	\$119,200	23	42	-3	62
5419	Other Professional, Scientific, and Technical Services	0.8%	74	\$98,200	22	39	8	70
-	All Others	13.3%	1,251	-	364	644	-15	993

Source: JobsEQ®
 Data as of 2023Q2. 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 Aviation and Drone Technology pathway, the specific occupations of Aircraft Systems Assemblers, Air Traffic Controllers, Airline Pilots, and Aircraft Cargo Handling Supervisors are uniquely concentrated in Minnesota to a higher degree than seen in the nation overall. On average, Aviation careers pay about \$125,500 per year—about \$59,400 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 \$185,700 compared to Aircraft Structure, Surfaces, Rigging, and Systems Assemblers at \$60,700 annually.

SOC	Occupation	Current					5-Year Baseline Forecast				
		Empl	Avg Ann Wages ²	LQ	Unempl	Unempl Rate	Total Demand	Exits	Transfers	Empl Change	Ann % Change
53-2011	Airline Pilots, Copilots, and Flight Engineers	2,437	\$185,700	1.37	23	0.9%	1,516	510	1,008	-2	0.0%
49-3011	Aircraft Mechanics and Service Technicians	2,146	\$83,900	0.77	26	1.3%	846	311	526	8	0.1%
17-2199	Engineers, All Other	1,868	\$118,600	0.59	11	0.6%	614	226	376	13	0.1%
53-2012	Commercial Pilots	1,079	\$142,300	1.08	10	1.0%	682	227	449	6	0.1%
53-2021	Air Traffic Controllers	553	\$153,600	1.41	20	3.5%	284	96	194	-6	-0.2%
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	437	\$60,700	1.52	7	1.6%	193	74	132	-13	-0.6%
17-3024	Electro-Mechanical and Mechatronics Technologists and Technicians	304	\$64,500	0.49	19	5.9%	133	61	101	-29	-2.0%
53-2022	Airfield Operations Specialists	282	\$72,500	0.98	11	3.6%	151	49	100	1	0.1%
53-1041	Aircraft Cargo Handling Supervisors	170	\$65,300	1.16	2	1.2%	104	31	70	3	0.3%
49-2091	Avionics Technicians	94	\$63,700	0.24	8	7.8%	35	16	19	1	0.1%
	Aviation and Drone Technology Pathway	9,370	\$125,500	0.87	135	1.5%	4,559	1,602	2,976	-19	0.0%
	Total - All Occupations	3,075,767	\$66,100	1.00	87,730	2.9%	1,746,576	727,900	1,016,920	1,756	0.0%

Source: [JobsEQ®](#)

Data as of 2023Q2 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

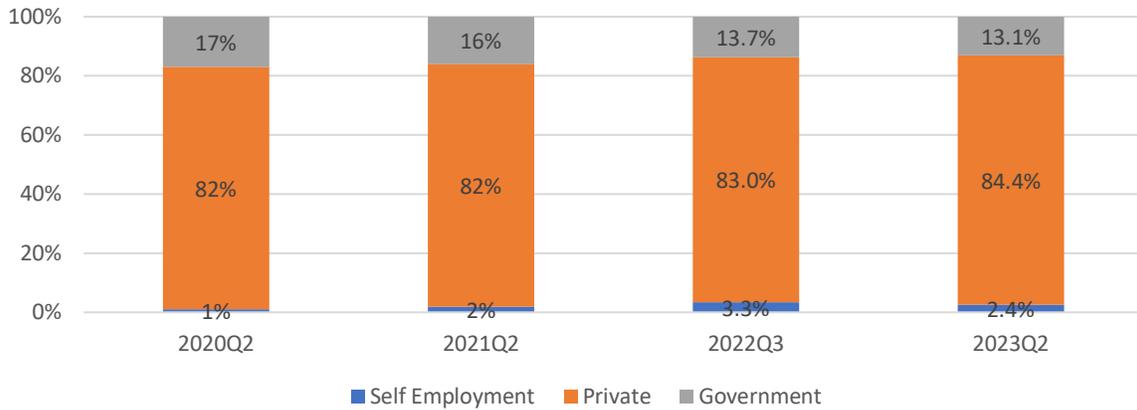
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Employment Types

About 84% of people employed in Aviation and Drone Technology careers in Minnesota work for private employers, while only about 2.4% are self-employed (a slight decrease from last year). The remaining 13.1% work for state, federal, or local government entities (mostly federal). The share employed by government agencies has declined considerably over the past few years.

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, <http://www.chmuraecon.com/jobseq/>. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/10/2024 at talentneuronplan.gartner.com Industry detail, skill and certification analysis, wage trends, and posting to hire analysis are from the Lightcast 2023Q4 dataset accessed at analyst.lightcast.io

Employment Types, Minnesota 2020-2023



Wage Analysis

The Aviation and Drone Technology pathway saw wage averages increase from the prior year's estimates. However, average wages for Avionics Technicians, Aircraft Mechanics and Service Technicians, and Air Traffic Controllers saw average wages drop from the prior year's estimates. Entry-level wages in the pathways far exceed the average entry-level wages observed across all occupations statewide, paying an average of \$80,800 annually for entry-level talent.

Occupation Wages, Average Annual in Minnesota, 2023Q2

SOC	Occupation	Mean	Entry Level	Experienced	Percentiles					Education and Training		
					10%	25%	50% (Median)	75%	90%	Typical Entry-Level Education	Previous Work Experience	Typical On-the-Job Training
17-2199	Engineers, All Other	\$118,600	\$79,200	\$138,300	\$74,200	\$91,600	\$117,200	\$136,100	\$168,000	BA	None	None
17-3024	Electro-Mechanical and Mechatronics Technologists and Technicians	\$60,700	\$48,400	\$66,900	\$47,100	\$51,500	\$57,800	\$68,600	\$81,900	AS	None	None
49-2091	Avionics Technicians	\$63,700	\$39,400	\$75,900	\$32,800	\$49,100	\$62,200	\$74,200	\$94,000	AS	None	None
49-3011	Aircraft Mechanics and Service Technicians	\$83,900	\$53,400	\$99,200	\$49,300	\$62,400	\$79,300	\$118,800	\$130,000	Certificate	None	None
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	\$64,500	\$41,800	\$75,800	\$39,400	\$47,900	\$62,700	\$80,600	\$92,900	HS/GED	None	Mod-term OJT
53-1041	Aircraft Cargo Handling Supervisors	\$65,300	\$50,000	\$72,900	\$49,400	\$51,900	\$56,900	\$86,400	\$97,800	HS/GED	< 5 years	None
53-2011	Airline Pilots, Copilots, and Flight Engineers	\$185,700	\$112,000	\$222,500	\$107,700	\$124,600	\$156,900	\$220,500	\$288,100	BA	< 5 years	Mod-term OJT
53-2012	Commercial Pilots	\$142,300	\$97,400	\$164,800	\$93,600	\$107,200	\$129,200	\$177,700	\$208,300	Certificate	None	Mod-term OJT
53-2021	Air Traffic Controllers	\$153,600	\$108,200	\$176,200	\$87,300	\$141,900	\$163,500	\$182,000	\$195,900	AS	None	Long-term OJT
53-2022	Airfield Operations Specialists	\$72,500	\$38,900	\$89,200	\$35,900	\$45,200	\$59,500	\$86,900	\$122,200	HS/GED	None	Long-term OJT
	Aviation and Drone Technology Pathway	\$125,500	\$80,800	\$147,900	\$75,800	\$92,400	\$115,000	\$153,600	\$186,900			
	Total - All Occupations	\$66,100	\$32,800	\$82,700	\$30,300	\$37,500	\$51,700	\$77,900	\$113,000			

Source: [JobsEQ®](#)

Wage data represent the average for all Covered Employment

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, <http://www.chmuraecon.com/jobseq/>. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/10/2024 at talentneuronplan.gartner.com Industry detail, skill and certification analysis, wage trends, and posting to hire analysis are from the Lightcast 2023Q4 dataset accessed at analyst.lightcast.io

Wages in the Aviation and Drone Technology pathway vary across the three regions of Rural Greater Minnesota, Urban Greater Minnesota, and the 7-County MSP Metro. The MSP Metro region has the highest wages across experience levels and percentiles, offering higher wages than the state overall as well. While entry-level wages in Rural Greater Minnesota and Urban Greater Minnesota are close, wages vary across percentiles and the average wage as well.

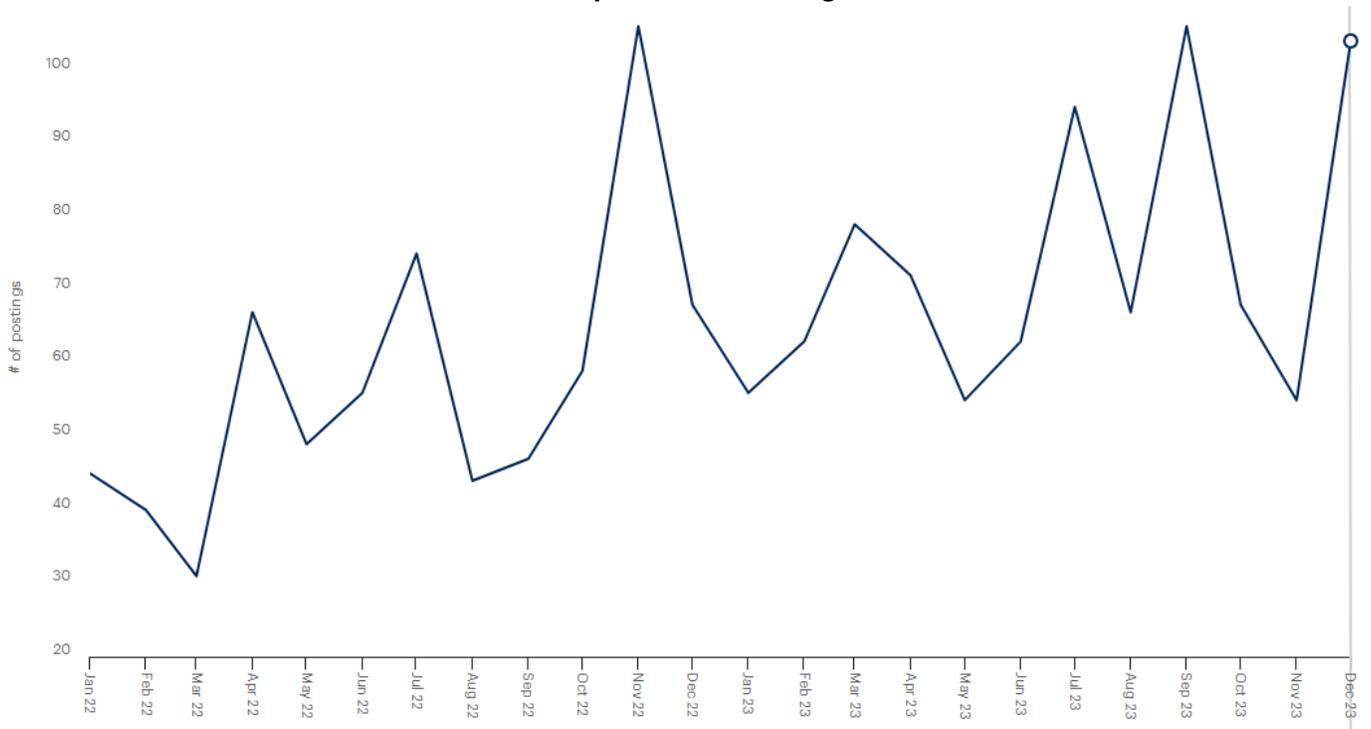
Aviation and Drone Technology Pathway Wages, 2023Q2

Region	Empl Count	Mean	Entry Level	Experienced	Percentiles				
					10%	25%	50% (Median)	75%	90%
Rural Greater	824	\$96,900	\$65,400	\$112,700	\$61,200	\$74,700	\$91,300	\$119,700	\$139,800
Urban Greater	826	\$106,300	\$66,100	\$126,300	\$60,900	\$77,700	\$101,300	\$128,700	\$157,700
7-County Metro	7,434	\$131,300	\$85,300	\$154,300	\$80,700	\$96,200	\$119,600	\$160,800	\$194,600
Minnesota	9,370	\$125,500	\$80,800	\$147,900	\$75,800	\$92,400	\$115,000	\$153,600	\$186,900

Job Posting Trends

Data in this section focuses on jobs newly advertised between January 1 and December 31, 2023 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 2023Q4 dataset. There were 873 new jobs advertised in Aviation careers during this timeframe, a more modest increase of 27% (from 2022) in comparison to last year's 135% increase from the prior 12-month period (2021). Volume of 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 of \$22.46 per hour (compared to \$19.66 per hour in 2022), and there was about 1 hire per every 1 unique job postings advertised based on Lightcast estimates.

Volume of Career Pathway Online Job Postings in 2022 and 2023



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

Employer	Percent Change between 2022 and 2023
1. Army	181%
2. Navy	New Entrant
3. U.S. Customs & Border Protection	-31%
4. Delta Air Lines	-36%
5. Signature Aviation	-26%
6. SAIC	167%
7. StandardAero	78%
8. Department of the Air Force	-17%
9. Federal Aviation Administration	-20%
10. Circus Aircraft Corporation	-29%

New Job Postings Advertised in Minnesota by Employer Type

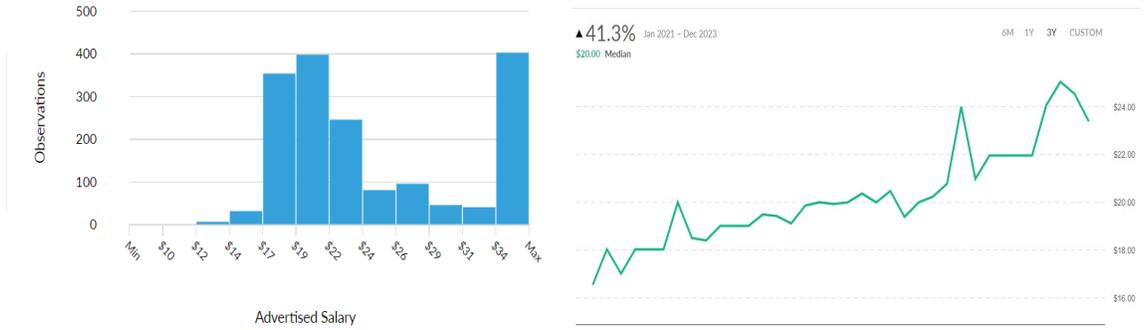


New Job Postings by Industry or Employer Type

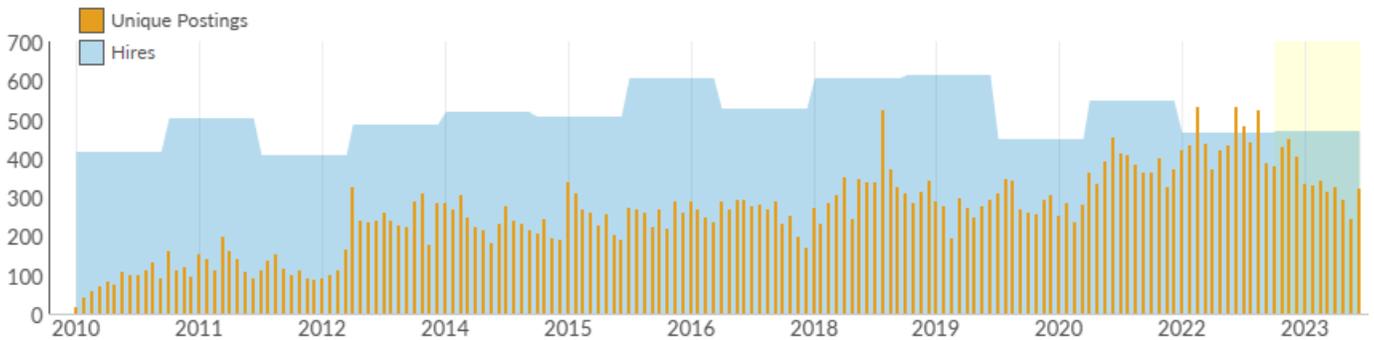
Industry	Total/Unique (Jan 2023 - Dec 2023)	Posting Intensity	Median Posting Duration
Employment Placement Agencies	1,242 / 714	2 : 1	23 days
Motorcycle, ATV, and All Other Motor Vehicle Dealers	577 / 238	2 : 1	22 days
Temporary Help Services	260 / 149	2 : 1	20 days
Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing	766 / 99	8 : 1	28 days
Farm and Garden Machinery and Equipment Merchant Wholesalers	185 / 93	2 : 1	20 days
Surgical Appliance and Supplies Manufacturing	177 / 69	3 : 1	31 days
Industrial and Commercial Fan and Blower and Air Purification Equipment Manufacturing	182 / 59	3 : 1	31 days
Lumber, Plywood, Millwork, and Wood Panel Merchant Wholesalers	87 / 59	1 : 1	28 days
Engineering Services	129 / 58	2 : 1	25 days
Direct Health and Medical Insurance Carriers	110 / 53	2 : 1	40 days

Pathway Advertised Salary Range

\$22.46/hr
Median Advertised Salary



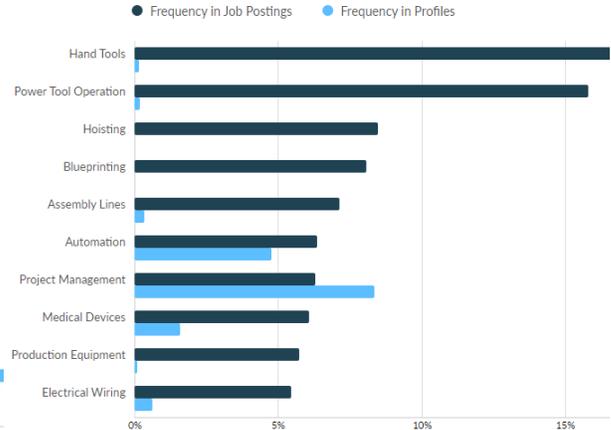
Monthly Ratio of Unique Job Postings to Estimated Hires



Top Common Skills



Top Specialized Skills



Source: RealTime Talent analysis of Chmura Economics JobsEQ®, <http://www.chmuraecon.com/jobseq/>. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/10/2024 at talentneuronplan.gartner.com Industry detail, skill and certification analysis, wage trends, and posting to hire analysis are from the Lightcast 2023Q4 dataset accessed at analyst.lightcast.io

Top Certifications and Qualifications

Qualification	Postings with Qualification
Valid Driver's License	286
Airframe & Powerplant (A&P) Certificate	102
Airline Transport Pilot Licence	36
FAA Instrument Rating	31
Professional Engineer (PE) License	31
Advanced Cardiovascular Life Support (ACLS) Certification	25
Basic Cardiac Life Support	25
American Medical Technologists (AMT) Certification	25
Engineer in Training	24
Cardiopulmonary Resuscitation (CPR) Certification	21

Talent Supply Detail

Talent Unemployment, Underemployment, and Educational Attainment

At an overall pathway unemployment rate of 1.5% (the same percent as the previous year), there are about 135 unemployed Aviation and Drone Technology professionals statewide. An additional 1,136 (an increase from the previous year's 986) Aviation professionals are underemployed—meaning they are working in roles for which they are overqualified by education or experience.²

Aviation and Drone Technology Pathway in Minnesota

SOC	Occupation	Empl (Place of Residence)								Overall Occupation ¹		
		< 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%	3.1%	6.3%	54.5%	26.2%	8.5%	1,737	0	11	0.6%
17-3024	Electro-Mechanical and Mechatronics Technologists and Technicians	1.8%	17.3%	20.5%	29.3%	26.0%	4.0%	1.2%	423	119	7	1.6%
49-2091	Avionics Technicians	0.8%	16.3%	29.1%	33.7%	17.5%	2.7%	0.0%	91	19	8	7.8%
49-3011	Aircraft Mechanics and Service Technicians	1.6%	18.1%	26.0%	32.5%	18.1%	2.7%	1.0%	2,072	448	26	1.3%
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	9.4%	42.8%	20.9%	14.1%	11.1%	1.4%	0.4%	294	35	21	5.9%
53-1041	Aircraft Cargo Handling Supervisors	3.5%	26.6%	21.6%	16.5%	25.5%	5.2%	1.0%	164	55	1	1.2%
53-2011	Airline Pilots, Copilots, and Flight Engineers	0.2%	1.6%	5.0%	5.4%	67.3%	16.8%	3.6%	2,388	0	23	0.9%
53-2012	Commercial Pilots	0.2%	2.0%	5.8%	6.6%	66.3%	15.8%	3.3%	1,025	0	10	1.0%
53-2021	Air Traffic Controllers	0.1%	6.7%	16.9%	15.8%	50.5%	9.0%	0.9%	543	305	20	3.5%
53-2022	Airfield Operations Specialists	0.1%	6.7%	16.9%	16.1%	50.4%	8.9%	0.9%	288	156	5	3.6%
Aviation and Drone Technology Pathway		0.9%	8.5%	12.4%	14.8%	46.9%	13.1%	3.4%	9,026	1,136	135	1.5%
Total - All Occupations		4.8%	20.9%	15.2%	14.1%	30.7%	10.4%	3.9%	2,976,622	526,677	87,730	2.9%

Source: JobsEQ®

Data as of 2023Q2 unless noted otherwise

Note: Figures may not sum due to rounding.

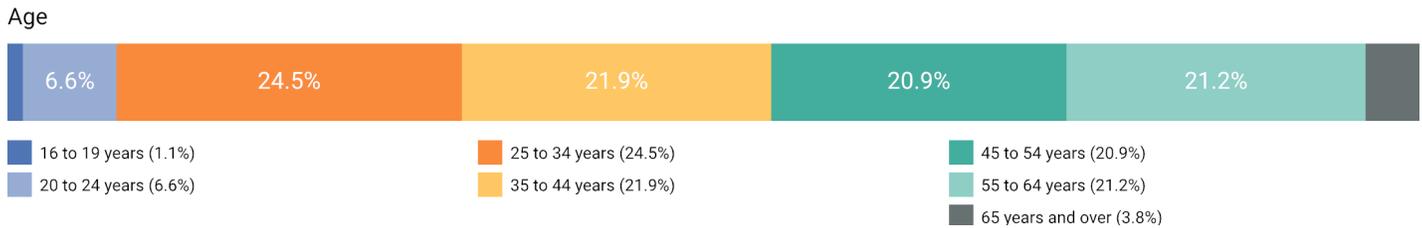
1. "Overall occupation" characteristics refer to attributes across all individuals in those occupations, not just those limited to the demographic categories shown in this table.

² Chmura adopts the New York Fed methodology of counting as underemployed only those who have acquired at least a Bachelor's degree and yet are working in an occupation that does not typically require a Bachelor's degree. In Occupation Diversity, the only occupations shown in the Underemployment table are "non-college jobs", as designated by the New York Fed. Per the New York Fed, "a job is classified as a college job if 50 percent or more of the people working in that job indicate that at least a bachelor's degree is necessary; otherwise, the job is classified as a non-college job."

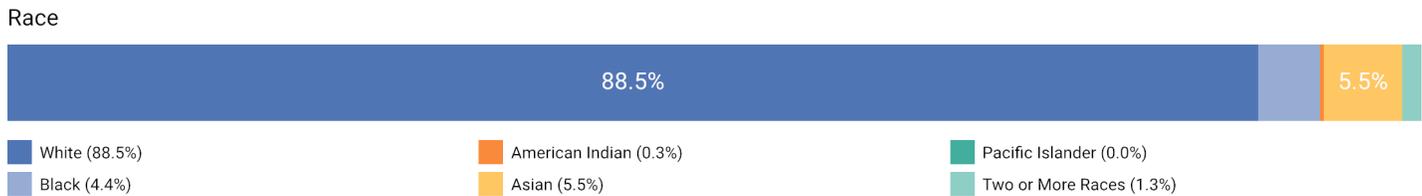
Workforce Demographics

Last year, as of 2022Q2, the Aviation and Drone Technology pathway had the smallest share of its workforce under the age of 25 out of all the Transportation pathways (4.6%), and 5% of the workforce was over 64 years old as of 2022 estimates. However, the share of the workforce under the age of 25 has increased from the prior year (7.7%) and the share over the age of 64 has decreased to 3.8% based on 2023Q2 estimates. The largest demographic group by race are White, representing 88.5% (increased by 0.3 percentage points from the previous year) of the total pathway’s workforce, with the next largest cohort being Asian talent representing 5.5% of the workforce. About 4.1% (an increase from the prior year’s 3.3%) of the pathway’s workforce are Hispanic or Latinx, and the share of female increased by 1.4 percentage points from the previous year (now 10.6%).

