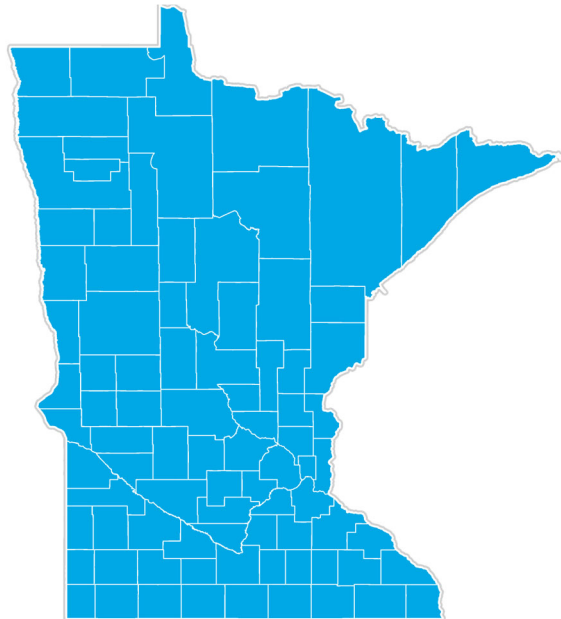


Workforce Trends

CAREER & TECHNICAL EDUCATION



Statewide

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Overview

Recent years have brought seismic shifts in the world of work, driven forward by ongoing economic uncertainties, dramatic talent shortages, workforce misalignments, and rapidly evolving technology. These dynamics make forecasting future labor market needs and supply uniquely challenging. But despite the turbulence, several pivotal shifts have begun to materialize, illuminating the path ahead in inclusive workplaces, skills-based hiring, and the digital workplace. The continuing effects of the pandemic, domestic and international unrest, and shifting economic models have been felt in disparate ways across the nation. The job market is undoubtedly cooling but is far from free from significant talent shortages plaguing every industry and career cluster.

This report unpacks the current workforce landscape of Minnesota and the regional nuances of talent demand by career field. We aim to support Minnesota Perkins Consortia in navigating changes in their local labor market and guide their understanding of how these changes may impact enrollment, industry, career advancement, and the needed programs of study by region.¹ Each report includes:

- A statewide economic and demographic overview
- Career field and cluster analysis including regional importance of each sector, key labor market statistics, and forecasting for future demand in the six career fields:
 - Health Science Technology
 - Engineering, Manufacturing, and Technology
 - Arts, Communications, and Information Systems
 - Agriculture, Food, and Natural Resources
 - Business, Management, and Administration
 - Human Services
- Gap analysis in each of the six career fields, including:
 - Occupation gaps (i.e. talent shortages)
 - Award gaps
- An Origin-to-Gateway-to-Target model analysis for how to help move students from entry points into their field of interest into other aligned careers, taking into account automation, remote work, and the changing work environment
- A word on remote work and jobs of the future

About This Report

This report was developed by RealTime Talent for the Career and Technical Education Consortia of Minnesota with funding provided by Minnesota State. The contents of this publication were made possible through the Strengthening Career and Technical Education for the 21st Century Act (Perkins V) Federal grant from the United States Department of Education administered through Minnesota State Colleges and Universities. 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.

¹ All labor market data in this report comes from Chmura Economics JobsEQ Dataset 2023Q2 unless otherwise noted. www.jobseq.com



Table of Contents

Overview	1
About This Report	1
Minnesota	4
Introduction	4
Community Profile	6
Demographics	6
Employment	9
Education	13
Labor Market.....	19
Workforce Forecast.....	19
Quantifying Talent Shortages.....	20
Occupation Gaps	20
Award Gaps	21
Job Posting Trends in Minnesota	24
Career Fields.....	27
Career Cluster Detail	28
Health Science Technology	30
Human Services.....	38
Arts, Communications, and Information Systems.....	46
Business, Management, and Administration	55
Engineering, Manufacturing, and Technology	63
Agriculture, Food, and Natural Resources	71
Conclusion.....	79
Data Notes	80



Definitions and Methodology 82



Minnesota

Introduction

This report highlights the current and future talent needs statewide across Minnesota, with highlights of similarities and differences across six regions of the state. Starting from the community demographics, unique opportunities, and the critical occupations and industries underpinning the regional economy, this macroeconomic overview is intended to support educators and administrators who aim to increase alignment between educational programming and local businesses' most pressing needs. Identifying the skills, certifications, and qualifications for positions today will help the education community anticipate community needs and ensure that curriculum best prepares students for relevant job opportunities of the future here in Minnesota.

This report uses an Origin-to-Gateway-to-Target Occupation model, used by the Rework America Alliance and modified in this report by RealTime Talent, illustrates promising likely and aligned pathways into each career field. This model supports students looking for entry points from an initial occupation of interest into other aligned careers, considering automation, remote work, and the changing work environment. The model itself is shown below, along with the definitions of each grouping of occupations.

Origin-to-Gateway-to-Target (OGT) Model

Target Occupations

High wage (above regional average)

High-skill (require some credential)

High-demand (2/4 indicators: under 3% unempl, higher than average 5-year growth, total 5-year demand >50% of current empl, high job posting volume)

*Often also high occupation gap and award gap

Gateway Occupations

Mid-wage (\$45,000 – regional average)

Low-middle skills (HS diploma, some OJT)

Sufficient demand (3-5% unemployment and/or high volumes of current opportunities)

Origin Occupations

Low wage (<\$45,000/year)

Low skill (no credential)

Low demand (over 5% unemployment, low growth, low replacement demand, and/or low job postings)

Origin Occupations are roles that are low-wage (<\$37,000 per year) or mid-wage (\$37,000-\$45,000) that have high unemployment locally among workers without four-year degrees.



Gateway Occupations are good jobs that can lead to Target Occupations as skills and experience are developed. These typically offer between \$45,000 up to the regional average wage (\$66,100 statewide). Gateway occupations offer a wage uplift to those previously employed in Origin Occupations, and offer longer-term economic mobility and career advancement opportunities. These are most often best-suited for adult workforce programming and first postsecondary experiences.

Target Occupations refer to high-wage occupations that pay at or above the region's average wage (\$66,100 statewide). These positions are also high-skill—meaning that they require an industry credential, certification, or higher education—and high-demand. Many of these Target Occupations are also facing Opportunity Gaps and Award Gaps locally, labeled as “OG” and “AG” respectively.

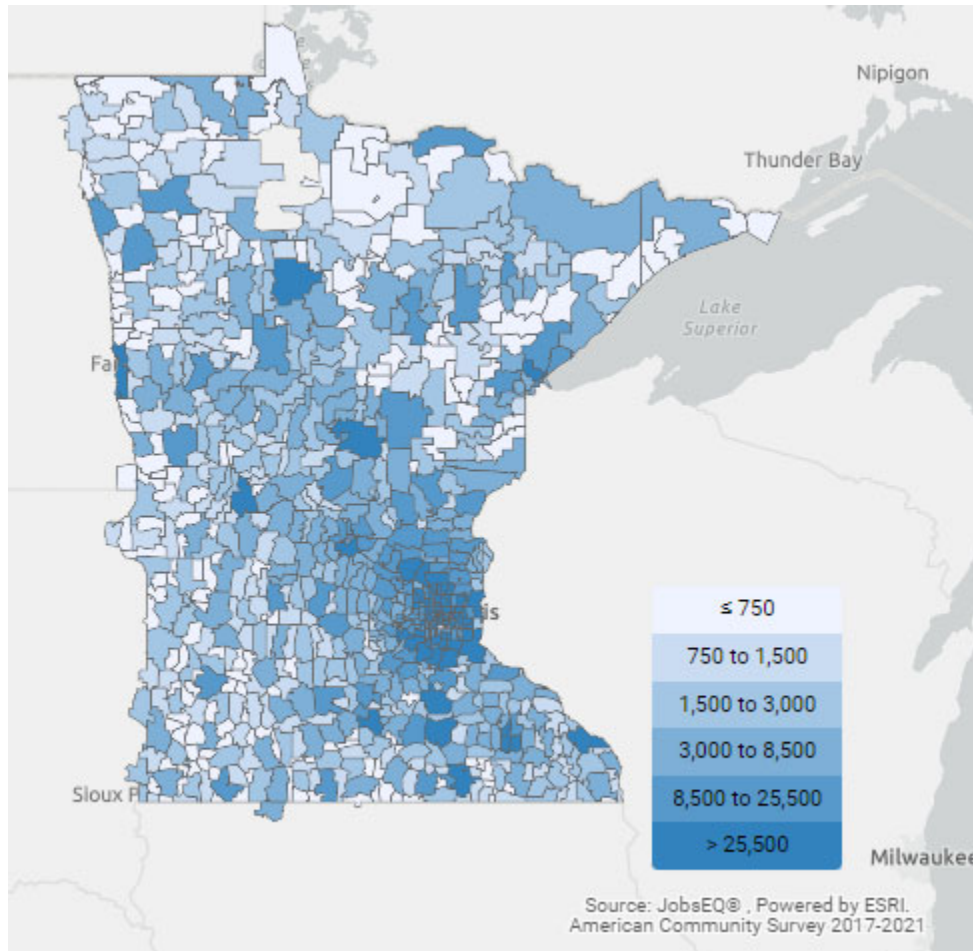


Community Profile

Demographics

The population of Minnesota was about 5,670,472 according to the 2017-2021 American Community Survey, an increase of about 70,306 from the prior years' estimates and about double the population growth seen in the prior year. Based on year-over-year population growth of about 0.6% on average, about 5,717,184 people are estimated to live in Minnesota as of 2022. Approximately 23.3% of Minnesota's population are minors under 18 years of age. Among the population 16 years and over, 69.1% participate in the labor force—a drop of 0.1 percentage point from the prior year (and compared to 63.4% nationwide, which increased by 0.2 percentage points).

Population Estimates, Minnesota Zip Codes

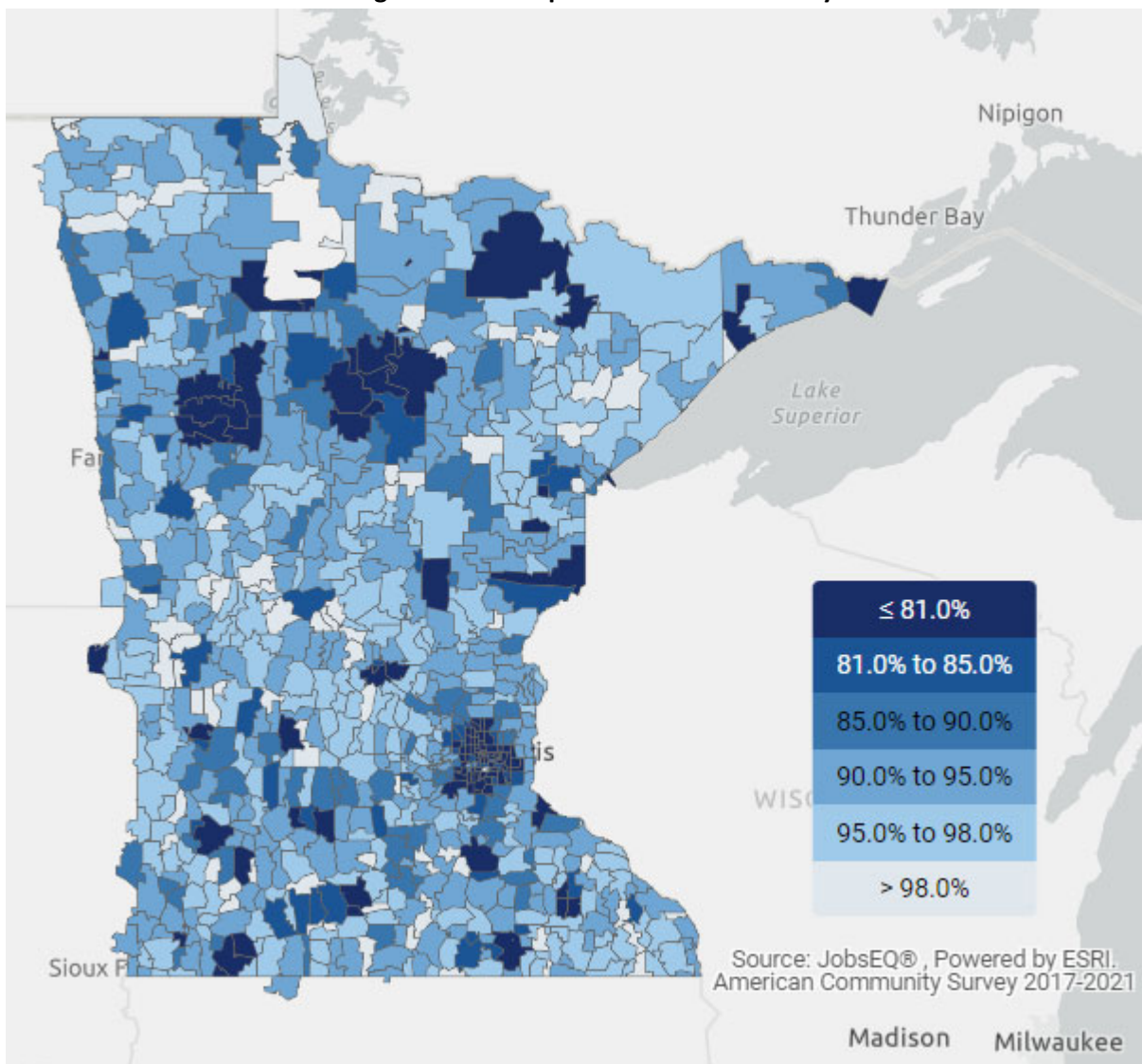


Across Minnesota, 19.3% of the population identify as Black, Asian, American Indian, Native Hawaiian, or some other race, an increase of 0.9 percentage points in BIPOC residents from the prior years' estimates, continuing a steady upward trend in diversity. Minnesota's most diverse region is the MSP Metro (26.3% BIPOC by race). However, by share of population that is BIPOC, not only Minnesota's most populous zip codes in the MSP Metro have high and growing



rates of diversity. Several communities with fewer than 650 residents, including zip codes 56219, 56187, 55771, 55072, 55615 (among others), Minnesota’s local American Indian tribal nations, and the very tip of Minnesota’s Arrowhead region, have higher than the state average mix of diversity with over 19% BIPOC residents (shown in dark blue in the map below). Approximately 5.6% of Minnesota residents are Hispanic or Latinx, an increase of 0.1 percentage points from the prior years’ estimates.² The Southwest region of Minnesota has the largest share of Hispanic or Latinx population in Minnesota with 7.7% of the population being Hispanic or Latinx—an increase of 0.4 percentage points from the prior year’s estimates.

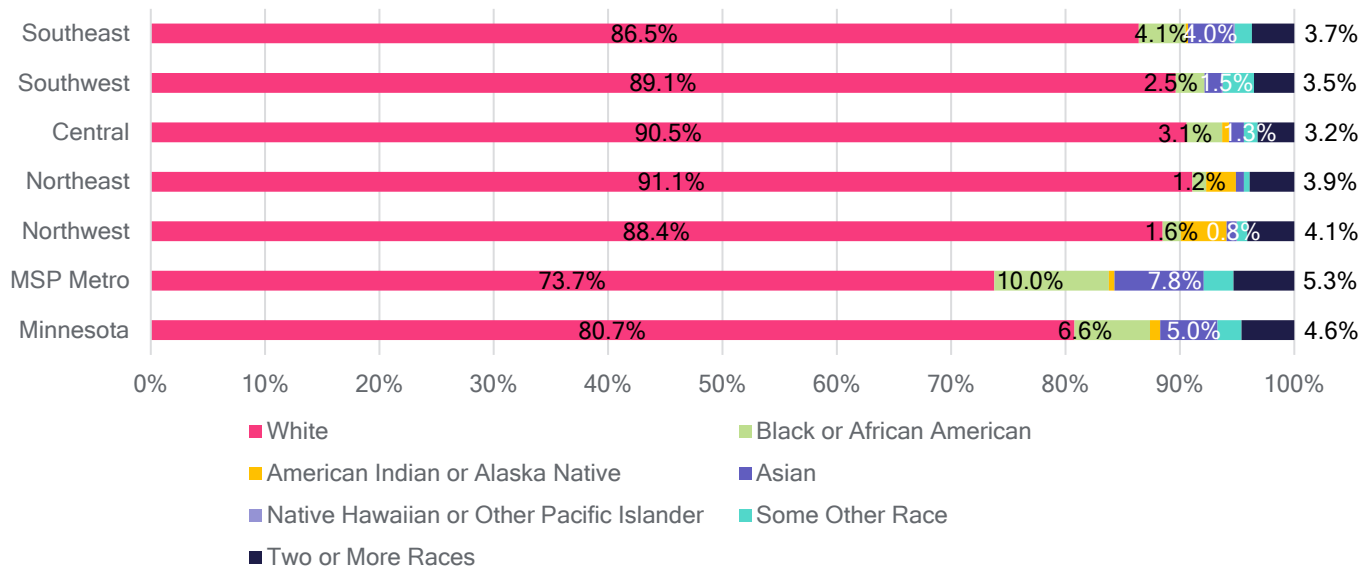
Population Demographic Estimates by Race, Minnesota Zip Codes Illustrating Percent of Population that is White by Race



² Comparing race and ethnicity data from the five-year American Community Survey estimates should be done with extreme caution as these data are not a time series. However, the overall trend of Minnesota’s increasing population diversity is supported by multiple data sources.

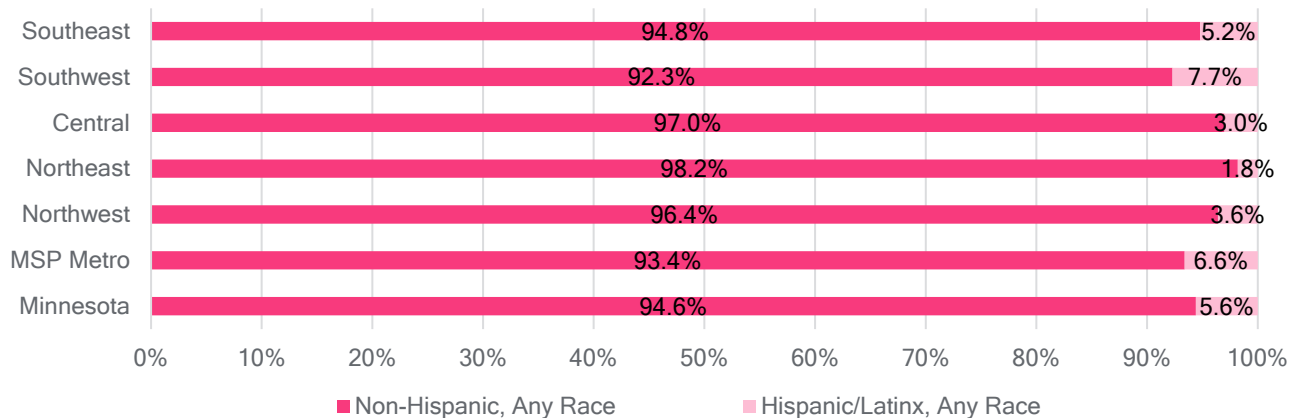


Population Race, All Ages



American Community Survey 2017-2021.

Population Ethnicity, All Ages



American Community Survey 2017-2021.

Community Demographics

Demographics	Percent			Percent			Value		
	Rural Greater MN	Urban Greater MN	Suburban Twin Cities Metro	MSP Metro Minnesota	Minnesota	USA	MSP Metro Minnesota	Minnesota	USA
Population (ACS)	—	—	—	—	—	—	3,136,376	5,670,472	329,725,481
Male	50.7%	50.3%	49.1%	49.7%	50.1%	49.5%	1,558,017	2,839,135	163,206,615
Female	49.3%	49.7%	50.9%	50.3%	49.9%	50.5%	1,578,359	2,831,337	166,518,866
Median Age ²	—	—	—	—	—	—	37.3	38.2	38.4
Under 18 Years	23.5%	22.6%	24.7%	23.5%	23.3%	22.5%	736,143	1,323,569	74,234,075



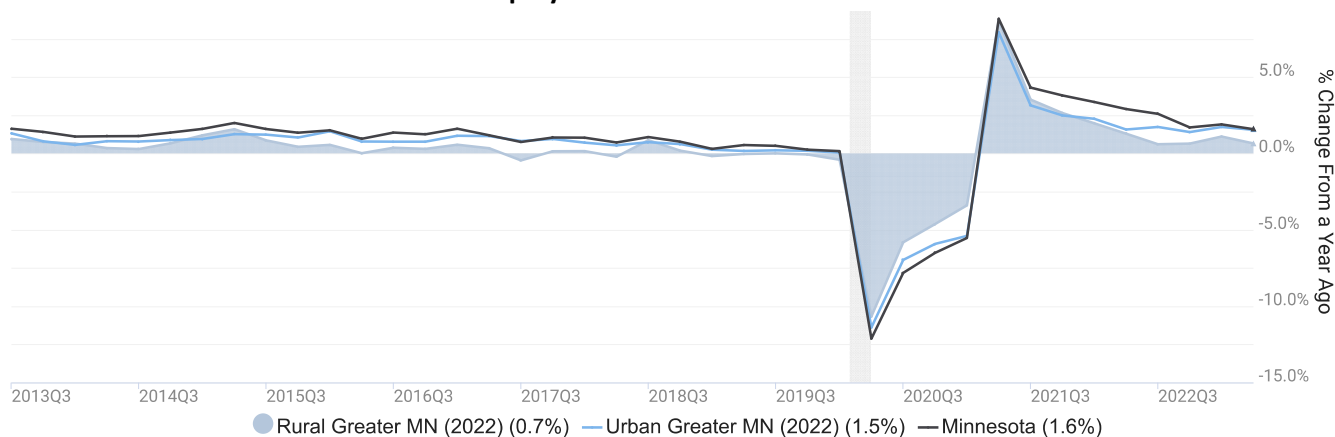
Demographics	Percent			Percent			Value		
	Rural Greater MN	Urban Greater MN	Suburban Twin Cities Metro	MSP Metro Minnesota	Minnesota	USA	MSP Metro Minnesota	Minnesota	USA
18 to 24 Years	8.1%	11.7%	10.9%	8.3%	8.8%	9.2%	261,779	499,402	30,339,089
25 to 34 Years	11.1%	12.5%	18.2%	14.8%	13.3%	13.8%	462,821	756,215	45,360,942
35 to 44 Years	11.9%	12.4%	13.5%	13.8%	13.0%	12.9%	432,562	738,714	42,441,883
45 to 54 Years	11.9%	11.2%	10.9%	12.5%	12.1%	12.6%	393,079	688,596	41,631,458
55 to 64 Years	14.5%	13.2%	10.7%	13.0%	13.4%	13.0%	407,478	762,459	42,829,413
65 to 74 Years	10.9%	9.6%	7.3%	8.6%	9.4%	9.6%	270,658	535,592	31,590,619
75 Years, and Over	8.1%	6.9%	3.8%	5.5%	6.5%	6.5%	171,856	365,925	21,298,002
Race: White	90.1%	88.1%	54.9%	73.7%	80.7%	68.2%	2,311,935	4,576,758	224,789,109
Race: Black or African American	1.6%	4.2%	16.0%	10.0%	6.6%	12.6%	313,299	376,406	41,393,012
Race: American Indian and Alaska Native	1.7%	0.9%	0.7%	0.5%	0.9%	0.8%	16,230	52,695	2,722,661
Race: Asian	1.2%	2.2%	19.0%	7.8%	5.0%	5.7%	243,917	283,382	18,782,924
Race: Native Hawaiian and Other Pacific Islander	0.1%	0.0%	0.0%	0.0%	0.0%	0.2%	928	2,338	615,557
Race: Some Other Race	1.7%	1.0%	2.7%	2.6%	2.1%	5.6%	82,538	120,011	18,382,796
Race: Two or More Races	3.6%	3.6%	6.6%	5.3%	4.6%	7.0%	167,529	258,882	23,039,422
Hispanic or Latino (of any race)	4.9%	3.6%	8.7%	6.6%	5.6%	18.4%	206,457	319,828	60,806,969

American Community Survey 2017-2021 unless noted otherwise.