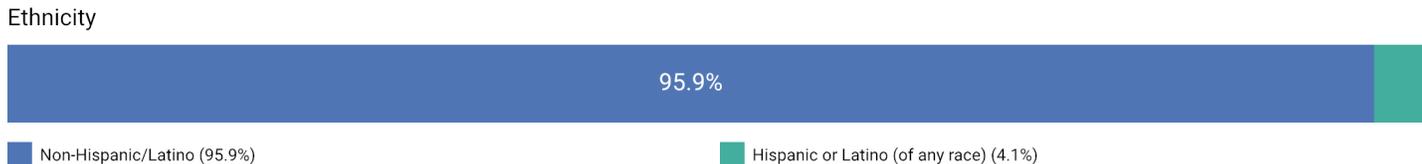
Aviation and Drone Technology Workforce Age Demographics, 2023Q2



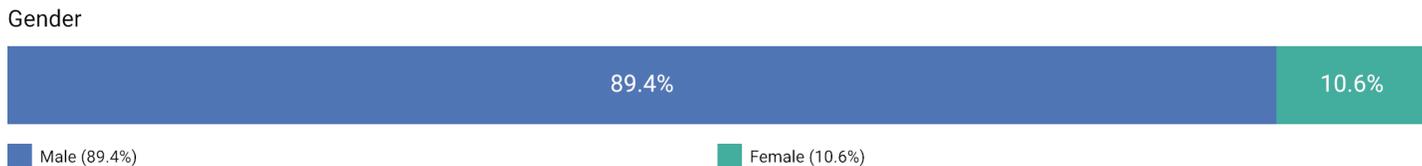
Aviation and Drone Technology Workforce Race Demographics, 2023Q2



Aviation and Drone Technology Workforce Ethnicity Demographics, 2023Q2



Aviation and Drone Technology Workforce Gender Demographics, 2023Q2



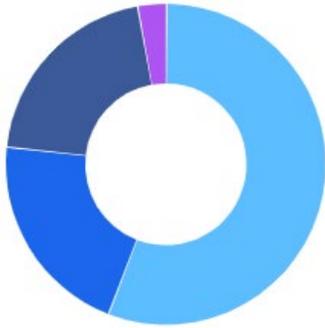
Aligned Postsecondary Programs

There were about 728 awards conferred at 30 different Minnesota postsecondary institutions in programs aligned to Aviation and Drone Technology careers in SY2022. Among these 262 were at the Associate level, and 108 were certificates that could be earned in less than two years. The average school had about 24 completions, but range from one to 84 completions. Three institutions offered programs remotely (10% of institutions), with 28 awards obtained remotely in 2022 (4% 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, SY2022

CIP Code	Title	Certificate < 1 Yr	Certificate 1+ but < 2 Yr	Associate's	Certificate 2+ but < 4 Yr	Bachelor's	Masters	Doctorate	Total Awards
15.0406	Automation Engineer Technology/Technician	21	32	100	11	0	0	0	164
47.0607	Airframe Mechanics and Aircraft Maintenance Technology/Technician	0	0	37	47	0	0	0	84
15.0303	Electrical, Electronic, and Communications Engineering Technology/Technician	12	6	42	4	3	0	0	67
14.0101	Engineering, General	0	0	0	0	65	1	0	66
14.3601	Manufacturing Engineering	0	0	0	0	23	30	0	53
15.0405	Robotics Technology/Technician	3	0	24	0	0	11	0	38
52.0203	Logistics, Materials, and Supply Chain Management	0	0	5	0	31	0	0	36
14.9999	Engineering, Other	0	0	0	0	0	30	0	30
49.0102	Airline/Commercial/Professional Pilot and Flight Crew	0	0	11	0	18	0	0	29
15.0000	Engineering Technologies/Technicians, General	0	0	7	0	22	0	0	29
15.0404	Instrumentation Technology/Technician	0	2	21	4	0	0	0	27
15.0499	Electromechanical Technologies/Technicians, Other	20	0	0	0	0	0	0	20
14.4201	Mechatronics, Robotics, and Automation Engineering	4	5	1	0	10	0	0	20
01.0205	Agricultural Mechanics and Equipment/Machine Technology/Technician	0	0	5	7	0	0	0	12
15.1502	Engineering Design	0	0	0	0	0	10	0	10
14.1301	Engineering Science	0	0	0	0	9	0	0	9
14.2701	Systems Engineering	0	0	0	0	0	9	0	9
15.0805	Mechanical/Mechanical Engineering Technology/Technician	0	0	8	0	0	0	0	8
15.9999	Engineering/Engineering-Related Technologies/Technicians, Other	0	0	0	0	0	7	0	7
47.0609	Avionics Maintenance Technology/Technician	3	0	0	0	0	0	0	3
14.1201	Engineering Physics/Applied Physics	0	0	0	0	3	0	0	3
14.3901	Geological/Geophysical Engineering	0	0	0	0	2	1	0	3
47.0608	Aircraft Powerplant Technology/Technician	0	0	1	0	0	0	0	1
49.0104	Aviation/Airway Management and Operations	0	0	0	0	0	0	0	0
15.0403	Electromechanical/Electromechanical Engineering Technology/Technician	0	0	0	0	0	0	0	0
15.0407	Mechatronics, Robotics, and Automation Engineering Technology/Technician	0	0	0	0	0	0	0	0
15.1601	Nanotechnology	0	0	0	0	0	0	0	0
00.0000	Total	63 (8.6%)	45 (6.2%)	262 (36.0%)	73 (10.0%)	186 (25.5%)	99 (13.6%)	0	728

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, <http://www.chmuraecon.com/jobseq/>. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/10/2024 at talentneuronplan.gartner.com Industry detail, skill and certification analysis, wage trends, and posting to hire analysis are from the Lightcast 2023Q4 dataset accessed at analyst.lightcast.io



Institution Type	Completions (2022)	Market Share
Public, 2-year	406	55.8%
Public, 4-year or above	152	20.9%
Private not-for-profit, 4-year or above	149	20.5%
Private for-profit, 4-year or above	21	2.9%

Over half (55.8%) of awards were conferred by public two-year institutions, with Hennepin Technical College and Dunwoody College of Technology comprising 19.6% of SY2022 awards conferred. In SY2021, Minneapolis Community and Technical College was the institution with the second greatest number of completions. Completions are up overall by 31.6% from 2012.

Aviation and Drone Technology Postsecondary Program Awards by Institution, SY2022

Institution	Completions (2022)	Growth % YOY (2022)	Market Share (2022)	IPEDS Tuition & Fees (2022)	Completions Trend (2018-2022)
Hennepin Technical College	84	-6.7%	11.5%	\$5,881	
Dunwoody College of Technology	59	-4.8%	8.1%	\$24,611	
University of St Thomas	54	3.8%	7.4%	\$50,366	
Lake Superior College	53	47.2%	7.3%	\$6,404	
Minneapolis Community and Technical College	41	-52.9%	5.6%	\$6,098	
Minnesota State University-Mankato	40	-13.0%	5.5%	\$9,444	
University of Minnesota-Twin Cities	36	24.1%	4.9%	\$15,859	
Ridgewater College	36	-10.0%	4.9%	\$6,114	
Central Lakes College-Brainerd	29	11.5%	4.0%	\$6,140	
Metropolitan State University	28	-12.5%	3.8%	\$9,684	
South Central College	26	-31.6%	3.6%	\$6,146	
University of Northwestern-St Paul	26	85.7%	3.6%	\$35,340	
Saint Paul College	25	47.1%	3.4%	\$6,318	
Bemidji State University	22	-12.0%	3.0%	\$10,130	
Academy College	21	75.0%	2.9%	\$17,997	
Alexandria Technical & Community College	21	-12.5%	2.9%	\$6,107	
Minnesota State College Southeast	21	50.0%	2.9%	\$7,490	
St Cloud Technical and Community College	20	-4.8%	2.7%	\$6,075	
Saint Cloud State University	18	-40.0%	2.5%	\$10,117	
Northland Community and Technical College	16	-27.3%	2.2%	\$6,244	
Anoka Technical College	14	7.7%	1.9%	\$6,075	
Minnesota West Community and Technical College	12	9.1%	1.6%	\$6,484	
Bethany Lutheran College	7	16.7%	1.0%	\$29,010	
Century College	7	40.0%	1.0%	\$6,105	
Minnesota State University Moorhead	4	-42.9%	0.5%	\$10,236	
Bethel University	2	100.0%	0.3%	\$41,270	
University of Minnesota-Duluth	2	0.0%	0.3%	\$14,126	
Winona State University	2	Insf. Data	0.3%	\$10,492	
Pine Technical & Community College	1	Insf. Data	0.1%	\$4,643	
Saint Mary's University of Minnesota	1	-50.0%	0.1%	\$41,150	

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, <http://www.chmuraecon.com/jobseq/>. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/10/2024 at talentneuronplan.gartner.com Industry detail, skill and certification analysis, wage trends, and posting to hire analysis are from the Lightcast 2023Q4 dataset accessed at analyst.lightcast.io

Graduate Demographics

Postsecondary program diversity varies by program across the Aviation and Drone Technology pathway. Automation Engineering Technology postsecondary programs continue to have the largest number of African American and Hispanic students who conferred awards in SY2022. Manufacturing Engineering programs have the largest number of international students, and all programs have an overrepresentation of male students.³ Overall, the total number of international students increased by seven from the previous school year. The total number of female graduates in programs aligned to the Automotive Technology pathway.

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>

Race and Gender of Graduates Receiving Postsecondary Awards in SY2022, 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	12	0	0	0	0	0	12	0	11	1
14.0101	Engineering, General	66	1	1	0	1	4	56	3	51	15
14.1201	Engineering Physics/Applied Physics	3	1	0	1	0	0	1	0	2	1
14.1301	Engineering Science	9	1	0	0	0	0	8	0	8	1
14.2701	Systems Engineering	9	2	1	0	1	0	4	1	8	1
14.3601	Manufacturing Engineering	53	10	2	0	8	1	31	1	38	15
14.3901	Geological/Geophysical Engineering	3	0	0	0	0	0	3	0	2	1
14.4201	Mechatronics, Robotics, and Automation Engineering	20	0	0	0	0	2	18	0	16	4
14.9999	Engineering, Other	30	1	2	0	1	1	24	1	17	13
15.0000	Engineering Technologies/Technicians, General	29	0	4	0	1	2	21	1	26	3
15.0303	Electrical, Electronic, and Communications Engineering Technology/Technician	67	1	6	1	17	3	35	4	53	14
15.0403	Electromechanical/Electromechanical Engineering Technology/Technician	0	0	0	0	0	0	0	0	0	0
15.0404	Instrumentation Technology/Technician	27	0	2	1	0	1	23	0	25	2
15.0405	Robotics Technology/Technician	38	2	0	0	4	2	26	4	32	6
15.0406	Automation Engineer Technology/Technician	164	2	14	0	13	16	116	3	151	13
15.0499	Electromechanical Technologies/Technicians, Other	20	0	4	0	4	1	11	0	20	0
15.0805	Mechanical/Mechanical Engineering Technology/Technician	8	0	0	0	0	0	8	0	8	0
15.1502	Engineering Design	10	2	2	0	1	0	2	3	6	4
15.1601	Nanotechnology	0	0	0	0	0	0	0	0	0	0
15.9999	Engineering/Engineering-Related Technologies/Technicians, Other	7	1	0	0	1	1	3	1	1	6
47.0607	Airframe Mechanics and Aircraft Maintenance Technology/Technician	84	2	11	0	2	5	55	9	79	5
47.0608	Aircraft Powerplant Technology/Technician	1	0	0	0	0	0	1	0	1	0
47.0609	Avionics Maintenance Technology/Technician	3	0	0	0	0	0	1	2	3	0
49.0102	Airline/Commercial/Professional Pilot and Flight Crew	29	0	0	0	1	2	24	2	26	3
49.0104	Aviation/Airway Management and Operations	0	0	0	0	0	0	0	0	0	0
52.0203	Logistics, Materials, and Supply Chain Management	36	1	6	1	3	3	21	1	27	9
All Aviation and Drone Technology Postsecondary Programs		728	27	55	4	58	44	504	36	611	117

[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 1/10/2024 at talentneuronplan.gartner.com. Industry detail, skill and certification analysis, wage trends, and posting to hire analysis are from the Lightcast 2023Q4 dataset accessed at analyst.lightcast.io

Postsecondary programs aligned to all Aviation and Drone Technology pathway occupations except for Electro-Mechanical and Mechatronics Technologists and Technicians and Avionics Technicians are underproducing graduates in comparison to national benchmarks. Each occupation in the Aviation and Drone Technology pathway except Aircraft Structure, Surfaces, Rigging, and Systems Assemblers are experiencing talent shortages. The 27 aligned programs for the Aviation and Drone Technology pathway all have a low share of BIPOC graduates, and a low share of female graduates. The share of BIPOC graduates decreased by 8.2 percentage points from the 2021 school year and the share of female graduates decreased by 0.2 percentage points from the 2021 school year.

Postsecondary Strategy Summary Table, Minnesota 2023

Occupation	Related Programs*	2023Q2 Empl	Workforce BIPOC by Race	Workforce Hispanic/Latinx	Workforce Female	Workforce Under 45	SY2022 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	<ul style="list-style-type: none"> Airline/Commercial/Professional Pilot and Flight Crew 	2,437	3.9%	3.2%	8.0%	53.9%	11	Y	0.41%	0.41%
Aircraft Mechanics and Service Technicians	<ul style="list-style-type: none"> Agricultural Mechanics and Equipment/Machine Technology/Technician Airframe Mechanics and Aircraft Maintenance Technology/Technician 	2,146	13.3%	5.8%	4.5%	53.3%	42	Y	3.0%	0.82%
Engineers, All Other	<ul style="list-style-type: none"> Engineering, General Engineering Physics/Applied Physics Engineering Science Systems Engineering Manufacturing Engineering Geological/Geophysical Engineering Mechatronics, Robotics, and Automation Engineering Engineering, Other 	1,868	16.6%	2.2%	13.0%	56.1%	0	Y	3.3%	7.0%
Commercial Pilots*	<ul style="list-style-type: none"> Airline/Commercial/Professional Pilot and Flight Crew 	1,079	2.6%	2.6%	7.9%	51.5%	11	Y	0.41%	0.41%
Air Traffic Controllers	<ul style="list-style-type: none"> Aviation/Airway Management and Operations 	553	20.8%	7.4%	19.6%	56.9%	0	Y	N/A no awards	N/A no awards
Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	<ul style="list-style-type: none"> Aircraft Powerplant Technology/Technician 	437	21.4%	6.6%	31.8%	56.2%	1	Y	0.0%	0.0%
Electro-Mechanical and Mechatronics Technologists and Technicians	<ul style="list-style-type: none"> 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 	304	16.2%	3.0%	15.3%	51.0%	298	N	11.7%	6.6%
Airfield Operations Specialists*	<ul style="list-style-type: none"> Aviation/Airway Management and Operations 	282	20.5%	7.4%	19.6%	57.2%	0	Y	0.0%	0.0%
Aircraft Cargo Handling Supervisors	<ul style="list-style-type: none"> Logistics, Materials, and Supply Chain Management 	170	25.8%	6.0%	25.4%	52.5%	5	Y	1.51%	1.2%
Avionics Technicians	<ul style="list-style-type: none"> Avionics Maintenance Technology/Technician 	94	14.3%	5.6%	4.3%	54.5%	3	N	0.3%	0.0%
Aviation and Drone Technology Pathway	All 26 aligned programs	9,370	11.5%	4.1%	10.6%	54.1%	370	Y	21.0%	16.1%
All Occupations		3,075,767	16.0%	5.4%	48.1%	56.7%	29,072		27.7%	66.0%

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 1/10/2024 at talentneuronplan.gartner.com. Industry detail, skill and certification analysis, wage trends, and posting to hire analysis are from the Lightcast 2023Q4 dataset accessed at analyst.lightcast.io

Conclusion

The Aviation and Drone Technology pathway employment forecast declined slightly in 2023, now forecasting a flat (0.0%) annual employment growth over the next five years, compared to the forecasted growth of 0.2% from 2022Q3 estimates. Of the ten occupations included in the Aviation and Drone Technology pathway, Aircraft Structure and Systems Assemblers, Air Traffic Controllers, Airline Pilots, and Aircraft Cargo Handling Supervisors are uniquely concentrated in Minnesota to a higher degree than seen in the nation overall, with location quotients of 1.52, 1.41, 1.37, and 1.16 respectively. On average, Aviation careers pay about \$125,500 per year—about \$59,400 higher than the average wage statewide across all positions. While average wages in the Aviation and Drone Technology pathway increased substantially from the prior year’s estimates (by \$10,300), average wages for several occupations within the pathway saw declines. Avionics Technicians, Aircraft Mechanics and Service Technicians, and Air Traffic Controllers saw average wages drop from the prior year’s estimates. Entry-level wages in the pathways far exceed the average entry-level wages observed across all occupations statewide, paying an average of \$80,800 annually for entry-level talent.

About 12.6% of workers employed in the Aviation and Drone Technology pathway in Minnesota are underemployed (about 1,136 underemployed people). Each of the 27 programs aligned with the Aviation and Drone Technology pathway have a low share of BIPOC graduates and a low share of female graduates. There is an opportunity to diversify student enrollment into these programs.

FAQ

How is employment forecast determined?

Forecast employment growth uses national projections from the Bureau of Labor Statistics, forecasts for 2022-2032, adapted for regional growth patterns by Chmura. Employment data are based on [occupation forecasts](#) and event-based forecasts if applicable. Forecasts are developed at the county level; therefore, for detailed (6-digit NAICS) ownership-specific industries, the forecast employment growth for a zip code or place (city, town, etc.) is taken from the forecast of the county to which it belongs.

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@realtimentalentmn.org or visit the RealTime Talent website at www.realtimentalent.org

COLLISION REPAIR

2023 Supply & Demand Analysis Overview

Published February 2024



MINNESOTA STATE
Transportation Center of Excellence

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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 7,307 people work in Collision Repair roles in Minnesota as of the second quarter of 2023—an increase of 550 workers from a year prior.

Overall employment in Minnesota grew by nearly 60,301 workers (2.0%) between the second quarter of 2022 and the second quarter of 2023. Over the past five years, employment grew by about 11,603 workers, or an 0.1% average annual growth in total employment. Over the next five years, overall employment is forecast to remain flat (0.0% average annual growth), while all Transportation Occupations together forecast moderate growth of 0.1% average annual growth. During this time frame, Collision Repair employment is anticipated to decline slightly in Minnesota, declining by 77 total jobs (-0.2% annually) due to a tight talent pool. Total baseline demand for Collision Repair talent is anticipated to be around 3,442 professionals needed to fill positions due to job exits and transfers, such as retirements and job changes.

Occupation	Current					5-Year History		5-Year Baseline Forecast				
	Empl	Avg Ann Wages ²	LQ	Unempl	Unempl Rate	Empl Change	Ann % Change	Total Demand	Exits	Transfers	Empl Change	Ann % Change
Automotive Technology Pathway	20,884	\$68,300	0.97	236	1.1%	-586	-0.6%	9,072	3,184	5,828	60	0.1%
Aviation and Drone Technology Pathway	9,370	\$125,500	0.87	135	1.5%	69	0.1%	4,559	1,602	2,976	-19	0.0%
Collision Repair Pathway	7,307	\$52,800	1.10	227	3.1%	188	0.5%	3,442	1,213	2,305	-77	-0.2%
Diesel Equipment and Truck Pathway	12,161	\$64,200	1.01	153	1.3%	152	0.3%	5,635	1,954	3,724	-43	-0.1%
Marine and Power Sports Pathway	4,284	\$48,700	0.84	159	3.7%	68	0.3%	2,574	926	1,673	-25	-0.1%
Truck Driving Pathway*	97,603	\$51,800	0.95	3,280	3.3%	2,561	0.5%	61,265	26,466	33,538	1,261	0.3%
Transportation Occupations	133,108	\$60,700	0.93	3,418	2.6%	3,212	0.5%	73,669	27,527	45,162	981	0.1%
Total - All Occupations	3,075,767	\$66,100	1.00	87,730	2.9%	11,603	0.1%	1,746,576	727,900	1,016,920	1,756	0.0%

*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.

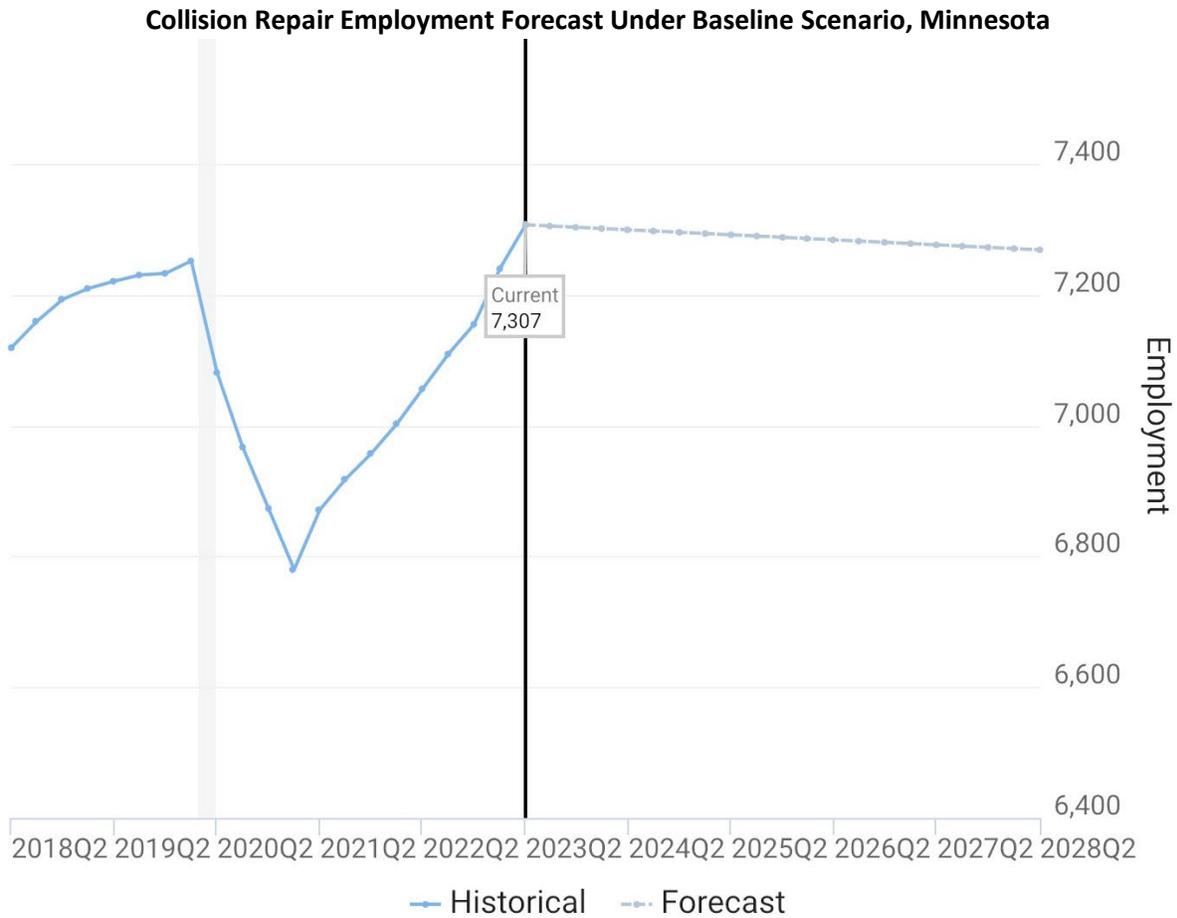
Source: [JobsEQ®](#)

Data as of 2023Q2 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).

Minnesota’s job market cooled somewhat in 2023 from 2021 and 2022’s relatively strong recovery. Unemployment rates have begun to rise again as the market stabilizes and shifts in response to new realities. 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 -0.2% average annual decline in overall employment through the second quarter of 2028. Continuing an initially strong recovery in early 2021 and 2022, 2023 saw strong employment gains in this pathway (an increase of 3.6% from the prior year).



Source: JobsEQ®, Data as of 2023Q2, The shaded areas of the graph represent national recessions.

Industry/Occupation Mix

Collision Repair talent is primarily concentrated in the Automotive Repair and Maintenance industry (45.6%), increasing in its concentration from estimates in 2022 by 0.4 percentage points. The next highest industry of employment concentration is Automobile Dealers (7.4%), followed by general Coating, Engraving, Heat Treating, and Allied Activities as well as Architectural and Structural Metals Manufacturing employers. These top industries (Automotive Repair and Maintenance, Automobile Dealers, and Coating, Engraving, Heat Treating, and Allied Activities) account for the most total demand for this talent over the next ten years.

Top Industry Distribution for Collision Repair Pathway Occupations in Minnesota

NAICS Code	Industry Title	CURRENT		10-YEAR DEMAND				Total Demand
		% of Occ Empl	Empl	Avg Ann Wages	Exits	Transfers	Empl Growth	
8111	Automotive Repair and Maintenance	45.6%	3,333	\$56,500	1,199	2,010	11	3,220
4411	Automobile Dealers	7.4%	542	\$52,900	194	299	-59	434
3328	Coating, Engraving, Heat Treating, and Allied Activities	5.8%	426	\$43,800	124	286	-23	388
3323	Architectural and Structural Metals Manufacturing	3.4%	249	\$50,900	75	173	3	251
3339	Other General Purpose Machinery Manufacturing	2.6%	190	\$50,900	57	131	-1	187
3399	Other Miscellaneous Manufacturing	2.0%	146	\$50,900	43	99	-5	137
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	2.0%	146	\$50,900	42	97	-9	131
3219	Other Wood Product Manufacturing	1.6%	117	\$43,300	35	81	1	117
3331	Agriculture, Construction, and Mining Machinery Manufacturing	1.6%	117	\$50,900	35	79	-3	111
3362	Motor Vehicle Body and Trailer Manufacturing	1.6%	115	\$48,800	35	78	-1	111
3222	Converted Paper Product Manufacturing	1.3%	94	\$56,700	26	61	-11	76
5613	Employment Services	1.2%	90	\$39,700	27	61	1	90
3261	Plastics Product Manufacturing	1.2%	86	\$43,900	26	60	1	87
3369	Other Transportation Equipment Manufacturing	1.1%	83	\$52,700	22	50	-20	52
3329	Other Fabricated Metal Product Manufacturing	1.1%	78	\$50,900	23	53	-2	75
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	1.0%	77	\$52,400	27	45	-3	69
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	1.0%	73	\$46,000	22	50	0	72
3391	Medical Equipment and Supplies Manufacturing	1.0%	70	\$52,300	21	49	2	72
3332	Industrial Machinery Manufacturing	0.9%	68	\$50,900	20	47	0	67
3324	Boiler, Tank, and Shipping Container Manufacturing	0.8%	62	\$50,900	19	43	1	63
-	All Others	15.7%	1,146	-	351	758	-36	1,073

Source: JobsEQ®
 Data as of 2023Q2. 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 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 with a location quotient of 1.17. On average, Collision Repair careers pay about \$52,800 (a decrease from \$54,100 last year)—about \$13,300 below than the average wage statewide across all positions. Each of the occupations in the Collision Repair pathway is forecasted to decline over the next five years, due in large part to the local talent shortage.

		Current					5-Year Baseline Forecast				
SOC	Occupation	Empl	Avg Ann Wages ²	LQ	Unempl	Unempl Rate	Total Demand	Exits	Transfers	Empl Change	Ann % Change
51-9124	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	3,826	\$50,900	1.16	148	3.8%	1,815	566	1,301	-52	-0.3%
49-3021	Automotive Body and Related Repairers	3,076	\$55,200	1.05	70	2.3%	1,441	595	869	-23	-0.1%
49-3022	Automotive Glass Installers and Repairers	405	\$53,100	0.96	9	2.1%	185	52	135	-2	-0.1%
Collision Repair Pathway		7,307	\$52,800	1.10	227	3.1%	3,442	1,213	2,305	-77	-0.2%
Total - All Occupations		3,075,767	\$66,100	1.00	87,730	2.9%	1,746,576	727,900	1,016,920	1,756	0.0%

Source: [JobsEQ®](#)

Data as of 2023Q2 unless noted otherwise

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1. Data based on a four-quarter moving average unless noted otherwise.