Employment

As of 2023Q2, total employment in Minnesota was 3,075,767 (based on a four-quarter moving average). Over the 12-month period ending 2023Q2, employment increased 1.6% statewide. Minneapolis and St. Paul saw slightly higher employment growth at about 1.8% annual employment change, while suburban MSP Metro communities saw employment growth closer to 1.5% over the 12-month period ending 2023Q2. In comparison, other Urban Greater Minnesota communities saw 1.5% growth in employment, while Rural Greater Minnesota communities collectively saw only 0.7% increase in employment.

Employment Trends in Minnesota

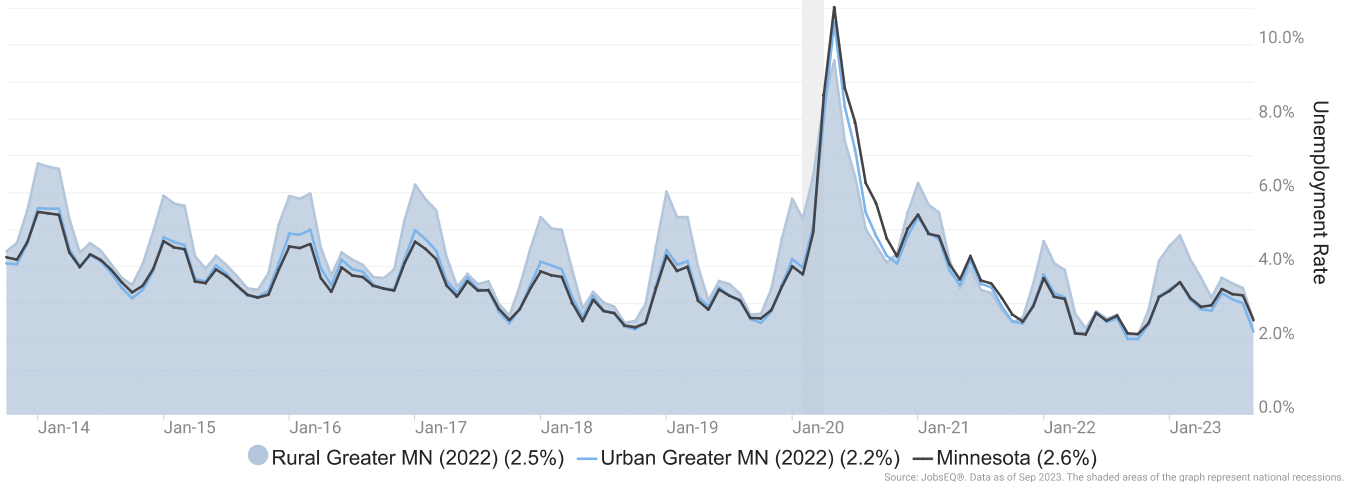


Employment data are derived from the Quarterly Census of Employment and Wages, provided by the Bureau of Labor Statistics and imputed where necessary. Data are updated through 2023Q1 with preliminary estimates updated to 2023Q2.



The unemployment rate in Minnesota was 2.6% as of September 2023. The regional unemployment rate was lower than the national rate (3.6%), but with variation by community: 2.7% in the MSP Metro, 2.2% in Urban Greater Minnesota, and 2.5% in Rural Greater Minnesota. One year earlier, in September 2022, the unemployment rate in Minnesota was 2.2%.

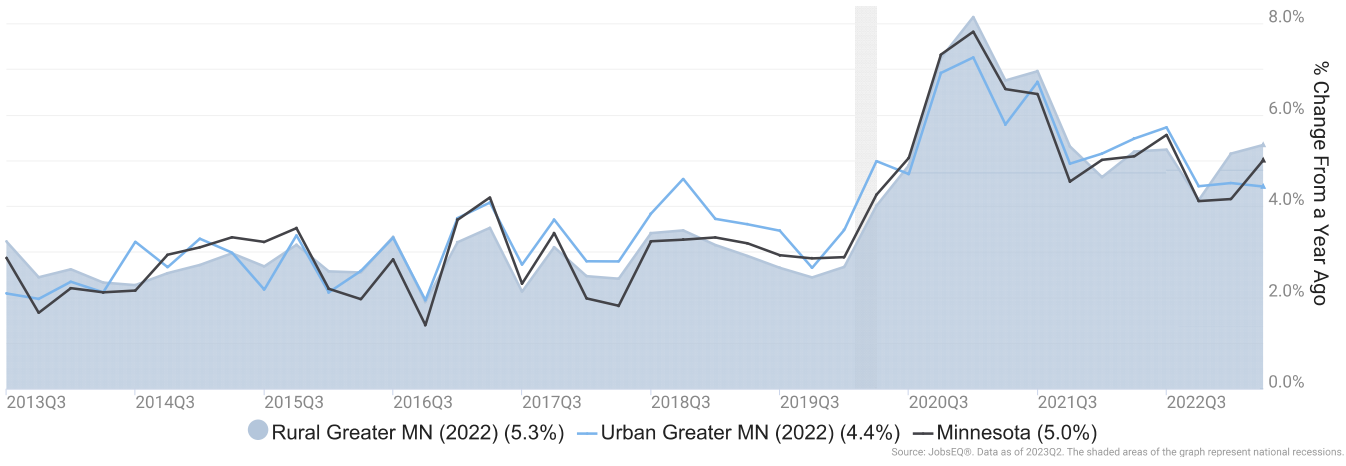
Unemployment in Minnesota



Unemployment rate data are from the Local Area Unemployment Statistics, provided by the Bureau of Labor Statistics and updated through September 2023.

The average worker in Minnesota earned annual wages of \$70,426 as of 2023Q2, Average annual wages per worker increased 5.0% in the region over the preceding four quarters (compared to last year’s increase of 8.5%). Wages rose similarly nationwide, where annual average wages were \$70,318 as of 2023Q2. Rural Greater Minnesota saw wages increase by 5.3% and Urban Greater Minnesota saw wage increases of about 4.4%, compared to 4.5% increases in the MSP Metro.

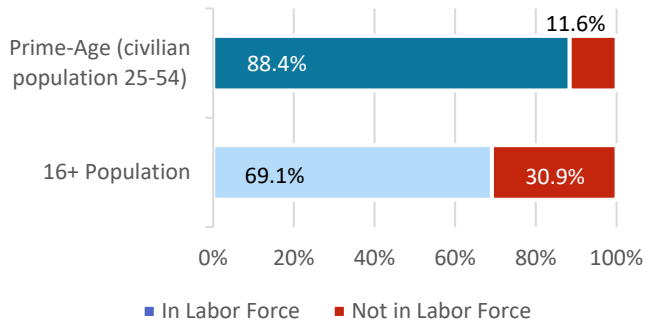
Average Annual Wage Growth in Minnesota



Annual average wages per worker data are derived from the Quarterly Census of Employment and Wages, provided by the Bureau of Labor Statistics and imputed where necessary. Data are updated through 2023Q1 with preliminary estimates updated to 2023Q2.



Labor Force Participation Rate



The size of Minnesota's labor force has increased to a total of 3,105,784 people 16 and older who are working or seeking work, as of the most recent American Community Survey estimates. The labor force participation rate is 69.1%, ahead of the nation's labor force participation rate for the population over 16 by 5.7 percentage points. The regional participation rate of the prime working age population (between the ages of 25 and 64) also leads the national rate—88.4% compared to the national 82.5%.

American Community Survey 2017-2021 unless noted otherwise.

About 3.6% of Minnesota residents are veterans and about 80.6% of veterans participate in the labor force. About 9.0% of Minnesota residents have some form of disability, participating in the labor force at a rate of 52.8% statewide. Rural Greater Minnesota has a slightly higher concentration of both veterans (4.2% of residents) and people with disabilities (10.0% of residents).

As of the 2017-2021 American Community Survey estimates, the share of youth that are disconnected from school or work sits at 1.8% statewide. While just 1.3% of MSP Metro suburban youth are disconnected from school, training, or work, about double this share of Saint Paul youth (2.8%) are disconnected (compared to 2.2% in Minneapolis). In Urban Greater Minnesota, just 1.1% of youth are disconnected, and in Rural Greater Minnesota, but 2.3% are disconnected from school or work.

Economic and Social Characteristics of Minnesota

Economic and Social Characteristics	Percent		Percent				Values		
	Rural Greater MN	Urban Greater MN	Suburban Twin Cities Metro	MSP Metro Minnesota	Minnesota	USA	MSP Metro Minnesota	Minnesota	USA
Labor Force Participation Rate and Size (civilian population 16 years and over)	65.1%	68.0%	71.4%	71.6%	69.1%	63.4%	1,775,168	3,105,784	166,672,597
Prime-Age Labor Force Participation Rate and Size (civilian population 25-54)	86.8%	88.3%	89.8%	89.1%	88.4%	82.5%	1,145,958	1,926,180	106,173,534
Armed Forces Labor Force	0.1%	0.2%	0.1%	0.1%	0.1%	0.5%	2,072	4,029	1,196,529
Veterans, Age 18-64	4.2%	4.0%	3.5%	3.1%	3.6%	4.4%	61,216	122,885	8,848,937
Veterans Labor Force Participation Rate and Size, Age 18-64	78.4%	76.7%	85.6%	83.3%	80.6%	77.0%	51,020	99,030	6,809,906
Median Household Income ²	—	—	—	—	—	—	\$87,542	\$77,706	\$69,021
Per Capita Income	—	—	—	—	—	—	\$46,407	\$41,204	\$37,638
Poverty Level (of all people)	9.6%	11.5%	5.7%	8.4%	9.2%	12.6%	260,948	512,312	40,661,636
Households Receiving Food Stamps/SNAP	7.2%	8.2%	5.2%	7.4%	7.5%	11.4%	91,347	167,348	14,105,231



Enrolled in Grade 12 (% of total population)	1.3%	1.2%	1.6%	1.5%	1.4%	1.3%	46,340	78,960	4,425,322
Disconnected Youth ³	2.3%	1.1%	1.3%	1.7%	1.8%	2.5%	2,650	5,245	432,389
Children in Single Parent Families (% of all children)	28.1%	28.4%	25.4%	28.6%	28.4%	34.0%	203,322	361,209	23,909,672
Uninsured	5.4%	4.0%	3.7%	4.4%	4.6%	8.8%	135,751	258,292	28,489,142
With a Disability, Age 18-64	10.0%	9.7%	7.4%	8.2%	9.0%	10.3%	160,296	306,405	20,537,729
With a Disability, Age 18-64, Labor Force Participation Rate and Size	50.9%	52.6%	57.5%	55.4%	53.5%	44.2%	88,814	164,030	9,068,973
Foreign Born	3.4%	5.2%	10.4%	12.0%	8.5%	13.6%	377,177	479,231	44,844,808

American Community Survey 2017-2021 unless noted otherwise.

*Median values for certain aggregate regions (such as MSAs) may be estimated as the weighted averages of the median values from the composing counties.

**Disconnected Youth are 16-19 year olds who are (1) not in school, (2) not high school graduates, and (3) either unemployed or not in the labor force.



Education

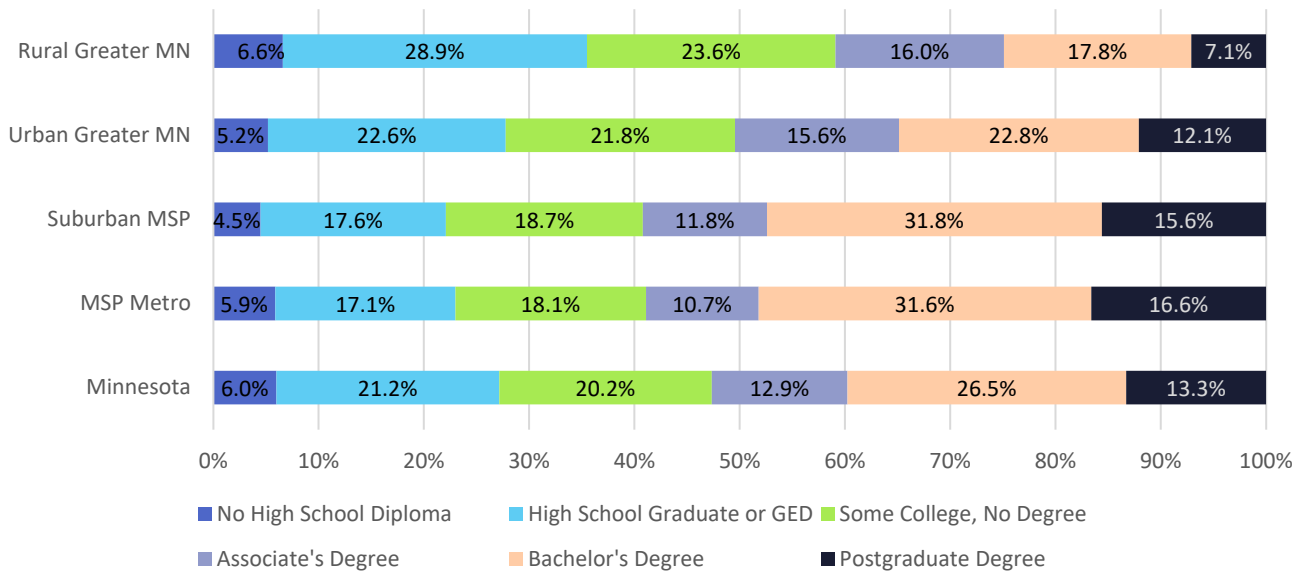
The share of Minnesota adults between the ages of 25 and 64 that do not have a high school diploma or equivalent dropped to 6.0% as of the 2017-2021 American Community Survey estimates. However, some communities have as high as 20% of prime working age adults in a neighborhood with no high school diploma or GED credential. The estimated share of the population with a high school diploma as the highest level of education dropped slightly from 21.4% to 21.2%. A larger share of the prime working age population of St. Paul hold a high school diploma or less (31.5%, or 51,997 people), while Suburban MSP and Minneapolis have a smaller share of residents with lower educational attainment. Rural Greater Minnesota has the largest overall share of talent with a high school diploma or less (35.5%) with the Southwest (35.4%) and Central (33.7%) regions having the largest shares of talent with lower educational attainment. The MSP Metro and Southeast regions have the highest volumes of talent with postgraduate degrees (16.6% and 14.9% respectively) or Bachelor’s degrees (31.6% and 23.8% respectively).

Educational Characteristics of Minnesota

Educational Characteristics	Percent			Percent			Values		
	Rural Greater MN	Urban Greater MN	Suburban Twin Cities Metro	MSP Metro Minnesota	Minnesota	USA	MSP Metro Minnesota	Minnesota	USA
No High School Diploma	6.6%	5.2%	4.5%	5.9%	6.0%	10.3%	100,087	176,696	17,756,046
High School Graduate	28.9%	22.6%	17.6%	17.1%	21.2%	25.3%	289,174	623,436	43,535,564
Some College, No Degree	23.6%	21.8%	18.7%	18.1%	20.2%	20.1%	306,861	593,618	34,637,141
Associate Degree	16.0%	15.6%	11.8%	10.7%	12.9%	9.3%	181,749	379,909	15,944,395
Bachelor's Degree	17.8%	22.8%	31.8%	31.6%	26.5%	22.0%	536,469	780,055	37,890,674
Postgraduate Degree	7.1%	12.1%	15.6%	16.6%	13.3%	13.1%	281,600	392,270	22,499,876

American Community Survey 2017-2021 unless noted otherwise.

Educational Attainment, Age 25-64



American Community Survey 2017-2021.



Colleges and Universities

Minnesota has 91 institutions of higher education that offer certificates, diplomas, non-degree awards, two-year degrees, and four-year degrees. The table below shows these postsecondary institutions sorted by total awards conferred during the 2021-22 school year. There were a total of 107,337 awards conferred in the region (including distance learning opportunities), a drop of 790 awards from the 2020-21 school year (108,127 awards). Capella and Walden Universities, which both offer a broad range of online programming, ranked first and third by total awards conferred, with the University of Minnesota-Twin Cities ranking second. Minnesota State University-Mankato had the fourth largest volume of total postsecondary awards. About 66.7% of all awards conferred were at postsecondary institutions in the MSP Metro.

School	Certificate < 1 Yr	Certificate 1+ but < 2 Yr	Associate	Certificate 2+ but < 4 Yr	Bachelor's	Post-Bacc	Master's	Post-Master's	Doctorate	Total Awards	Total School Enrollment	Avg Net Price ¹
Capella University	2	6	0	0	6,115	612	6,767	21	1,324	14,847	38,716	\$17,840
University of Minnesota-Twin Cities	183	11	0	0	8,508	250	2,958	0	1,766	13,676	52,376	\$17,468
Walden University	0	0	0	0	1,606	366	9,192	135	1,571	12,870	46,455	\$18,772
Minnesota State University-Mankato	131	0	53	0	2,628	210	603	65	38	3,728	14,576	\$15,832
University of St Thomas	0	0	48	29	1,722	206	954	3	199	3,161	9,336	\$30,099
University of Minnesota-Duluth	31	0	0	0	2,218	3	215	0	1	2,468	9,884	\$16,960
Saint Cloud State University	63	1	111	0	1,614	113	490	1	13	2,406	10,774	\$13,615
Century College	477	410	1,188	38	0	0	0	0	0	2,113	7,678	\$10,901
Rasmussen University-Minnesota	355	200	1,328	0	136	0	49	0	0	2,068	3,914	\$18,239
Metropolitan State University	8	5	0	0	1,735	35	252	0	19	2,054	6,914	\$16,830
Concordia University-Saint Paul	10	0	22	0	978	23	734	69	45	1,881	5,545	\$15,944
Winona State University	0	0	53	0	1,483	54	191	1	52	1,834	6,545	\$17,283
Hennepin Technical College	730	393	533	82	0	0	0	0	0	1,738	4,083	\$11,194
Saint Mary's University of Minnesota	0	0	0	0	424	91	1,076	63	50	1,704	4,701	\$21,606
Normandale Community College	199	0	1,371	0	0	0	0	0	0	1,570	8,842	\$12,354
Minneapolis Community and Technical College	450	142	954	19	0	0	0	0	0	1,565	5,973	\$12,314
Minnesota State University Moorhead	102	0	5	0	1,039	15	277	35	14	1,487	5,088	\$17,254
The College of Saint Scholastica	15	0	0	0	761	145	294	16	233	1,464	3,512	\$25,744
St Catherine University	18	1	245	0	582	45	435	2	71	1,399	3,904	\$19,252
Saint Paul College	448	237	560	83	0	0	0	0	0	1,328	5,083	\$12,391
North Hennepin Community College	578	16	613	0	0	0	0	0	0	1,207	5,173	\$11,368



Anoka-Ramsey Community College	65	11	1,112	0	0	0	0	0	0	1,188	7,951	\$10,929
Bethel University	15	0	29	0	737	44	313	0	36	1,174	3,731	\$28,840
Bemidji State University	18	10	57	0	972	2	88	0	0	1,147	4,279	\$15,594
Hamline University	4	6	0	0	494	166	357	36	5	1,068	2,931	\$20,239
Minnesota State Community and Technical College	43	230	727	52	0	0	0	0	0	1,052	5,360	\$10,119
Minnesota North College	163	151	643	74	0	0	0	0	0	1,031	859	\$9,151
St Cloud Technical and Community College	25	175	735	74	0	0	0	0	0	1,009	3,638	\$8,404
Lake Superior College	177	102	672	48	0	0	0	0	0	999	4,373	\$13,682
Anoka Technical College	526	200	187	72	0	0	0	0	0	985	1,690	\$12,407
St Olaf College	0	0	0	0	969	0	0	0	0	969	2,988	\$27,729
Rochester Community and Technical College	123	80	690	36	0	0	0	0	0	929	4,658	\$13,522
Augsburg University	0	0	0	0	572	5	291	0	24	892	3,166	\$23,871
Dakota County Technical College	209	221	420	13	0	0	0	0	0	863	2,451	\$11,472
Central Lakes College-Brainerd	106	194	503	53	0	0	0	0	0	856	4,448	\$12,279
Northland Community and Technical College	167	230	385	28	0	0	0	0	0	810	2,716	\$11,952
University of Northwestern-St Paul	0	0	20	0	707	3	60	0	0	790	3,398	\$22,965
Inver Hills Community College	248	22	487	0	0	0	0	0	0	757	3,729	\$10,184
Ridgewater College	39	75	548	80	0	0	0	0	0	742	2,846	\$11,014
Macalester College	0	0	0	0	711	0	0	0	0	711	2,244	\$30,939
Minnesota West Community and Technical College	277	161	239	13	0	0	0	0	0	690	3,347	\$11,356
Gustavus Adolphus College	0	0	0	0	682	0	0	0	0	682	2,251	\$27,657
Alexandria Technical & Community College	161	114	337	50	0	0	0	0	0	662	2,586	\$13,189
Riverland Community College	99	101	362	82	0	0	0	0	0	644	3,276	\$9,276
Southwest Minnesota State University	5	0	10	0	457	21	139	10	0	642	6,986	\$14,061
South Central College	107	82	375	27	0	0	0	0	0	591	2,511	\$10,025
Carleton College	0	0	0	0	555	0	0	0	0	555	2,044	\$31,718
Mayo Clinic College of Medicine and Science	101	134	0	0	0	44	29	0	193	501	1,250	\$11,188



Summit Academy Opportunities Industrialization Center	500	0	0	0	0	0	0	0	0	500	409	\$16,725
Concordia College at Moorhead	0	0	0	0	453	0	16	0	0	469	1,919	\$23,890
Dunwoody College of Technology	20	15	316	0	102	0	0	0	0	453	1,382	\$24,738
University of Minnesota-Crookston	11	0	0	0	435	0	0	0	0	446	2,304	\$11,925
College of Saint Benedict	0	0	0	0	407	0	0	0	0	407	1,557	\$28,269
Minnesota State College Southeast	81	142	173	3	0	0	0	0	0	399	1,838	\$14,965
Saint Johns University	0	0	0	0	370	0	24	0	0	394	1,643	\$27,750
Mitchell Hamline School of Law	0	0	0	0	0	0	1	0	350	351	1,220	
University of Minnesota-Morris	0	0	0	0	349	0	0	0	0	349	1,286	\$11,652
Pine Technical & Community College	98	101	134	0	0	0	0	0	0	333	1,766	\$10,971
Crown College	7	0	18	0	182	0	120	0	0	327	1,476	\$25,513
Aveda Arts & Sciences Institute Minneapolis	175	150	0	0	0	0	0	0	0	325	618	\$17,977
Northwestern Health Sciences University	0	14	59	0	37	0	26	0	165	301	1,126	\$23,003
Martin Luther College	55	1	0	1	173	0	26	0	0	256	920	\$21,988
Herzing University-Minneapolis	0	50	37	0	156	0	4	0	0	247	759	\$22,055
North Central University	2	0	9	0	199	0	25	0	0	235	1,034	\$24,232
Northwest Technical College	37	22	115	29	0	0	0	0	0	203	794	\$12,540
Bethany Lutheran College	0	14	0	0	150	0	0	0	0	164	798	\$17,640
Fond du Lac Tribal and Community College	18	12	124	0	0	0	0	0	0	154	1,525	\$10,307
Minneapolis College of Art and Design	0	0	0	0	119	0	33	0	0	152	775	\$28,520
Nova Academy of Cosmetology	48	98	0	0	0	0	0	0	0	146	177	\$17,312
Minnesota School of Cosmetology-Woodbury Campus	91	52	0	0	0	0	0	0	0	143	189	\$16,730
University of Minnesota-Rochester	0	0	0	0	143	0	0	0	0	143	646	\$14,198
Bethany Global University	4	27	9	0	90	0	11	0	0	141	328	\$19,093
Luther Seminary	0	0	0	0	0	0	122	5	1	128	480	
PCI Academy-Plymouth	71	22	0	0	0	0	0	0	0	93	90	



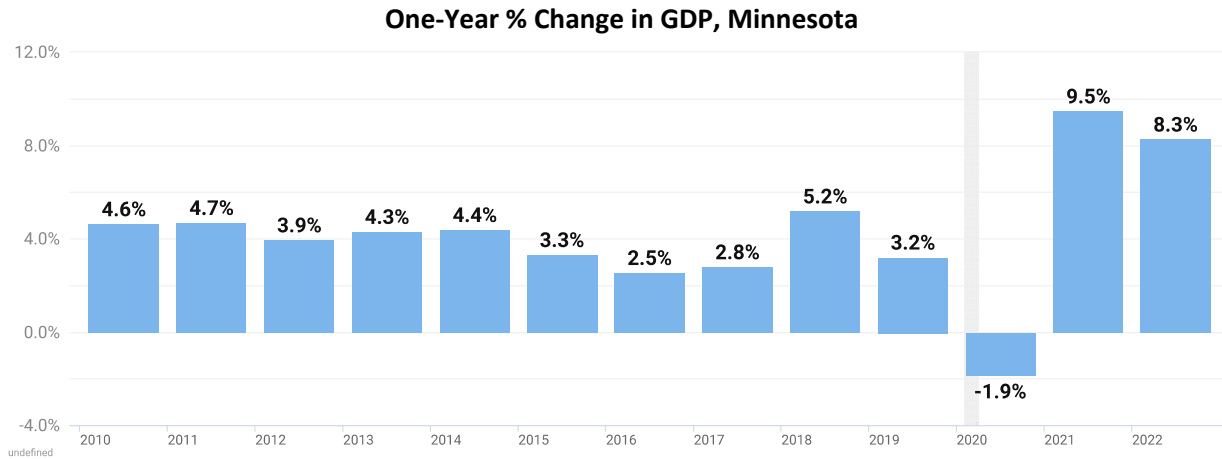
Empire Beauty School-Bloomington	53	36	0	0	0	0	0	0	0	89	144	\$16,566
Adler Graduate School	0	0	0	0	0	1	75	5	0	81	233	
Hazelden Betty Ford Graduate School of Addiction Studies	0	0	0	0	0	0	73	0	0	73	172	
Model College of Hair Design	32	36	0	0	0	0	0	0	0	68	128	\$12,185
Institute of Production and Recording	0	0	34	0	5	0	0	0	0	39	128	\$23,297
Bethlehem College & Seminary	0	0	2	0	20	0	9	0	0	31	205	\$7,500
Empire Beauty School-Spring Lake Park	0	29	0	0	0	0	0	0	0	29	89	\$15,342
United Theological Seminary of the Twin Cities	0	0	0	0	0	0	25	0	3	28	197	
Academy College	0	0	3	0	20	0	0	0	0	23	85	\$24,488
Leech Lake Tribal College	0	2	19	0	0	0	0	0	0	21	156	\$9,947
Oak Hills Christian College	0	4	6	0	10	0	0	0	0	20	94	\$20,855
Avalon School of Cosmetology	6	7	0	4	0	0	0	0	0	17	18	\$9,861
White Earth Tribal and Community College	0	0	16	0	0	0	0	0	0	16	123	\$8,562
Red Lake Nation College	0	0	14	0	0	0	0	0	0	14	152	\$6,956
Cosmetology Careers Unlimited College of Hair Skin and Nails	0	11	0	0	0	0	0	0	0	11	27	\$9,202
Hastings Beauty School	0	9	0	0	0	0	0	0	0	9	16	\$12,926
American Academy of Health and Wellness	0	0	0	0	0	0	2	0	0	2	36	
Total	7,787	4,575	16,710	990	41,825	2,454	26,356	467	6,173	107,337		

* Average net price represents full-time beginning undergraduate students who paid the in-state or in-district tuition rate and were awarded grant or scholarship aid from federal, state or local governments, or the institution. Data as of the 2021-2022 academic year.



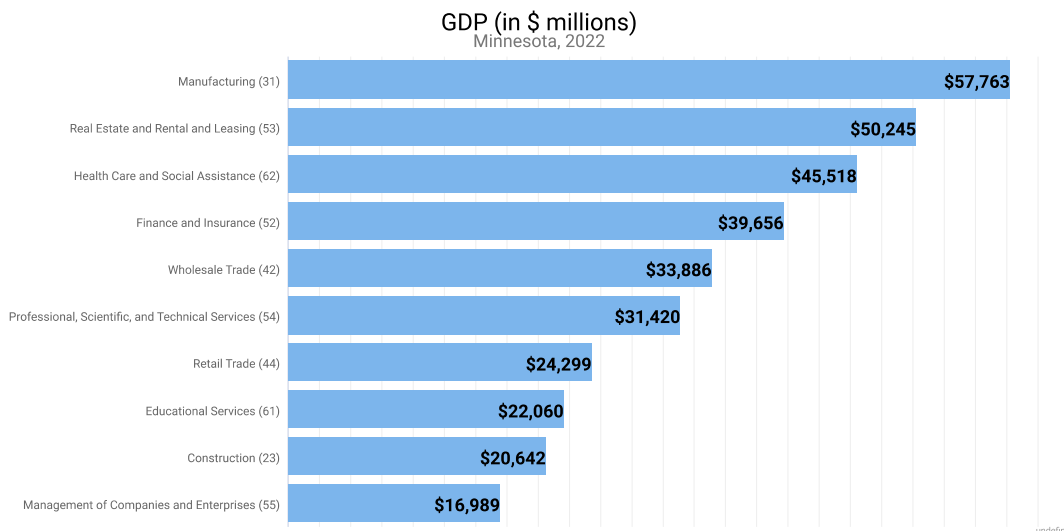
Economic Indicators

Gross Domestic Product (GDP) is the total value of goods and services produced by a region. In 2022, nominal GDP in Minnesota grew by 8.3%. This follows an expansion of 9.5% in 2021, and a contraction of -1.9% in 2020. As of 2022, total GDP in the region was \$446,499,500,000.



Gross Domestic Product data are provided by the Bureau of Economic Analysis, imputed by Chmura where necessary, updated through 2022.³

Of the industries represented in Minnesota, Manufacturing contributed the largest portion of GDP in 2022, \$57,763,449,000—rising roughly \$4.7 billion from 2021. The next-largest contributions came from Real Estate and Leasing (\$50,244,731,000), which decreased by over \$1.2 billion from 2021, and Health Care and Social Assistance (\$45,517,557,000), which grew by over \$4.0 billion. All industries in Minnesota saw increased output except for Real Estate and Leasing.



³ GDP estimates by Chmura Economics, updated through 2022. GDP data is revised every year, and there are typically small changes over time, with more recent years being more likely to be revised. Additionally, Chmura's detailed GDP estimates are modeled from industry employment and wage data, which is also subject to revision with each update. In general, with the exception of the most recent 2 or 3 years, historical revisions should be relatively small, only fractions of a percentage point.

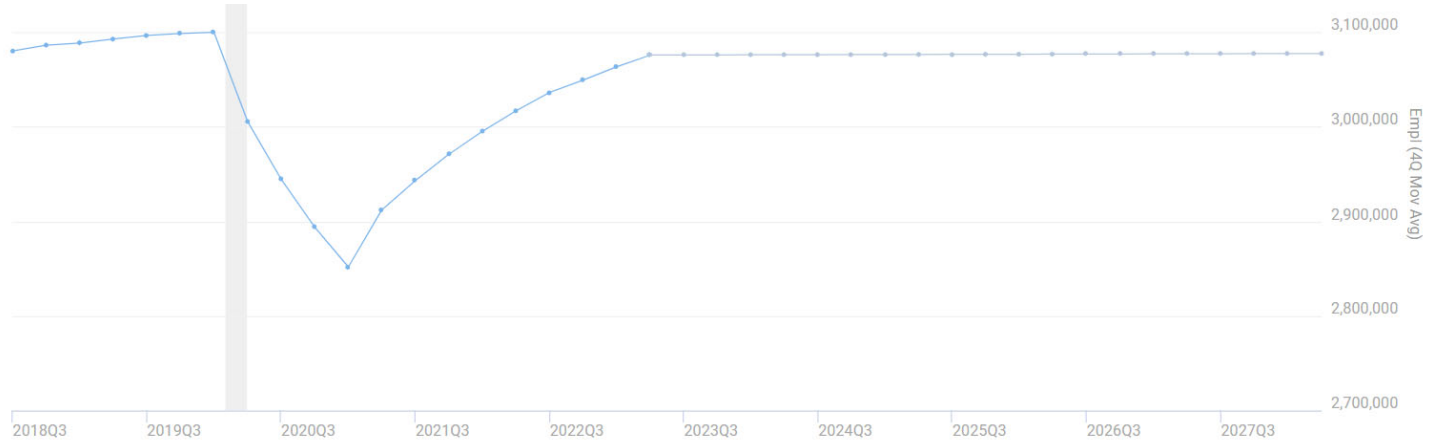


Labor Market

Workforce Forecast

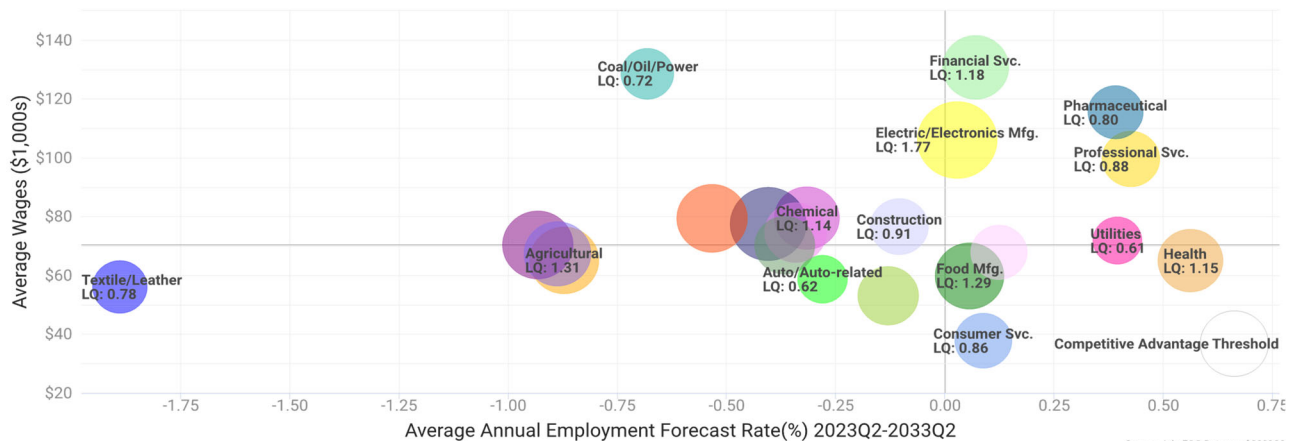
Employment rose by 2.0% in the region between 2022Q2 and 2023Q2 in Minnesota, tapering down on what was a relatively swift recovery from the COVID-19 pandemic. An estimated 2.9% of the Minnesota workforce is unemployed as of September 2023 (about 87,730 people)—52.6% of whom are located in the MSP Metro. Employment in the region is forecast to remain flat through 2028 in a baseline scenario, adding only 1,756 new jobs to the 3,075,767 currently held and unlikely to reach pre-pandemic volumes due to a tight talent supply.

5-Year Forecast in Minnesota



Employment forecasts vary considerably by industry. An industry cluster is a geographic concentration of interrelated industries or occupations. The industry cluster in Minnesota with the highest relative concentration remains Electric and Electronics Manufacturing with a location quotient of 1.77, particularly highly concentrated in the MSP Metro region. This cluster employs 57,718 workers in Minnesota, 77.5% of which is based in the MSP Metro. Talent employed in this industry make an average wage of \$106,054—consistent with 2022 estimates. Employment in the Electric and Electronics Manufacturing cluster is forecast to remain flat over the next five to ten years, due in large part to a tight talent market. Between 2022Q2 and 2023Q2 estimates, most industries saw decline in forecasted employment change, but also experienced higher-than-anticipated job growth over the one-year period.

Industry Clusters for Minnesota as of 2023Q2



Source: JobsEQ8, Data as of 2023Q2

Quantifying Talent Shortages

Occupation Gaps

The pandemic's acceleration of critical talent shortages through shifts in demand, supply chains, and resource availability resulted in dramatic upticks in demand for very specifically trained talent with some college, an industry credential, a two year degree, or a Bachelor's degree amidst a severe constriction of talent availability for these same middle-skill, middle-wage roles. This section highlights the most critical talent shortages now apparent statewide, the industries that define each region of Minnesota, and the top Gateway occupations that are in high demand and low talent supply.

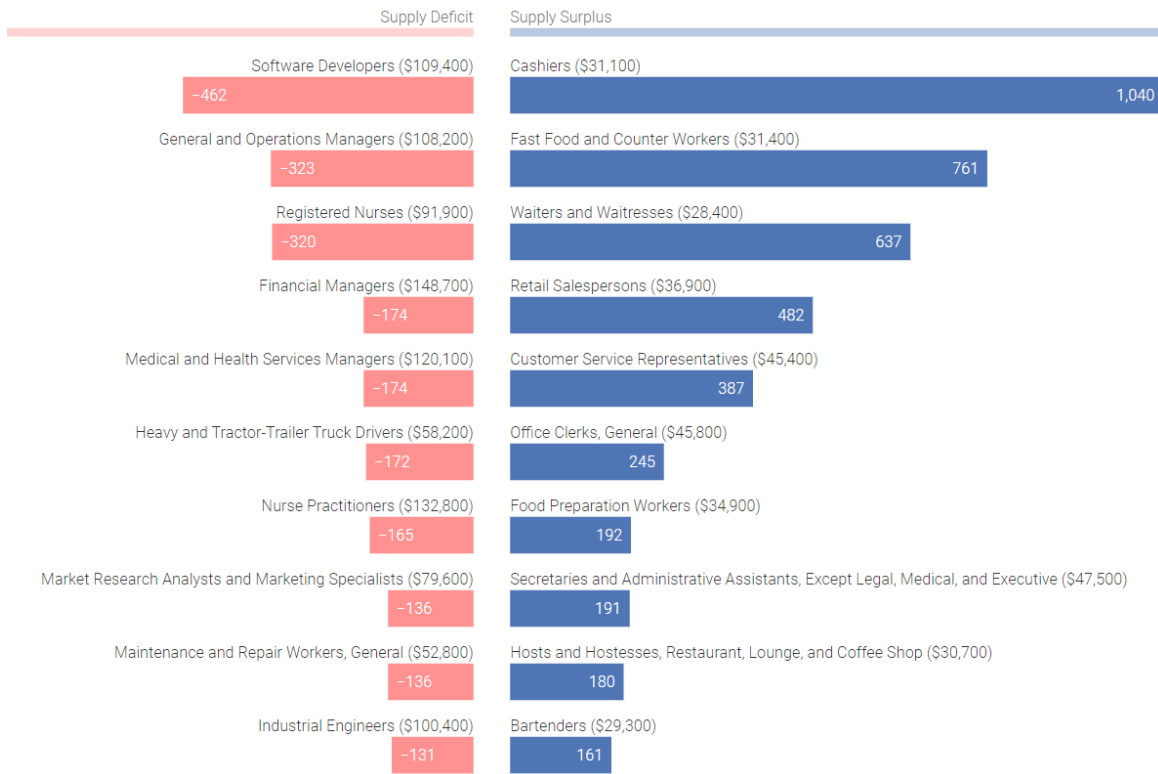
The chart below shows the potential average annual talent gaps over ten years. Many variables go into this analysis, but at its core it is based on a forecast comparing occupation demand growth to the local population growth and the projected educational attainment of those residents, then matched to specific related programs offered locally. When an area, for example, has an occupation expected to grow quickly but the educational requirement for the occupation does not match well with the educational attainment of its residents, there is a high potential for an occupation shortfall in the region. Alternatively, slow-growing or contracting occupations often represent potential supply surpluses. While this an important analysis for determining local occupation needs, the occupation gap should be considered along with other regional data including growth and separation forecasts, unemployment rates, wage trends, and award and skill gap analyses.

Several occupations that forecast high talent surpluses in 2022 have continued to grow in the estimated size of talent surplus in 2023 (shown in blue below), including Cashiers, Fast Food and Counter Workers, Waiters and Waitresses, Retail Workers, and Customer Service Representatives.

In 2022, several Gateway occupations (Restaurant Cooks as well as Maintenance and Repair Workers) had joined the ranks of top ten occupations in highest shortage. Although these roles continue to forecast shortages, as of 2023Q2 both have dropped considerably in rank to 13th and 9th greatest shortage statewide, respectively. Software Developers, General and Operations Managers, Registered Nurses, and Financial Managers continue to rank as the top occupations of highest forecasted shortage over the next five to ten years, with employers needing hundreds more workers in these roles each year than what can be found in our existing talent market. Medical and Health Services Managers, Truck Drivers, and Nurse Practitioners remain in critical shortage across the state.



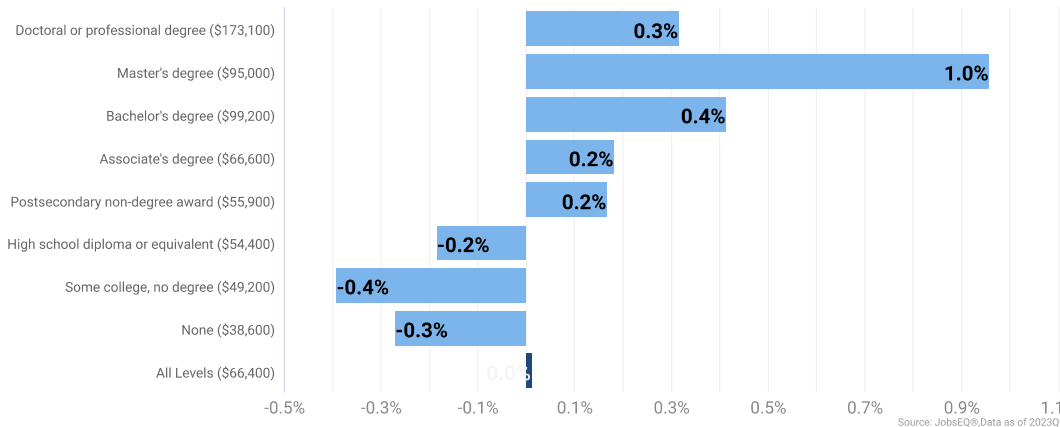
Average Annual Occupation Gaps (i.e. Talent Shortage), 2023Q2 through 2033Q2



Award Gaps

Expected growth rates for occupations vary by the education and training required. The employment outlook declined for the MSP Metro region from 2022 estimates, now forecast to grow by about 1,756 workers over five years. Occupations typically requiring a Doctoral degree are now expected to grow by about 0.3% on average annually, whereas those requiring a Master’s degree are expected to grow by 1.0% annually. Those requiring either a certificate or a two-year degree or certificate have lower forecasted overall growth rates. Estimated wages have increased across careers at each education level requirement.