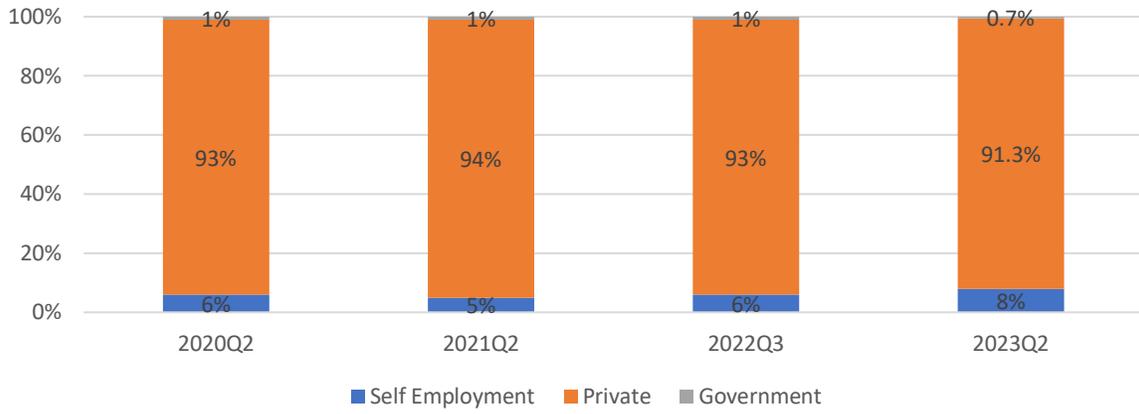
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Employment Types

About 91.3% (down from last year's 93%) of people employed in Collision Repair careers in Minnesota work for private employers, while an estimated 8% are self-employed (a slight increase from 2022). The remaining 0.7% work for state, federal, or local government entities.

Employment Types, Minnesota 2020-2023



Wage Analysis

The Collision Repair pathway overall saw declines in average wages, with average wages declining by \$1,300. ¹ Two out of the three occupations within this pathway saw declines in average wages, while Automotive Glass Installers and Repairers saw an increase of \$4,300 from 2022Q3 estimates. Entry-level wages in the pathway exceed the average entry-level wages observed across all occupations statewide by over \$5,000, paying an average of \$37,900 annually for entry-level talent. Education and training requirements are similar across the different occupations in this pathway, with each occupation requiring a High School Diploma or equivalent and either long-term or moderate-term on the job training.

Collision Repair Pathway Wages and Experience Level Requirements, MN, 2023Q2

SOC	Occupation	Empl Count	Mean	Entry Level	Experienced	Percentiles					Education and Training		
						10%	25%	50% (Median)	75%	90%	Typical Entry-Level Education	Previous Work Experience	Typical On-the-Job Training
49-3021	Automotive Body and Related Repairers	3,826	\$55,200	\$38,300	\$63,600	\$35,300	\$44,000	\$53,000	\$64,700	\$76,900	HS/GED	None	Long-term OJT
49-3022	Automotive Glass Installers and Repairers	3,076	\$53,100	\$43,000	\$58,200	\$41,600	\$46,000	\$51,800	\$62,400	\$74,400	HS/GED	None	Mod-term OJT training
51-9124	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	405	\$50,900	\$37,100	\$57,800	\$35,600	\$40,900	\$48,700	\$58,300	\$67,200	HS/GED	None	Mod-term OJT
16417	Collision Repair Pathway	7,307	\$52,800	\$37,900	\$60,300	\$35,800	\$42,500	\$50,600	\$61,200	\$71,700			
	Total - All Occupations	3,075,767	\$66,100	\$32,800	\$82,700	\$30,300	\$37,500	\$51,700	\$77,900	\$113,000			

Wages in the Collision pathway vary across the three regions of Rural Greater Minnesota, Urban Greater Minnesota, and the 7-county MSP Metro. The MSP Metro region has the highest wages across experience levels and percentiles, and contains 54% of the pathway's total statewide employment. The Rural Greater Minnesota region and the Urban Greater Minnesota region have very close average and median wage rates; Average Collision Repair Pathway wages in the Greater Minnesota regions are just over \$5,000 below the average pathway wages in the MSP Metro.

Collision Repair Pathway Wages, 2023Q2

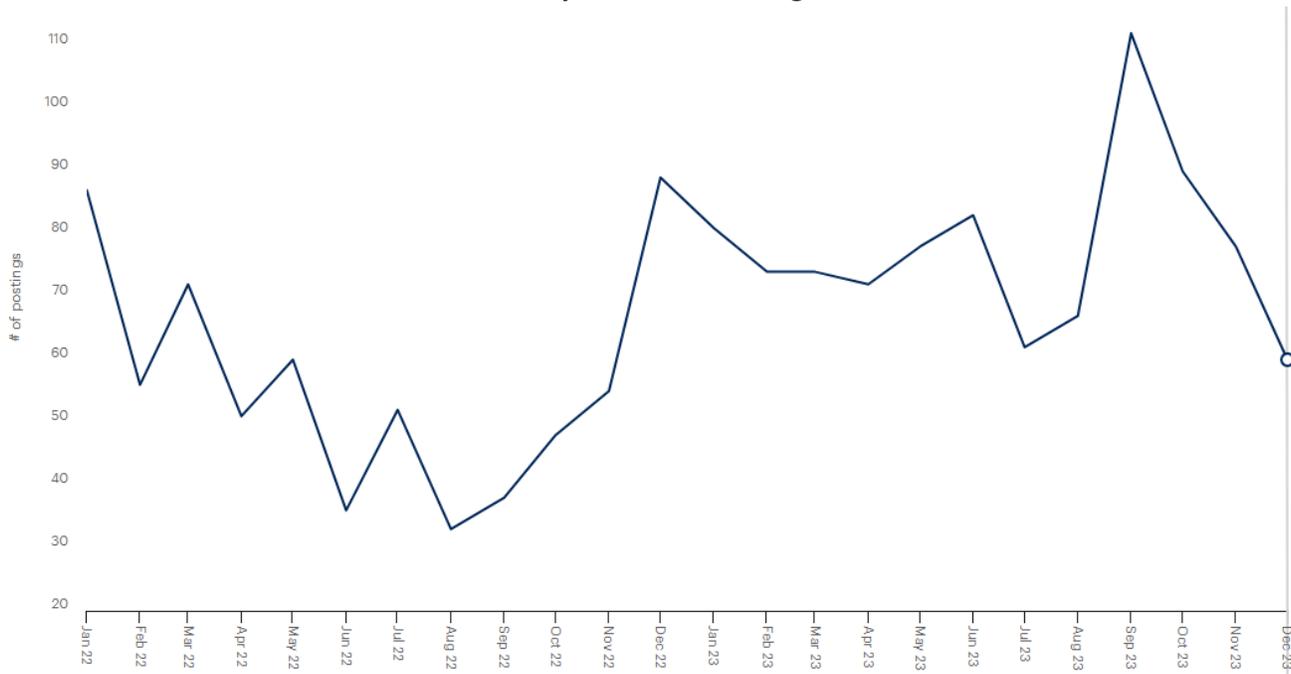
Region	Empl Count	Mean	Entry Level	Experienced	Percentiles				
					10%	25%	50% (Median)	75%	90%
Rural Greater Minnesota	2,234	\$49,600	\$35,300	\$56,700	\$33,400	\$39,200	\$48,200	\$59,200	\$67,400
Urban Greater Minnesota	1,029	\$49,700	\$36,200	\$56,500	\$34,000	\$40,500	\$47,300	\$56,900	\$65,400
MSP Metro	3,981	\$55,400	\$40,900	\$62,700	\$39,100	\$45,000	\$52,400	\$63,400	\$74,300
Minnesota	7,307	\$52,800	\$37,900	\$60,300	\$35,800	\$42,500	\$50,600	\$61,200	\$71,700

¹ Methodology for estimating wages changed between the 2022 and 2023 reports and are new as of the 2023Q2 dataset used here. They are estimated for the most current quarter of data available (2023Q2) using a combination of data from the Bureau of Labor Statistics and Chmura RTI wages, and no longer lag by a calendar year.

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 931 new jobs, an increase of 38% from the prior 12-month period (2022), following what had been a 21% decrease between 2021 and 2022. The share of positions advertised by staffing and temp agencies in the Collision Repair pathway increased in 2023, following a drop in 2022, 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 substantially from the prior year’s estimates, rising to a median hourly rate \$25.05 as of 2023 and there three hires per every one unique job posting advertised based on Lightcast estimates.

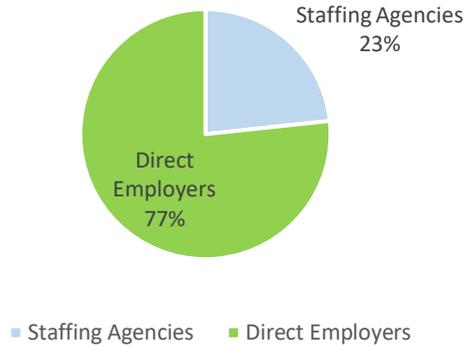
Volume of Career Pathway Online Job Postings in 2022 and 2023



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

Employer	Percent Change between 2022 and 2023
1. Caliber Collision Centers	114%
2. Safelite Autoglass	27%
3. John Harris Body Shops	New Entrant
4. Gerber Collision and Glass	New Entrant
5. CNH Industrial	2,300%
6. DOHERTY	229%
7. Dent Wizard	69%
8. Stemper Auto Body	New Entrant
9. Luther Automotive Services	New Entrant
10. Walsler Automotive Group	100%

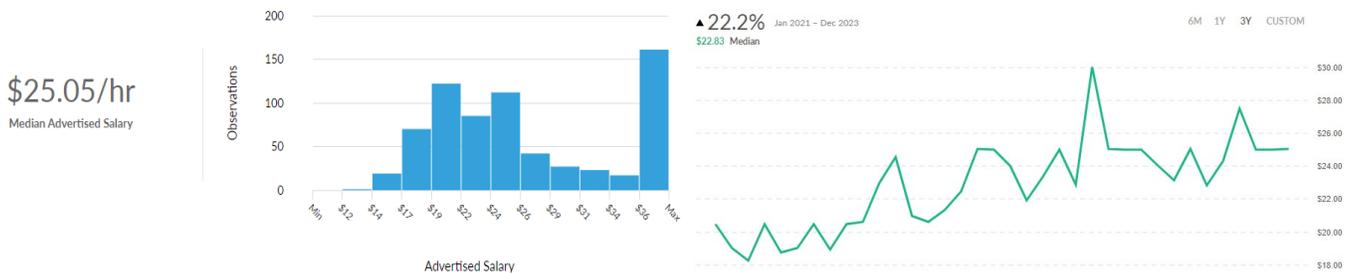
New Job Postings Advertised in Minnesota by Employer Type



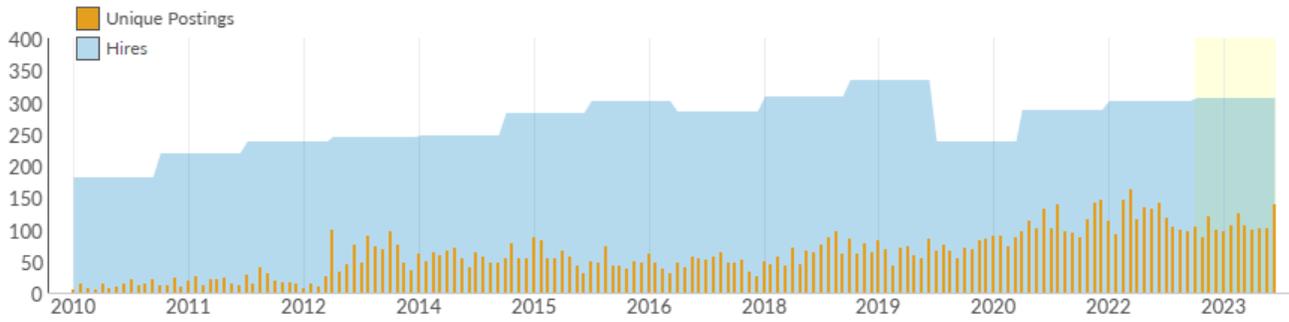
New Job Postings by Industry or Employer Type

Industry	Total/Unique (Jan 2023 - Dec 2023)	Posting Intensity	Median Posting Duration
Automotive Body, Paint, and Interior Repair and Maintenance	874 / 192	5 : 1	26 days
Employment Placement Agencies	270 / 161	2 : 1	27 days
New Car Dealers	148 / 62	2 : 1	32 days
General Automotive Repair	414 / 62	7 : 1	25 days
Automotive Glass Replacement Shops	162 / 54	3 : 1	27 days
Automobile and Other Motor Vehicle Merchant Wholesalers	150 / 37	4 : 1	27 days
Motor Vehicle Body Manufacturing	53 / 36	1 : 1	38 days
Farm and Garden Machinery and Equipment Merchant Wholesalers	53 / 35	2 : 1	23 days
Heavy Duty Truck Manufacturing	30 / 26	1 : 1	33 days
Temporary Help Services	60 / 18	3 : 1	20 days

Pathway Advertised Salary Range



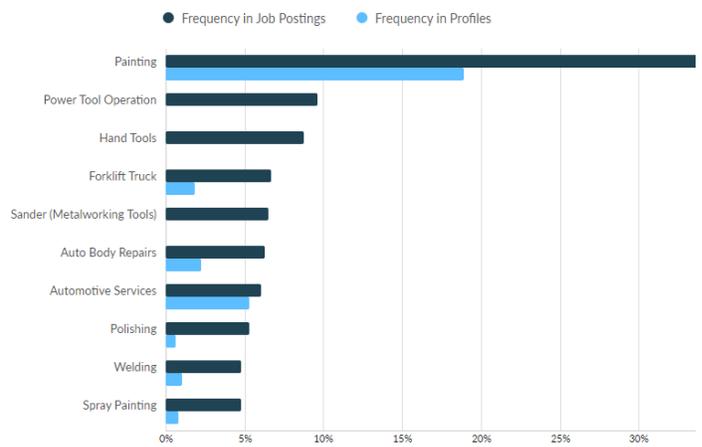
Monthly Ratio of Unique Job Postings to Estimated Hires



Top Common Skills



Top Specialized Skills



Top Certifications and Qualifications

Qualification	Postings with Qualification
Valid Driver's License	324
Automotive Service Excellence (ASE) Certification	96
Forklift Certification	6
Commercial Driver's License (CDL)	4
Cardiopulmonary Resuscitation (CPR) Certification	3
Respirator Fit Test Certification	3
Assistant Laboratory Animal Technician	3
30-Hour OSHA General Industry Card	2
Certificate Of Clinical Competence In Speech-Language Pathology (CCC-SLP)	2
Security Clearance	2

Talent Supply Detail

Talent Unemployment, Underemployment, and Educational Attainment

At an overall pathway unemployment rate of 3.1% (an increase from last year's 2.6%), there are about 227 unemployed Collision Repair professionals statewide. An additional 515 Collision Repair professionals are underemployed, meaning they are working in roles for which they are overqualified by education or experience.²

Collision Repair Pathway in Minnesota

SOC	Occupation	Empl (Place of Residence)								Overall Occupation ¹		
		< 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	13.4%	46.2%	16.8%	17.2%	5.4%	0.7%	0.2%	3,028	185	70	2.3%
49-3022	Automotive Glass Installers and Repairers	10.0%	52.7%	24.8%	7.1%	4.6%	0.2%	0.6%	394	21	9	2.1%
51-9124	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	12.1%	47.4%	17.9%	13.4%	7.6%	1.4%	0.2%	3,785	309	148	3.8%
Collision Repair Pathway		12.5%	47.2%	17.8%	14.6%	6.5%	1.1%	0.2%	7,207	515	227	3.1%
Total - All Occupations		4.8%	20.9%	15.2%	14.1%	30.7%	10.4%	3.9%	2,976,622	526,677	87,730	2.9%

Source: JobsEQ®

Data as of 2023Q2 unless noted otherwise

Note: Figures may not sum due to rounding.

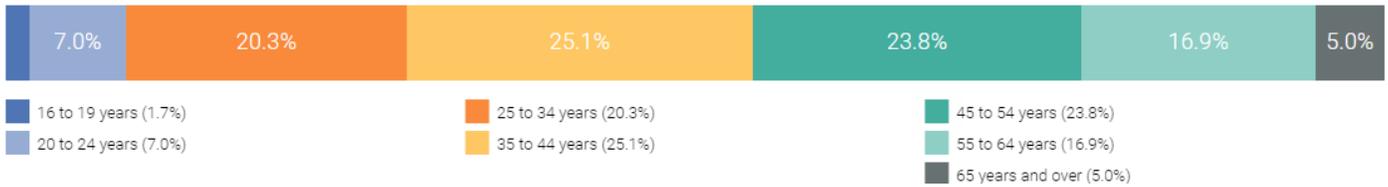
1. "Overall occupation" characteristics refer to attributes across all individuals in those occupations, not just those limited to the demographic categories shown in this table.

² Chmura adopts the New York Fed methodology of counting as underemployed only those who have acquired at least a Bachelor's degree and yet are working in an occupation that does not typically require a Bachelor's degree. In Occupation Diversity, the only occupations shown in the Underemployment table are "non-college jobs", as designated by the New York Fed. Per the New York Fed, "a job is classified as a college job if 50 percent or more of the people working in that job indicate that at least a bachelor's degree is necessary; otherwise, the job is classified as a non-college job."

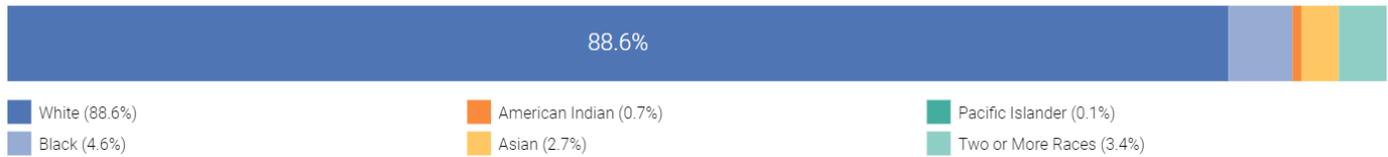
Workforce Demographics

About 8.7% (a decrease of 1.3 percentage points from 2022Q3 estimates) of the Collision Repair workforce is under the age of 25, and 5.0% are over 64 years old (an increase of 1.5 percentage points from 2022Q3 estimates). This signals a potentially aging workforce. The largest demographic group by race are White, representing 88.6% (increasing by 0.5 percentage points) of the total pathway’s workforce, with the next largest cohort being Black talent representing 4.6% of the workforce. About 10.2% of the pathway’s workforce are Hispanic or Latinx (increased by 1.7 percentage points) and 10.8% are female, a substantial increase of 4.5 percentage points.

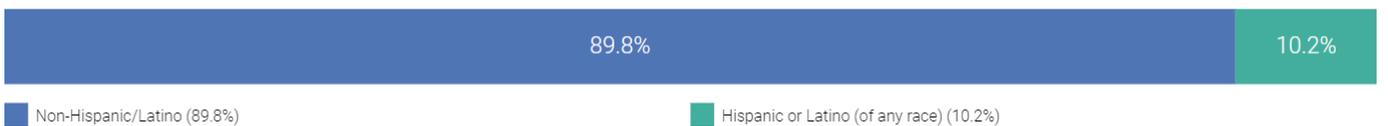
Collision Repair Workforce Age Demographics, 2023Q2



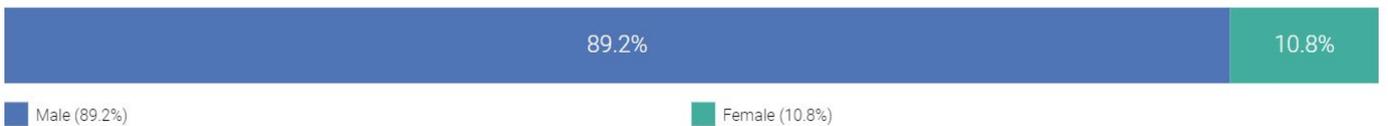
Collision Repair Workforce Race Demographics, 2023Q2



Collision Repair Workforce Ethnicity Demographics, 2023Q2



Collision Repair Workforce Gender Demographics, 2023Q2

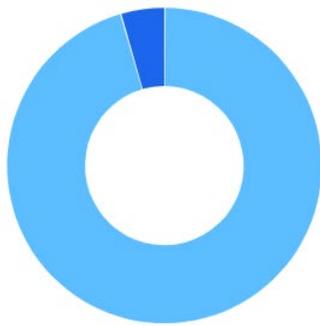


Aligned Postsecondary Programs

There were about 154 awards conferred at 11 different Minnesota postsecondary institutions in programs aligned to Collision Repair careers in SY2022. Among, these 97 were certificates that could be earned in less than two years, 31 were at the Associate level, and 26 were certificates that could be earned in more than two years, but less than four years. The average school had about 14 completions, but range from one to 68 completions. No programs were delivered remotely.

Collision Repair Postsecondary Program Awards by Level, SY2022

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	67	30	31	26	0	0	0	154
	Total	67 (43.5%)	30 (19.5%)	31 (17.5%)	26 (16.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	154 (100%)



Institution Type	Completions (2022)	Market Share
Public, 2-year	147	95.5%
Private not-for-profit, 4-year or above	7	4.5%

Nearly all of the SY2022 awards (95.5%) were conferred by public 2-year institutions. Just seven awards were conferred by private not-for-profit 4-year or above institutions, despite all completions being for certificate or 2-year awards. Completions are down overall by -16.3% from 2012.

Collision Repair Postsecondary Program Awards by Institution, SY2022

Institution	Completions (2022)	Growth % YOY (2022)	Market Share (2022) 	IPEDS Tuition & Fees (2022)	Completions Trend (2018-2022)
 Hennepin Technical College	68	-11.7%	44.2%	\$5,881	
 Dakota County Technical College	18	80.0%	11.7%	\$6,419	
 Northland Community and Technical College	15	-11.8%	9.7%	\$6,244	
 Ridgewater College	10	0.0%	6.5%	\$6,114	
 Century College	9	-43.8%	5.8%	\$6,105	
 Lake Superior College	8	-50.0%	5.2%	\$6,404	
 South Central College	7	250.0%	4.5%	\$6,146	
 Dunwoody College of Technology	7	0.0%	4.5%	\$24,611	
 St Cloud Technical and Community College	6	50.0%	3.9%	\$6,075	
 Minnesota State College Southeast	5	150.0%	3.2%	\$7,490	
 Riverland Community College	1	Insf. Data	0.6%	\$6,249	

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 SY2022.³ The Autobody/Collision and Repair Technology/Technician program is more diverse than some of the other transportation programs with 46% (up from 42% in SY2021) of program graduates being BIPOC.

Race and Gender of Graduates Receiving Postsecondary Awards in SY2022, Minnesota

CIP Code	Description	All 2022 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	154	0	23	9	10	19	83	10	134	20
All Collision Repair Postsecondary Programs		154	0	23	9	10	19	83	10	134	20

IPEDS SY2022 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>

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Occupations in the Collision Repair pathway do not typically require a 2-year degree or higher, and Minnesota postsecondary institutions are not underproducing credentials for Collision Repair professionals. Coating, Painting, and Spraying Machine Setters, Operators, and Tenders, Automotive Body and Related Repairers, and Automotive Glass Installers and Repairers are experiencing talent shortages. The aligned program (Autobody/Collision and Repair Technology/Technician) for the Collision Repair pathway has a very high share of BIPOC graduates (nearly 50%), but a low share of female graduates. The share of BIPOC graduates increased by 4 percentage points from the 2021 school year.

Postsecondary Strategy Summary Table, Minnesota 2023

Occupation	Related Programs*	2023Q2 Empl	Workforce BIPOC by Race	Workforce Hispanic/Latinx	Workforce Female	Workforce Under 45	SY2022 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	<ul style="list-style-type: none"> Autobody/Collision and Repair Technology/Technician 	3,785	12.7%	12.2%	16.6%	59.9%	154	N	46.0%	13.0%
Automotive Body and Related Repairers	<ul style="list-style-type: none"> Autobody/Collision and Repair Technology/Technician 	3,028	9.9%	8.4%	4.3%	47.4%	154	N	46.0%	13.0%
Automotive Glass Installers and Repairers	<ul style="list-style-type: none"> Autobody/Collision and Repair Technology/Technician 	394	10.8%	5.5%	5.2%	52.7%	154	N	46.0%	13.0%
Collision Repair Pathway	All aligned programs	7,307	11.4%	10.2%	10.8%	54.1%	154	N	46.0%	13.0%
Total - All Occupations		2,976,622	16.0%	5.4%	48.1%	56.7%	30,032		34.1%	66.0%

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.

Conclusion

Postsecondary programs aligned to the Collision Repair pathway are not underproducing graduates in comparison to national benchmarks, yet completions are down overall by -16.3% from 2012. There is one new institution (Riverland Community College) with one completion aligned to the Collision Repair pathway in SY2022. However, all the occupations in the Collision Repair pathway are experiencing talent shortages, a low share of female workers (even with a sizeable increase in the share of female workers, up 4.5 percentage points from 2022Q3) and female graduates. Graduates of Collision Repair programs have become more diverse over the past few years, with about 50% of graduates identifying as BIPOC by race and ethnicity (increased by four percentage points from SY2021).

The unemployment rate for the Collision Repair pathway increased to 3.1% compared to 2.6% in 2022Q3. Unemployment and underemployment numbers increased dramatically for the Coating, Painting, and Spraying Machine Setters, Operators, and Tenders occupation. The percentage of people who are self-employed in the Collision Repair pathway has continued to increase and is now at 8%.

With increasing unemployment and underemployment in the Collision Repair pathway, addressing lower wages and career advancement potential in this pathway could potentially help with attracting additional talent.

FAQ

How is employment forecast determined?

Forecast employment growth uses national projections from the Bureau of Labor Statistics, forecasts for 2022-2032, adapted for regional growth patterns by Chmura. Employment data are based on [occupation forecasts](#) and event-based forecasts if applicable. Forecasts are developed at the county level; therefore, for detailed (6-digit NAICS) ownership-specific industries, the forecast employment growth for a zip code or place (city, town, etc.) is taken from the forecast of the county to which it belongs.

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.