Annual Average Projected Job Growth by Training Required for Minnesota, 2023Q2

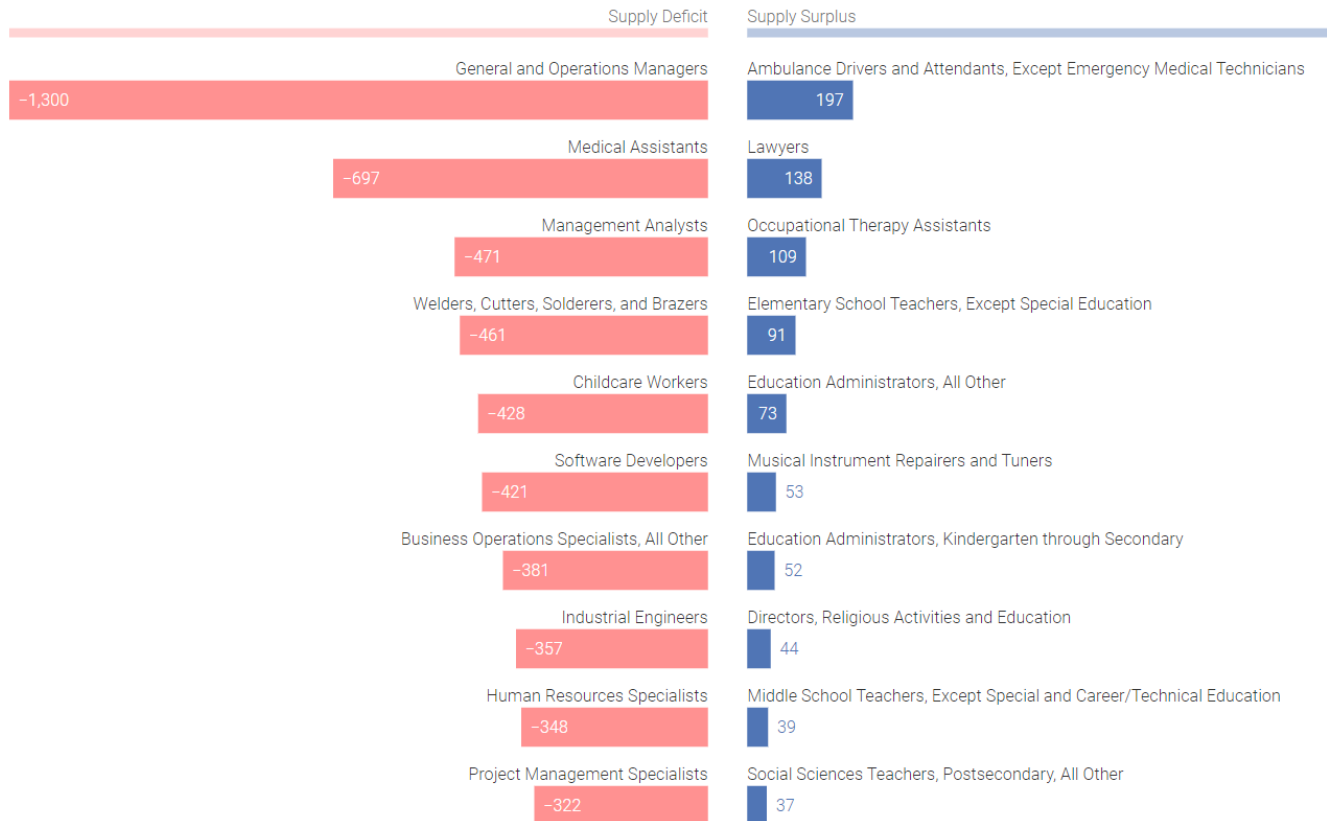


Employment by occupation data are estimates as of 2023Q2. Education levels of occupations are based on BLS assignments. Forecast employment growth uses national projections from the Bureau of Labor Statistics adapted for regional growth patterns.



Award gaps quantify the total number of postsecondary award completions in a region tied to an occupation benchmarked against national rates. Statewide, local postsecondary programs are likely underproducing General and Operations Managers, Medical Assistants, Management Analysts, Welders, Childcare Workers, and Software Developers in high volumes. There is a moderate-to-low oversupply of EMTs, Lawyers, and Occupational Therapy Assistants completing local postsecondary programs compared to national volumes.

Award Gaps, All Occupations, Minnesota, 2023Q2



In 2022Q2, there were twelve occupations employing more than 75 people in Minnesota that also had unemployment rates of zero—meaning there were likely no skilled, unemployed workers available in Minnesota. As of 2023Q2, there are ten occupations employing more than 100 people statewide with no unemployed talent (twelve when expanding the list of occupations to roles that employ 75 or more people), but the roles are not all the same as what was observed in 2022. Whereas all but one of these zero-unemployment occupations in 2022Q2 paid over the statewide average wage, as of 2023Q2 half (six) of the occupations have average annual wages under the statewide average. In addition to having more low-wage positions with no unemployed talent, the 2023Q2 roles have more positions that do not require a postsecondary credential. In 2022Q2, elite Target occupations in Health Science Technology comprised half (six) of the occupations, but Health Science Technology roles are no longer in the list as of 2023Q2. Health Science Technology positions previously on the list of zero unemployment occupations still have dramatically low unemployment rates, some with only one person estimated as being unemployed as of 2023Q2. However, the broader shift toward Origin and Gateway occupations in significant talent shortage across all career fields marks the severity of the talent shortage.

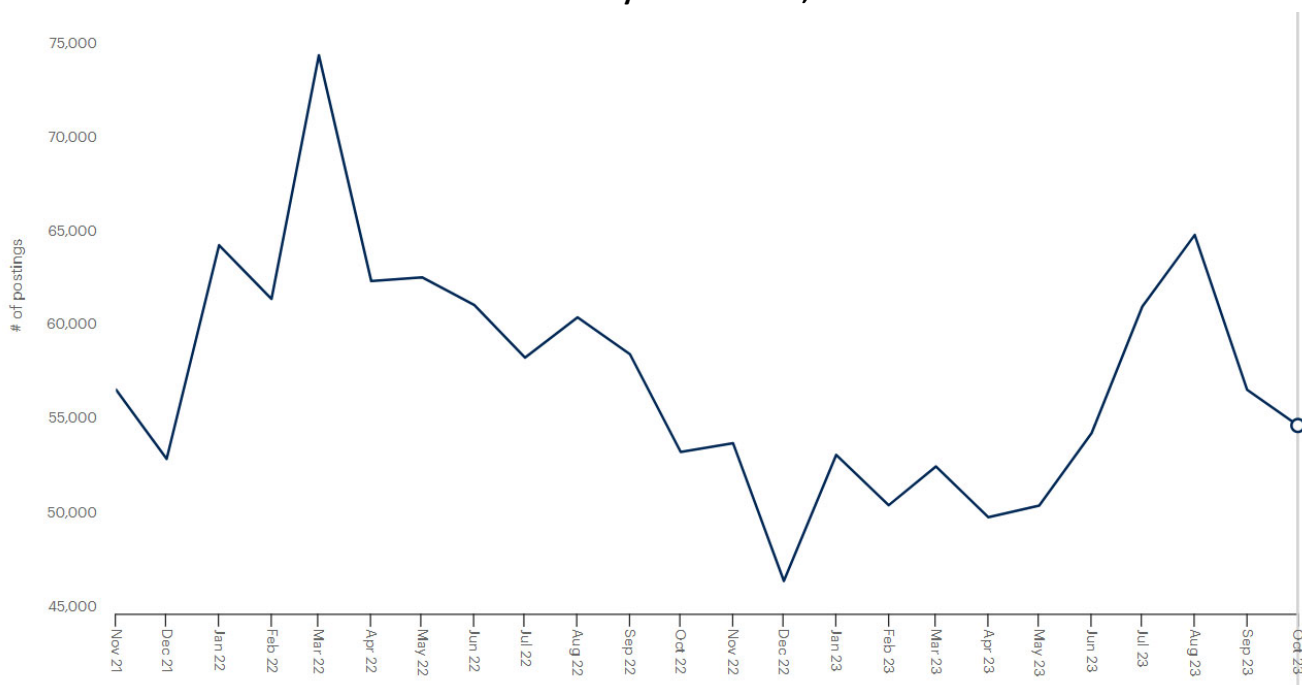
Occupations with Zero Unemployed Workforce and Employing over 75 Workers, Minnesota 2023Q2

SOC	Occupation	Current						5-Year History		5-Year Forecast				
		Empl	Mean Ann Wages ²	LQ	Unempl	Unempl Rate	30-Day Online Job Ads ³	Empl Change	Ann %	Total Demand	Exits	Transfers	Empl Change	Ann % Change
11-1031	Legislators	732	\$70,000	0.93	0	n/a	n/a	6	0.2%	284	113	175	-3	-0.1%
33-9021	Private Detectives and Investigators	605	\$64,800	0.85	0	n/a	11	-32	-1.0%	287	106	176	4	0.1%
17-2011	Aerospace Engineers	578	\$123,100	0.48	0	n/a	26	13	0.5%	169	64	99	6	0.2%
49-9091	Coin, Vending, and Amusement Machine Servicers and Repairers	566	\$48,900	0.76	0	n/a	3	-63	-2.1%	308	135	190	-16	-0.6%
49-2097	Audiovisual Equipment Installers and Repairers	387	\$53,100	0.76	0	n/a	11	-146	-6.2%	186	69	129	-13	-0.7%
11-9131	Postmasters and Mail Superintendents	307	\$83,900	1.20	0	n/a	9	-21	-1.3%	98	45	70	-17	-1.1%
53-6099	Transportation Workers, All Other	192	\$43,200	0.80	0	n/a	1	-60	-5.3%	121	43	76	1	0.1%
25-4011	Archivists	154	\$63,600	0.93	0	n/a	5	5	0.6%	99	46	48	4	0.6%
19-2012	Physicists	125	\$137,200	0.32	0	n/a	15	19	3.3%	48	16	29	2	0.4%
19-3091	Anthropologists and Archeologists	101	\$85,200	0.69	0	n/a	73	6	1.3%	49	12	35	2	0.4%
47-5013	Service Unit Operators, Oil and Gas	98	\$69,300	0.12	0	n/a	n/a	23	5.5%	58	12	44	1	0.3%
43-2021	Telephone Operators	83	\$46,800	1.08	0	n/a	n/a	-95	-14.2%	37	23	26	-12	-3.2%
00-0000	Total - All Occupations	3,075,767	\$66,100	1.00	87,730	2.9%	146,046	11,603	0.1%	1,746,576	727,900	1,016,920	1,756	0.0%

Job Posting Trends in Minnesota

Online job posting data reveals much about employer demand for certain skills, certifications, qualifications, and occupational competencies. From November 1, 2022, through October 31, 2023, there were 512,504 unique job postings advertised online in Minnesota. This was -11% lower than the 12 months prior. The peak month for total volume of job postings over the past two years was March 2022, when there were 74,722 unique jobs posted in the region. About 15% of all positions advertised over the most recent 12-month period were explicitly listed as remote or telecommute roles—either permanently or temporarily—consistent with the prior 12-month period. The share of remote work opportunities have increased most among Health Science Technology and Business, Management, and Administration roles in the last year (by four and two percentage points respectively).

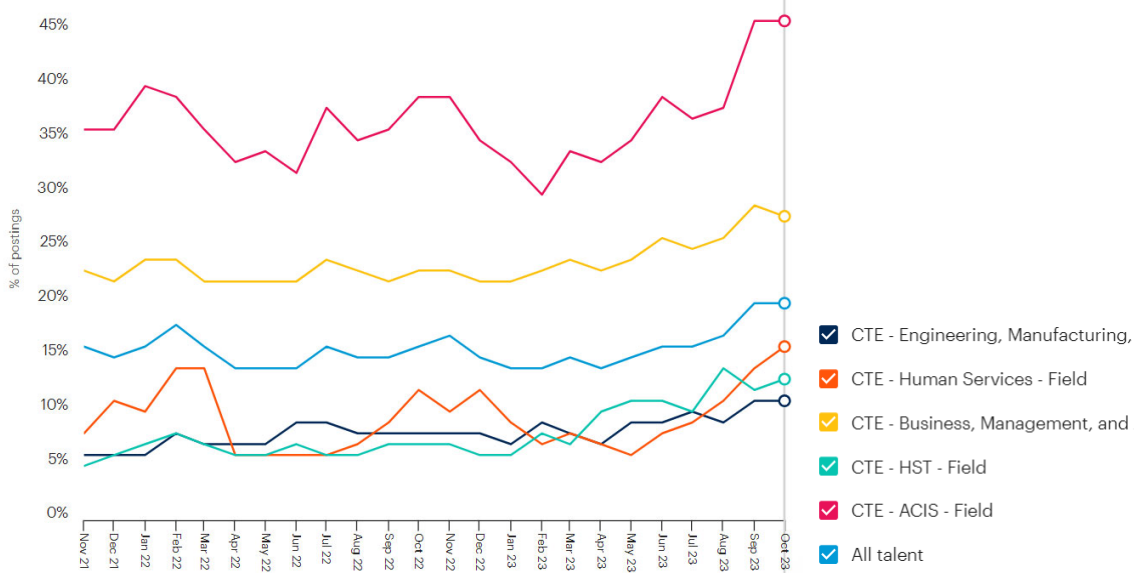
Total Jobs Advertised Monthly in Minnesota, October 2022-2023



SOURCE: Gartner TalentNeuron Plan accessed 11/28/2023

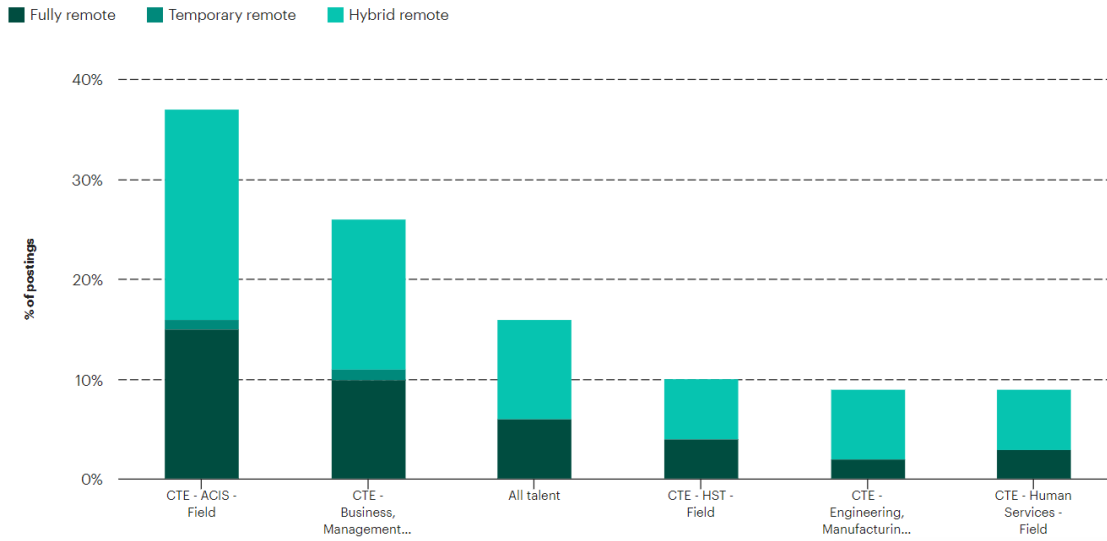


Total Remote Job Postings Advertised Monthly in Minnesota, October 2022-2023



SOURCE: Gartner TalentNeuron Plan accessed 11/22/2023

Remote Job Postings by Career Field Advertised in Minnesota, October 2022-2023








Talent Profile	% of postings				
	Unspecified /Onsite	Total remote	Fully remote	Temporary remote	Hybrid remote
CTE - ACIS - Field	63% ▼ -1 pp	37% ▲ 1 pp	15% ▼ -6 pp	1% ▲ 0 pp	21% ▲ 7 pp
CTE - Business, Management, and Administration - Field	74% ▼ -3 pp	26% ▲ 3 pp	10% ▼ -3 pp	1% ▲ 0 pp	15% ▲ 6 pp
All talent	84% ▼ -1 pp	16% ▲ 1 pp	6% ▼ -3 pp	0% ▲ 0 pp	10% ▲ 4 pp
CTE - HST - Field	90% ▼ -4 pp	10% ▲ 4 pp	4% ▲ 0 pp	0% ▲ 0 pp	6% ▲ 4 pp
CTE - Engineering, Manufacturing, and Technology - Field	91% ▼ -2 pp	9% ▲ 2 pp	2% ▼ -1 pp	0% ▲ 0 pp	7% ▲ 3 pp
CTE - Human Services - Field	91% ▼ -1 pp	9% ▲ 1 pp	3% ▼ -2 pp	0% ▲ 0 pp	6% ▲ 3 pp

SOURCE: Gartner TalentNeuron Plan accessed 11/28/2023



Talent accumulates valuable skills in many different ways beyond just work and education, from self-study to apprenticeships and internships, workforce training programs, as well as general life experiences, which all develop relevant skills. Assessing experience in terms of skills unearths a person’s qualifications and more clearly identifies training needs. It also helps people recognize the abilities and knowledge they may not know they have. This kind of gap analysis is possible at the occupation level and supports postsecondary planning, workforce development, and employer talent strategy. There are no specific skills new, emerging, or growing across all career clusters broadly, though regional and industry-specific trends. Core skills have remained consistent with human skills such as communication and relationship management ranking in high importance.

Top Evolving Skills in Minnesota, October 2022-2023

 New There are no New skills in the market New skills whose future is uncertain.	 Emerging There are no Emerging skills in the market Relatively new skills that are becoming more prevalent.	 Growing There are no Growing skills in the market Fast-growing skills that are becoming core skills.	 Core 1. Collaboration 2. Relationships 3. Operations Skills that have been present in a high percentage of job postings for some time.	 Declining 1. Software development Skills that used to be essential but are becoming obsolete.
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Career Fields

Minnesota has a slightly higher concentration of Health Science Technology careers statewide than seen on average nationally, with the Healthcare Industry also contributing to the state's economy to a greater extent than observed in the average state. The Business, Management, and Administration field accounts for about 43.4% of the total workforce, as well as 42.4% of all job postings advertised over the past 30 days. The Human Services field saw the highest growth over the past five years (0.5% average annual growth), and forecasts strong growth through 2028Q2 at about 0.4% average annual growth anticipated. Arts, Communications, and Information Systems careers have the lowest total employment volume statewide but offer the highest average annual wages of all career fields and the highest forecast average annual growth (0.6%).

Unemployment is highest among Engineering, Manufacturing, and Technology careers, at 3.4% unemployment or about 25,276 unemployed professionals in this field statewide. Minnesota can expect talent shortages in all career fields, with the highest shortages among Health Science Technology, Engineering, Manufacturing, and Technology, Business, Management, and Administration, and several pathways within Arts, Communications, and Information Systems.

CTE Field Employment and Wages in Minnesota, 2023Q2¹

CTE Field (occupation overlap exists, will not sum)	Current 2023Q2 Estimates							5-Year History	
	2023Q2 Empl	2023 Avg Entry-Level Wages	2023 Avg Ann Wages	LQ	Unempl	Unempl Rate	Online Job Ads 10/6/2023- 11/6/2023 ³	Empl Change	Ann %
Health Science Technology	298,189	\$39,300	\$89,700	1.06	5,210	1.7%	26,147	-815	-0.1%
Human Services	483,093	\$41,700	\$59,300	1.01	11,185	2.3%	20,281	12,948	0.5%
Arts, Communications, and Information Systems	145,621	\$61,100	\$91,700	1.02	2,855	2.1%	8,632	-616	-0.1%
Business, Management, and Administration	1,334,001	\$41,400	\$64,000	0.98	41,435	3.1%	62,832	-15,455	-0.2%
Engineering, Manufacturing, and Technology	750,568	\$44,200	\$61,600	1.00	25,276	3.4%	28,559	16,703	0.5%
Agriculture, Food, and Natural Resources*	159,827	\$41,500	\$60,900	1.00	4,512	2.8%	5,175	2,019	0.3%
Total - All Occupations	3,075,767	\$32,800	\$66,100	1.00	87,730	2.9%	148,113	11,603	0.1%

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. 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). Ad counts for ZCTA-based regions are estimates.

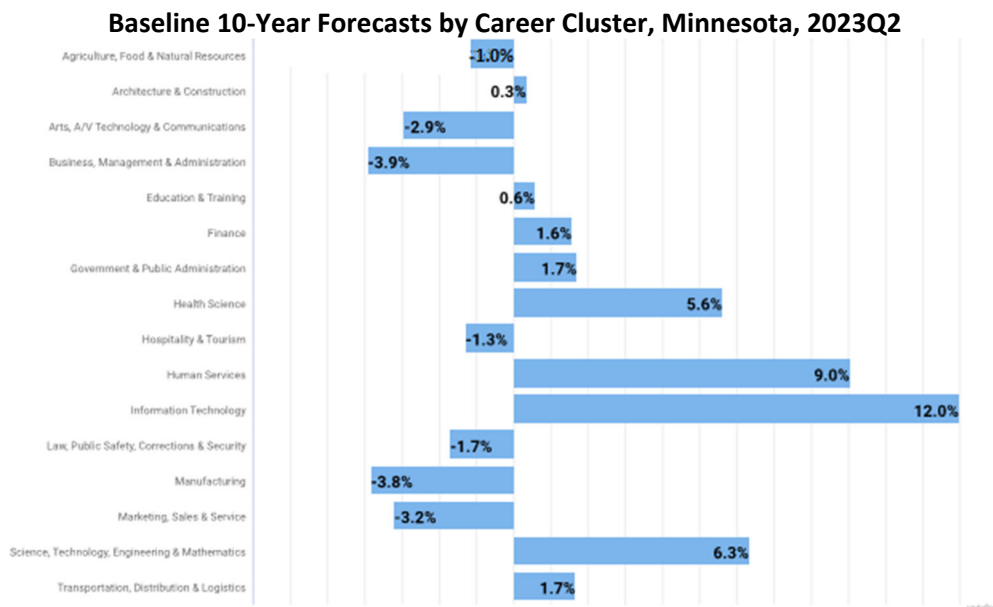
CTE Field Baseline Employment Forecast for Minnesota, 2028Q2

CTE Field (occupation overlap exists, will not sum)	Current 2023Q2	5-Year Growth 2028Q2				
	Empl (Place of Work)	Total Demand	Exits	Transfers	Empl Change	Ann % Change
Health Science Technology	298,189	136,009	58,767	68,996	8,245	0.5%
Human Services	483,093	272,635	123,272	140,744	8,620	0.4%
Arts, Communications, and Information Systems	145,621	65,412	20,997	39,738	4,677	0.6%
Business, Management, and Administration	1,334,001	828,092	356,097	490,256	-18,262	-0.3%
Engineering, Manufacturing, and Technology	750,568	404,156	151,696	254,250	-1,790	0.0%
Agriculture, Food, and Natural Resources*	159,827	93,377	36,232	58,385	-1,239	-0.2%
Total - All Occupations	3,075,767	1,746,576	727,900	1,016,920	1,756	0.0%

*Supply gaps in parentheses indicate the number of trained workers we expect to fall short of the baseline talent needed to see the employment growth officially forecasted by the Bureau of Labor Statistics (BLS) and MN DEED. Represents skill mismatch in the region. Positive number indicates likely unemployment due to talent surplus. ** This focused, or narrow definition of Agriculture, Food, and Natural Resources (AFNR) aligns with classic definitions of the sector by MN DEED and BLS Agriculture, Fishing, and Forestry specific roles. The sector analysis found further in this report highlights a broader, more inclusive definition of AFNR, which is reflected in the sub-industry definition of AFNR included here.

Career Cluster Detail

Of the sixteen career clusters used by Career and Technical Education (CTE), seven are forecast to decline in overall employment over the next ten years as of 2023Q2 estimates—reflecting a return to pre-pandemic outlooks for most career clusters. Information Technology and Human Services have the highest overall forecasted growth rates statewide, but total demand volume over the next ten years is highest for Business, Management, and Administration cluster careers due to high turnover rates. All clusters except for Information Technology and STEM saw a decline in their overall forecasted employment outlook from 2022Q2. Eight of the sixteen career clusters have average wages above the average occupation wage in the region (\$66,100 in 2023—an increase of \$5,800 from 2022).⁴



Cluster forecasts estimated using Chmura, JobsEQ, based on 2023Q2 employment data. All clusters are distinct occupations except for Agriculture, Food, and Natural Resources, which overlaps with other clusters.

An accurate assessment of future occupation demand requires that future growth, retirements, and other job exits be considered. Statewide, Business, Management, and the Hospitality and Tourism clusters are expected to have the highest annual job demand by volume of opportunities—largely due to retirements, turnover, and other job changes.

The Science, Technology, Engineering and Mathematics cluster has the highest wages of the career clusters followed by the Information Technology and Finance clusters.

⁴ Clusters paying an average salary higher than the regional average occupation wage include Science, Technology, Engineering, and Mathematics, Information Technology, Finance, Health Science, Law, Public Safety, Corrections, and Security, Government and Public Administration, Business, Management, and Administration, and Architecture and Construction.



Employment, Wages, and Forecast by Career Cluster, 2023Q2

Career Cluster	Employment	Avg Ann Wages	Job Ads	Baseline 10-Year Forecasted Empl Change	Ann Empl Change	Ann Total Demand
Science, Technology, Engineering & Mathematics	47,864	\$108,000	4,369	6.3% (+)	295	3,635
Information Technology	95,702	\$104,800	6,856	12.0% (+)	1,088	8,035
Finance	125,298	\$95,200	5,667	1.6%	195	10,991
Health Science	298,189	\$89,700	24,800	5.6%	1,631	27,042
Law, Public Safety, Corrections & Security	75,862	\$78,800	3,229	-1.7%	-131	7,163
Government & Public Administration	26,613	\$75,000	1,044	1.7%	45	2,606
Business, Management & Administration	560,476	\$74,300	19,816	-3.9%	-2,238	59,426
Architecture & Construction	193,463	\$68,800	3,962	0.3%	66	19,154
Arts, A/V Technology & Communications	49,919	\$66,100	1,211	-2.9%	-149	4,992
Education & Training	183,597	\$62,600	6,711	0.6%	106	17,150
Marketing, Sales & Service	316,228	\$61,800	13,971	-3.2%	-1,030	38,786
Transportation, Distribution & Logistics	233,940	\$54,500	7,379	1.7%	385	29,330
Manufacturing	275,300	\$54,400	11,104	-3.8%	-1,073	28,798
Agriculture, Food & Natural Resources*	266,977	\$50,200	12,349	-1.0%	-221	18,699
Human Services	197,021	\$46,500	7,890	9.0%	1,713	27,398
Hospitality & Tourism	331,999	\$35,900	18,407	-1.3%	-431	57,123
Total - All Occupations	3,075,767	\$66,100	137,931	0.0%	351	349,551

*Cluster forecasts estimated using Chmura, JobsEQ, based on 2023Q2 employment data. All clusters are distinct occupations except for Agriculture, Food, and Natural Resources, which overlaps with other clusters. (+) indicates an improved forecast from 2022Q2 estimates.

While employment statewide is forecast to remain flat due to the tight talent market, only the MSP Metro and Central Minnesota are forecast to see overall employment growth over the next ten years. With regional forecasts souring between 2022Q2 and 2023Q2 for all regions, only a few career clusters saw improvement in forecasted employment outlook between 2022Q2 and 2023Q2 (indicated by a “+” in the table below)—most frequently in Information Technology, STEM, or Transportation, Distribution, and Logistics clusters.

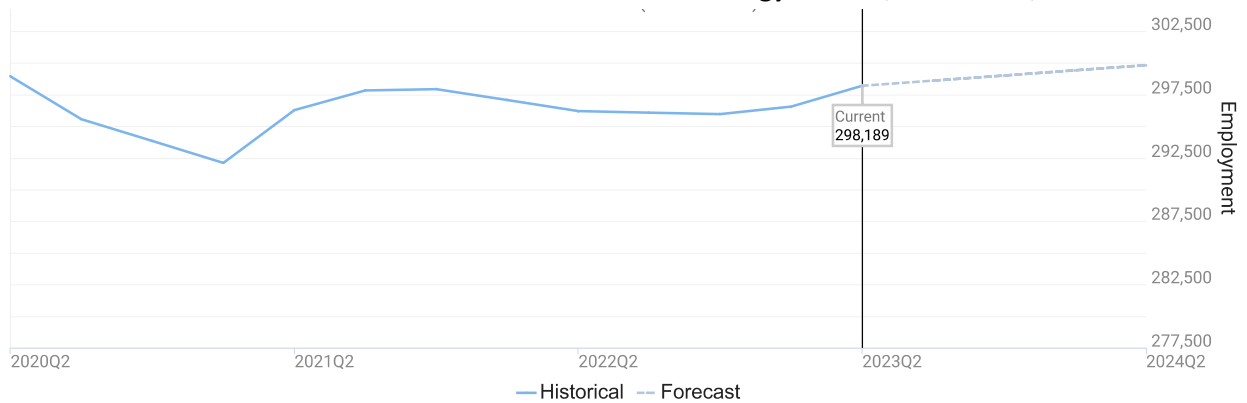
Cluster Ten-Year Total Employment Change Forecasts by Region, 2023Q2

Career Cluster	Minnesota	MSP					
		Metro	Northeast	Northwest	Central	Southwest	Southeast
Science, Technology, Engineering & Mathematics	6.3% (+)	6.5%	-10.3%	1.5%	7.3% (+)	1.1%	2.6%
Information Technology	12.0% (+)	10.9%	0.6% (+)	4.0%	8.6% (+)	0.7%	4.8%
Finance	1.6%	1.1%	-5.0%	-1.0%	1.6%	-4.7%	-0.4%
Health Science	5.6%	7.1%	-1.2% (+)	3.2%	6.3%	0.0%	5.6%
Law, Public Safety, Corrections & Security	-1.7%	-1.3%	-7.0%	-2.3%	0.1%	-6.0%	-2.0%
Government & Public Administration	1.7%	2.2%	-4.4%	0.2%	3.2%	-2.8%	-0.3%
Business, Management & Administration	-3.9%	-3.5%	-6.9% (+)	-6.9%	-3.6%	-10.1%	-6.3%
Architecture & Construction	0.3%	1.1%	-5.3%	-1.1%	2.7%	-4.6%	-1.8%
Arts, A/V Technology & Communications	-2.9%	-2.5%	-9.0%	-6.0%	-2.4%	-11.0%	-5.3%
Education & Training	0.6%	2.9%	-6.0%	-1.5%	0.7%	-6.5%	-2.5%
Marketing, Sales & Service	-3.2%	-2.3%	-10.8%	-6.5%	-3.2%	-9.8%	-7.0%
Transportation, Distribution & Logistics	1.7%	2.9%	-5.7%	-1.6%	2.4% (+)	-4.3% (+)	-1.8%
Manufacturing	-3.8%	-2.8%	-11.2%	-7.5%	-1.4%	-7.5%	-6.1%
Agriculture, Food & Natural Resources	-1.0%	3.0%	-7.0%	-5.0%	-1.0%	-9.0%	-10.0%
Human Services	9.0%	10.9%	2.5%	7.5%	8.6%	2.6%	5.7%
Hospitality & Tourism	-1.3%	-0.2%	-6.8%	-2.3%	1.1%	-5.8%	-3.1%
Total - All Occupations	0.0%	1.0%	-7.0%	-3.0%	1.0%	-6.0%	0.0%

Health Science Technology

Over the past year, employment in Health Science Technology roles has grown by nearly 2,000 workers, or 0.7%. Since 2022Q2, the employment outlook in the field has soured to about 0.5% average annual growth over the next five years. The 298,189 Health Science Technology careers statewide pay about \$89,700 annually on average (up about \$10,500 from the prior year), signaling that employers are responding to the tight talent market with increasing salary offerings. As of 2023Q2, there are about 5,210 unemployed Health Science Technology professionals in Minnesota, giving an unemployment rate of 1.7%. Total five-year demand for Health Science Technology talent is 136,009 new professionals needed to meet replacement and growth demand.

Baseline 3-Year Forecast for Health Science Technology Careers, Minnesota, 2023Q2



Top Ten Health Science Technology Occupations by Employment Volume in Minnesota, 2023Q2

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year		Baseline Forecast
				Year Empl Change	Annual Demand	Ann Change
Registered Nurses	64,581	\$92,800	1.08	71	3,765	0.1%
Nursing Assistants	27,160	\$44,500	1.05	-2,389	4,037	-0.1%
Home Health Aides	24,696	\$33,800	1.33	-3,542	3,283	1.6%
Medical Secretaries and Administrative Assistants	15,199	\$49,200	1.15	760	1,789	0.2%
Licensed Practical and Licensed Vocational Nurses	14,753	\$57,800	1.20	-1,775	1,200	0.0%
Medical Assistants	13,197	\$49,100	0.90	787	2,003	1.0%
Medical and Health Services Managers	10,161	\$121,900	1.06	647	1,067	2.1%
Pharmacy Technicians	7,842	\$45,600	0.92	246	724	0.2%
Pharmacists	6,269	\$143,300	1.00	88	244	0.0%
Dental Assistants	6,197	\$61,300	0.88	620	918	0.4%
Remaining Component Occupations	108,139	\$125,600	1.12	3,744	7,935	0.6%
Health Science (CTE Field)	298,189	\$89,700	1.06	-741	27,042	0.5%

“Annual Demand” is the projected need for new entrants into an occupation. New entrants are needed due to expected growth and to replace workers who left the occupation due to factors such as retirement or switching careers.

“Forecast Ann Growth” is the expected baseline (most pessimistic) yearly change in employment due to national, long-term trend projections (per the BLS) as well as local factors such as industry mix, labor force participation rates, and population growth (as computed and modeled by RealTime Talent in JobsEQ).



The largest share of talent in Minnesota working in Health Science Technology roles are employed by General Medical and Surgical Hospitals (30.3%), followed by Office of Physicians (18.4%).

Health Science Technology Field Employment by Industry, Minnesota, 2023Q2

Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Change	10-Year Total Demand
General Medical and Surgical Hospitals	30.3%	90,273	65,895	1,181	67,076
Offices of Physicians	18.4%	54,774	42,493	3,705	46,198
Nursing Care Facilities (Skilled Nursing Facilities)	8.0%	23,962	25,733	-1,438	24,295
Individual and Family Services	5.4%	16,026	19,235	4,043	23,278
Offices of Dentists	4.7%	13,872	13,703	535	14,238
Home Health Care Services	3.7%	11,001	10,868	1,879	12,747
Offices of Other Health Practitioners	3.7%	10,897	8,904	1,515	10,419
Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	2.8%	8,322	10,035	941	10,976
Health and Personal Care Retailers	2.5%	7,375	5,586	-189	5,397
Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities	2.3%	6,738	6,776	100	6,876
Outpatient Care Centers	2.2%	6,519	5,455	1,276	6,731
Other Professional, Scientific, and Technical Services	2.1%	6,125	6,643	1,129	7,772
Employment Services	1.5%	4,554	4,057	186	4,243
Elementary and Secondary Schools	1.2%	3,613	2,598	96	2,694
Colleges, Universities, and Professional Schools	1.1%	3,209	2,266	108	2,374
Management of Companies and Enterprises	1.1%	3,197	2,520	339	2,860
Other Ambulatory Health Care Services	0.9%	2,725	2,668	418	3,086
Insurance Carriers	0.8%	2,363	1,634	221	1,855
Executive, Legislative, and Other General Government Support	0.7%	1,987	1,643	7	1,649
Medical and Diagnostic Laboratories	0.6%	1,850	1,557	149	1,706
All Others	6.3%	18,808	15,389	519	15,908

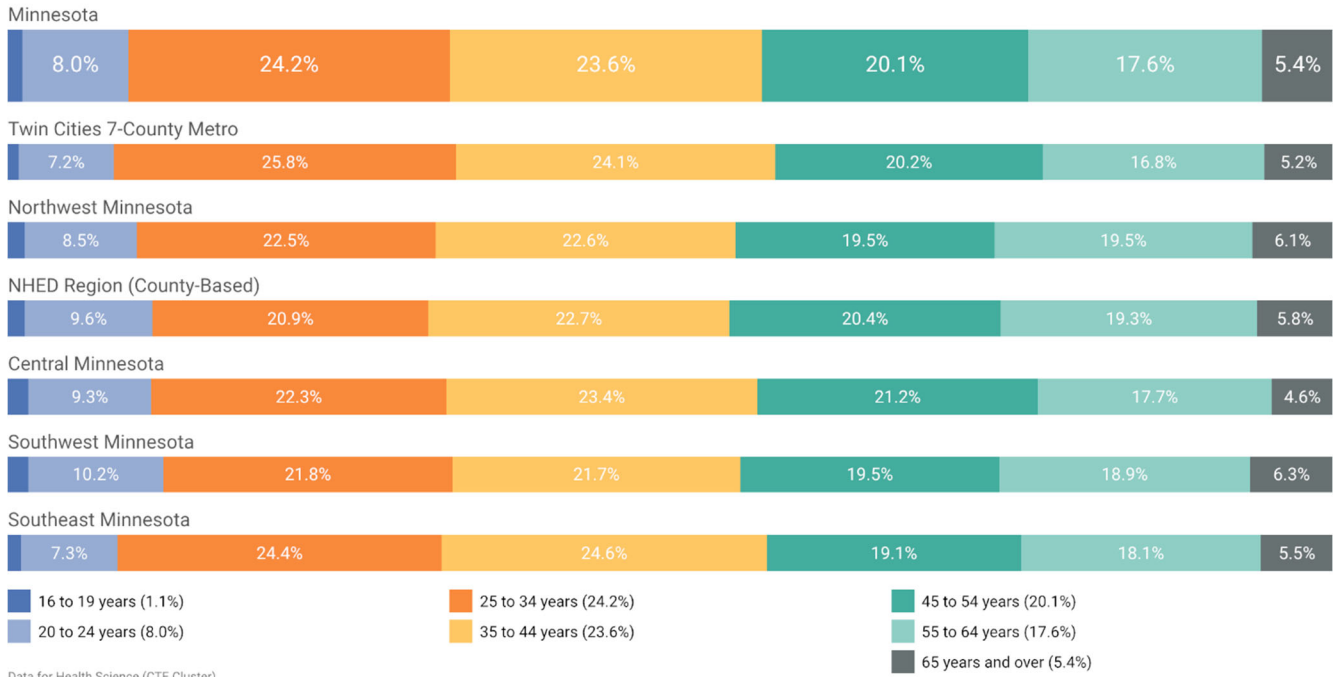
Career Field Demographics

The Health Science Technology field continues to be predominantly female (79.0%) and white (80.8%), but with racial diversity growing in the field. Between 2022Q2 and 2023Q2 estimates, the share of the Health Science Technology workforce that is BIPOC by race increased by 2.2 percentage points statewide. The share of the field's workforce that is female increased by 0.9 percentage points. Statewide demographics of the Health Science Technology workforce remained unchanged by ethnicity between 2022Q2 and 2023Q2. The share of Minnesota Health Science Technology professionals in the younger cohorts of workers increased from the prior years' estimates, by 0.6 percentage points for workers between the ages of 20-24 years.



Health Science Technology Workforce Age by Region

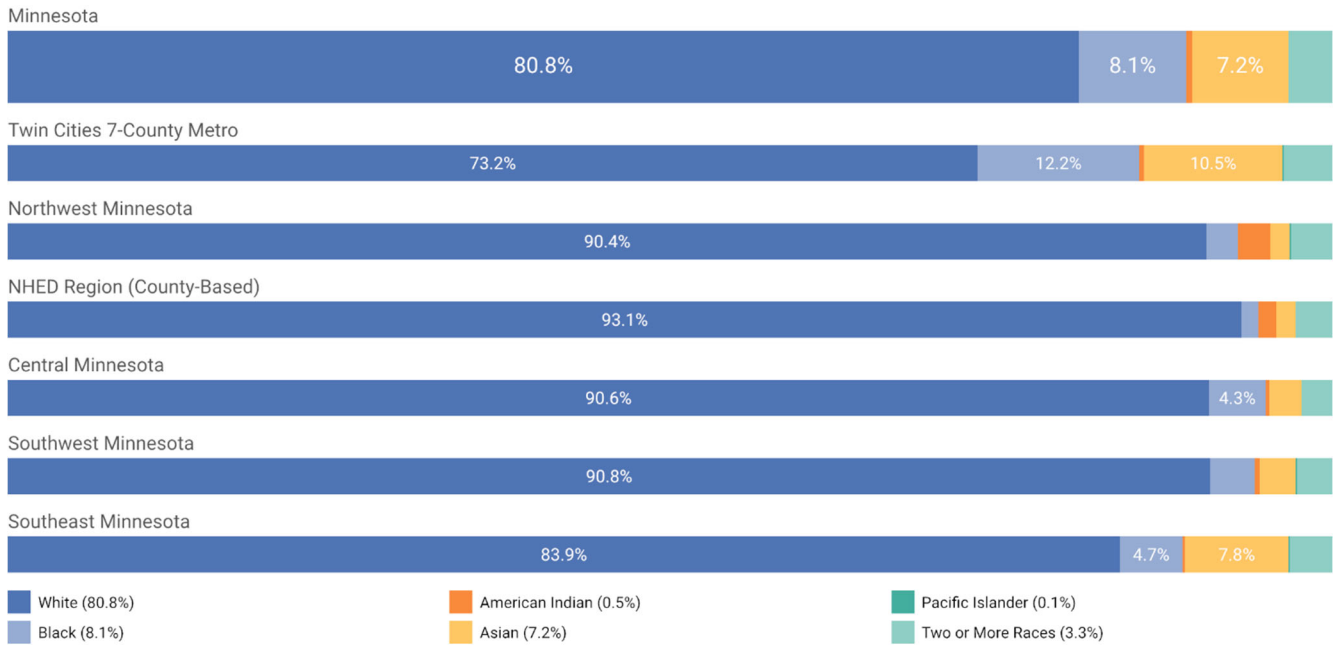
Age



Data for Health Science (CTE Cluster)
Source: JobsEQ®. Data as of 2023Q2.

Health Science Technology Workforce Race by Region

Race



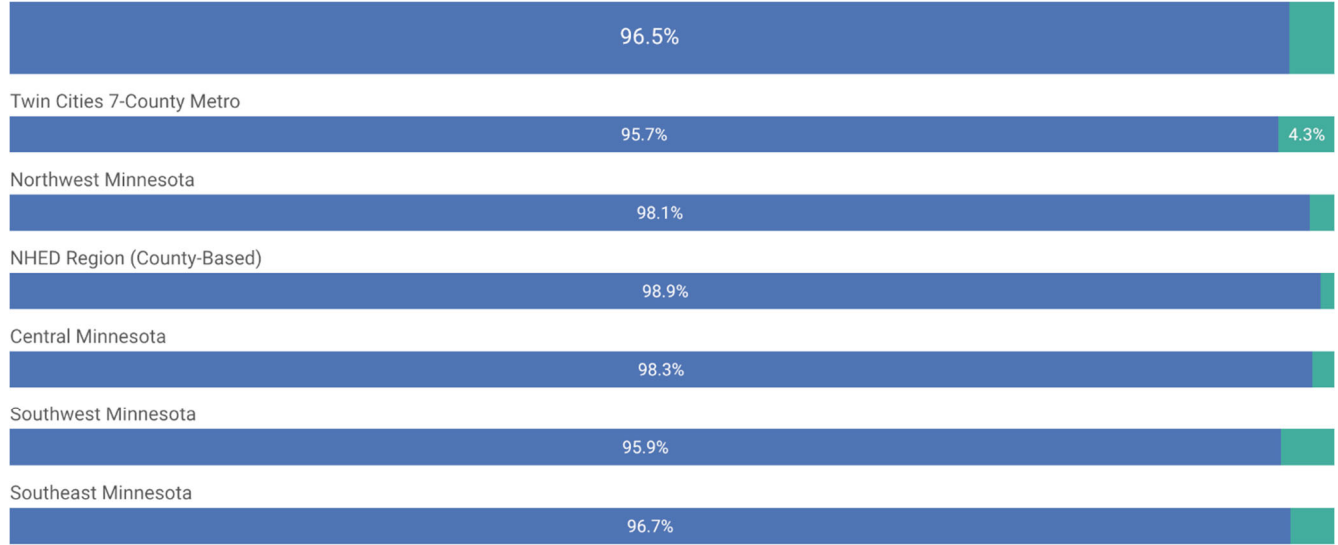
Data for Health Science (CTE Cluster)
Source: JobsEQ®. Data as of 2023Q2.