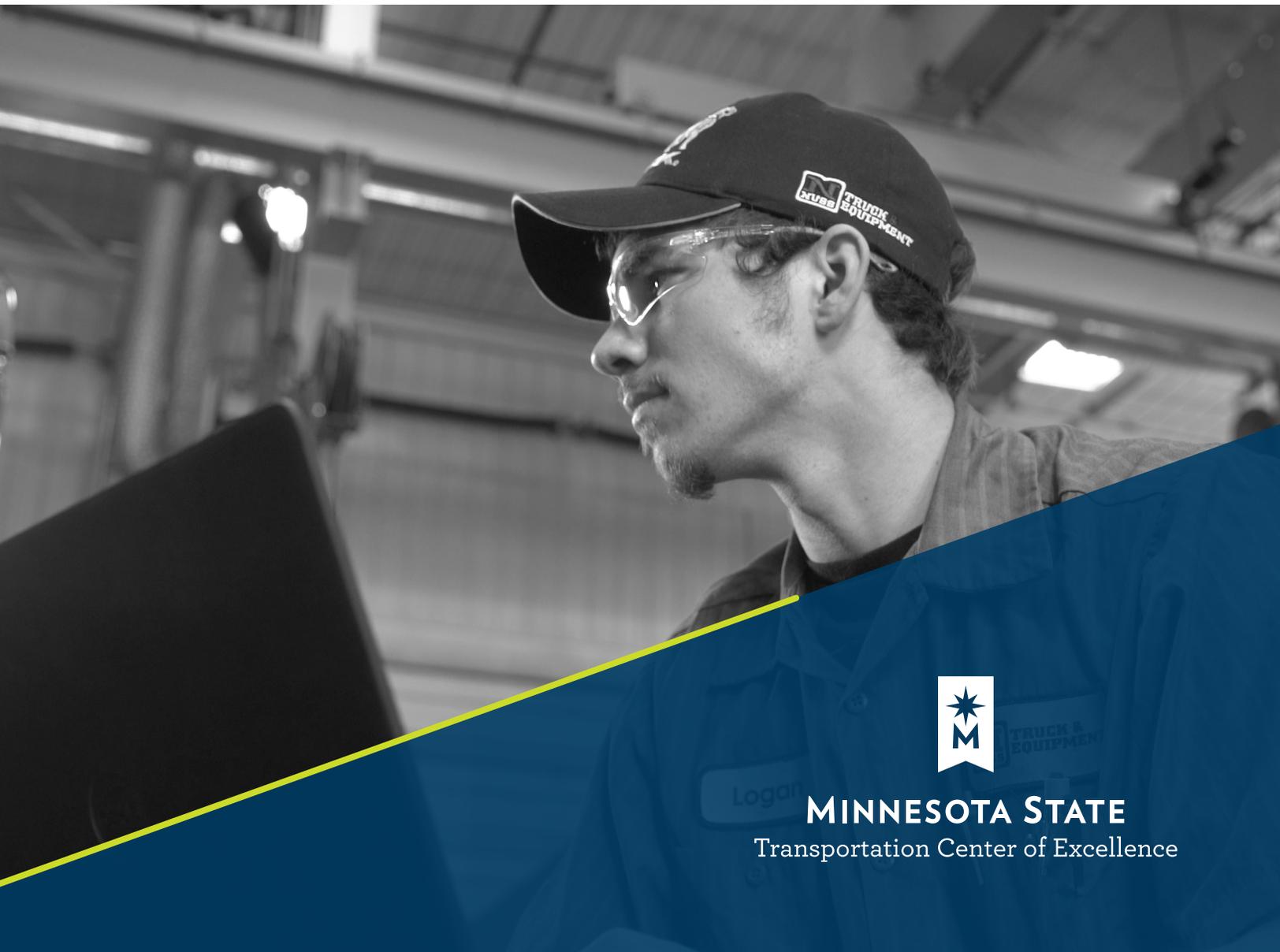
Who created this report?

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

DIESEL EQUIPMENT & TRUCK

2023 Supply & Demand Analysis Overview

Published February 2024



MINNESOTA STATE

Transportation Center of Excellence

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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 12,161 people work in Diesel Equipment and Truck roles in Minnesota as of the second quarter of 2023—down about 357 workers from a year prior and continuing the trend of declining employment in the pathway.

Overall employment in Minnesota has grown by nearly 60,301 workers (2.0%) between the second quarter of 2022 and the second quarter of 2023, and the five-year forecast growth is flat at 0.0% and 1,756 expansion of employment as of the most current baseline forecasts. During this time frame, Diesel, Equipment, and Truck pathway employment is anticipated decline slightly by about 43 jobs (-0.1% on average annually). Total baseline demand for Diesel, Equipment, and Truck talent is anticipated to be around 5,635 professionals needed to fill positions due to job exits and transfers, such as retirements and job changes.

Occupation	Current					5-Year History		5-Year Baseline Forecast				
	Empl	Avg Ann Wages ²	LQ	Unempl	Unempl Rate	Empl Change	Ann % Change	Total Demand	Exits	Transfers	Empl Change	Ann % Change
Automotive Technology Pathway	20,884	\$68,300	0.97	236	1.1%	-586	-0.6%	9,072	3,184	5,828	60	0.1%
Aviation and Drone Technology Pathway	9,370	\$125,500	0.87	135	1.5%	69	0.1%	4,559	1,602	2,976	-19	0.0%
Collision Repair Pathway	7,307	\$52,800	1.10	227	3.1%	188	0.5%	3,442	1,213	2,305	-77	-0.2%
Diesel Equipment and Truck Pathway	12,161	\$64,200	1.01	153	1.3%	152	0.3%	5,635	1,954	3,724	-43	-0.1%
Marine and Power Sports Pathway	4,284	\$48,700	0.84	159	3.7%	68	0.3%	2,574	926	1,673	-25	-0.1%
Truck Driving Pathway*	97,603	\$51,800	0.95	3,280	3.3%	2,561	0.5%	61,265	26,466	33,538	1,261	0.3%
Transportation Occupations	133,108	\$60,700	0.93	3,418	2.6%	3,212	0.5%	73,669	27,527	45,162	981	0.1%
Total - All Occupations	3,075,767	\$66,100	1.00	87,730	2.9%	11,603	0.1%	1,746,576	727,900	1,016,920	1,756	0.0%

*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®](#)

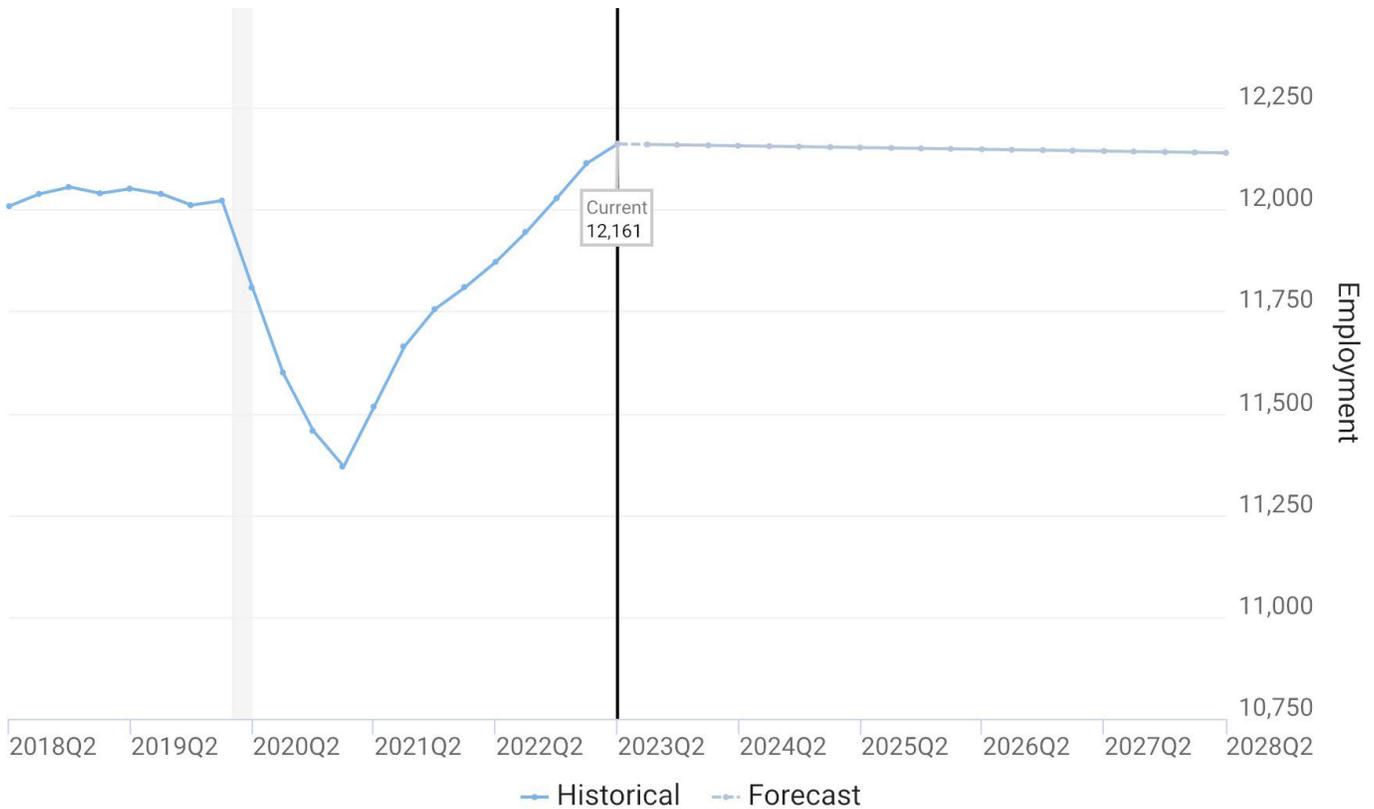
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Minnesota saw a strong job market throughout 2023 and elevated recruitment among employers across most sectors. As the available talent pool was exhausted, unemployment rates dropped dramatically across critical roles and in many scenarios demand far 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 sufficient talent across a large share of occupations in this career pathway. The pathway forecast now shows a -0.1% decline in overall employment by the second quarter of 2028. This is down from last year's baseline estimates of 0.3% growth.

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



Source: JobsEQ®, Data as of 2023Q2, The shaded areas of the graph represent national recessions.

Industry/Occupation Mix

Diesel, Equipment, and Truck talent is primarily concentrated in the Machinery, Equipment, and Supplies Merchant Wholesalers Industry (17.8%), increasing slightly in concentration in 2023 by 0.9 percentage points. The next highest industry of employment concentration is General Freight Trucking (7.6%), followed by Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers (5.6%). 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

NAICS Code	Industry Title	CURRENT		10-YEAR DEMAND				Total Demand
		% of Occ Empl	Empl	Avg Ann Wages	Exits	Transfers	Empl Growth	
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	17.8%	2,159	\$58,200	706	1,378	104	2,188
4841	General Freight Trucking	7.6%	918	\$63,900	296	526	-34	789
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	5.6%	678	\$65,800	228	401	30	659
8111	Automotive Repair and Maintenance	5.1%	621	\$62,000	204	359	-5	558
2389	Other Specialty Trade Contractors	5.0%	611	\$75,900	186	408	-23	571
4854	School and Employee Bus Transportation	4.3%	528	\$60,600	172	303	-11	463
9211	Executive, Legislative, and Other General Government Support	3.4%	416	\$64,100	135	244	-8	371
2373	Highway, Street, and Bridge Construction	3.3%	398	\$71,500	123	254	-17	360
2122	Metal Ore Mining	3.0%	363	\$78,600	112	233	-18	328
2123	Nonmetallic Mineral Mining and Quarrying	2.6%	313	\$67,500	96	217	-13	300
4842	Specialized Freight Trucking	2.3%	286	\$63,900	92	164	-11	245
4851	Urban Transit Systems	2.1%	252	\$66,100	82	144	-7	218
2371	Utility System Construction	2.0%	238	\$68,100	76	166	10	252
5621	Waste Collection	2.0%	238	\$63,100	80	143	15	238
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	1.8%	223	\$62,800	72	137	-1	208
4882	Support Activities for Rail Transportation	1.8%	220	\$58,100	70	137	-4	203
5321	Automotive Equipment Rental and Leasing	1.7%	206	\$60,200	66	116	-11	171
4821	Rail Transportation	1.5%	177	\$78,200	56	109	-6	158
6111	Elementary and Secondary Schools	1.4%	174	\$63,500	56	99	-8	147
9221	Justice, Public Order, and Safety Activities	0.8%	94	\$64,300	30	55	-2	83
-	All Others	25.1%	3,049	-	971	1,856	-65	2,762

Source: JobsEQ®
 Data as of 2023Q2. 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 double the concentration locally than seen in the nation overall. Other occupations highly concentrated in Minnesota include Excavating and Loading Machine Operators and Bus and Truck Mechanics. On average, careers in this pathway pay about \$64,200—about \$1,900 below the average wage statewide across all positions. However, average wages in the pathway increased by \$2,300 since 2022. Demand was high over the past year, seeing employment growth of 2.4% since the second quarter of 2022. Employment in the pathway is forecast to decline statewide by about -0.1% through the second quarter of 2028.

Diesel, Equipment, and Truck Pathway in Minnesota – Baseline Forecast, 2023Q2¹

SOC	Occupation	Current					5-Year Baseline Forecast				
		Empl	Avg Ann Wages ²	LQ	Unempl	Unempl Rate	Total Demand	Exits	Transfers	Empl Change	Ann % Change
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	6,356	\$63,500	1.15	78	1.2%	2,791	1,036	1,821	-67	-0.2%
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	2,176	\$69,200	0.67	28	1.3%	1,079	352	693	34	0.3%
49-3041	Farm Equipment Mechanics and Service Technicians	1,769	\$54,500	2.05	22	1.2%	845	283	557	5	0.1%
47-5022	Excavating and Loading Machine and Dragline Operators, Surface Mining	834	\$73,800	1.22	2	0.2%	410	127	296	-13	-0.3%
49-3043	Rail Car Repairers	417	\$58,200	1.05	5	1.2%	196	66	131	-2	-0.1%
53-7021	Crane and Tower Operators	320	\$78,000	0.35	11	3.2%	166	45	123	-1	-0.1%
47-5023	Earth Drillers, Except Oil and Gas	289	\$65,900	0.75	7	2.6%	148	45	103	0	0.0%
	Diesel Equipment and Truck Pathway	12,161	\$64,200	1.01	153	1.3%	5,635	1,954	3,724	-43	-0.1%
	Total - All Occupations	3,075,767	\$66,100	1.00	87,730	2.9%	1,746,576	727,900	1,016,920	1,756	0.0%

Source: [JobsEQ®](#)

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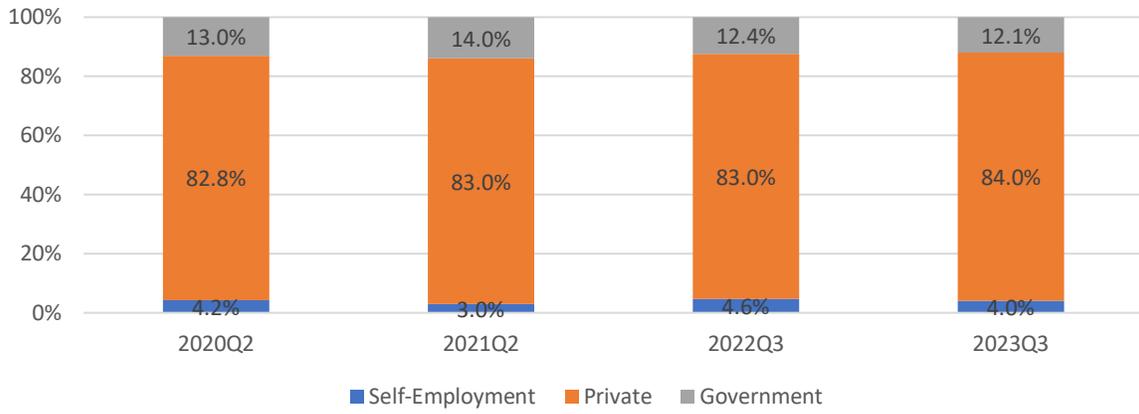
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Employment Types

About 84% of people employed in Diesel, Equipment, and Truck careers in Minnesota work for private employers, while an estimated 4% are self-employed (similar to 2022). The remaining 12% work for state, federal, or local government entities.

Employment Types, Minnesota 2020-2023



Wage Analysis

Diesel, Equipment, and Truck careers saw some wage gains across the pathway, with average wages rising by about \$2,300 from prior estimates.¹ Entry-level wages in the pathway exceed the average entry-level wages observed across all occupations statewide, paying an average of \$47,300 annually for entry-level talent.

Education and training requirements vary slightly across the different occupations in this pathway, with all occupations typically requiring only a High School equivalency and zero to five years of work experience. Typical on-the-job training is either moderate or long term for all occupations.

Diesel, Equipment, and Truck Pathway Wages and Experience Level Requirements, MN, 2023Q2

SOC	Occupation	Mean	Entry Level	Experienced	Percentiles					Education and Training		
					10%	25%	50% (Median)	75%	90%	Typical Entry-Level Education	Previous Work Experience	Typical On-the-Job Training
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	\$63,500	\$47,000	\$71,800	\$44,200	\$52,900	\$62,400	\$74,400	\$85,800	HS/GED	None	Long-term OJT
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	\$78,000	\$52,200	\$90,800	\$48,900	\$59,700	\$72,800	\$103,500	\$119,300	HS/GED	None	Long-term OJT
49-3041	Farm Equipment Mechanics and Service Technicians	\$65,900	\$46,400	\$75,700	\$42,600	\$53,900	\$64,400	\$72,000	\$86,800	HS/GED	None	Long-term OJT
47-5022	Excavating and Loading Machine and Dragline Operators, Surface Mining	\$73,800	\$51,700	\$84,900	\$48,400	\$59,100	\$71,800	\$87,400	\$96,600	HS/GED	Less than 5 years	Mod-term OJT
49-3043	Rail Car Repairers	\$54,500	\$41,900	\$60,800	\$38,500	\$48,100	\$53,800	\$62,700	\$68,400	HS/GED	None	Long-term OJT
53-7021	Crane and Tower Operators	\$69,200	\$50,500	\$78,500	\$46,800	\$57,900	\$69,000	\$80,000	\$89,900	HS/GED	Less than 5 years	Mod-term OJT
47-5023	Earth Drillers, Except Oil and Gas	\$58,200	\$46,900	\$63,800	\$45,600	\$49,600	\$53,300	\$68,900	\$78,200	HS/GED	Less than 5 years	Long-term OJT
	Diesel Equipment and Truck Pathway	\$64,200	\$47,300	\$72,600	\$44,200	\$53,600	\$63,000	\$75,100	\$85,400			
	Total - All Occupations	\$66,100	\$32,800	\$82,700	\$30,300	\$37,500	\$51,700	\$77,900	\$113,000			

Source: [JobsEQ®](#) Wage data represent the average for all Covered Employment

Wages in the Diesel, Equipment, and Truck pathway vary across the three regions of Rural Greater Minnesota, Urban Greater Minnesota, and the 7-county MSP Metro. The MSP Metro region has the highest wages across experience levels and percentiles and contains 48% of the pathway's total statewide employment. Wages in the Urban Greater Minnesota region, while lower than those in the MSP Metro, are higher than for Rural Greater Minnesota across experience levels and percentiles.

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, <http://www.chmuraecon.com/jobseq/>. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/11/2024 at talentneuronplan.gartner.com. Industry detail, skill and certification analysis, wage trends, and posting to hire analysis are from the Lightcast 2023Q4 dataset accessed at analyst.lightcast.io

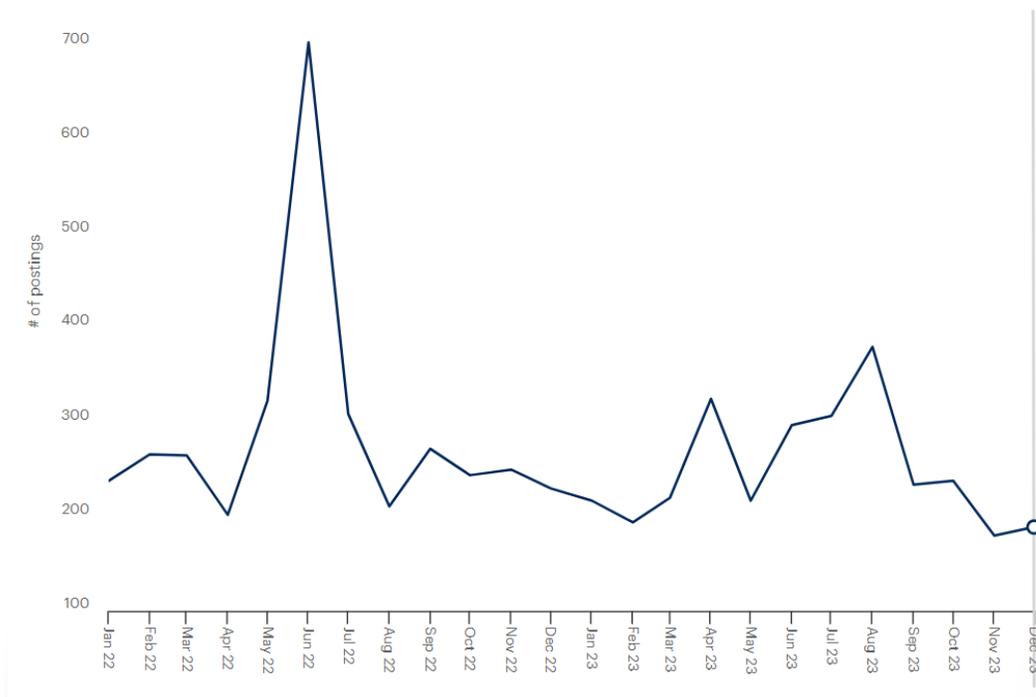
Diesel, Equipment, and Truck Pathway Wages, 2023Q2

Region	Empl Count	Mean	Entry Level	Experienced	Percentiles				
					10%	25%	50% (Median)	75%	90%
Rural Greater Minnesota	3,828	\$57,600	\$43,000	\$64,900	\$39,700	\$49,000	\$56,500	\$67,000	\$74,700
Urban Greater Minnesota	2,247	\$61,700	\$45,900	\$69,600	\$43,300	\$51,600	\$61,200	\$70,300	\$80,100
MSP Metro	5,698	\$69,500	\$53,300	\$77,500	\$50,500	\$59,100	\$67,800	\$81,400	\$89,400
Minnesota	12,161	\$64,200	\$47,300	\$72,600	\$44,200	\$53,600	\$63,000	\$75,100	\$85,400

Job Posting Trends

Data in this section focuses on jobs newly advertised between January 1 and December 31, 2023 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 2023Q4 dataset. Overall, there were 2,970 new jobs advertised in Diesel, Equipment, and Truck pathway careers during this time frame, a decrease of -16% from the prior 12-month period (2022). The share of positions advertised by staffing and temp agencies in the Diesel, Equipment, and Truck pathway decreased back to levels similar to 2021 (11%), implying an easing of the challenges seen in 2022 in finding talent in this career. Posted wages increased to an average \$31.38 per hour as of 2023, and there were only an average of three hires per every one unique job posting advertised based on Lightcast estimates.

Volume of Career Pathway Online Job Postings in 2022 and 2023



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

Employer	Percent Change between 2022 and 2023
1. PENSKE	160%
2. Ryder	13%
3. Army	100%
4. Ruan Transportation	4200%
5. ZIEGLER	-11%
6. Waste Management	-44%
7. John Deere	22%
8. Ziegler Caterpillar	-21%
9. Sysco	20%
10. XPO Logistics, Inc	-50%

New Job Postings Advertised in Minnesota by Employer Type

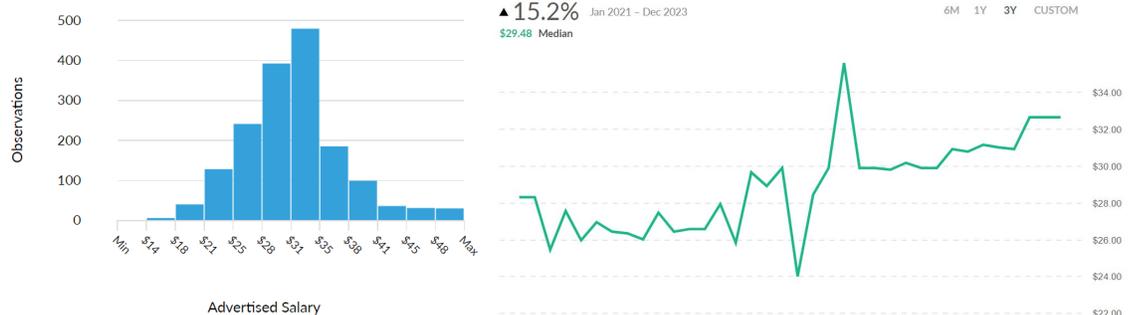


New Job Postings by Industry or Employer Type

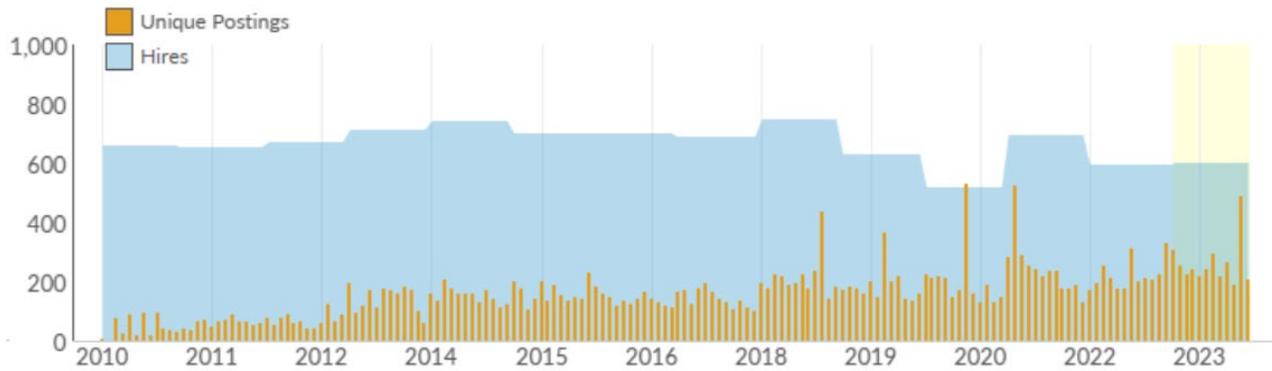
Industry	Total/Unique (Jan 2023 - Dec 2023)	Posting Intensity	Median Posting Duration
General Freight Trucking, Long-Distance, Truckload	3,637 / 263	14 : 1	25 days
Employment Placement Agencies	377 / 257	1 : 1	28 days
Solid Waste Collection	608 / 173	4 : 1	35 days
Process, Physical Distribution, and Logistics Consulting Services	5,040 / 163	31 : 1	41 days
Truck, Utility Trailer, and RV (Recreational Vehicle) Rental and Leasing	282 / 108	3 : 1	23 days
General Automotive Repair	589 / 80	7 : 1	34 days
Other Grocery and Related Products Merchant Wholesalers	363 / 71	5 : 1	47 days
Hardware Retailers	250 / 69	4 : 1	36 days
New Car Dealers	739 / 67	11 : 1	20 days
Automobile and Other Motor Vehicle Merchant Wholesalers	235 / 55	4 : 1	31 days

Pathway Advertised Salary Range

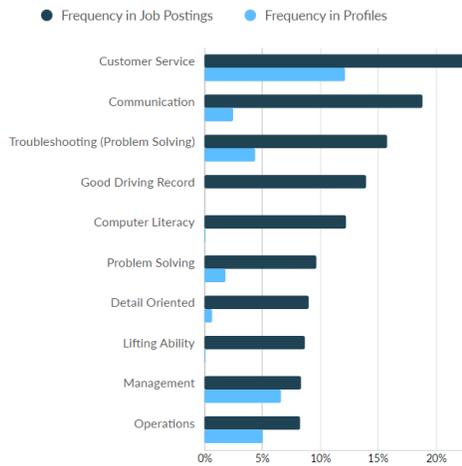
\$31.38/hr
Median Advertised Salary



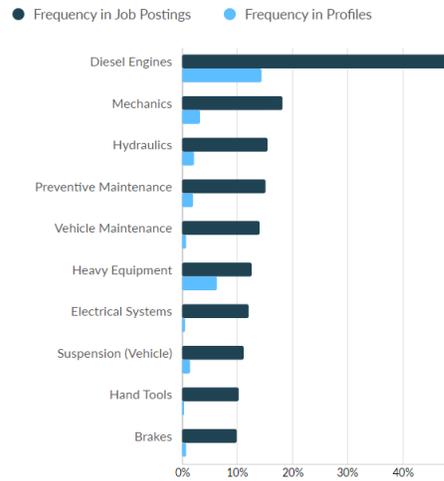
Monthly Ratio of Unique Job Postings to Estimated Hires



Top Common Skills



Top Specialized Skills



Top Certifications and Qualifications

Qualification	Postings with Qualification
Valid Driver's License	1,016
Commercial Driver's License (CDL)	462
Automotive Service Excellence (ASE) Certification	386
CDL Class A License	329
HVAC Certification	56
CDL Class B License	39
ASE Medium-Heavy Truck Certification	39
DOT Certification	37
Forklift Certification	19
EPA 608 Technician Certification	15

Talent Supply Detail

Talent Unemployment, Underemployment, and Educational Attainment

At an overall pathway unemployment rate of 1.3%, there are about 153 unemployed Diesel Equipment Truck professionals statewide. An additional 745 Diesel Equipment Truck professionals are underemployed—meaning they are working in roles for which they are overqualified by education or experience.²

Diesel, Equipment, and Truck Pathway in Minnesota

SOC	Occupation	Empl (Place of Residence)								Overall Occupation ¹		
		< 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	11.3%	52.9%	17.4%	10.9%	7.2%	0.2%	0.2%	820	58	2	0.2%
47-5023	Earth Drillers, Except Oil and Gas	11.4%	52.6%	17.3%	10.9%	7.4%	0.2%	0.2%	280	22	7	2.6%
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	7.2%	41.9%	19.1%	25.2%	5.8%	0.7%	0.2%	6,172	386	78	1.2%
49-3041	Farm Equipment Mechanics and Service Technicians	6.0%	43.8%	19.0%	25.5%	4.8%	0.7%	0.2%	1,744	79	22	1.2%
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	6.2%	42.7%	19.6%	24.4%	5.8%	0.9%	0.3%	2,114	142	28	1.3%
49-3043	Rail Car Repairers	6.6%	42.5%	19.5%	23.7%	6.3%	1.1%	0.4%	406	32	5	1.2%
53-7021	Crane and Tower Operators	5.5%	54.1%	19.4%	12.5%	7.1%	1.1%	0.2%	320	27	11	3.2%
	Diesel Equipment and Truck Pathway	7.2%	43.7%	19.0%	23.4%	5.8%	0.7%	0.2%	11,856	745	153	1.3%
	Total - All Occupations	4.8%	20.9%	15.2%	14.1%	30.7%	10.4%	3.9%	2,976,622	526,677	87,730	2.9%

Source: JobsEQ®

Data as of 2023Q2 unless noted otherwise

Note: Figures may not sum due to rounding.

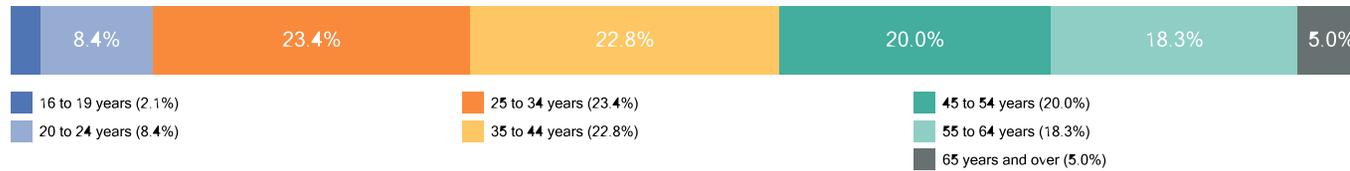
1. "Overall occupation" characteristics refer to attributes across all individuals in those occupations, not just those limited to the demographic categories shown in this table.

² Chmura adopts the New York Fed methodology of counting as underemployed only those who have acquired at least a Bachelor's degree and yet are working in an occupation that does not typically require a Bachelor's degree. In Occupation Diversity, the only occupations shown in the Underemployment table are "non-college jobs", as designated by the New York Fed. Per the New York Fed, "a job is classified as a college job if 50 percent or more of the people working in that job indicate that at least a bachelor's degree is necessary; otherwise, the job is classified as a non-college job."

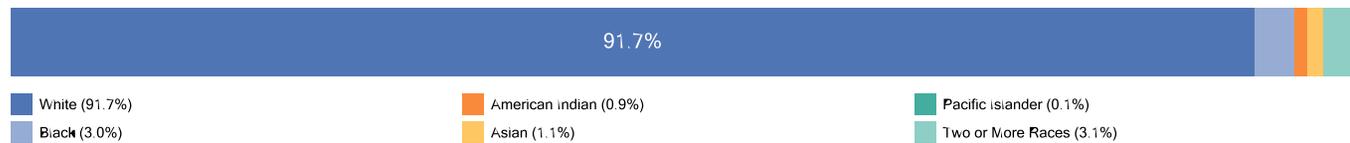
Workforce Demographics

About 10.5% of the Diesel Equipment Truck workforce is under the age of 25, and 5.0% are over 64 years old. More of the workforce in 2023 is between 25-44 years old (46.2%) than in 2022 (43.5%). Similar to 2022, the largest demographic group by race are White, representing 91.7% of the total pathway's workforce, with the next largest cohort being talent identifying as two or more races, representing 3.1% of the workforce. Just over 5% of the pathway's workforce are Hispanic or Latinx, and less than 2% are female.

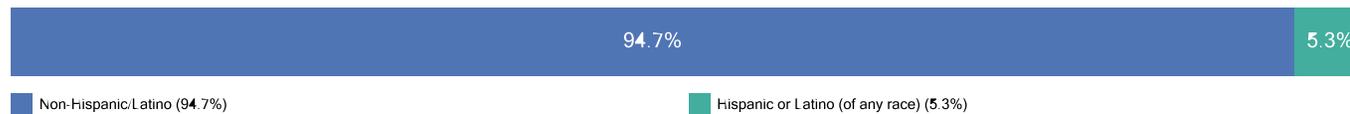
Diesel, Equipment, and Truck Workforce Age Demographics, 2023Q2



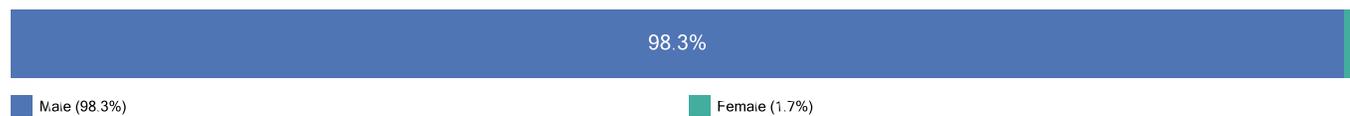
Diesel, Equipment, and Truck Workforce Race Demographics, 2023Q2



Diesel, Equipment, and Truck Workforce Ethnicity Demographics, 2023Q2



Diesel, Equipment, and Truck Workforce Gender Demographics, 2023Q2

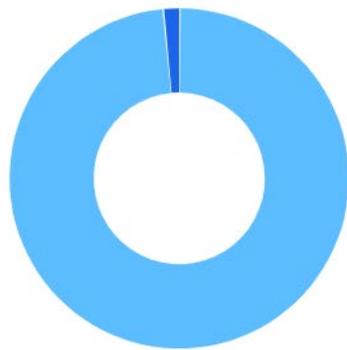


Aligned Postsecondary Programs

There were 256 awards conferred at 14 different Minnesota postsecondary institutions in programs aligned to Diesel, Equipment, and Truck careers in SY2022. Among these, 106 were certificates that could be earned in more than two but less than four years, while 97 were at the Associate level. The average school had about 18 completions, but schools range from two to 67 completions. No programs were delivered remotely.

Diesel, Equipment, and Truck Postsecondary Program Awards by Level, SY2022

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
01.0201	Agricultural Mechanization, General	0	0	0	0	4	0	0	4
01.0204	Agricultural Power Machinery Operation	0	1	0	0	0	0	0	1
01.0205	Agricultural Mechanics and Equipment/Machine Technology/Technician	0	0	5	7	0	0	0	12
47.0302	Heavy Equipment Maintenance Technology/Technician	2	0	19	10	0	0	0	31
47.0399	Heavy/Industrial Equipment Maintenance Technologies/Technicians, Other	0	0	0	0	0	0	0	0
47.0605	Diesel Mechanics Technology/Technician	0	33	35	22	0	0	0	90
47.0613	Medium/Heavy Vehicle and Truck Technology/Technician	4	9	38	21	0	0	0	72
49.0202	Construction/Heavy Equipment/Earthmoving Equipment Operation	0	0	0	46	0	0	0	46
	Total	6 (2.3%)	43 (16.8%)	97 (37.9%)	106 (41.4%)	4 (1.6%)	0 (0%)	0 (0%)	256



Institution Type	Completions (2022)	Market Share
Public, 2-year	252	98.4%
Public, 4-year or above	4	1.6%

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, <http://www.chmuraecon.com/jobseq/>. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/11/2024 at talentneuronplan.gartner.com. Industry detail, skill and certification analysis, wage trends, and posting to hire analysis are from the Lightcast 2023Q4 dataset accessed at analyst.lightcast.io

Nearly all (98.4%) SY2022 awards were conferred at public two-year institutions, with the largest number of completions in SY2022 at Central Lakes College-Brainerd, followed by the Dakota County Technical College (26.2% and 18.8% respectively of related awards conferred). Completions are down overall by 4% from 2018.

Diesel, Equipment, and Truck Postsecondary Program Awards by Institution, SY2022

Completions by Institution

Institution	Completions (2022)	Growth % YOY (2022)	Market Share (2022)	IPEDS Tuition & Fees (2022)	Completions Trend (2018-2022)
Central Lakes College-Brainerd	67	-33.7%	26.2%	\$6,140	
Dakota County Technical College	48	9.1%	18.8%	\$6,419	
Alexandria Technical & Community College	32	-3.0%	12.5%	\$6,107	
Hennepin Technical College	21	-22.2%	8.2%	\$5,881	
St Cloud Technical and Community College	18	50.0%	7.0%	\$6,075	
Minnesota West Community and Technical College	16	-30.4%	6.3%	\$6,484	
Minnesota State Community and Technical College	11	83.3%	4.3%	\$5,900	
Riverland Community College	10	0.0%	3.9%	\$6,249	
Minnesota North College	9	-10.0%	3.5%	\$5,970	
South Central College	9	125.0%	3.5%	\$6,146	

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, <http://www.chmuraecon.com/jobseq/>. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/18/2024 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 remain the most diverse by race and ethnicity, similar to SY2021. However, all programs continue to have an overrepresentation of male students, with just 11 graduates statewide from all aligned programs this year being female.

Race and Gender of Graduates Receiving Postsecondary Awards in SY2022, Minnesota

CIP Code	Description	All 2022 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	4	0	0	0	0	0	4	0	4	0
01.0204	Agricultural Power Machinery Operation	1	0	0	0	0	0	1	0	1	0
01.0205	Agricultural Mechanics and Equipment/Machine Technology/Technician	12	0	0	0	0	0	12	0	11	1
47.0302	Heavy Equipment Maintenance Technology/Technician	31	0	1	1	0	0	25	4	29	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	90	1	0	3	0	5	76	5	87	3
47.0613	Medium/Heavy Vehicle and Truck Technology/Technician	72	1	7	0	2	3	51	8	69	3
49.0202	Construction/Heavy Equipment/Earthmoving Equipment Operation	46	0	0	0	0	0	43	3	44	2
All Diesel, Equipment, and Truck Postsecondary Programs		256	2	8	4	2	8	212	20	245	11

IPEDS SY2022 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>

Postsecondary programs aligned to Bus and Truck Mechanics and Diesel Engine Specialists and Farm Equipment Mechanics and Service Technicians are underproducing graduates in comparison to national benchmarks. These two occupations, along with Mobile Heavy Equipment Mechanics, are also experiencing moderate graduate shortages. The eight aligned programs for the Diesel, Equipment, and Truck pathway all have very low shares of BIPOC graduates and of female graduates. The share of BIPOC graduates in aligned programs increased by 2.7 percentage points from the 2021 school year. However, the share of graduates that are female was relatively steady, with a 0.2 percentage point decrease from the 2021 school year (down from 4.5%). The Bus and Truck Mechanics and Diesel Engine Specialist occupation has the highest volume of employment and the highest number related graduates; there were 90 graduates specifically from Diesel Mechanics Technology/Technician in Minnesota during the 2022 school year, plus another 72 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 1/18/2024 at talentneuronplan.gartner.com

Postsecondary Strategy Summary Table, Minnesota 2023

Occupation	Related Programs*	2023Q2 Empl	Workforce BIPOC by Race	Workforce Hispanic/Latinx	Workforce Female	Workforce Under 45	SY2022 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	<ul style="list-style-type: none"> Construction/Heavy Equipment/Earthmoving Equipment Operation 	820	8.6%	10.4%	5.2%	56.8%	46	N	6.5%	4.3%
Earth Drillers, Except Oil and Gas	<ul style="list-style-type: none"> Construction/Heavy Equipment/Earthmoving Equipment Operation 	280	9.4%	10.7%	5.5%	57.5%	46	N	6.5%	4.3%
Bus and Truck Mechanics and Diesel Engine Specialists	<ul style="list-style-type: none"> Diesel Mechanics Technology/Technician Medium/Heavy Vehicle and Truck Technology/Technician 	6,172	10.7%	5.5%	1.3%	56.4%	162	Y	21.6%	3.7%
Farm Equipment Mechanics and Service Technicians	<ul style="list-style-type: none"> Agricultural Mechanics and Equipment/Machine Technology/Technician Agricultural Mechanization, General Agricultural Power Machinery Operation 	1,744	3.7%	4.1%	1.4%	57.7%	13	Y	0%	5.9%
Mobile Heavy Equipment Mechanics, Except Engines	<ul style="list-style-type: none"> Heavy Equipment Maintenance Technology/Technician Agricultural Mechanics and Equipment/Machine Technology/Technician 	2,114	5.5%	3.7%	1.4%	59.1%	43	N	14%	0%
Rail Car Repairers	<ul style="list-style-type: none"> Heavy Equipment Maintenance Technology/Technician 	406	7.6%	4.3%	1.4%	60.7%	31	N	19.4%	6.5%
Crane and Tower Operators	<ul style="list-style-type: none"> Construction/Heavy Equipment/Earthmoving Equipment Operation 	320	3.2%	2.5%	0.9%	36.9%	46	N	6.5%	4.3%
Diesel Equipment and Truck Pathway	All nine aligned programs	11,856	8.3%	5.3%	1.7%	56.7%	252	Y	17.2%	4.3%
All Occupations		2,976,622	16.0%	5.4%	48.1%	56.7%	30,032		34.1%	66.0%

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

Conclusion

The Diesel, Equipment, and Truck pathway employment forecast declined slightly in 2023, now forecasting a slight decrease of -0.1% average annual employment over the next five years. Of the seven occupations included in the Diesel, Equipment, and Truck pathway, three (Farm Equipment Mechanics and Service Technicians; Excavating and Loading Machine and Dragline Operators, Surface Mining; Bus and Truck Mechanics and Diesel Engine Specialists) are uniquely concentrated in Minnesota to a higher degree than seen in the nation overall, with location quotients of 2.05, 1.22, and 1.15, respectively. The percentage of people employed by private employers in Diesel, Equipment, and Truck careers has increased slightly from prior years (84% compared to 83% in 2022). This comes from a slight decrease in both self-employment and government employment. Average wages increased significantly across the pathway statewide as occurred the past two years, rising by nearly \$2,300 from prior year estimates.

About 6.2% of workers employed in the Diesel, Equipment, and Truck pathway in Minnesota are underemployed (about 745 underemployed people). As in prior years, the institution with the largest number of completions was the Central Lakes College-Brainerd, with 67 completions in SY2022. The following programs are prime for exploration of certificate or two-year program growth or development given local employer demand and underproduction of graduates in the state: Diesel Mechanics Technology/Technician, Medium/Heavy Vehicle and Truck Technology/Technician, Agricultural Mechanics and Equipment/Machine Technology/Technician, General Agricultural Mechanization, and Agricultural Power Machinery Operation. Each of the eight programs aligned with the Diesel, Equipment, and Truck pathway have a low share of BIPOC graduates and a low share of female graduates, showcasing the opportunity to diversify student enrollment into these programs.

FAQ

How is employment forecast determined?

Forecast employment growth uses national projections from the Bureau of Labor Statistics, forecasts for 2022-2032, adapted for regional growth patterns by Chmura. Employment data are based on [occupation forecasts](#) and event-based forecasts if applicable. Forecasts are developed at the county level; therefore, for detailed (6-digit NAICS) ownership-specific industries, the forecast employment growth for a zip code or place (city, town, etc.) is taken from the forecast of the county to which it belongs.

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

MARINE & POWERSPORTS

2023 Supply & Demand Analysis Overview

Published February 2024



MINNESOTA STATE
Transportation Center of Excellence

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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 including industrial equipment maintenance, outdoor power equipment maintenance, and small engine, motorboat, and motorcycle mechanics, serving a variety of industries. In all, about 4,284 people work in Marine and Power Sports roles in Minnesota as of the second quarter of 2023—a 3.6% increase (148 workers) from a year prior (2022Q2).

Overall employment in Minnesota grew by nearly 60,301 workers (2.0%) between the second quarter of 2022 and the second quarter of 2023. Over the past five years, employment grew by about 11,603 workers, or an 0.1% average annual growth in total employment. Over the next five years, overall employment is forecast to remain flat (0.0% average annual growth), while all Transportation Occupations together forecast moderate growth of 0.1% average annual growth. During this time frame, Marine and Power Sports employment is anticipated to decline slightly, declining by about 25 jobs (-0.1% annually). Total baseline demand for Marine and Power Sports talent is anticipated to be around 2,574 professionals needed to fill positions due to job exits and transfers, such as retirements and job changes.

Occupation	Current					5-Year History		5-Year Baseline Forecast				
	Empl	Avg Ann Wages ²	LQ	Unempl	Unempl Rate	Empl Change	Ann % Change	Total Demand	Exits	Transfers	Empl Change	Ann % Change
Automotive Technology Pathway	20,884	\$68,300	0.97	236	1.1%	-586	-0.6%	9,072	3,184	5,828	60	0.1%
Aviation and Drone Technology Pathway	9,370	\$125,500	0.87	135	1.5%	69	0.1%	4,559	1,602	2,976	-19	0.0%
Collision Repair Pathway	7,307	\$52,800	1.10	227	3.1%	188	0.5%	3,442	1,213	2,305	-77	-0.2%
Diesel Equipment and Truck Pathway	12,161	\$64,200	1.01	153	1.3%	152	0.3%	5,635	1,954	3,724	-43	-0.1%
Marine and Power Sports Pathway	4,284	\$48,700	0.84	159	3.7%	68	0.3%	2,574	926	1,673	-25	-0.1%
Truck Driving Pathway*	97,603	\$51,800	0.95	3,280	3.3%	2,561	0.5%	61,265	26,466	33,538	1,261	0.3%
Transportation Occupations	133,108	\$60,700	0.93	3,418	2.6%	3,212	0.5%	73,669	27,527	45,162	981	0.1%
Total - All Occupations	3,075,767	\$66,100	1.00	87,730	2.9%	11,603	0.1%	1,746,576	727,900	1,016,920	1,756	0.0%

*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.

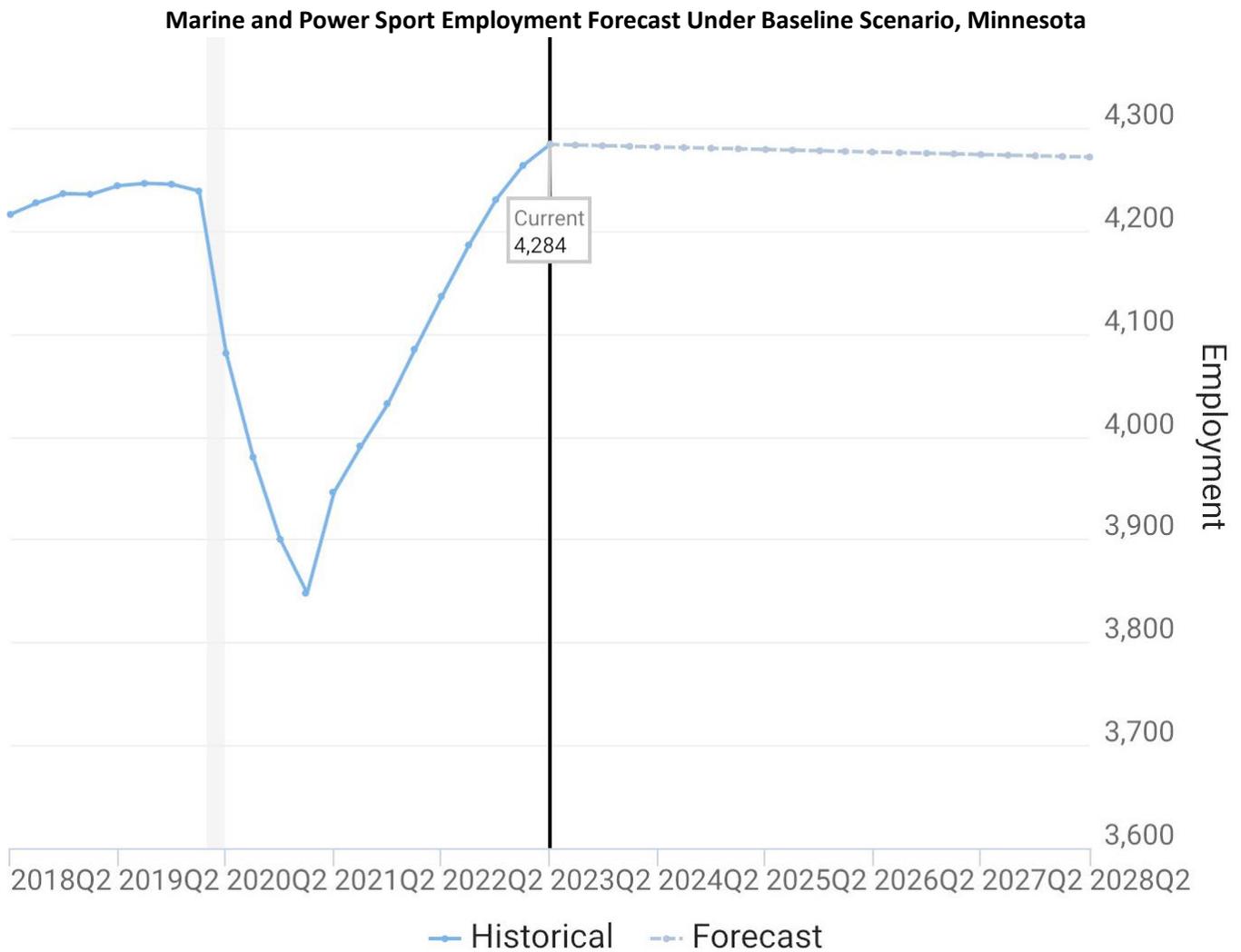
Source: [JobsEQ®](#)

Data as of 2023Q2 unless noted otherwise

Note: Figures may not sum due to rounding.

1. Data based on a four-quarter moving average unless noted otherwise.
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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).

Minnesota’s job market cooled somewhat in 2023 from 2021 and 2022’s strong recoveries. Unemployment rates have begun to rise again as the market stabilizes and shifts in response to new realities. Marine and Power Sports employment rose rapidly and steadily from 2021Q2 through 2023Q2, surpassing employment levels pre-pandemic in late 2022. 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 that will stifle ongoing growth in this career pathway unless more talent decides to enter the field. While there was 3.6% growth since 2022Q2, the pathway forecast is declining with a forecasted decline of -0.1% by the second quarter of 2028.



Source: JobsEQ®, Data as of 2023Q2, The shaded areas of the graph represent national recessions.

Industry/Occupation Mix

Marine and Power Sports talent is primarily concentrated in the Other Motor Vehicle Dealers industry (18.5%), increasing in its concentration from estimates in 2022 by another 2.1 percentage points. The next highest industry of employment concentration is Personal and Household Goods Repair and Maintenance (7.9%). Top industries in terms of greatest amount of total demand over the next ten years are Other Motor Vehicle Dealers and Support Activities for Air Transportation.