Health Science Technology Workforce Ethnicity by Region

Ethnicity

Minnesota



■ Non-Hispanic/Latino (96.5%)

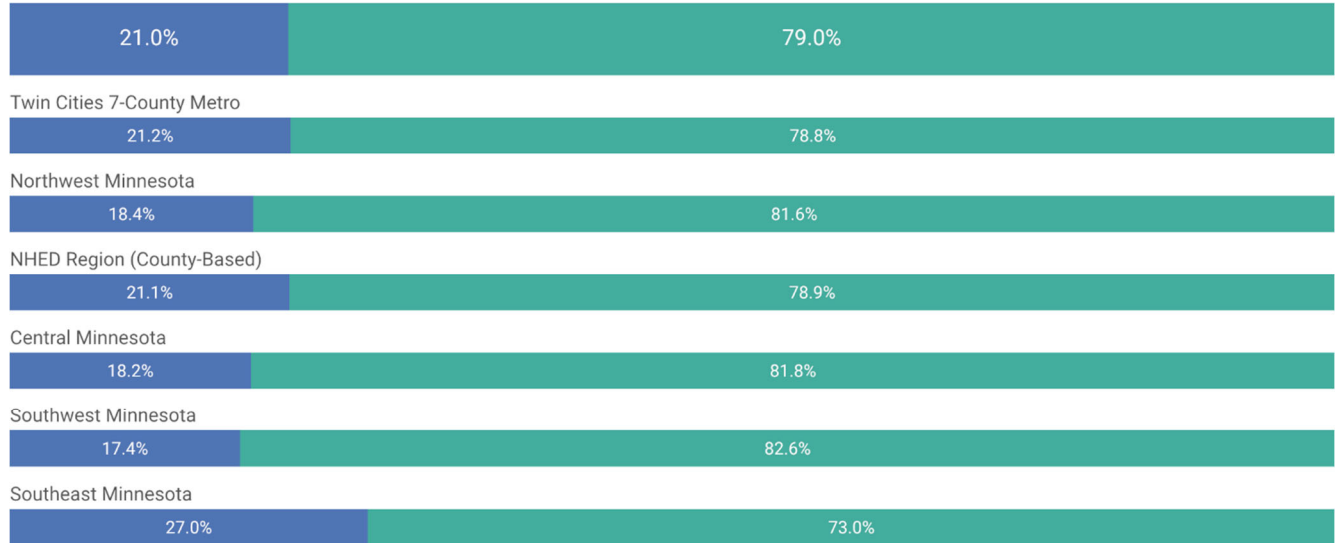
■ Hispanic or Latino (of any race) (3.5%)

Data for Health Science (CTE Cluster)
Source: JobsEQ®. Data as of 2023Q2.

Health Science Technology Workforce Gender by Region

Gender

Minnesota



■ Male (21.0%)

■ Female (79.0%)

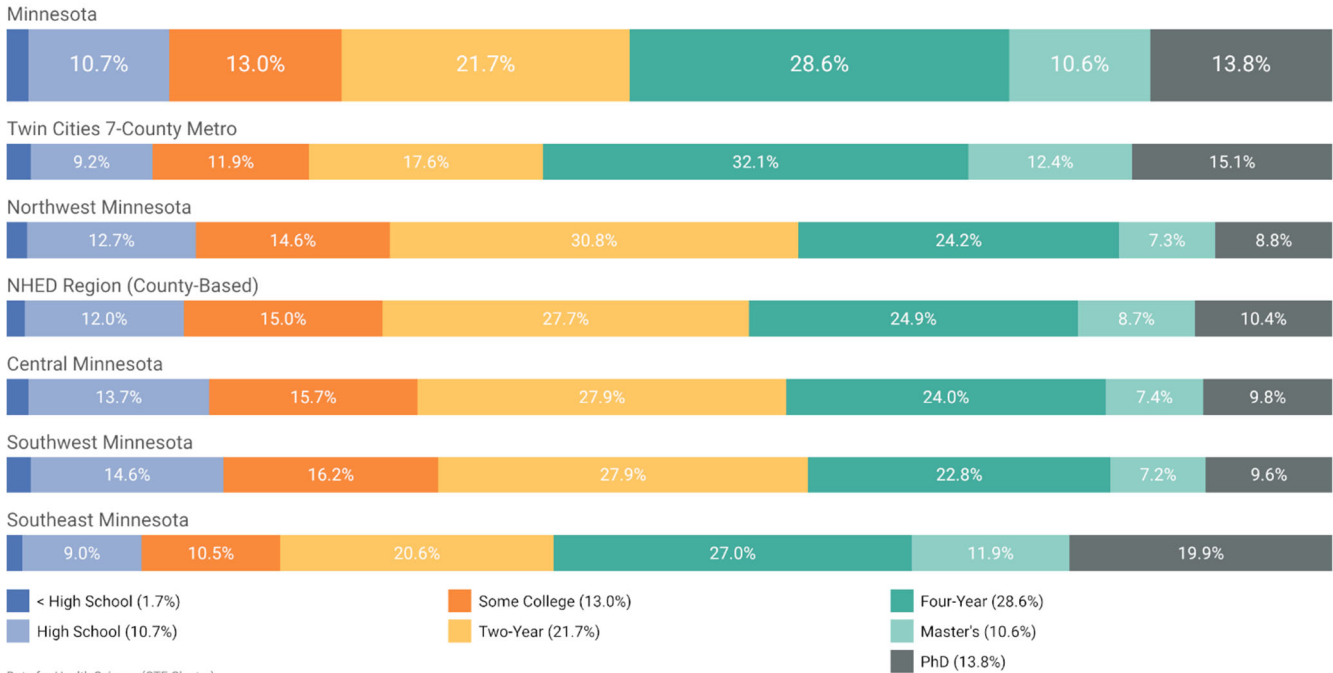
Data for Health Science (CTE Cluster)
Source: JobsEQ®. Data as of 2023Q2.



Educational Attainment and Requirements

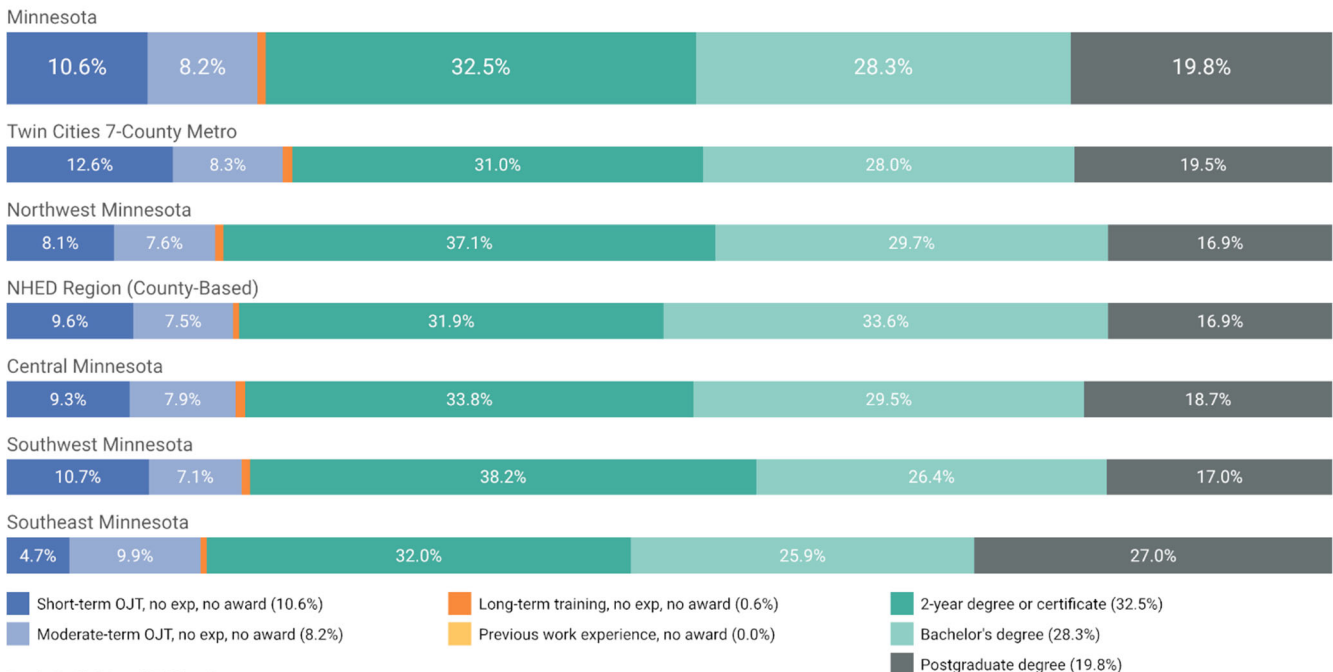
The stacked bar charts here illustrate the estimated mix of educational attainment of the workers in this career field in aggregate, followed by the typical education and training requirements in the field. Health Science Technology roles in the Southwest and Central parts of the state have a larger share of the workforce with a High School diploma or less, while the Twin Cities Metro has the largest share of local positions that require a High School diploma or less. Southeast Minnesota has the highest demand for talent with a postgraduate degree (27.0% of jobs) and also the largest share of workers holding a PhD (19.9%) or Master’s degree (11.9%).

Educational Attainment



Data for Health Science (CTE Cluster)
Source: JobsEQ®. Data as of 2023Q2.

Education and Training Requirements



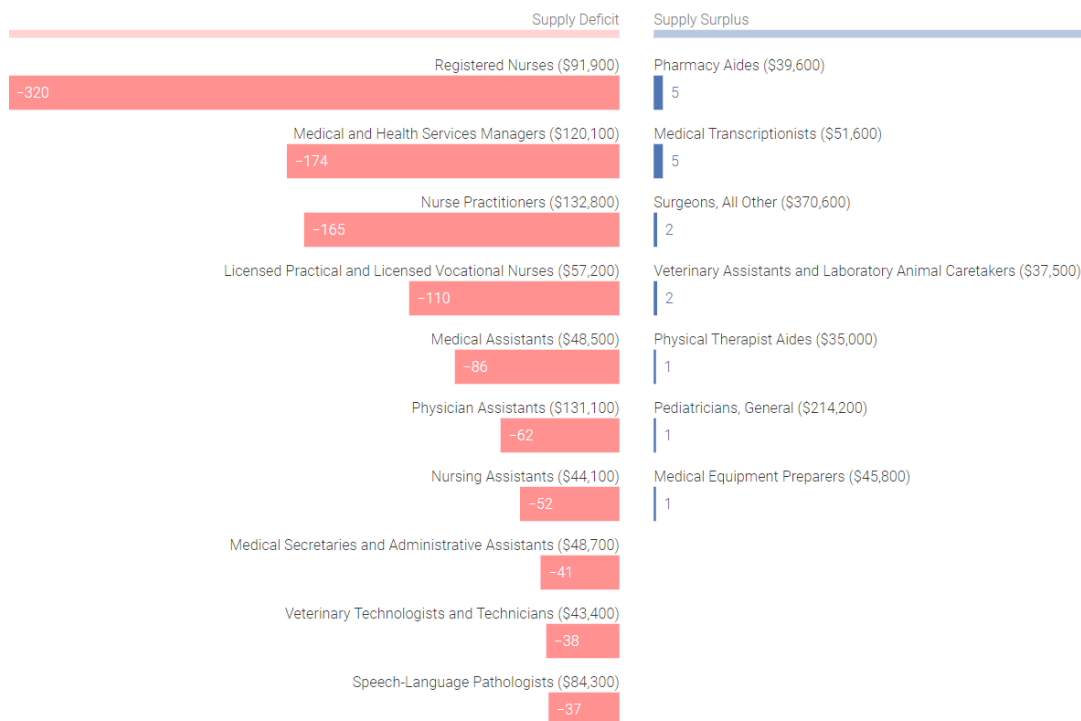
Data for Health Science (CTE Cluster)
Source: JobsEQ®. Data as of 2023Q2.



Occupation Gaps

In Health Science Technology, Registered Nurses and Medical and Health Service Managers continue to be the two occupations with the greatest annual shortages statewide with the shortage of Medical and Health Services managers growing from 2022Q2 estimates. Nurse Practitioners, Licensed Practical Nurses, Medical Assistants, and Physician Assistants all rank as the next highest occupations of shortage consistent with 2022Q2 estimates, reinforcing the importance of the Therapeutic Services career pathway statewide.

Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Health Science Technology, Minnesota, 2023Q2



Award Gaps

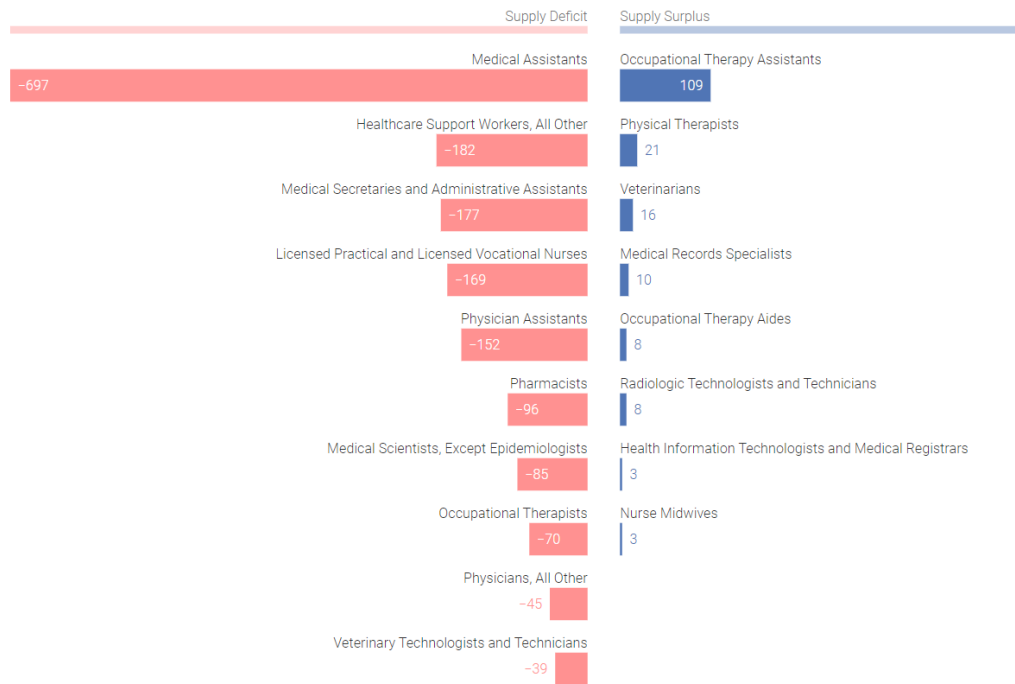
A comparison of the graduate talent pipeline through certificate and other postsecondary degree programs to the current estimated openings by occupation illuminate several critical shortages. Minnesota has several persistent Health Science Technology award gaps, meaning that local postsecondary institutions are underproducing local talent in relation to employer demand and compared to national benchmarks. Minnesota colleges and universities are underproducing about 697 Medical Assistant graduates at all levels of educational attainment (rising from last year's annual graduate shortage of -646) and more than 182 other Healthcare Support Workers that typically require a two-year degree or certificate. These estimates of shortage also include completions coming from virtual or distance learning programs, meaning that shortages for local graduates may be even more severe than estimated here. Most award gaps increased in severity between 2022Q2 and 2023Q2 due to an overall drop in completions from Minnesota institutions; Licensed Practical Nurses now ranks as the fourth highest award gap in Minnesota, followed by Physician Assistants, Pharmacists, and Medical Scientists.

Occupations that show higher awards given than what is currently needed in the local talent market are examples of programs that serve other states where talent demand is high but relevant programs may not exist, such as Occupational Therapy Assistants and Veterinarians. For both of these two examples, the majority (or in the case of Veterinarians, entirety) of graduates are coming out of postsecondary institutions in the MSP



Metro region and serving shortages in Greater Minnesota and neighboring states with significant shortages. Given the existing talent shortages that persist in Minnesota, retention of Minnesota graduates from the programs indicated in blue below is first priority, followed by exploration of expansion of programming to meet local demand.

Award Gaps in Health Science Technology, Minnesota, 2023Q2



Origin, Gateway, and Target Occupations

This section offers an Origin-to-Gateway-to-Target model analysis for how to help move students from entry points into their field of interest into both likely and other aligned careers, considering automation, remote work, and the changing work environment.

Origin-to-Gateway-to-Target Occupations for Health Science Technology, Minnesota, 2023Q2

Target Occupations (All HW, HD, HS, OG)

Registered Nurses
 Medical & Health Services Managers (AG)
 Nurse Practitioners
 Dental Hygienists
 Radiologic Technologists & Technicians

Gateway Occupations (All HD, OG)

Medical Secretaries & Administrative Assistants (AG)
 Licensed Practical & Licensed Vocational Nurses (HS, AG)
 Medical Assistants (HS, AG)
 Pharmacy Technicians (AG)
 Dental Assistants (HS)

Origin Occupations

Nursing Assistants (HS, HD, OG)
 Home Health Aides (HD, AG)
 Healthcare Support Workers, All Other (HD, AG)
 Veterinary Technologists & Technicians (HS, HD, OG, AG)
 Psychiatric Technicians (HS, OG, AG)

HW = High-Wage; HS=High-Skill; HD=High-Demand; OG=Occupation Gaps; AG=Award Gaps

Origin-to-Gateway-to-Target Occupations for Health Science Technology, By Region 2023Q2

	MSP Metro	Northeast	Northwest	Central	Southwest	Southeast
Avg. Wage	Region: \$70,7500 Field: \$90,500	Region: \$57,900 Field: \$80,700	Region: \$55,600 Field: \$77,200	Region: \$57,400 Field: \$83,100	Region: \$56,500 Field: \$78,200	Region: \$68,000 Field: \$110,700
Unempl	Region: 2.6% Field: 1.7%	Region: 3.9% Field: 2.2%	Region: 3.2% Field: 2.0%	Region: 3.4% Field: 2.0%	Region: 2.9% Field: 1.8%	Region: 2.4% Field: 1.4%
Origin Occupations	<ul style="list-style-type: none"> Home Health Aides Healthcare Support Workers, All Other Psychiatric Technicians Phlebotomists Veterinary Assistants & Laboratory Animal Caretakers 	<ul style="list-style-type: none"> Nursing Assistants Home Health Aides Pharmacy Technicians Healthcare Support Workers Psychiatric Technicians 	<ul style="list-style-type: none"> Nursing Assistants Home Health Aides Medical Secretaries Pharmacy Technicians Medical Assistants 	<ul style="list-style-type: none"> Nursing Assistants Home Health Aides Medical Secretaries Medical Assistants Pharmacy Technicians 	<ul style="list-style-type: none"> Nursing Assistants Home Health Aides Medical Assistants Pharmacy Technicians Veterinary Technologists & Technicians 	<ul style="list-style-type: none"> Nursing Assistants Home Health Aides Healthcare Support Workers, All Other Phlebotomists Veterinary Technologists & Technicians
Gateway Occupations	<ul style="list-style-type: none"> Nursing Assistants Medical Secretaries LPNs Medical Assistants Pharmacy Technicians 	<ul style="list-style-type: none"> LPNs Medical Secretaries Medical Assistants Dental Assistants Medical Records Specialists 	<ul style="list-style-type: none"> LPNs Dental Assistants Medical Records Specialists Ophthalmic Technicians Therapists, All Other 	<ul style="list-style-type: none"> LPNs Dental Assistants Athletic Trainers Therapists, All Other Occupational Therapy Assistants 	<ul style="list-style-type: none"> LPNs Medical Secretaries Medical Records Specialists Health Technologists & Technicians Ophthalmic Medical Technicians 	<ul style="list-style-type: none"> Medical Assistants Medical Secretaries & Administrative Assistants LPNs Pharmacy Technicians Medical Records Specialists
Target Occupations	<ul style="list-style-type: none"> Registered Nurses Medical & Health Services Managers Nurse Practitioners Medical Scientists Dental Hygienists 	<ul style="list-style-type: none"> Registered Nurses Medical & Health Services Managers Pharmacists Radiologic Technicians Physicians 	<ul style="list-style-type: none"> Registered Nurses Medical & Health Services Managers Pharmacists Dental Hygienists Physical Therapists 	<ul style="list-style-type: none"> Registered Nurses Medical & Health Services Managers Pharmacists Nurse Practitioners Dental Hygienists 	<ul style="list-style-type: none"> Registered Nurses Medical & Health Services Managers Dental Assistants Pharmacists Dental Hygienists 	<ul style="list-style-type: none"> Registered Nurses Nurse Practitioners Physicians, All Other Medical & Health Services Managers Physician Assistants

High Location Quotient (LQ) Occupations for Health Science Technology, By Region 2023Q2