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

NAICS Code	Industry Title	CURRENT		10-YEAR DEMAND				
		% of Occ Empl	Empl	Avg Ann Wages	Exits	Transfers	Empl Growth	Total Demand
4412	Other Motor Vehicle Dealers	18.5%	794	\$46,400	321	514	16	851
8114	Personal and Household Goods Repair and Maintenance	7.9%	338	\$49,600	136	218	7	361
4881	Support Activities for Air Transportation	7.3%	312	\$43,400	165	321	4	490
4571	Gasoline Stations	7.2%	308	\$33,900	155	301	-30	427
8111	Automotive Repair and Maintenance	7.1%	302	\$34,400	157	304	-4	458
7139	Other Amusement and Recreation Industries	5.6%	238	\$53,400	100	167	16	282
4411	Automobile Dealers	4.7%	201	\$37,100	107	208	5	321
4442	Lawn and Garden Equipment and Supplies Retailers	3.6%	152	\$45,200	59	94	-9	145
4811	Scheduled Air Transportation	3.3%	140	\$46,500	73	143	-1	215
4552	Warehouse Clubs, Supercenters, and Other General Merchandise Retailers	2.7%	115	\$36,600	58	111	-7	161
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	2.4%	103	\$67,500	31	61	-6	86
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	2.0%	86	\$52,300	32	52	-8	77
4441	Building Material and Supplies Dealers	2.0%	86	\$44,300	34	55	0	89
5617	Services to Buildings and Dwellings	1.7%	73	\$48,300	29	46	0	75
9211	Executive, Legislative, and Other General Government Support	1.4%	61	\$58,300	24	46	-1	69
4451	Grocery and Convenience Retailers	1.4%	59	\$35,100	30	59	-3	86
4551	Department Stores	1.2%	52	\$36,600	26	50	-3	74
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	0.7%	30	\$65,300	10	19	0	30
2211	Electric Power Generation, Transmission and Distribution	0.6%	27	\$76,000	7	14	-8	14
5613	Employment Services	0.6%	26	\$48,900	10	19	0	29
-	All Others	18.2%	781	-	286	542	-17	811

Source: JobsEQ®
 Data as of 2023Q2. 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 Marine and Power Sports pathway, Aircraft Service Attendants, Motorcycle Mechanics and Outdoor Power Equipment and Other Small Engine Mechanics are uniquely concentrated in Minnesota to a higher degree than seen in the nation overall. On average, Marine and Power Sports careers pay about \$48,700 per year (up from \$46,200 last year)—well below the average wage statewide across all positions. Demand was relatively high over the past year, seeing employment growth of 3.6% since the second quarter of 2022.

Marine and Power Sports Pathway in Minnesota - Baseline, 2023Q2¹

SOC	Occupation	Current					5-Year Forecast				
		Empl	Avg Ann Wages ²	LQ	Unempl	Unempl Rate	Total Demand	Exits	Transfers	Empl Change	Ann % Change
53-6031	Automotive and Watercraft Service Attendants	1,122	\$35,100	0.58	87	7.3%	841	292	568	-19	-0.3%
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	788	\$48,300	1.01	8	1.1%	398	156	250	-7	-0.2%
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	670	\$51,400	1.19	7	1.1%	370	136	218	15	0.4%
49-3051	Motorboat Mechanics and Service Technicians	667	\$76,400	0.68	8	1.2%	286	101	199	-14	-0.4%
49-3052	Motorcycle Mechanics	531	\$44,400	1.29	42	7.5%	416	141	273	2	0.1%
53-6032	Aircraft Service Attendants	464	\$43,500	1.43	5	1.1%	239	92	148	-1	-0.1%
53-5022	Motorboat Operators	41	\$52,700	0.60	2	4.0%	23	7	16	0	0.2%
16420	Marine and Power Sports Pathway	4,284	\$48,700	0.84	159	3.7%	2,574	926	1,673	-25	-0.1%
	Total - All Occupations	3,075,767	\$66,100	1.00	87,730	2.9%	1,746,576	727,900	1,016,920	1,756	0.0%

Source: [JobsEQ®](#)

Data as of 2022Q2 unless noted otherwise

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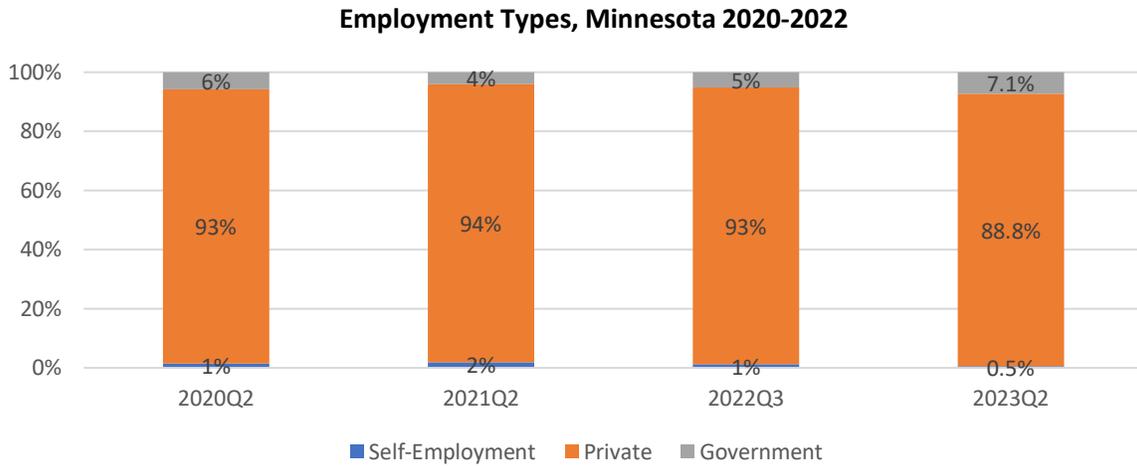
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Employment Types

About 89% of people employed in Marine and Power Sports careers in Minnesota work for private employers (a slight decrease from 2022), while an estimated 0.5% are self-employed (also a slight decrease from 2022). The remaining 7% work for state, federal, or local government entities – a share that has grown moderately over the past three years.



Wage Analysis

Marine and Power Sports saw some significant wage gains across the pathway, with average wages rising by \$2,500 from prior estimates.¹ Entry-level wages in the pathways exceed the average entry-level wages observed across all occupations statewide by over \$5,000, paying an average of \$37,900 annually for entry-level talent. Education and training requirements vary slightly across the different occupations in this pathway, with most occupations requiring either a certificate or high school diploma or equivalent. Only one of these occupations require previous work experience (Motorboat Operators) and every occupation except Motorboat Operators require some level of on-the-job training.

Marine and Power Sports Pathway Wages and Experience Level Requirements, MN, 2023Q2

SOC	Occupation	Empl Count	Mean	Entry Level	Experienced	Percentiles					Education and Training		
						10%	25%	50% (Median)	75%	90%	Typical Entry-Level Education	Previous Work Experience	Typical On-the-Job Training
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	667	\$76,400	\$61,500	\$83,900	\$59,500	\$65,900	\$74,300	\$83,700	\$98,500	Certificate	None	Long-term OJT
49-3051	Motorboat Mechanics and Service Technicians	670	\$51,400	\$38,500	\$57,800	\$36,300	\$43,100	\$49,800	\$60,700	\$69,200	HS/GED	None	Long-term OJT
49-3052	Motorcycle Mechanics	464	\$43,500	\$26,900	\$51,800	\$24,000	\$29,900	\$42,100	\$54,500	\$63,500	Certificate	None	Short-term OJT
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	788	\$48,300	\$39,400	\$52,700	\$37,800	\$42,700	\$47,600	\$52,300	\$59,700	HS/GED	None	Moderate-term OJT
53-5022	Motorboat Operators	41	\$52,700	\$35,500	\$61,300	\$33,600	\$39,600	\$48,200	\$65,000	\$80,600	Certificate	<5 years	None
53-6031	Automotive and Watercraft Service Attendants	1,122	\$35,100	\$28,900	\$38,100	\$27,500	\$31,400	\$34,200	\$37,400	\$43,200	None	None	Short-term OJT
53-6032	Aircraft Service Attendants	531	\$44,400	\$33,800	\$49,800	\$32,700	\$36,400	\$42,200	\$49,300	\$57,600	HS/GED	None	Short-term OJT
16420	Marine and Power Sports Pathway	4,284	\$48,700	\$37,900	\$54,200	\$36,100	\$41,200	\$47,300	\$54,600	\$63,300			
	Total - All Occupations	3,075,767	\$66,100	\$32,800	\$82,700	\$30,300	\$37,500	\$51,700	\$77,900	\$113,000			

Wages in the Marine and Power Sports pathway vary across the three regions of Rural Greater Minnesota, Urban Greater Minnesota, and the 7-county MSP Metro. The MSP Metro region has the highest wages across experience levels and percentiles and contains 55% of the pathway's total statewide employment. The Rural Greater Minnesota region and the Urban Greater Minnesota region have close average and very close median wage rates. Average Marine and Power Sports Pathway wages in the Greater Minnesota regions are about \$7,800 below the average pathway wages in the MSP Metro.

¹ Methodology for estimating wages changed between the 2022 and 2023 reports and are new as of the 2023Q2 dataset used here. They are estimated for the most current quarter of data available (2023Q2) using a combination of data from the Bureau of Labor Statistics and Chmura RTI wages, and no longer lag by a calendar year.

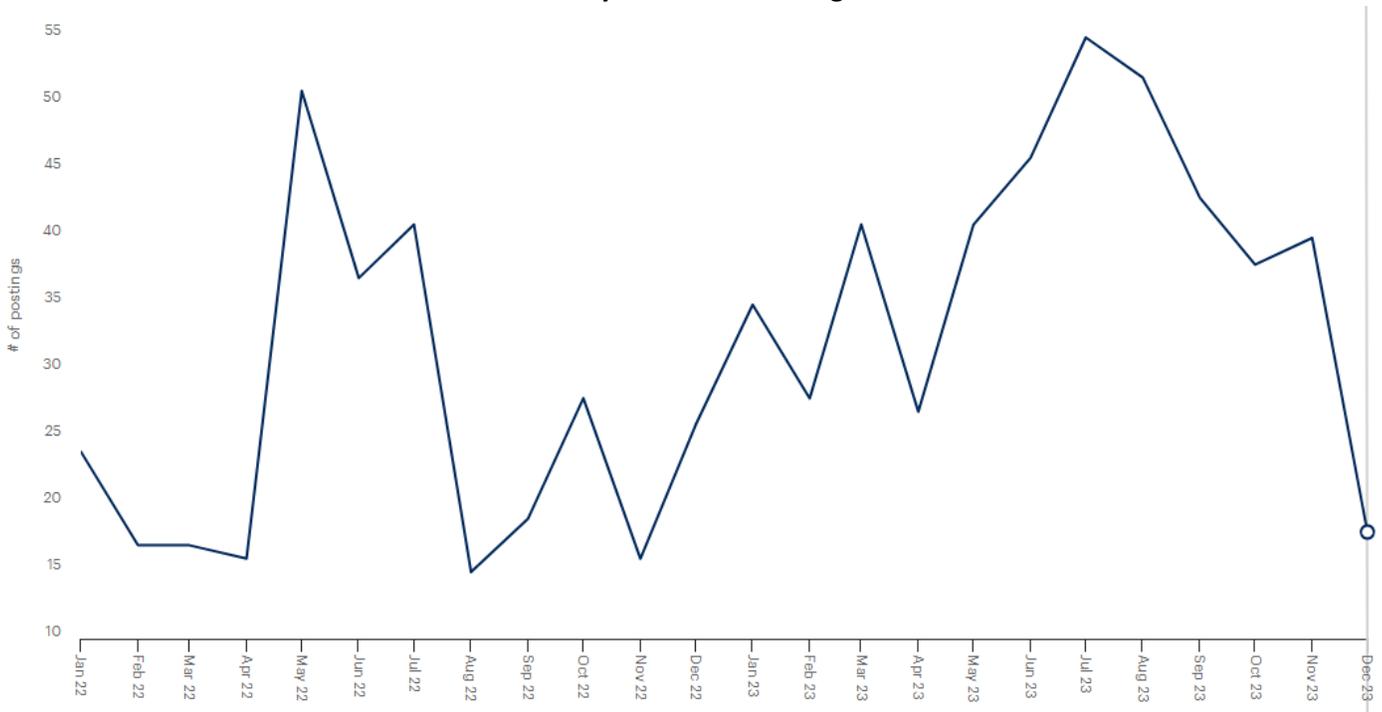
Marine and Power Sports Pathway Wages, 2023Q2

Region	Empl Count	Mean	Entry Level	Experienced	Percentiles				
					10%	25%	50% (Median)	75%	90%
Rural Greater Minnesota	1,191	\$43,900	\$34,900	\$48,400	\$33,000	\$38,000	\$43,000	\$49,000	\$56,900
Urban Greater Minnesota	629	\$45,600	\$35,700	\$50,500	\$33,700	\$39,100	\$44,300	\$50,300	\$59,600
MSP Metro	2,373	\$51,700	\$40,700	\$57,200	\$38,900	\$44,100	\$50,100	\$57,200	\$68,300
Minnesota	4,284	\$48,700	\$37,900	\$54,200	\$36,100	\$41,200	\$47,300	\$54,600	\$63,300

Job Posting Trends

Data in this section focuses on jobs newly advertised between January 1 and December 31, 2023 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 2023Q4 dataset. Overall, there were 473 new jobs advertised in Marine and Power Sports during this time frame, an increase of 55% from the prior 12-month period (2022). The total share of posted positions advertised by staffing and temp agencies in the Marine and Power Sports pathway increased to 21% in 2023 compared to 16% in 2022 and 5% in 2021. Posted wages remained the same from 2022 with an average of \$20.00 per hour as of 2023, and there were an average of six hires per every one unique job posting advertised based on Lightcast estimates.

Volume of Career Pathway Online Job Postings in 2022 and 2023

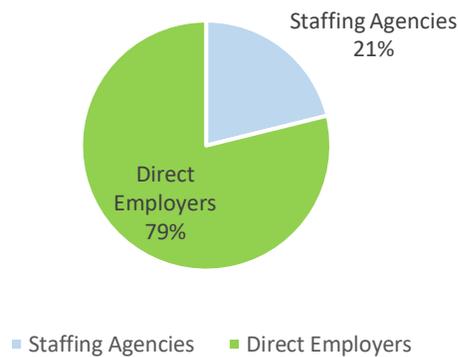


Source: RealTime Talent analysis of Chmura Economics JobsEQ®, <http://www.chmuraecon.com/jobseq/>. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/10/2024 at talentneuronplan.gartner.com Industry detail, skill and certification analysis, wage trends, and posting to hire analysis are from the Lightcast 2023Q4 dataset accessed at analyst.lightcast.io

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

	Employer	Percent Change between 2022 and 2023
1.	Army	137%
2.	PENSKE	118%
3.	Walmart	New Entrant
4.	John Deere	-50%
5.	Ryder	-50%
6.	Elk River Harley Davidson	New Entrant
7.	General Mills	25%
8.	Northern Tool and Equipment	New Entrant
9.	PREMIER MARINE	New Entrant
10.	Cabela's Inc.	300%

New Job Postings Advertised in Minnesota by Employer Type

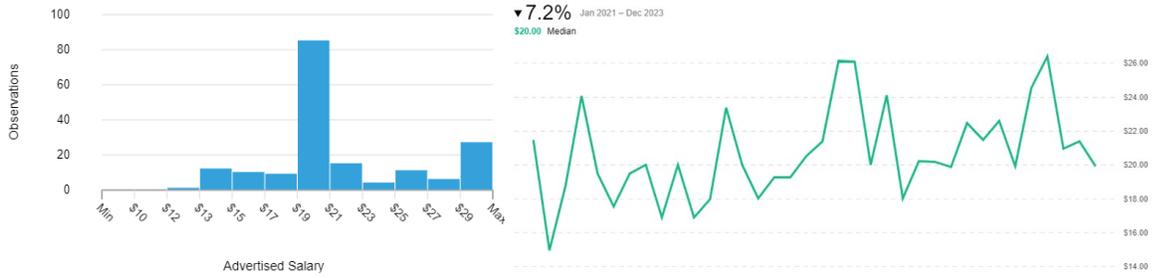


New Job Postings by Industry or Employer Type

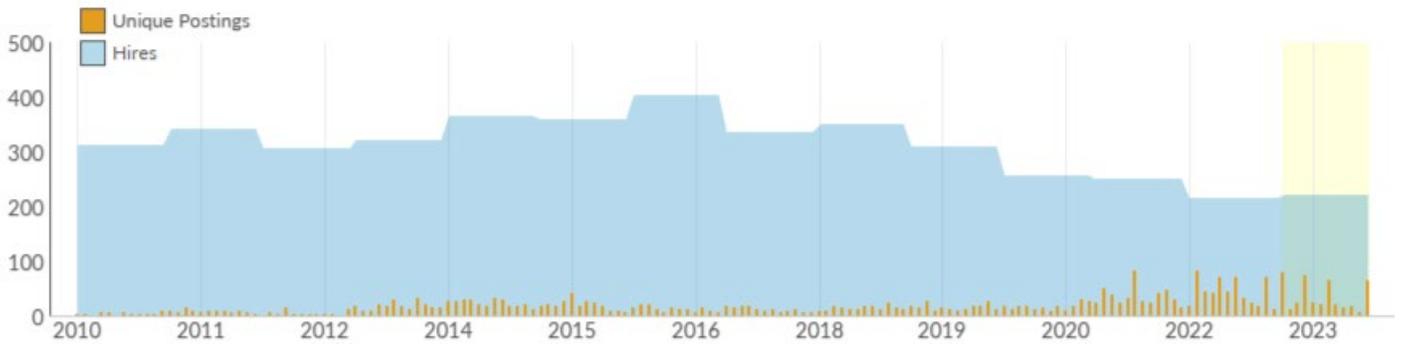
Industry	Total/Unique (Jan 2023 - Dec 2023)	Posting Intensity	Median Posting Duration
Warehouse Clubs and Supercenters	455 / 230	2 : 1	12 days
Employment Placement Agencies	22 / 18	1 : 1	21 days
Convenience Retailers	66 / 14	5 : 1	29 days
Truck, Utility Trailer, and RV (Recreational Vehicle) Rental and Leasing	27 / 12	2 : 1	22 days
Other General Government Support	18 / 8	2 : 1	23 days
Landscaping Services	47 / 7	7 : 1	40 days
Passenger Car Leasing	7 / 5	1 : 1	15 days
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	111 / 5	22 : 1	14 days
Construction and Mining (except Oil Well) Machinery and Equipment Merchant Wholesalers	6 / 4	2 : 1	20 days
Hardware Retailers	4 / 4	1 : 1	18 days

Pathway Advertised Salary Range

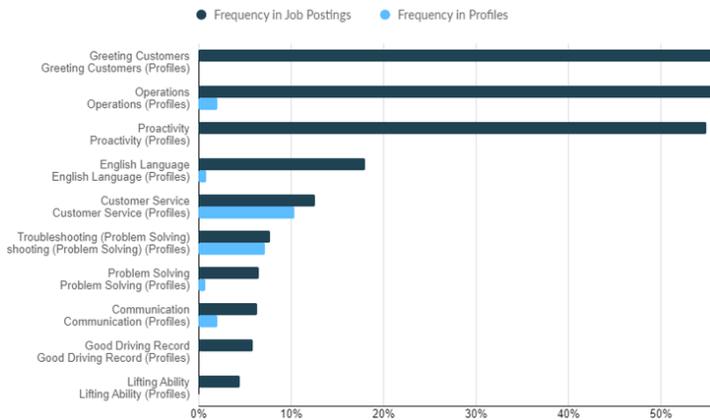
\$20.00/hr
Median Advertised Salary



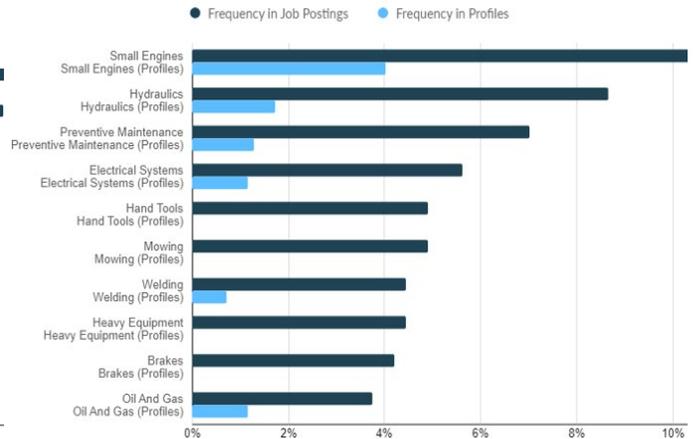
Monthly Ratio of Unique Job Postings to Estimated Hires



Top Common Skills



Top Specialized Skills



Top Certifications and Qualifications

Qualification	Postings with Qualification
Valid Driver's License	47
Commercial Driver's License (CDL)	19
CDL Class A License	13
Automotive Service Excellence (ASE) Certification	13
CDL Class B License	5
Tanker Endorsement	5
Automated External Defibrillator (AED) Certification	1
Cardiopulmonary Resuscitation (CPR) Certification	1
First Aid Certification	1
Forklift Certification	1

Talent Supply Detail

Talent Unemployment, Underemployment, and Educational Attainment

At an overall pathway unemployment rate of 3.7% (decreasing slightly from 2022Q3 4.2%), there are about 159 unemployed Marine and Power Sports professionals statewide. However, unemployment rates for Automotive and Watercraft Service Attendants and Aircraft Service Attendants increased dramatically (from 3.7% to 7.3% and from 0.5% to 7.5%) since 2022Q3 while unemployment rates for other occupations in the pathway decreased substantially. An additional 485 (also decreasing slightly from 524 in 2022Q3) Marine and Power Sports professionals are underemployed—meaning they are working in roles for which they are overqualified by education or experience.²

Marine and Power Sports Pathway in Minnesota

SOC	Occupation	Empl (Place of Residence)							Total Empl	Overall Occupation ¹		
		< High School	High School	Some College	2-Year	4-Year	Master's	PhD		Underemployed	Unemployed	Unempl Rate
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	4.0%	23.8%	22.6%	27.2%	21.1%	1.0%	0.3%	642	146	8	1.2%
49-3051	Motorboat Mechanics and Service Technicians	7.4%	41.7%	23.0%	18.4%	6.9%	0.9%	1.7%	653	56	7	1.1%
49-3052	Motorcycle Mechanics	7.2%	42.3%	23.0%	18.6%	6.5%	0.9%	1.5%	459	34	5	1.1%
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	7.6%	41.5%	22.8%	18.2%	7.1%	1.0%	1.8%	765	71	8	1.1%
53-5022	Motorboat Operators	5.1%	26.4%	21.8%	10.5%	27.1%	7.2%	1.9%	39	14	2	4.0%
53-6031	Automotive and Watercraft Service Attendants	8.0%	44.2%	21.1%	16.4%	8.8%	1.5%	0.0%	1,101	95	87	7.3%
53-6032	Aircraft Service Attendants	8.9%	40.7%	21.5%	15.4%	11.4%	2.1%	0.0%	514	69	42	7.5%
Marine and Power Sports Pathway		7.2%	39.4%	22.2%	18.8%	10.3%	1.3%	0.8%	4,172	485	159	3.7%
Total - All Occupations		4.8%	20.9%	15.2%	14.1%	30.7%	10.4%	3.9%	2,976,622	526,677	87,730	2.9%

Source: JobsEQ®

Data as of 2023Q2 unless noted otherwise

Note: Figures may not sum due to rounding.

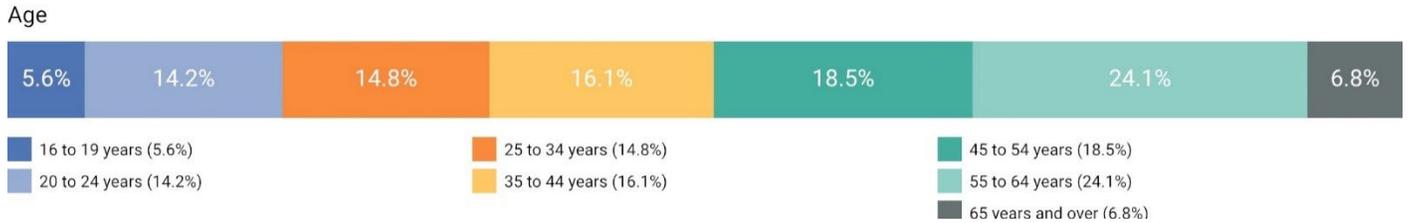
1. "Overall occupation" characteristics refer to attributes across all individuals in those occupations, not just those limited to the demographic categories shown in this table.

² Chmura adopts the New York Fed methodology of counting as underemployed only those who have acquired at least a Bachelor's degree and yet are working in an occupation that does not typically require a Bachelor's degree. In Occupation Diversity, the only occupations shown in the Underemployment table are "non-college jobs", as designated by the New York Fed. Per the New York Fed, "a job is classified as a college job if 50 percent or more of the people working in that job indicate that at least a bachelor's degree is necessary; otherwise, the job is classified as a non-college job."

Workforce Demographics

Talent currently employed in this career pathway in Minnesota are relatively young overall, consistent with observations over the past three years. About 19.8% (an increase of 3.5 percentage points from 2022Q3) of the Marine and Power Sports workforce is under the age of 25, and 6.8% are over 64 years old (an increase of 2.2 percentage points). The largest demographic group by race are White, representing 83.5% (decreased by 1.5 percentage points) of the total pathway’s workforce, with the next largest cohort being Black talent representing 5.5% of the workforce. Just over 3% of the pathway’s workforce are Hispanic or Latinx, and 9.8% are female.

Marine and Power Sports Workforce Age Demographics, 2023Q2



Marine and Power Sports Workforce Race Demographics, 2023Q2



Marine and Power Sports Workforce Ethnicity Demographics, 2023Q2



Marine and Power Sports Workforce Gender Demographics, 2023Q2

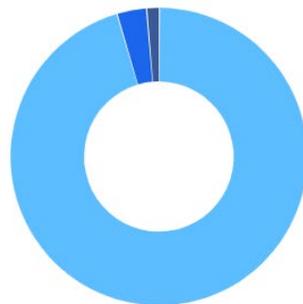


Aligned Postsecondary Programs

There were about 216 awards conferred at 11 different Minnesota postsecondary institutions in programs aligned to Marine and Power Sports careers in SY2022. In SY2022, there was one less postsecondary institution with completions in Marine and Power Sports aligned programs and 67 less completions compared to SY2021. Among, these 85 were at the Associate level, and 82 were certificates that could be earned in less than two years. The average school had about 19 completions but range from two to 47 completions. No institutions delivered programs remotely in SY2022. 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 58 certificate and Associate degree awards statewide in SY2022.

Marine and Power Sports Postsecondary Program Awards by Level, SY2022

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	0	33	35	22	0	0	0	90
15.0303	Electrical, Electronic, and Communications Engineering Technology/Technician	12	6	42	4	3	0	0	67
47.0616	Marine Maintenance/Fitter and Ship Repair Technology/Technician	1	20	8	17	0	0	0	46
47.0611	Motorcycle Maintenance and Repair Technology/Technician	0	6	0	0	0	0	0	6
47.0606	Small Engine Mechanics and Repair Technology/Technician	0	3	0	3	0	0	0	6
47.0104	Computer Installation and Repair Technology/Technician	0	1	0	0	0	0	0	1
47.0103	Communications Systems Installation and Repair Technology/Technician	0	0	0	0	0	0	0	0
	Total	13 (6.0%)	69 (32.4%)	85 (39.4%)	46 (21.3%)	3 (1.4%)	0 (0%)	0 (0%)	216



Institution Type	Completions (2022)	Market Share
Public, 2-year	206	95.4%
Private not-for-profit, 4-year or above	7	3.2%
Public, 4-year or above	3	1.4%

Source: RealTime Talent analysis of Chmura Economics JobsEQ®, <http://www.chmuraecon.com/jobseq/>. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/10/2024 at talentneuronplan.gartner.com. Industry detail, skill and certification analysis, wage trends, and posting to hire analysis are from the Lightcast 2023Q4 dataset accessed at analyst.lightcast.io

Over 95% of related pathway awards were conferred by public 2-year institutions and Alexandria Technical and Community College and Hennepin Technical College had the largest number of completions in SY2022, each comprising 21.8% of related awards conferred. Completions are down overall by 37.6% from 2012.

Marine and Power Sports Postsecondary Program Awards by Institution, SY2022

Institution	Completions (2022)	Growth % YOY (2022)	Market Share (2022)	IPEDS Tuition & Fees (2022)	Completions Trend (2018-2022)
Alexandria Technical & Community College	47	-17.5%	21.8%	\$6,107	
Hennepin Technical College	47	-19.0%	21.8%	\$5,881	
Central Lakes College-Brainerd	40	-4.8%	18.5%	\$6,140	
Minnesota State Community and Technical College	17	54.5%	7.9%	\$5,900	
Minnesota West Community and Technical College	17	-48.5%	7.9%	\$6,484	
Anoka Technical College	14	7.7%	6.5%	\$6,075	
Lake Superior College	12	-55.6%	5.6%	\$6,404	
Riverland Community College	10	0.0%	4.6%	\$6,249	
Dunwoody College of Technology	7	-30.0%	3.2%	\$24,611	
Minnesota State University-Mankato	3	-70.0%	1.4%	\$9,444	
Minnesota State College Southeast	2	-81.8%	0.9%	\$7,490	

Graduate Demographics

Postsecondary program diversity varies by program across the Marine and Power Sports pathway. There were no international student completions in SY2021, but for SY2022, there were two completions for international students. While there was an increase in the number of female students in SY2022, all programs continue to have an overrepresentation of male students. Electrical, Electronic, and Communication Engineering Technology/Technician continues to have the most diverse graduates.³

Race and Gender of Graduates Receiving Postsecondary Awards in SY2022, Minnesota

CIP Code	Description	All 2022 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	67	1	6	1	17	3	35	4	53	14
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	1	0	0	0	0	0	1	0	0	1
47.0605	Diesel Mechanics Technology/Technician	90	1	0	3	0	5	76	5	87	3
47.0606	Small Engine Mechanics and Repair Technology/Technician	6	0	0	0	0	1	5	0	6	0
47.0611	Motorcycle Maintenance and Repair Technology/Technician	6	0	0	0	1	1	4	0	5	1
47.0616	Marine Maintenance/Fitter and Ship Repair Technology/Technician	46	0	0	0	1	3	40	2	45	1
All Marine and Power Sports Postsecondary Programs		216	2	6	4	19	13	161	11	196	20

IPEDS SY2022 demographics by award conferred. Count of awards may double count individuals who obtained multiple credentials in the same calendar year. *[NCES IPEDS](https://nces.ed.gov/ipeds/report-your-data/race-ethnicity-definitions) refers to international students that do not have resident status in the United States as “nonresident aliens.” This title aligns to Federal tax definitions and according to NCES IPEDS refers to “a person who is not a citizen or national of the United States and who is in this country on a visa or temporary basis and does not have the right to remain indefinitely. Note: Nonresident aliens are reported separately, rather than in any of the racial/ethnic categories.” They are not included in calculations of BIPOC talent in this report as race and ethnicity information is not provided for these international students. The terminology of “international student” has been used in this report as it is more familiar to a common audience. <https://nces.ed.gov/ipeds/report-your-data/race-ethnicity-definitions>. For more information, view this article from Berkeley on tax filing status of international students. <https://internationaloffice.berkeley.edu/taxes/tax-filing-status>

Nearly half of the postsecondary programs aligned to all Marine and Power Sport pathway occupations are underproducing graduates in comparison to national benchmarks, shown in pink in the table below. The seven aligned programs for the Marine and Power Sport pathway all have a low share of BIPOC graduates, and a low share of female graduates. The share of BIPOC graduates decreased by one percentage point from the 2021 school year and the share of female graduates decreased by 0.1 percentage points from the 2021 school year.

³ [NCES IPEDS](https://nces.ed.gov/ipeds/report-your-data/race-ethnicity-definitions) refers to international students that do not have resident status in the United States as “nonresident aliens.” This title aligns to Federal tax definitions and according to NCES IPEDS refers to “a person who is not a citizen or national of the United States and who is in this country on a visa or temporary basis and does not have the right to remain indefinitely. Note: Nonresident aliens are reported separately, rather than in any of the racial/ethnic categories.” They are not included in calculations of BIPOC talent in this report as race and ethnicity information is not provided for these international students. The terminology of “international student” has been used in this report as it is more familiar to a common audience. <https://nces.ed.gov/ipeds/report-your-data/race-ethnicity-definitions>. For more information, view this article from Berkeley on tax filing status of international students. <https://internationaloffice.berkeley.edu/taxes/tax-filing-status>

Postsecondary Strategy Summary Table, Minnesota 2023

Occupation	Related Programs*	2023Q2 Empl	Workforce BIPOC by Race	Workforce Hispanic/Latinx	Workforce Female	Workforce Under 45	SY2022 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	<ul style="list-style-type: none"> Personal Watercraft/Boating Education (not offered in Minnesota) 	1,122	25.1%	3.8%	20.3%	60.7%	N/A	N	N/A	N/A
Electrical and Electronics Repairers, Commercial and Industrial Equipment	<ul style="list-style-type: none"> Electrical, Electronic, and Communications Engineering Technology/Technician Computer Installation and Repair Technology/Technician Communications Systems Installation and Repair Technology/Technician 	667	11.0%	5.3%	4.4%	53.2%	65	Y	14.4%	6.9%
Outdoor Power Equipment and Other Small Engine Mechanics	<ul style="list-style-type: none"> Small Engine Mechanics and Repair Technology/Technician 	788	9.1%	1.5%	2.6%	40.3%	6	N	0.5%	0%
Motorboat Mechanics and Service Technicians	<ul style="list-style-type: none"> Diesel Mechanics Technology/Technician Marine Maintenance/Fitter and Ship Repair Technology/Technician Small Engine Mechanics and Repair Technology/Technician 	670	8.0%	1.4%	4.4%	40.2%	142	N	9.3%	1.9%
Motorcycle Mechanics	<ul style="list-style-type: none"> Small Engine Mechanics and Repair Technology/Technician Motorcycle Maintenance and Repair Technology/Technician 	464	6.7%	1.2%	2.6%	39.5%	12	Y	1.4%	0.5%
Aircraft Service Attendants	N/A	531	34.3%	5.4%	19.1%	64.2%	N/A	N	N/A	N/A
Motorboat Operators	<ul style="list-style-type: none"> Personal Watercraft/Boating Education (not offered in Minnesota) 	41	21.8%	7.4%	23.3%	56.7%	N/A	Y	N/A	N/A
Marine and Power Sports Pathway	All seven aligned programs	4,284	16.5%	5.4%	9.8%	50.7%	216	Y	24.5%	9.3%
Total - All Occupations		3,075,767	16.0%	5.4%	48.1%	56.7%	30,032		34.1%	66.0%

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.

Conclusion

Despite strong growth in employment over the past two years, the employment forecast for the Marine and Power Sports pathway soured slightly from 2022Q3 estimates, now forecasting a -0.1% over the next five years. Of the seven occupations included within this pathway, Motorcycle Mechanics, Aircraft Service Attendants, and Motorboat Mechanics are uniquely concentrated in Minnesota to a higher degree than seen in the nation overall, with location quotients of 1.43, 1.29, and 1.19 respectively. The percentage of Marine and Power Sports talent employed by the government has increased over the past three years, now representing over 7% of all employment in this pathway. Average wages have increased considerably across the pathway statewide, by \$2,500 from estimates in 2022.

The overall unemployment rate for the Marine and Power Sports pathway improved slightly from the previous year, estimated at about 3.7% as of 2023Q2. However, unemployment rates for Automotive and Watercraft Service Attendants and Aircraft Service Attendants increased dramatically (from 3.7% to 7.3% and from 0.5% to 7.5% respectively) since 2022Q3. About 11.6% of workers employed in this pathway in Minnesota are underemployed, increasing slightly from the previous year. Each of the seven programs aligned with the Marine and Power Sports pathway have a low share of BIPOC graduates and a low share of female graduates, showcasing the opportunity to diversify student enrollment into these programs. There is also an opportunity to consider offering the Personal Watercraft/Boating Education program in Minnesota as it is not offered currently.

FAQ

How is employment forecast determined?

Forecast employment growth uses national projections from the Bureau of Labor Statistics, forecasts for 2022-2032, adapted for regional growth patterns by Chmura. Employment data are based on [occupation forecasts](#) and event-based forecasts if applicable. Forecasts are developed at the county level; therefore, for detailed (6-digit NAICS) ownership-specific industries, the forecast employment growth for a zip code or place (city, town, etc.) is taken from the forecast of the county to which it belongs.

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

TRUCK DRIVING

2023 Supply & Demand Analysis Overview

Published February 2024



MINNESOTA STATE
Transportation Center of Excellence

Talent Demad Detail

Employment and Wage Overview

Of all occupations found in the Truck Driving pathway, Industrial Truck and Tractor Operators, and Shuttle Drivers and Chauffeurs are uniquely concentrated in Minnesota to a higher degree than seen in the nation overall with location quotients of 1.41, 1.35 respectively. On average, Truck Driving careers pay about \$51,800 per year—about \$14,300 below the average wage statewide across all positions. The Truck Driving Pathway saw significant growth over the past year, increasing in total employment by 3.3%.

SOC	Occupation	Current					5-Year Baseline Forecast				
		Empl	Avg Ann Wages ²	LQ	Unempl	Rate	Total Demand	Exits	Transfers	Empl Change	Ann % Change
53-3032	Heavy and Tractor-Trailer Truck Drivers	39,788	\$60,300	0.96	1,151	2.9%	23,397	9,157	14,133	107	0.1%
53-3033	Light Truck Drivers	20,704	\$49,700	0.96	592	2.9%	13,146	4,895	7,556	695	0.7%
53-3051	Bus Drivers, School	10,170	\$37,100	0.98	298	2.9%	6,221	2,370	3,659	192	0.4%
53-7051	Industrial Truck and Tractor Operators	9,712	\$46,600	1.41	275	2.8%	7,599	5,195	2,379	25	0.1%
53-3031	Driver/Sales Workers	7,979	\$50,400	0.53	354	4.5%	4,606	1,324	3,209	73	0.2%
53-3053	Shuttle Drivers and Chauffeurs	5,664	\$36,400	1.35	431	7.3%	3,907	2,138	1,618	151	0.5%
53-3052	Bus Drivers, Transit and Intercity	3,368	\$52,000	1.07	161	4.7%	2,252	1,335	895	22	0.1%
53-7121	Tank Car, Truck, and Ship Loaders	217	\$65,100	0.84	18	7.8%	137	52	89	-4	-0.4%
Truck Driving Pathway		97,603	\$51,800	0.95	3,280	3.3%	61,265	26,466	33,538	1,261	0.3%
Total - All Occupations		3,075,767	\$66,100	1.00	87,730	2.9%	1,746,576	727,900	1,016,920	1,756	0.0%

Source: [JobsEQ®](#)

Data as of 2023Q2 unless noted otherwise

Note: Figures may not sum due to rounding.

1. Data based on a four-quarter moving average unless noted otherwise.

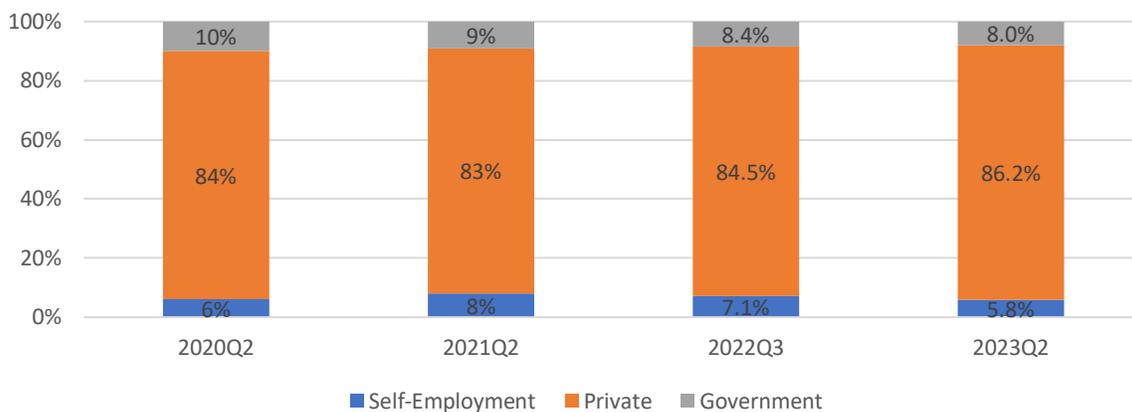
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Employment Types

About 86.2% of people employed in Truck Driving roles in Minnesota work for private employers (increased by 1.7 percentage points since 2022Q3), while an estimated 5.8% are self-employed. The remaining 8% work for state, federal, or local government entities.

Employment Types, Minnesota 2020-2023



Source: RealTime Talent analysis of Chmura Economics JobsEQ®, <http://www.chmuraecon.com/jobseq/>. Job Posting Trends section uses data from Gartner TalentNeuron Plan, accessed 1/10/2024 at talentneuronplan.gartner.com Industry detail, skill and certification analysis, wage trends, and posting to hire analysis are from the Lightcast 2023Q4 dataset accessed at analyst.lightcast.io

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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 97,603 people work in Truck Driving roles in Minnesota as of the third quarter of 2023—a 1.9% increase from a year prior.

Overall employment in Minnesota grew by nearly 60,301 workers (2.0%) between the second quarter of 2022 and the second quarter of 2023. Over the past five years, employment grew by about 11,603 workers, or an 0.1% average annual growth in total employment. Over the next five years, overall employment is forecast to remain flat (0.0% average annual growth), while all Transportation Occupations together forecast moderate growth of 0.1% average annual growth. During this time frame, Truck Driving employment is anticipated to rise slightly in Minnesota by about 1,261 total jobs (0.3% annually) due to a tight talent pool (a slight decrease from the 0.5% growth forecasted in 2022Q3). Total baseline demand for Truck Driving talent is anticipated to be around 61,265 professionals needed to fill positions due to job exits and transfers, such as retirements and job changes.

Occupation	Current					5-Year History		5-Year Baseline Forecast				
	Empl	Avg Ann Wages ²	LQ	Unempl	Unempl Rate	Empl Change	Ann % Change	Total Demand	Exits	Transfers	Empl Change	Ann % Change
Automotive Technology Pathway	20,884	\$68,300	0.97	236	1.1%	-586	-0.6%	9,072	3,184	5,828	60	0.1%
Aviation and Drone Technology Pathway	9,370	\$125,500	0.87	135	1.5%	69	0.1%	4,559	1,602	2,976	-19	0.0%
Collision Repair Pathway	7,307	\$52,800	1.10	227	3.1%	188	0.5%	3,442	1,213	2,305	-77	-0.2%
Diesel Equipment and Truck Pathway	12,161	\$64,200	1.01	153	1.3%	152	0.3%	5,635	1,954	3,724	-43	-0.1%
Marine and Power Sports Pathway	4,284	\$48,700	0.84	159	3.7%	68	0.3%	2,574	926	1,673	-25	-0.1%
Truck Driving Pathway*	97,603	\$51,800	0.95	3,280	3.3%	2,561	0.5%	61,265	26,466	33,538	1,261	0.3%
Transportation Occupations	133,108	\$60,700	0.93	3,418	2.6%	3,212	0.5%	73,669	27,527	45,162	981	0.1%
Total - All Occupations	3,075,767	\$66,100	1.00	87,730	2.9%	11,603	0.1%	1,746,576	727,900	1,016,920	1,756	0.0%

*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 2023Q2 unless noted otherwise

Note: Figures may not sum due to rounding.

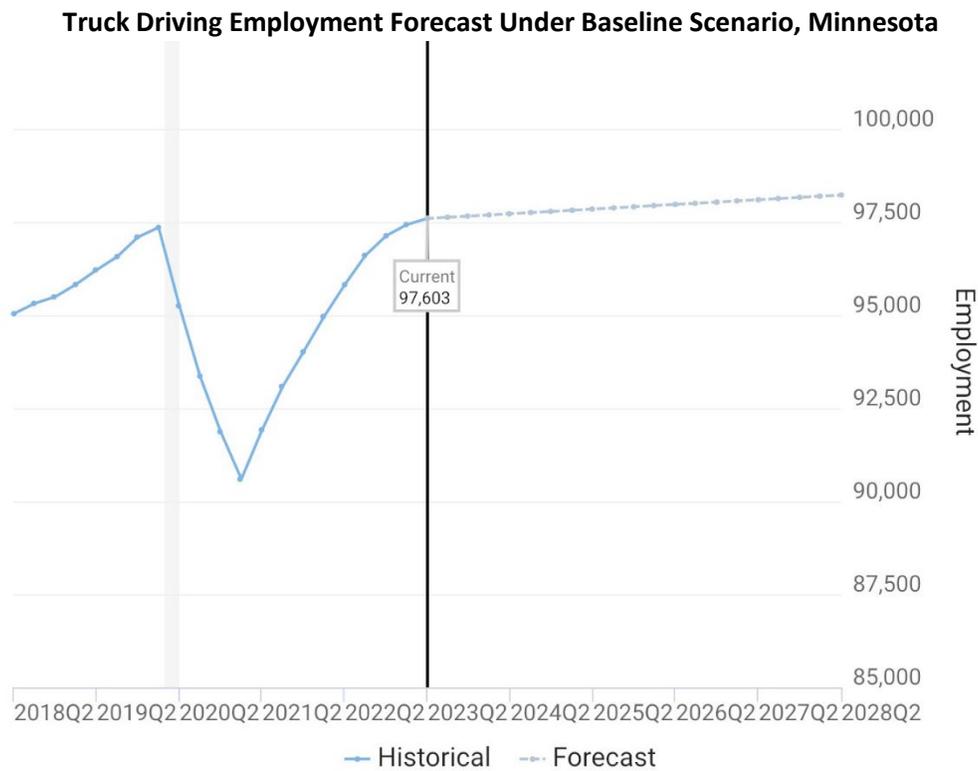
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¹ The occupation for School Bus Drivers was added to this pathway analysis as of 2022.

Minnesota’s job market cooled somewhat in 2023 from 2021 and 2022’s strong recoveries. Unemployment rates have begun to rise again as the market stabilizes and shifts in response to new realities. 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. This pathway had a steady recovery through 2021 and 2022, reaching pre-pandemic levels of employment by early 2023. Truck Driving pathway employment still forecasts growth as of 2023, although a more modest 0.3% annual growth forecasted through 2028.



Source: JobsEQ®, Data as of 2023Q2, The shaded areas of the graph represent national recessions.

Industry/Occupation Mix

Truck Driving talent is primarily concentrated in the General Freight Trucking industry (15.9%, up 0.8 percentage points) and School and Employee Bus Transportation (7.7%, up 0.8 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

NAICS Code	Industry Title	CURRENT		10-YEAR DEMAND				
		% of Occ Empl	Empl	Avg Ann Wages	Exits	Transfers	Empl Growth	Total Demand
4841	General Freight Trucking	15.9%	15,566	\$59,200	7,141	11,065	55	18,262
4854	School and Employee Bus Transportation	8.5%	8,281	\$46,100	8,403	4,175	82	12,660
4921	Couriers and Express Delivery Services	7.2%	7,000	\$67,600	3,462	5,355	1,185	10,002
4842	Specialized Freight Trucking	4.6%	4,461	\$59,100	2,041	3,165	-5	5,201
7225	Restaurants and Other Eating Places	4.6%	4,454	\$32,700	2,127	3,282	392	5,801
4244	Grocery and Related Product Merchant Wholesalers	3.7%	3,575	\$49,400	1,616	2,554	14	4,185
4931	Warehousing and Storage	3.0%	2,958	\$55,100	1,204	2,428	467	4,100
6111	Elementary and Secondary Schools	2.3%	2,270	\$46,600	2,333	1,127	-32	3,428
4859	Other Transit and Ground Passenger Transportation	2.1%	2,054	\$38,100	1,577	1,225	227	3,029
4922	Local Messengers and Local Delivery	2.0%	1,918	\$46,300	969	1,497	420	2,886
4851	Urban Transit Systems	1.9%	1,898	\$52,700	1,468	1,029	3	2,499
5613	Employment Services	1.5%	1,468	\$44,100	586	1,122	37	1,745
4413	Automotive Parts, Accessories, and Tire Retailers	1.5%	1,459	\$31,300	664	1,028	-14	1,678
4249	Miscellaneous Nondurable Goods Merchant Wholesalers	1.4%	1,397	\$55,600	614	968	-80	1,502
9211	Executive, Legislative, and Other General Government Support	1.4%	1,374	\$50,300	1,037	776	-9	1,803
2389	Other Specialty Trade Contractors	1.3%	1,245	\$60,300	575	892	23	1,490
2373	Highway, Street, and Bridge Construction	1.2%	1,126	\$63,800	516	803	7	1,325
5621	Waste Collection	1.1%	1,109	\$58,600	529	823	102	1,453
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	1.1%	1,065	\$39,800	477	741	-43	1,175
4236	Household Appliances and Electrical and Electronic Goods Merchant Wholesalers	1.0%	949	\$54,700	412	679	-19	1,072
-	All Others	32.8%	31,977	-	15,195	22,360	-260	37,295

Source: JobsEQ®

Data as of 2023Q2. 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 Demad Detail

Employment and Wage Overview

Of all occupations found in the Truck Driving pathway, Industrial Truck and Tractor Operators, and Shuttle Drivers and Chauffeurs are uniquely concentrated in Minnesota to a higher degree than seen in the nation overall with location quotients of 1.41, 1.35 respectively. On average, Truck Driving careers pay about \$51,800 per year—about \$14,300 below the average wage statewide across all positions. The Truck Driving Pathway saw significant growth over the past year, increasing in total employment by 3.3%.

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53-3031	Driver/Sales Workers	7,979	\$50,400	0.53	354	4.5%	4,606	1,324	3,209	73	0.2%
53-3053	Shuttle Drivers and Chauffeurs	5,664	\$36,400	1.35	431	7.3%	3,907	2,138	1,618	151	0.5%
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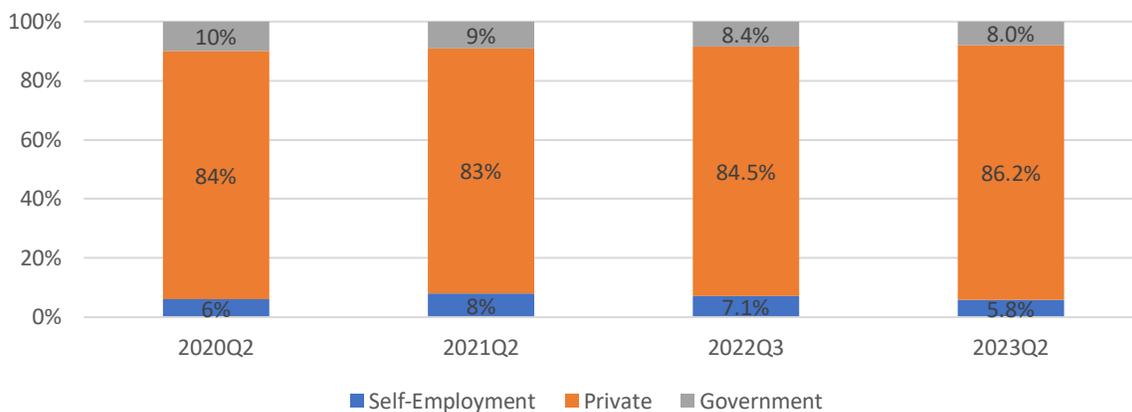
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Employment Types

About 86.2% of people employed in Truck Driving roles in Minnesota work for private employers (increased by 1.7 percentage points since 2022Q3), while an estimated 5.8% are self-employed. The remaining 8% work for state, federal, or local government entities.

Employment Types, Minnesota 2020-2023



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Wage Analysis

The Truck Driving pathway saw some wage gains across the pathway, with average annual wages rising by \$600 from prior estimates.² Entry-level wages in the pathway exceed the average entry-level wages observed across all occupations statewide by \$5,100, paying an average of \$37,900 annually for entry-level talent. Education and training requirements vary across the different occupations in this pathway, with Heavy and Tractor-Trailer Truck Drivers requiring a certificate whereas other occupations in the pathway require either a high school diploma or equivalent or no education requirement. While none of these occupations require previous work experience and all require some level of on-the-job training.

Truck Driving Pathway Wages and Experience Level Requirements, MN, 2023Q2

						Percentiles					Education and Training		
SOC	Occupation	Empl Count	Mean	Entry Level	Experienced	10%	25%	50% (Median)	75%	90%	Typical Entry-Level Education	Previous Work Experience	Typical On-the-Job Training
53-3032	Heavy and Tractor-Trailer Truck Drivers	39,788	\$60,300	\$44,900	\$68,000	\$42,900	\$49,500	\$58,400	\$68,400	\$80,300	Certificate	None	Short-term OJT
53-3033	Light Truck Drivers	20,704	\$49,700	\$34,500	\$57,300	\$30,400	\$40,800	\$47,700	\$56,100	\$68,900	HS/GED	None	Short-term OJT
53-3051	Bus Drivers, School	10,170	\$46,600	\$35,200	\$52,300	\$34,100	\$38,200	\$45,000	\$51,200	\$57,400	HS/GED	None	Short-term OJT
53-7051	Industrial Truck and Tractor Operators	9,712	\$50,400	\$38,400	\$56,400	\$36,900	\$41,700	\$47,500	\$56,200	\$69,600	None	None	Short-term OJT
53-3031	Driver/Sales Workers	7,979	\$37,100	\$24,300	\$43,400	\$23,400	\$25,500	\$31,200	\$46,900	\$60,400	HS/GED	None	Short-term OJT
53-3053	Shuttle Drivers and Chauffeurs	5,664	\$36,400	\$28,500	\$40,400	\$27,300	\$30,800	\$36,200	\$41,600	\$45,800	None	None	Short-term OJT
53-3052	Bus Drivers, Transit and Intercity	3,368	\$52,000	\$38,100	\$58,900	\$36,200	\$42,300	\$50,800	\$63,400	\$71,200	HS/GED	None	Mod-term OJT
53-7121	Tank Car, Truck, and Ship Loaders	217	\$65,100	\$43,900	\$75,600	\$41,200	\$49,900	\$61,800	\$82,300	\$97,400	None	None	Short-term OJT
	Truck Driving Pathway	97,603	\$51,800	\$37,900	\$58,800	\$35,700	\$42,100	\$49,500	\$59,100	\$70,400			
	Total - All Occupations	3,075,767	\$66,100	\$32,800	\$82,700	\$30,300	\$37,500	\$51,700	\$77,900	\$113,000			

² Methodology for estimating wages changed between the 2022 and 2023 reports and are new as of the 2023Q2 dataset used here. They are estimated for the most current quarter of data available (2023Q2) using a combination of data from the Bureau of Labor Statistics and Chmura RTI wages, and no longer lag by a calendar year.