	MSP Metro	Northeast	Northwest	Central	Southwest	Southeast
LQ > 1.20	<ul style="list-style-type: none"> Bioengineers & Biomedical Engineers Orthotists & Prosthetists Medical Scientists Genetic Counselors Surgeons, All Other 	<ul style="list-style-type: none"> Genetic Counselors Healthcare Support Workers, All Other Surgeons, All Other Epidemiologists Nurse Anesthetists 	<ul style="list-style-type: none"> Healthcare Support Workers, All Other Genetic Counselors Epidemiologists Nursing Assistants LPNs 	<ul style="list-style-type: none"> Chiropractors Genetic Counselors Surgeons, All Other Nurse Anesthetists Healthcare Support Workers, All Other 	<ul style="list-style-type: none"> Recreational Therapists Psychiatric Aides Chiropractors Healthcare Support Workers, All Other Surgeons, All Other 	<ul style="list-style-type: none"> Dermatologists Surgeons, All Other Nurse Anesthetists Obstetricians and Gynecologists Cardiologists

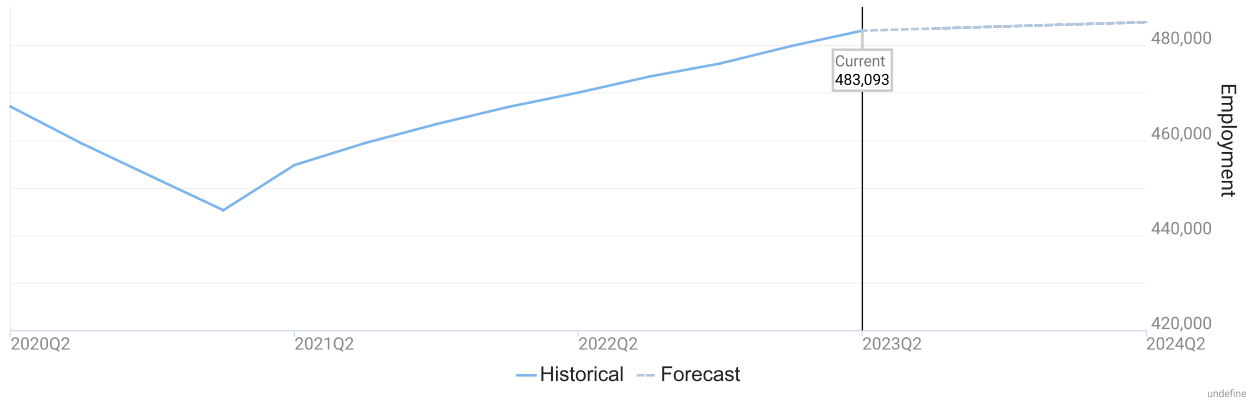
High Location Quotient (LQ) Occupations for Health Science Technology, Minnesota 2023Q2

- 1) Surgeons, All Other (2.37)
- 2) Genetic Counselors (2.20)
- 3) Nurse Anesthetists (2.14)
- 4) Dermatologists (2.10)
- 5) Medical Scientists (1.84)

Human Services

Over the next three years, Human Services employment is forecast to grow by 0.3% annually—significantly lower than forecasts estimated in 2022Q2 (1.2% forecasted growth at that time). The 483,093 Human Services careers statewide pay about \$59,300 annually on average and are about as concentrated in Minnesota than other states (LQ 1.01). Human Services roles employ about 15.7% of Minnesota’s workforce. As of 2023Q2, there are about 11,185 unemployed Human Services professionals in Minnesota, giving an unemployment rate of 2.3%. Total five-year demand for Human Services talent is 272,635 new professionals needed to meet replacement and growth demand.

Baseline 3-Year Forecast for Human Services Careers, Minnesota, 2023Q2



Top Ten Human Services Occupations by Employment Volume in Minnesota, 2023Q2

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Change
Personal Care Aides	69,975	\$33,800	1.33	10,626	11,277	1.6%
Teaching Assistants, Except Postsecondary	32,538	\$38,900	1.37	26	3,761	-0.1%
Elementary School Teachers, Except Special Education	24,149	\$67,900	0.93	66	1,753	0.0%
Secondary School Teachers, Except Special and Career/Technical Education	18,475	\$67,900	0.94	182	1,257	0.0%
Childcare Workers	17,388	\$32,200	1.13	-554	2,811	-0.3%
Preschool Teachers, Except Special Education	12,968	\$39,700	1.38	154	1,402	0.1%
Lawyers	12,310	\$169,100	0.80	-69	629	0.4%
Security Guards	11,681	\$40,200	0.53	537	1,520	-0.4%
Social and Human Service Assistants	11,100	\$45,300	1.41	394	1,383	0.8%
Middle School Teachers, Except Special and Career/Technical Education	10,231	\$68,400	0.90	46	745	0.0%
Remaining Component Occupations	262,280	\$66,000	0.96	4,582	27,710	0.2%
Human Services (CTE Field)	483,093	\$59,300	1.01	15,990	54,247	0.3%

“Annual Demand” is the projected need for new entrants into an occupation. New entrants are needed due to expected growth and to replace workers who left the occupation due to factors such as retirement or switching careers.

“Forecast Ann Growth” is the expected baseline (most pessimistic) yearly change in employment due to national, long-term trend projections (per the BLS) as well as local factors such as industry mix, labor force participation rates, and population growth (as computed and modeled by RealTime Talent in JobsEQ).



The largest share of regional Human Services talent in Minnesota is employed by Elementary and Secondary Schools (24.5%, consistent with estimates the prior year) or Individual and Family Services (11.5%).

Human Services Field Employment by Industry, Minnesota, 2023Q2

Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Change	10-Year Total Demand
Elementary and Secondary Schools	24.5%	118,208	106,332	-314	106,018
Individual and Family Services	11.5%	55,511	77,691	13,526	91,217
Executive, Legislative, and Other General Government Support	7.3%	35,065	32,490	-663	31,827
Colleges, Universities, and Professional Schools	5.0%	24,248	21,656	604	22,260
Child Care Services	4.1%	20,005	25,655	-946	24,709
Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities	3.8%	18,290	23,070	128	23,198
Religious Organizations	3.4%	16,641	17,693	-306	17,386
Personal Care Services	3.2%	15,398	21,321	1,157	22,477
Legal Services	3.0%	14,340	10,875	-206	10,670
Justice, Public Order, and Safety Activities	2.4%	11,730	10,685	-383	10,302
Home Health Care Services	2.4%	11,650	16,857	1,867	18,724
Other Schools and Instruction	2.3%	10,908	13,440	160	13,600
Other Residential Care Facilities	1.6%	7,601	9,416	-229	9,186
Other Amusement and Recreation Industries	1.5%	7,313	12,620	727	13,347
Investigation and Security Services	1.5%	7,113	9,478	-138	9,339
Administration of Human Resource Programs	1.4%	6,822	6,189	-282	5,908
Offices of Other Health Practitioners	1.3%	6,444	6,397	1,153	7,550
Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	1.3%	6,294	9,256	1,136	10,392
General Medical and Surgical Hospitals	1.2%	5,934	5,799	-48	5,752
Junior Colleges	1.1%	5,122	4,452	-142	4,310
All Others	16.2%	78,454	86,863	1,232	88,095

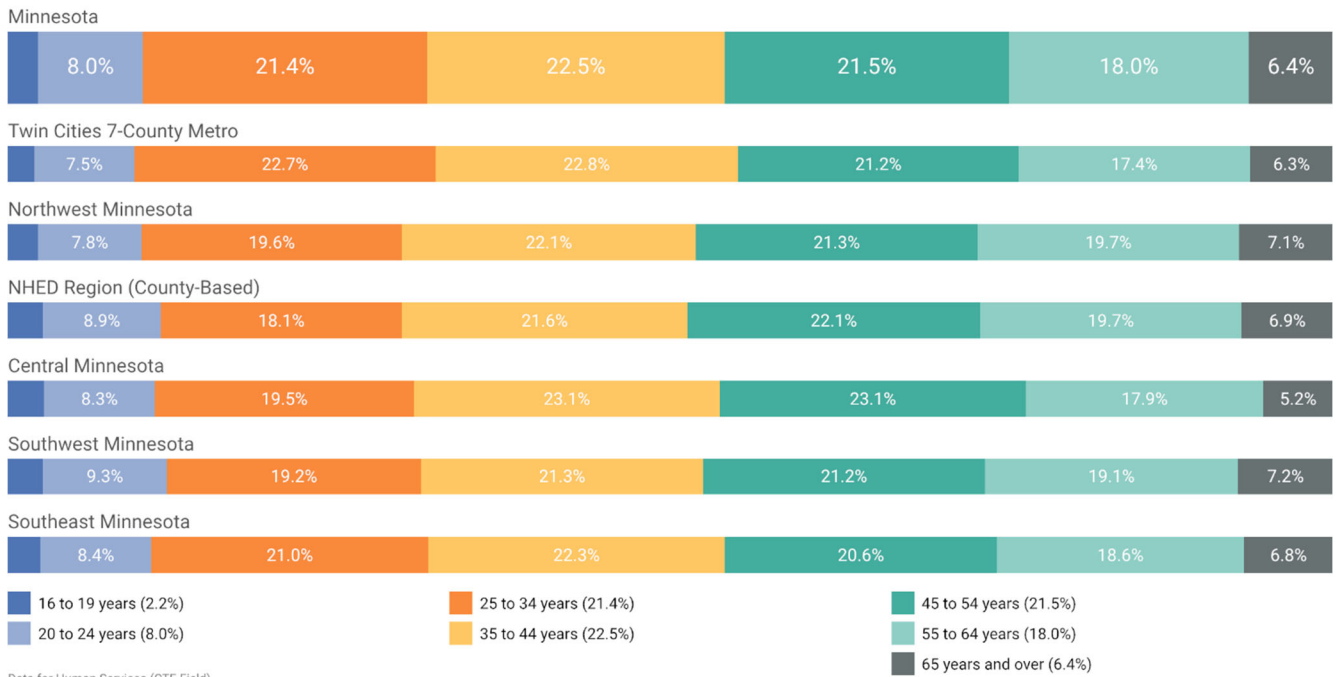
Career Field Demographics

The Human Services field statewide is predominantly female (65.1%) and white (84.6%), becoming more diverse year over year (a change of 0.9 percentage points from the prior year's estimates by race and 0.8 percentage points by gender). The share of Hispanic talent in this field increased by 0.1 percentage point from the prior year. The workforce overall has aged from the prior year's estimates from 24.3% aged 55 and older to now 24.9% in this age bracket.



Human Services Workforce Age by Region

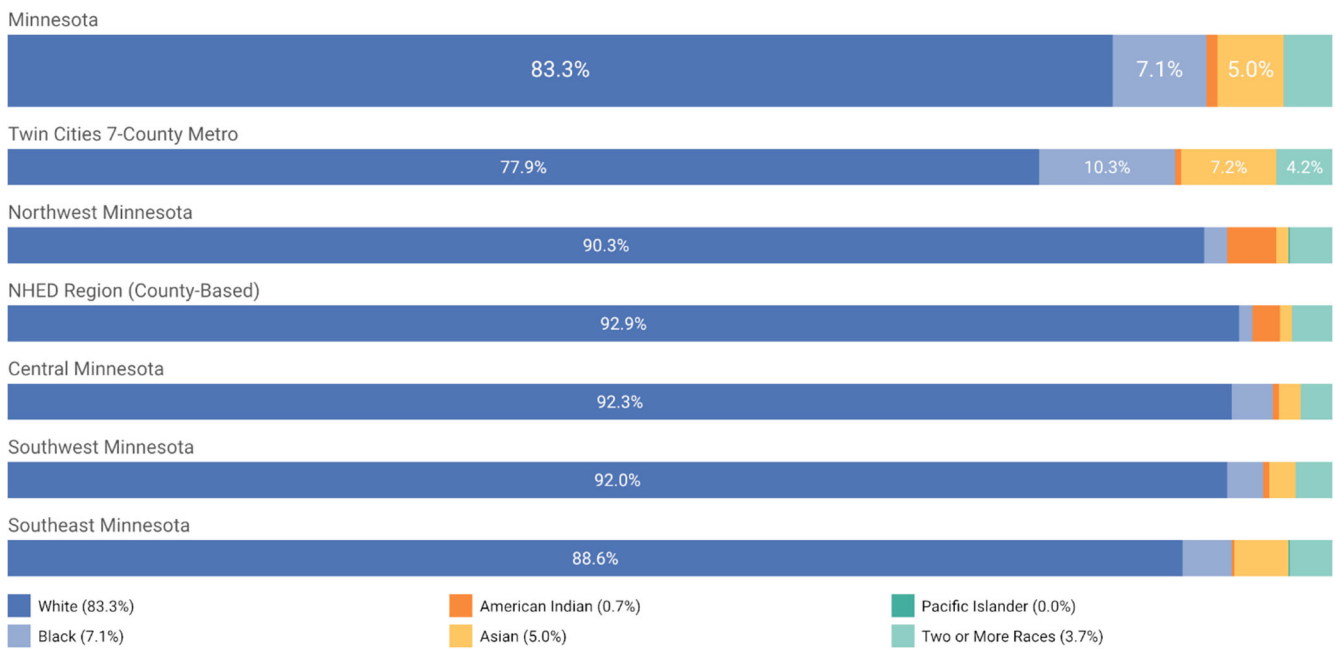
Age



Data for Human Services (CTE Field)
Source: JobsEQ®. Data as of 2023Q2.

Human Services Workforce Race by Region

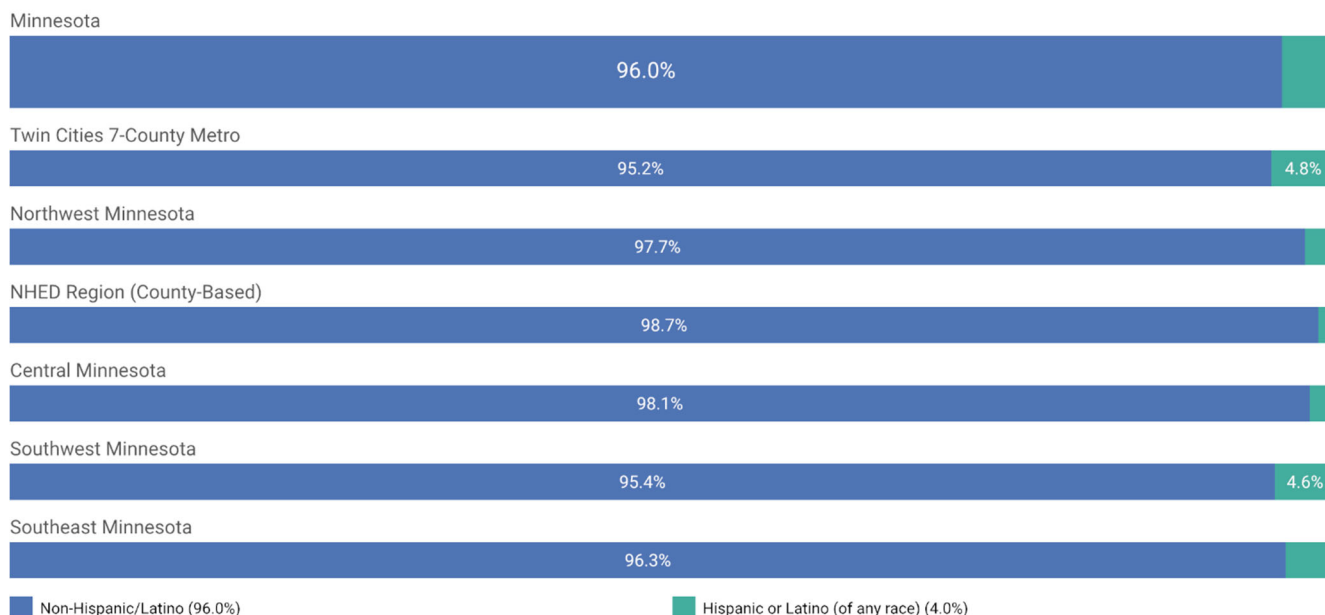
Race





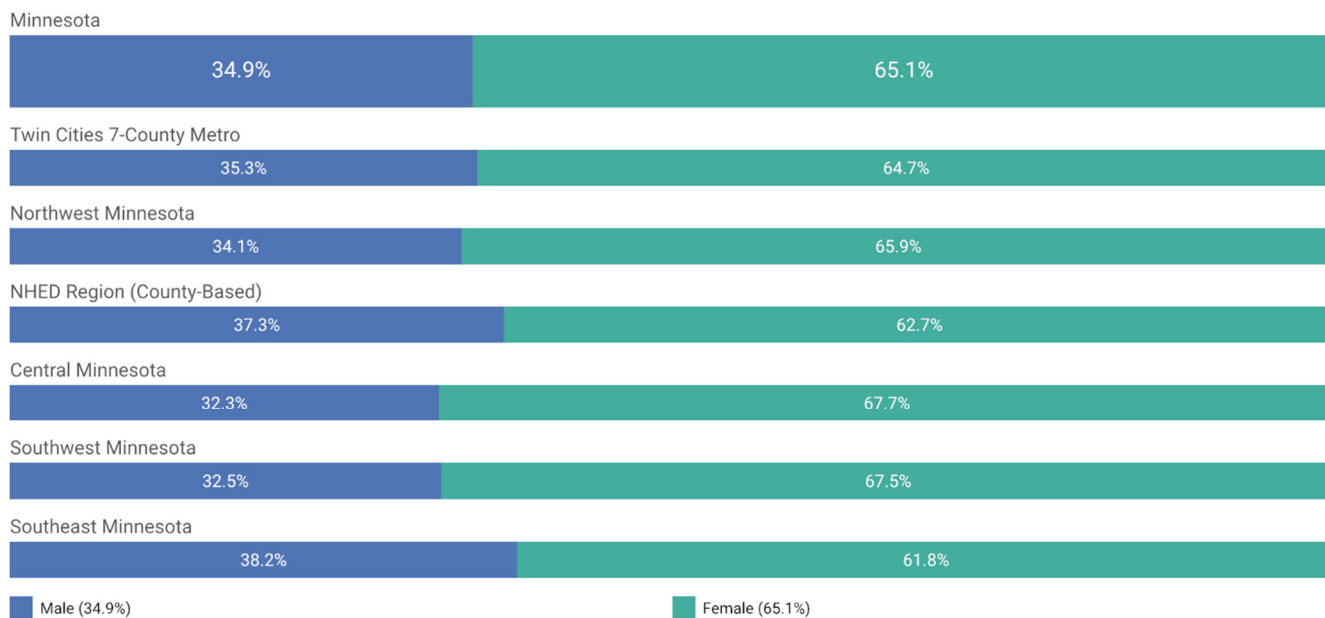
Human Services Workforce Ethnicity by Region

Ethnicity



Human Services Workforce Gender by Region

Gender



Educational Attainment and Requirements

The stacked bar charts here illustrate the estimated mix of educational attainment of the workers in this occupation(s) in aggregate, followed by the education and training requirements of local roles. Overall, the Human Services Workforce of the MSP Metro and Southeast Minnesota have the largest share of workers with a four-year degree or higher, while the Central region has the largest share of Human Services talent with a High School diploma or less. However, it is Northeast Minnesota and the MSP Metro that have the largest share of jobs that require no more than a High School diploma. Southeast Minnesota has the largest share of Human Services roles that require a two-year degree (12.6%).



Educational Attainment

Minnesota



Twin Cities 7-County Metro



Northwest Minnesota



NHED Region (County-Based)



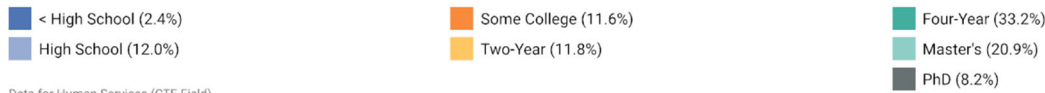
Central Minnesota



Southwest Minnesota



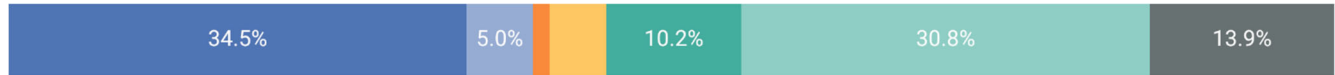
Southeast Minnesota



Data for Human Services (CTE Field)
Source: JobsEQ®. Data as of 2023Q2.

Education and Training Requirements

Minnesota



Twin Cities 7-County Metro



Northwest Minnesota



NHED Region (County-Based)



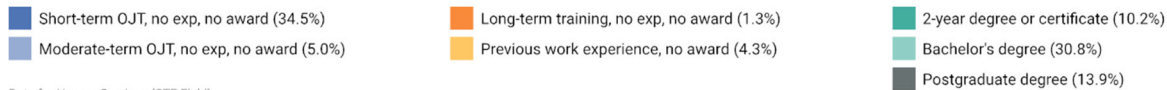
Central Minnesota



Southwest Minnesota



Southeast Minnesota



Data for Human Services (CTE Field)
Source: JobsEQ®. Data as of 2023Q2.