Wages in the Truck Driving pathway vary across the three regions of Rural Greater Minnesota, Urban Greater Minnesota, and the 7-county MSP Metro. The MSP Metro region has the highest wages across experience levels and percentiles and contains 56% of the pathway’s total statewide employment. The Rural Greater Minnesota region and the Urban Greater Minnesota region have very close average and median wage rates; average Automotive Technology Pathway wages in the Greater Minnesota regions are nearly \$3,200 below the average pathway wages in the MSP Metro.

Truck Driving Pathway Wages, 2023Q2

Region	Empl Count	Mean	Entry Level	Experienced	Percentiles				
					10%	25%	50% (Median)	75%	90%
Rural Greater Minnesota	25,567	\$48,600	\$36,300	\$54,700	\$34,400	\$39,800	\$46,100	\$54,300	\$68,300
Urban Greater Minnesota	14,414	\$50,000	\$36,800	\$56,600	\$34,500	\$40,900	\$48,100	\$56,700	\$68,400
MSP Metro	54,849	\$53,700	\$39,800	\$60,600	\$37,800	\$43,900	\$51,700	\$60,500	\$72,200
Minnesota	97,603	\$51,800	\$37,900	\$58,800	\$35,700	\$42,100	\$49,500	\$59,100	\$70,400

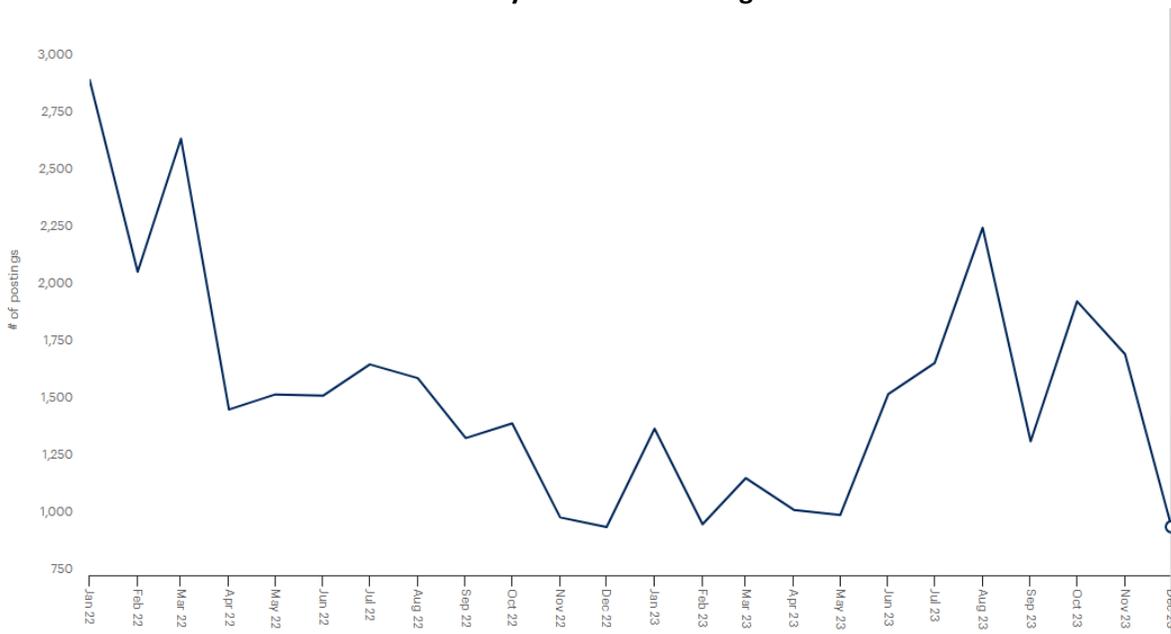
Job Posting Trends

Data in this section focuses on jobs newly advertised between January 1 and December 31, 2023 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 2023Q4 dataset. Overall, there were 18,506 new jobs advertised in Truck Driving roles during 2023, a decrease of -14% from the prior 12-month period (2022). Volume of positions advertised by staffing and temp agencies in the Truck Driving pathway has increased dramatically from 2022 (by six percentage points). Posted wages increased to an average \$25.54 per hour as of 2022, and there were an average of three 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 14,747 unique job postings in Minnesota in 2023, representing 2% of all postings (a decrease from 2022 of three percentage points) and a decrease of -8% from 2022's demand for a CDL credential. In addition to the Truck Driving pathway careers analyzed in this report, 63 other occupations often require a CDL including the following:

- 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

Volume of Career Pathway Online Job Postings in 2022 and 2023

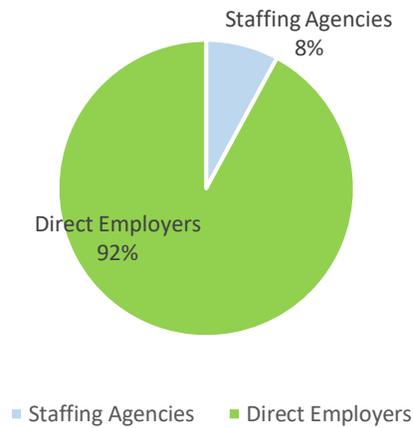


Top Employers by Volume of New Job Postings, With Change from Prior Year

	Employer	Percent Change between 2022 and 2023
1.	Performance Food Group	-18%
2.	US Foods	-9%
3.	Scheider National	44%
4.	PENSKE	98%
5.	Marten Transport	37%
6.	Sysco	104%
7.	Ryder	3%
8.	Hogan Transports	457%
9.	Terminal Transport	503%
10.	Atlas Materials Corp.	New Entrant

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

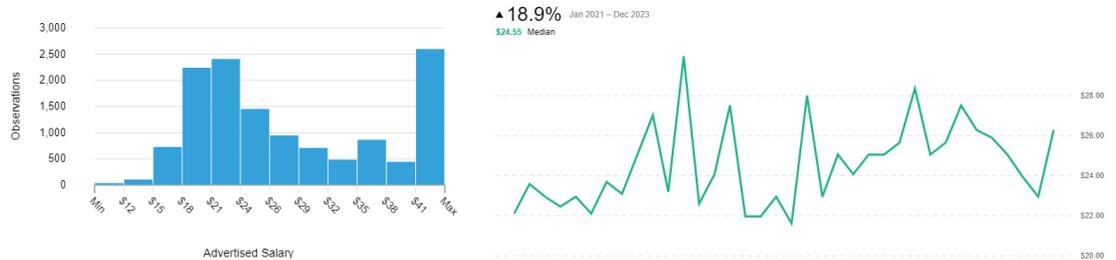


New Job Postings by Industry or Employer Type

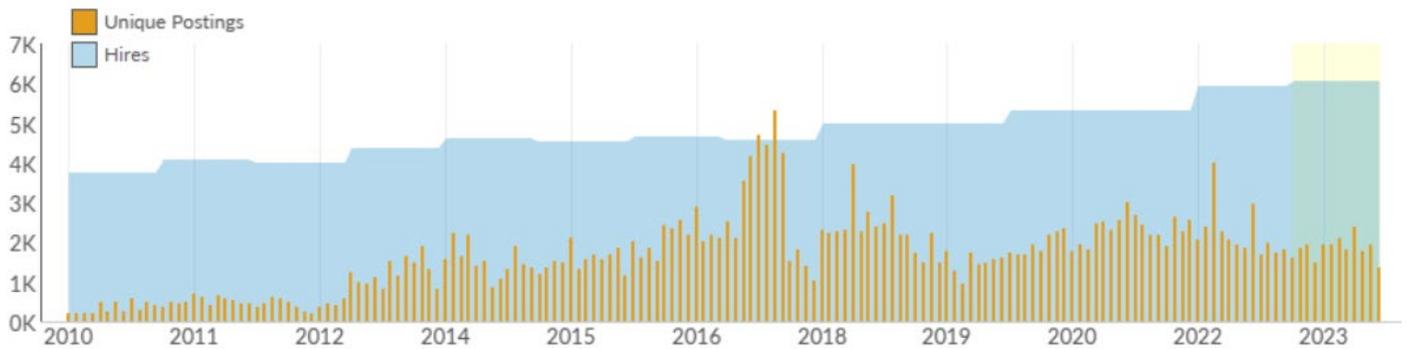
Industry	Total/Unique (Jan 2023 - Dec 2023)	Posting Intensity	Median Posting Duration
General Freight Trucking, Long-Distance, Truckload	13,245 / 2,142	6 : 1	33 days
Limited-Service Restaurants	4,146 / 936	4 : 1	30 days
Employment Placement Agencies	1,479 / 866	2 : 1	26 days
All Other Miscellaneous Retailers	5,387 / 862	6 : 1	24 days
General Freight Trucking, Local	2,341 / 822	3 : 1	30 days
Couriers and Express Delivery Services	2,906 / 651	4 : 1	28 days
Automotive Parts and Accessories Retailers	1,595 / 550	3 : 1	33 days
General Line Grocery Merchant Wholesalers	1,251 / 517	2 : 1	33 days
Other Grocery and Related Products Merchant Wholesalers	1,779 / 429	4 : 1	32 days
Solid Waste Collection	847 / 337	3 : 1	30 days

Pathway Advertised Salary Range

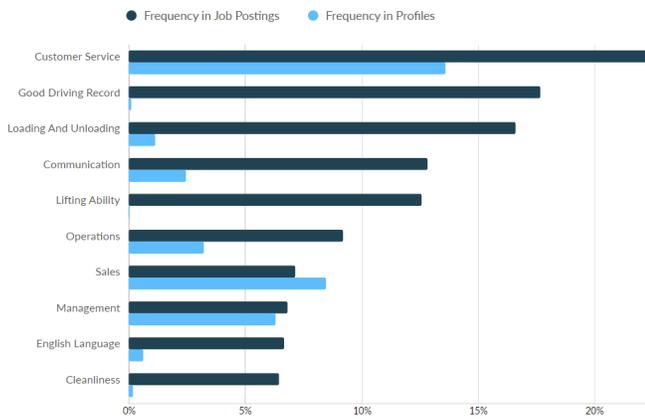
\$25.54/hr
Median Advertised Salary



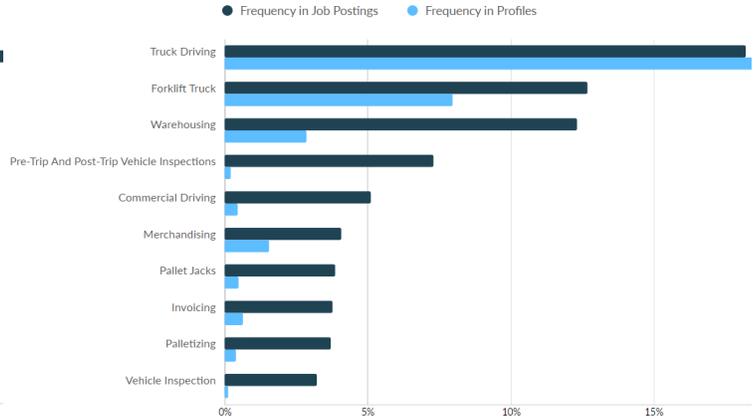
Monthly Ratio of Unique Job Postings to Estimated Hires



Top Common Skills



Top Specialized Skills



Top Certifications and Qualifications

Qualification	Postings with Qualification
Commercial Driver's License (CDL)	4,588
Valid Driver's License	3,975
CDL Class A License	3,952
CDL Class B License	1,270
Tanker Endorsement	576
Hazmat Endorsement	559
Tanker And Hazmat Combo X Endorsement	313
Forklift Certification	293
Doubles Endorsement	184
Triples Endorsement	166

Talent Supply Detail

Talent Unemployment, Underemployment, and Educational Attainment

At an overall pathway unemployment rate of 3.3% (an increase from 2.6% in 2022Q3), there are about 3,280 unemployed Truck Driving professionals statewide. An additional 13,186 Truck Driving professionals are underemployed, meaning they are working in roles for which they are overqualified by education or experience.³

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	9.0%	43.6%	20.1%	12.5%	12.5%	1.9%	0.4%	9,922	1,338	298	2.9%
53-3032	Heavy and Tractor-Trailer Truck Drivers	8.8%	43.8%	20.2%	12.8%	12.2%	1.8%	0.4%	38,730	4,688	1,151	2.9%
53-3033	Light Truck Drivers	9.0%	42.7%	20.2%	12.4%	13.2%	2.0%	0.4%	19,981	2,854	592	2.9%
53-3051	Bus Drivers, School	4.0%	37.3%	23.5%	16.6%	14.5%	3.3%	0.9%	9,544	1,503	275	2.8%
53-3052	Bus Drivers, Transit and Intercity	4.6%	35.8%	22.9%	15.7%	17.2%	3.2%	0.6%	3,260	605	161	4.7%
53-3053	Shuttle Drivers and Chauffeurs	6.0%	29.7%	19.0%	13.0%	24.4%	5.9%	2.0%	5,492	1,531	431	7.3%
53-7051	Industrial Truck and Tractor Operators	12.0%	49.7%	19.0%	11.1%	6.9%	0.8%	0.5%	7,554	643	354	4.5%
53-7121	Tank Car, Truck, and Ship Loaders	11.7%	46.9%	16.9%	12.1%	10.9%	1.4%	0.2%	214	23	18	7.8%
Truck Driving Pathway (2023 Update)		8.3%	42.3%	20.4%	13.0%	13.1%	2.2%	0.6%	94,698	13,186	3,280	3.3%
Total - All Occupations		4.8%	20.9%	15.2%	14.1%	30.7%	10.4%	3.9%	2,976,622	526,677	87,730	2.9%

Source: JobsEQ®

Data as of 2023Q2 unless noted otherwise

Note: Figures may not sum due to rounding.

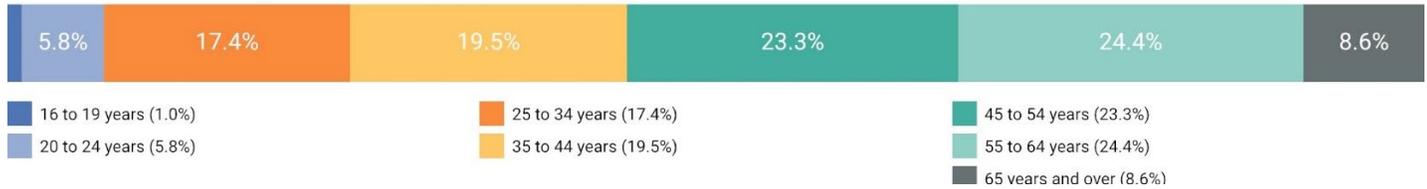
1. "Overall occupation" characteristics refer to attributes across all individuals in those occupations, not just those limited to the demographic categories shown in this table.

³ Chmura adopts the New York Fed methodology of counting as underemployed only those who have acquired at least a Bachelor's degree and yet are working in an occupation that does not typically require a Bachelor's degree. In Occupation Diversity, the only occupations shown in the Underemployment table are "non-college jobs", as designated by the New York Fed. Per the New York Fed, "a job is classified as a college job if 50 percent or more of the people working in that job indicate that at least a bachelor's degree is necessary; otherwise, the job is classified as a non-college job."

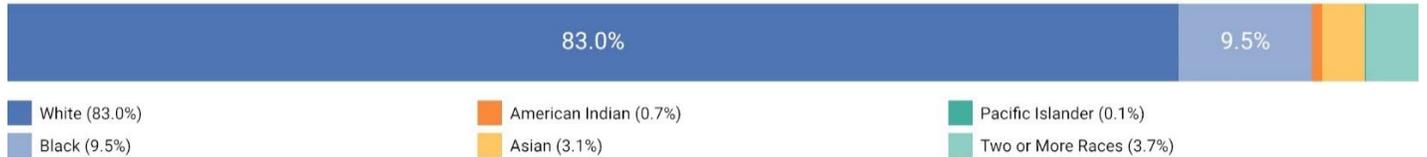
Workforce Demographics

The Truck Driving workforce is older on average than the workforce as a whole in Minnesota. About 6.8% (decrease of 1.1 percentage points from 2022Q3) of the Truck Driving workforce is under the age of 25, and 8.6% (increase of 1.9 percentage points) are over 64 years old. The largest demographic group by race are White, representing 83% of the total pathway's workforce (decreased by 0.5 percentage points), with the next largest cohort being Black talent representing 9.5% of the workforce. About 6.3% of the pathway's workforce are Hispanic or Latinx, and 14.6% are female (an increase of 1.5 percentage points).

Truck Driving Workforce Age Demographics, 2023Q2



Truck Driving Workforce Race Demographics, 2023Q2



Truck Driving Workforce Ethnicity Demographics, 2023Q2



Truck Driving Workforce Gender Demographics, 2023Q2



Aligned Postsecondary Programs

There were a total of 61 conferred at three different Minnesota postsecondary institutions in programs aligned to Truck Driving careers in SY2022 (down from 84 awards in SY2021). All of these awards were short-term certificates. The average school had about 20 completions, ranging from 14 to 33 completions. No programs were delivered remotely. In all, there are 15 driving training schools (three new training schools as of August 2023) 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.⁴

Truck Driving Postsecondary Program Awards by Level, SY2022

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	61	0	0	0	0	0	0	61
	Total	61 (100%)	0	0	0	0	0	0	61

Program Overview



All awards were conferred by public two-year institutions in SY2022. Completions are down overall by 68.9% from 2012.

Truck Driving Postsecondary Program Awards by Institution, SY2022

Institution	Completions (2022)	Growth % YOY (2022)	Market Share (2022)	IPEDS Tuition & Fees (2022)	Completions Trend (2018-2022)
Alexandria Technical & Community College	33	13.8%	54.1%	\$6,107	
Riverland Community College	14	-53.3%	23.0%	\$6,249	
Minnesota State College Southeast	14	-44.0%	23.0%	\$7,490	

⁴ Minnesota Department of Public Safety. Licensed Truck Driver Training. August 2023. <https://dps.mn.gov/divisions/dvs/forms-documents/Documents/LicensedTruckDriverTrainingList.pdf>

A current list of CDL training schools associated with postsecondary institutions⁵ in Minnesota include:

- [Interstate Truck Driving School](#)
- [Alexandria Technical & Community College](#)
- [Century College](#)
- [Dakota County Technical College](#)
- [Minnesota State College – Southeast Technical](#)
- [Riverland Community College](#)
- [St. Cloud Technical & Community College](#)
- [Transportation Center for Excellence](#)
- [Lake Superior College](#)
- [Central Lakes College](#)

⁵ CDL Training Today. <https://cdltrainingtoday.com/schools/mn/>

Graduate Demographics

Just over 90% of students who obtained a truck driving or trucking instructor certificate from an accredited program reporting to NCES IPEDS in SY2022 were male (increased by 3.3 percentage points from prior school year), and 85.2% were non-Hispanic White students (an increase of nine percentage points), aligning closely to the overall workforce demographics of the pathway.⁶ 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 15 published on the Minnesota Department of Public Safety’s website, six are in the seven-county MSP metro area.⁷ 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.⁸

Race and Gender of Graduates Receiving Postsecondary Awards in SY2022, Minnesota

CIP Code	Description	All 2022 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	61	0	4	1	1	2	52	1	55	6
	Truck Driving Postsecondary Programs, Percent	100%	0%	6.6%	1.6%	1.6%	3.3%	85.2%	1.6%	90.2%	9.8%

IPEDS SY2022 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>

Minnesota colleges and universities do not offer postsecondary programs aligned to most occupations in this pathway, despite programs existing in other states. The one program offered locally, for driver instructors, has an undersupply of graduates compared to national benchmarks and has a low share of BIPOC graduates, and a low share of female graduates. The share of BIPOC graduates decreased by 7.8 percentage points from the 2021 school year and the share of female graduates decreased by 3.3 percentage points. Heavy and Tractor-Trailer Truck Drivers and Bus Drivers, School both also have a low share of BIPOC workforce by race and all occupations except for Bus Drivers, School have a low share of female workforce.

⁶ 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>

⁷ Minnesota Department of Public Safety. Licensed Truck Driver Training. August 2023. <https://dps.mn.gov/divisions/dvs/forms-documents/Documents/LicensedTruckDriverTrainingList.pdf>

⁸ CDL Training Today. <https://cdltrainingtoday.com/schools/mn/>

Postsecondary Strategy Summary Table, Minnesota 2023

Occupation	Related Programs*	2023Q2 Empl	Workforce BIPOC by Race	Workforce Hispanic/Latinx	Workforce Female	Workforce Under 45	SY2022 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		39,788	14.6%	6.2%	8.3%	46.8%	61	Y	14.8%	9.8%
Light Truck Drivers		20,704	17.4%	6.6%	8.3%	47.9%	61	Y	14.8%	9.8%
Bus Drivers, School		10,170	11.9%	3.3%	52.1%	22.0%	61	Y	14.8%	9.8%
Industrial Truck and Tractor Operators		9,712	21.3%	10.0%	11.7%	62.2%	61	N	14.8%	9.8%
Drivers/Sales Workers		7,979	17.7%	6.5%	8.6%	47.8%	N/A	N	N/A	N/A
Shuttle Drivers and Chauffeurs		5,664	28.6%	7.6%	16.5%	20.0%	61	Y	14.8%	9.8%
Bus Drivers, Transit and Intercity		3,368	27.1%	3.3%	40.4%	29.4%	61	Y	14.8%	9.8%
Tank Car, Truck, and Ship Loaders		217	25.0%	7.1%	20.9%	60.4%	NA	N	N/A	N/A
Truck Driving Pathway	Truck and Bus Driver/Commercial Vehicle Operator and Instructor	97,603	17.0%	6.3%	14.6%	43.7%	61	Y	14.8%	9.8%
All Occupations		3,075,767	16.0%	5.4%	48.1%	56.7%	30,032		34.1%	66.0%

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.

Conclusion

The Truck Driving pathway employment forecast is anticipated to rise slightly by 0.3% annually, decreasing slightly from the 2022Q3 forecast of 0.5%. Of all occupations found in the Truck Driving pathway, Industrial Truck and Tractor Operators, and Shuttle Drivers and Chauffeurs are uniquely concentrated in Minnesota to a higher degree than seen in the nation overall with location quotients of 1.41, and 1.35, respectively. On average, Truck Driving careers pay about \$51,800 per year—about \$14,300 below the average wage statewide across all positions. The Truck Driving Pathway saw significant growth over the past year, increasing in total employment by 3.3%. About 86.2% of people employed in Truck Driving roles in Minnesota work for private employers (increased by 1.7 percentage points since 2022Q3), while an estimated 5.8% are self-employed. The remaining 8% work for state, federal, or local government entities.

A variety of strategies may improve the outlook for transportation talent in need. In the Truck Driving pathway, all occupations, except for Bus Drivers, School have low talent diversity by gender. Many also have a higher than average share of the workforce that is over 45 years of age. Similarly, graduate diversity and graduate volumes are lagging. Just over 90% of students who obtained a truck driving or trucking instructor certificate from an accredited program reporting to NCES IPEDS in SY2022 were male (increased by 3.3 percentage points from prior school year), and 85.2% were non-Hispanic White students (an increase of nine percentage points). 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.

FAQ

How is employment forecast determined?

Forecast employment growth uses national projections from the Bureau of Labor Statistics, forecasts for 2022-2032, adapted for regional growth patterns by Chmura. Employment data are based on [occupation forecasts](#) and event-based forecasts if applicable. Forecasts are developed at the county level; therefore, for detailed (6-digit NAICS) ownership-specific industries, the forecast employment growth for a zip code or place (city, town, etc.) is taken from the forecast of the county to which it belongs.

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.

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

Licensed Truck Driver Training Schools

School Name & Address	Phone	Signer	Type of Training
160 Driving Academy 3410 Federal Drive, Suite 109 Eagan, MN 55122	(651) 461-3555	Steve Gold	CDL Class A
160 Driving Academy 1215 15th Street N St. Cloud, MN 56303	(309) 431-9272	Steve Gold	CDL Class A
160 Driving Academy 3755 25th Street SE Rochester, MN 55904	(507) 242-8160	Steve Gold	CDL Class A
Ancora Corporate Training 1111 West 5th Street Northfield, MN 55057	(612) 868-3341	Keith R. Franklin	CDL Class A
CES Minnesota LLC 2400 Trott Avenue SW Willmar, MN 56201	(701) 260-7057	Merle Bobbitt	CDL Class A
HabHab Trucking School LLC 2021 E Hennepin Avenue, Suite 420 Minneapolis, MN 55413	(615) 578-0636	Abdul M. Abdillahi	CDL Class A
Interstate Truck Driving School of Minnesota, LLC 499 Villaume Avenue South St. Paul, MN 55075	(651) 735-9250	William Collins	CDL Class A, B, C
Kings Trucking School 1821 University Avenue W, Ste. 461-11 St. Paul, MN 55104	(763) 204-3652	Bashir Omar	CDL Class A
Mayle Trans LLC 211 E 7th Street, Suite 525 St. Paul, MN 55101	(952) 417-6593	Abdiwahab M Nur	CDL Class A
Minnesota Truck and Trailer School, Inc. 8899 Hastings Street NE Blaine, MN 55449	(612) 618-1812	Eric Odegard	CDL Class A, B
Nova Lines Driving LLC 540 Apollo Avenue NE St. Cloud, MN 56304	(612) 845-1096	Noor Yussuf	CDL Class A
The CMV Tutor LLC 4121 US 14 Rochester, MN 55901	(507) 358-3143	Thomas F. Gilliam Jr.	CDL Class A, B

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<https://dps.mn.gov/divisions/dvs/forms-documents/Documents/LicensedTruckDriverTrainingList.pdf>