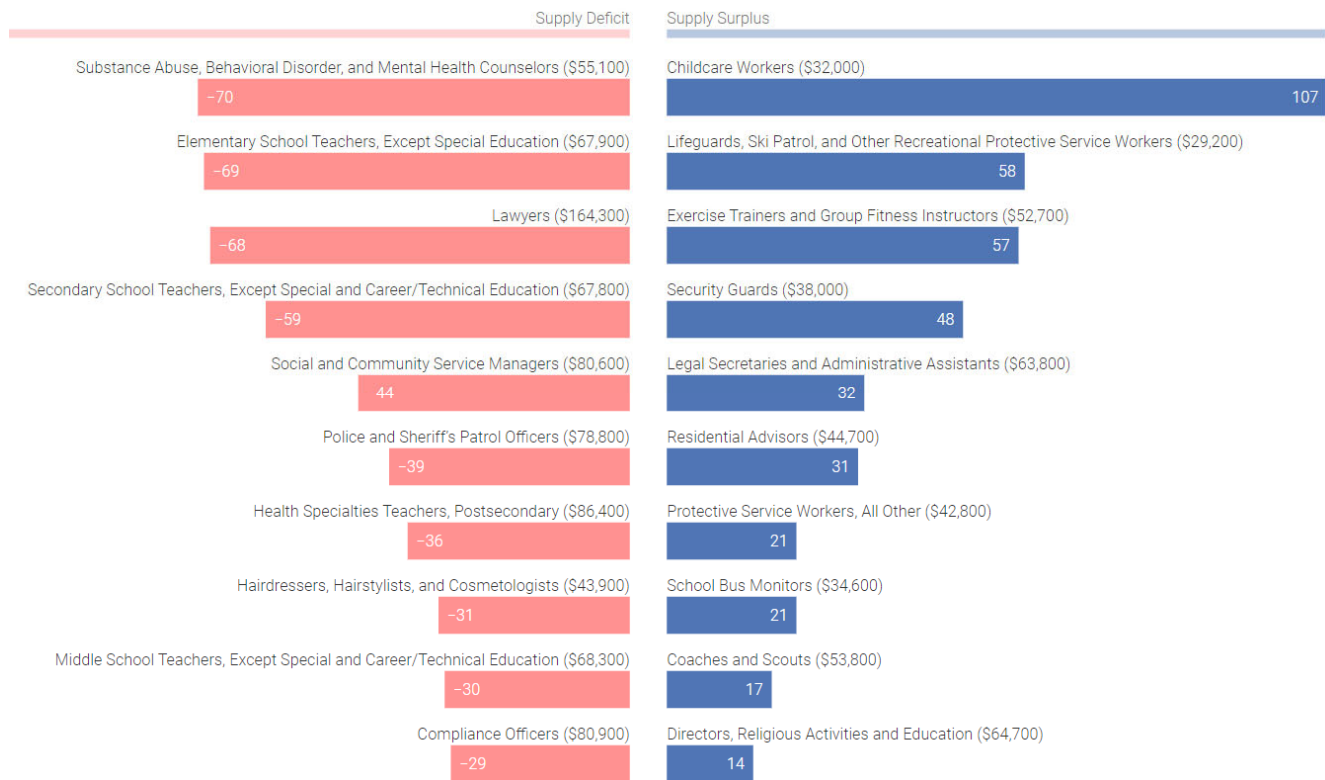
Occupation Gaps

The chart below shows the potential average annual talent shortages over 10 years. Across Minnesota in Human Services, the Education and Training career pathway continues to be the top pathway with shortages. However, since 2022Q2, Substance Abuse, Behavioral Disorder, and Mental Health Counselors have risen into the top position of occupation with highest talent shortage statewide in this field (short at least 70 workers annually). While shortages for teaching and several personal care and service roles such as Hairdressers, Cosmetologists, and Manicurists have decreased in overall shortage from 2022Q2, talent shortages are still



prominent in these positions with variation in their demand by region. Social and Community Service Managers, Police and Sheriff's Patrol Officers, and Compliance Officers could all benefit from stronger career pathway strategies that address the statewide need for this critical talent.

Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Human Services, Minnesota, 2023Q2

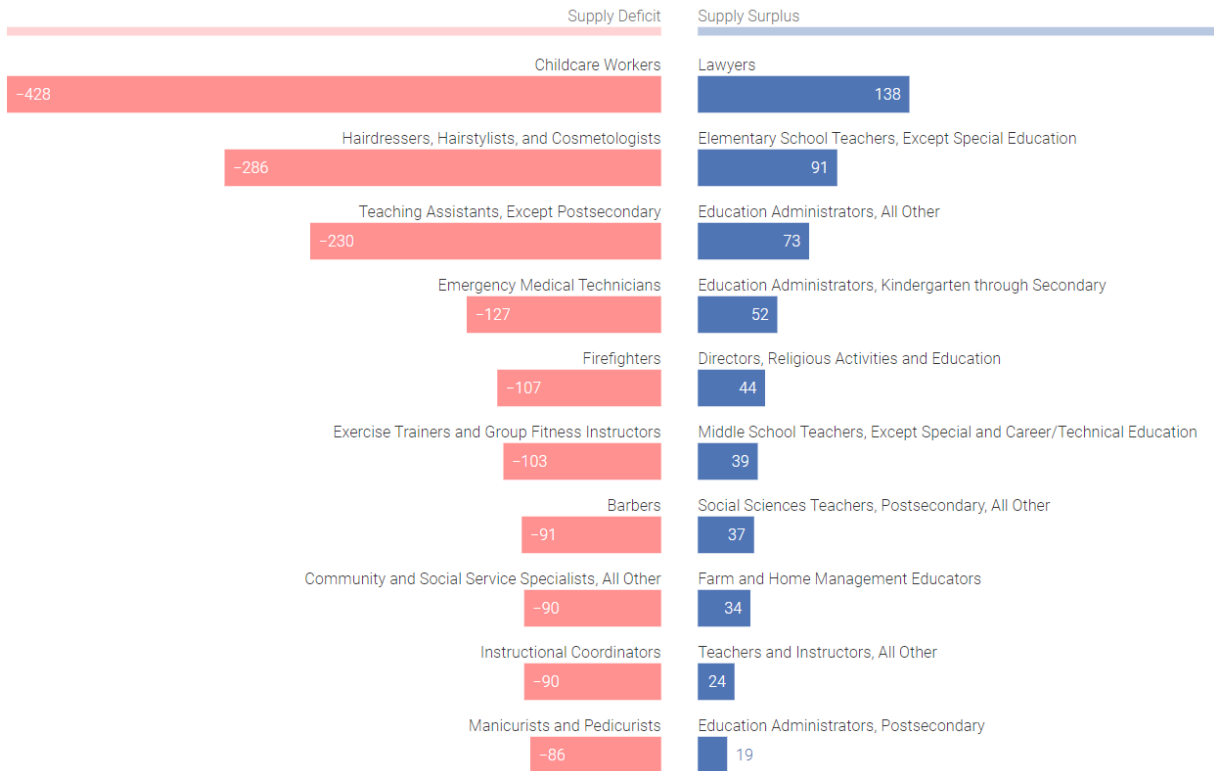


Award Gaps

A comparison of the graduate talent pipeline through certificate and other postsecondary degree programs to the current estimated openings by occupation reveal several shortages. Minnesota faces several notable Human Services award gaps, meaning that the region is underproducing local talent in relation to employer demand—with the largest shortages in early childhood education, personal care services, emergency medical response, and teaching. Similar to what was observed in 2022Q2, Minnesota colleges and universities are underproducing postsecondary completions from programs training Childcare Workers (-428 awards, improving from prior estimates), Hairdressers, Hairstylists, and Cosmetologists (-286 awards, worsening from prior estimates), and Emergency Medical Technicians (-127 awards, improving from prior estimates). A large share of the award gaps in Minnesota are in occupations that typically require a certificate or two-year degree, while most of the occupations that have more local postsecondary awards produced than national benchmarks are roles that require a four-year degree or higher.



Award Gaps in Human Services, Minnesota, 2023Q2



Origin-Gateway-Target

This section offers an Origin-to-Gateway-to-Target model analysis for how to help move students from entry points into their field of interest, considering automation, remote work, and the changing work environment. Overall, the top Origin and Gateway occupations by total volume of employment all have local award gaps (shortfalls of postsecondary graduates compared to an average community nationally) while all Target occupations have talent shortages.

Origin-to-Gateway-to-Target Occupations for Human Services, Minnesota, 2023Q2

Target Occupations (All HW, HS, HD, OG)

Elementary School Teachers, Except Special Education
Lawyers
Child, Family, & School Social Workers (AG)
Compliance Officers (AG)
Paralegals & Legal Assistants

Gateway Occupations (All HD)

Social & Human Service Assistants (AG)
Substance Abuse, Behavioral Disorder, & Mental Health Counselors (HS,OG, AG)
Self-Enrichment Teachers
Exercise Trainers & Group Fitness Instructors (AG)
Court, Municipal, & License Clerks (OG)

Origin Occupations (All HD)

Personal Care Aides (AG)
Teaching Assistants, Except Postsecondary (HS, AG)
Childcare Workers (AG)
Preschool Teachers, Except Special Education (HS, AG)
Security Guards

HW = High-Wage; HS=High-Skill; HD=High-Demand; OG=Occupation Gaps; AG=Award Gaps

Origin-to-Gateway-to-Target Occupations for Human Services, By Region 2023Q2

	MSP Metro	Northeast	Northwest	Central	Southwest	Southeast
Avg. Wage	Region: \$70,750 Field: \$62,300	Region: \$57,900 Field: \$54,200	Region: \$55,600 Field: \$53,900	Region: \$57,400 Field: \$53,400	Region: \$56,500 Field: \$54,800	Region: \$68,000 Field: \$55,500
Unempl	Region: 2.6% Field: 2.2%	Region: 3.9% Field: 2.9%	Region: 3.2% Field: 2.5%	Region: 3.4% Field: 2.7%	Region: 2.9% Field: 2.3%	Region: 2.4% Field: 2.0%
Origin Occupations	<ul style="list-style-type: none"> Personal Care Aides Teaching Assistants Childcare Workers Security Guards Preschool Teachers 	<ul style="list-style-type: none"> Personal Care Aides Teaching Assistants Childcare Workers Social & Human Service Assistants Preschool Teachers 	<ul style="list-style-type: none"> Personal Care Aides Teaching Assistants Childcare Workers Social & Human Service Assistants Preschool Teachers 	<ul style="list-style-type: none"> Personal Care Aides Teaching Assistants Childcare Workers Preschool Teachers Social & Human Service Assistants 	<ul style="list-style-type: none"> Personal Care Aides Teaching Assistants Childcare Workers Preschool Teachers Hairdressers, Hairstylists, & Cosmetologists 	<ul style="list-style-type: none"> Personal Care Aides Teaching Assistants Childcare Workers Preschool Teachers Emergency Medical Technicians
Gateway Occupations	<ul style="list-style-type: none"> Social & Human Service Assistants Hairdressers, Hairstylists, & Cosmetologists Self-Enrichment Teachers Substance Abuse & Mental Health Counselors Child, Family, & School Social Workers 	<ul style="list-style-type: none"> Substance Abuse & Mental Health Counselors License Clerks Correctional Officers Exercise Trainers Clergy 	<ul style="list-style-type: none"> License Clerks Substance Abuse & Mental Health Counselors Clergy Correctional Workers Exercise Trainers 	<ul style="list-style-type: none"> Substance Abuse & Mental Health Counselors Substitute Teachers Correctional Officers License Clerks Clergy 	<ul style="list-style-type: none"> Social & Human Service Assistants License Clerks Substance Abuse & Mental Health Counselors Correctional Officers Substitute Teachers 	<ul style="list-style-type: none"> Elementary School Teachers Secondary Teachers Middle School Teachers Substance Abuse & Mental Health Counselors Child, Family, & School Social Workers
Target Occupations	<ul style="list-style-type: none"> Elementary School Teachers Secondary School Teachers Lawyers Middle School Teachers Compliance Officers 	<ul style="list-style-type: none"> Child, Family, & School Social Workers Lawyers Social & Community Service Managers Compliance Officers Social Work, All Others 	<ul style="list-style-type: none"> Child, Family, & School Social Workers Lawyers Social & Community Service Managers Directors, Religious Activities Guidance & Career Counselors 	<ul style="list-style-type: none"> Child, Family, & School Social Workers Lawyers Social & Community Service Managers Compliance Officers Educational, Guidance, & Career Counselors 	<ul style="list-style-type: none"> Child, Family, & School Social Workers Lawyers Social & Community Service Managers Guidance & Career Counselors Compliance Officers 	<ul style="list-style-type: none"> Lawyers Social & Community Service Managers Compliance Officers Social Workers, All Other Health Specialties Teachers, Postsecondary

High Location Quotient (LQ) Occupations for Human Services, By Region 2023Q2

	MSP Metro	Northeast	Northwest	Central	Southwest	Southeast
LQ > 1.20	<ul style="list-style-type: none"> Social Workers, All Other Preschool Special Ed Teachers Marriage & Family Therapists Postsecondary Geography Teachers Postsecondary Area Ethnic & Cultural Studies Teachers 	<ul style="list-style-type: none"> Gambling Surveillance Officers Social Workers, All Other Court, Municipal & License Clerks Residential Advisors Preschool Special Ed Teachers 	<ul style="list-style-type: none"> Funeral Home Managers Preschool Special Ed Teachers Social Workers, All Other Court, Municipal, & License Clerks Sec. Special Ed Teachers 	<ul style="list-style-type: none"> Preschool Special Ed Teachers Funeral Home Managers Social Workers, All Other Court, Municipal, & License Clerks Residential Advisors 	<ul style="list-style-type: none"> Funeral Home Managers Preschool Special Ed Teachers Court, Municipal, & License Clerks Social Workers, All Other Gambling Surveillance Officers & Gambling Investigators 	<ul style="list-style-type: none"> Emergency Medical Technicians Paramedics Preschool Special Ed Teachers Funeral Home Managers Social Workers, All Other

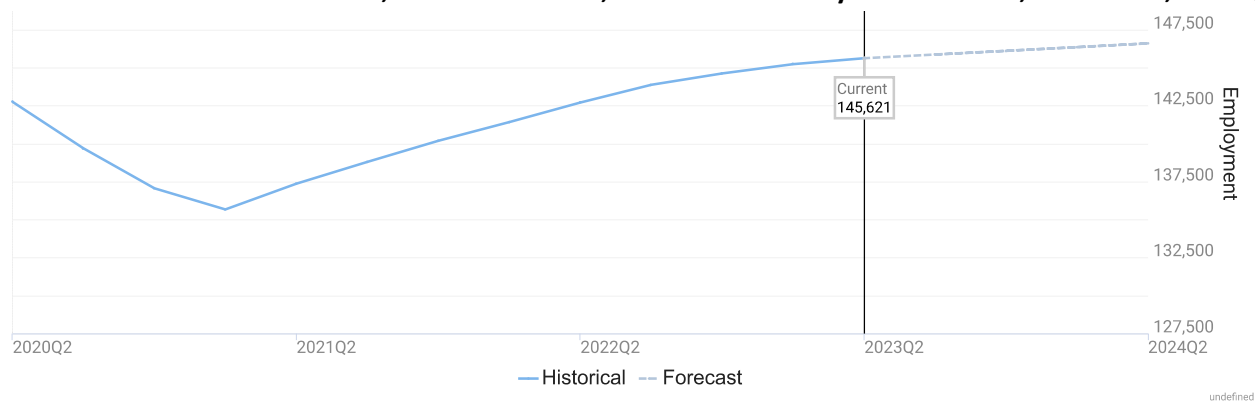
High Location Quotient (LQ) Occupations for Human Services, Minnesota 2023Q2

- 1) Social Workers, All Other (2.72)
- 2) Preschool Special Education Teachers (2.70)
- 3) Court, Municipal, & License Clerks (2.12)
- 4) Marriage & Family Therapists (2.03)
- 5) Residential Advisors (1.95)

Arts, Communications, and Information Systems

Arts, Communications, and Information Systems is a diverse career field with artistic careers as well as Information Technology career paths. The field’s employment forecast has soured since 2022Q2 estimates, now expecting to see 0.6% average annual growth over the next five years (estimated 0.9% in 2022Q2). The 145,621 Arts, Communications, and Information Systems careers statewide pay about \$91,700 annually on average and are similarly concentrated in Minnesota as the average nationwide (LQ 1.02). This field’s roles comprise about 4.7% of Minnesota’s workforce. As of 2023Q2, there are about 2,855 unemployed Arts, Communications, and Information Systems professionals in Minnesota, giving an unemployment rate of 2.1%. Total five-year demand for this talent is 65,412 new professionals needed to meet replacement and growth demand.

Baseline 3-Year Forecast for Arts, Communications, and Information Systems Careers, Minnesota, 2023Q2



Top Ten Arts, Communications, and Information Systems Occupations by Employment Volume in Minnesota, 2023Q2

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Change
Software Developers	35,221	\$121,300	1.15	3,377	3,214	2.1%
Computer User Support Specialists	13,623	\$66,400	0.99	937	1,088	0.2%
Computer Systems Analysts	12,421	\$109,800	1.26	-169	961	0.6%
Graphic Designers	6,179	\$67,500	1.21	-9	552	0.0%
Computer Network Support Specialists	6,125	\$80,200	1.86	-15	500	0.4%
Computer Occupations, All Other	5,649	\$101,100	0.68	349	450	0.6%
Printing Press Operators	5,557	\$49,900	1.90	-437	508	-1.4%
Network and Computer Systems Administrators	5,158	\$99,300	0.81	-97	346	0.0%
Musicians and Singers	3,080	\$85,300	0.95	-301	393	-0.1%
Information Security Analysts	2,959	\$118,900	0.92	390	305	2.5%
Remaining Component Occupations	49,652	\$79,200	0.97	-1,156	4,654	0.0%
Arts, Communications, & Information Systems (CTE Field)	145,621	\$91,700	1.02	2,867	12,975	0.6%

“Annual Demand” is the projected need for new entrants into an occupation. New entrants are needed due to expected growth and to replace workers who left the occupation due to factors such as retirement or switching careers.

“Forecast Ann Growth” is the expected baseline (most pessimistic) yearly change in employment due to national, long-term trend projections (per the BLS) as well as local factors such as industry mix, labor force participation rates, and population growth (as computed and modeled by RealTime Talent in JobsEQ).



The largest share of talent in Minnesota that is working in Arts, Communications, and Information Systems roles are employed by Computer Systems Design Companies (15.1%) or Management of Companies and Enterprises organizations (8.0%). These two industries account for a substantial amount of talent demand over the next ten years, but generally both current employment and future growth are relatively spread out over many different industries.

Arts, Communications, and Information Systems Field Employment by Industry, Minnesota, 2023Q2

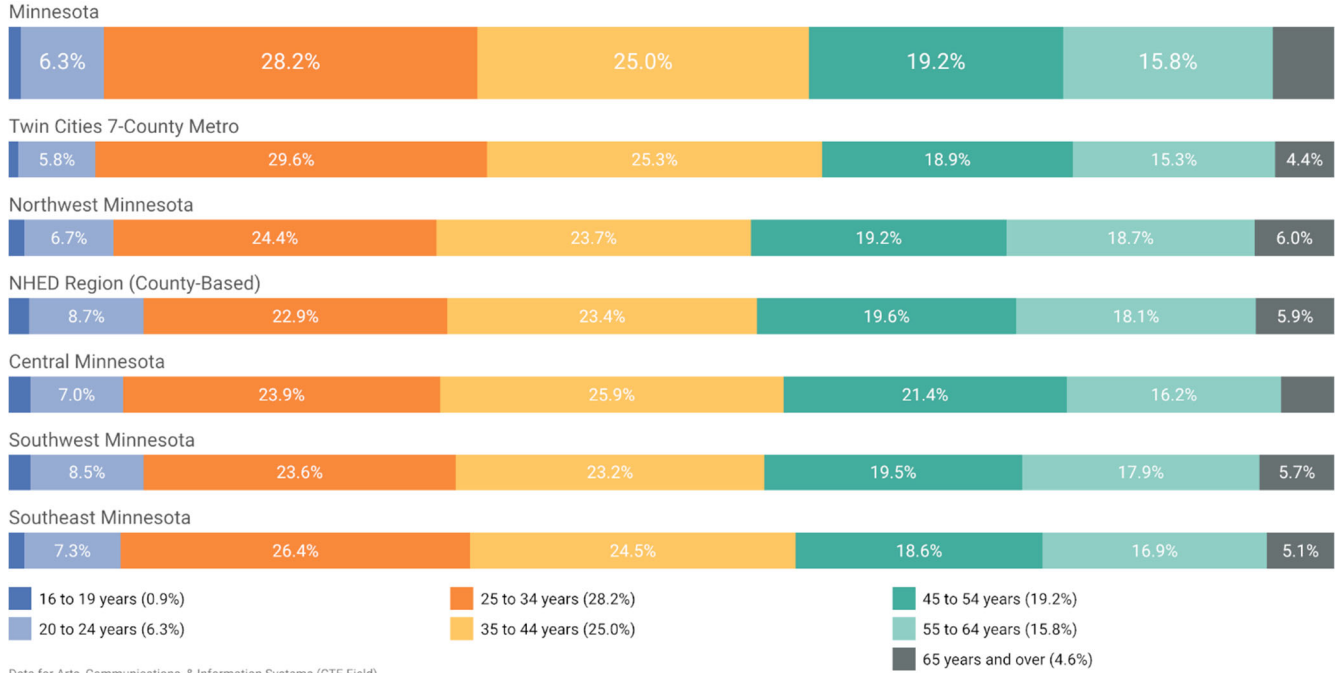
Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Change	10-Year Total Demand
Computer Systems Design and Related Services	15.1%	22,043	16,941	4,751	21,692
Management of Companies and Enterprises	8.0%	11,663	8,874	1,231	10,105
Printing and Related Support Activities	5.7%	8,330	8,204	-1,538	6,667
Independent Artists, Writers, and Performers	3.8%	5,547	5,738	43	5,781
Software Publishers	3.4%	5,002	3,861	1,136	4,996
Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	2.8%	4,144	2,924	285	3,209
Newspaper, Periodical, Book, and Directory Publishers	2.8%	4,079	3,859	-123	3,736
Insurance Carriers	2.8%	4,066	2,955	344	3,299
Depository Credit Intermediation	2.6%	3,747	2,698	334	3,033
Wired and Wireless Telecommunications (except Satellite)	2.5%	3,669	3,475	36	3,510
Management, Scientific, and Technical Consulting Services	2.5%	3,573	2,869	508	3,377
Employment Services	2.4%	3,548	2,757	155	2,912
Computing Infrastructure Providers, Data Processing, Web Hosting, and Related Services	2.3%	3,337	2,565	675	3,241
Religious Organizations	2.2%	3,171	3,418	-77	3,341
Other Professional, Scientific, and Technical Services	2.1%	3,120	2,712	179	2,891
Advertising, Public Relations, and Related Services	2.1%	2,996	2,962	272	3,234
Professional and Commercial Equipment and Supplies Merchant Wholesalers	1.8%	2,632	1,938	134	2,072
Colleges, Universities, and Professional Schools	1.8%	2,587	2,023	-12	2,011
Web Search Portals, Libraries, Archives, and Other Information Services	1.4%	2,080	1,641	609	2,251
Architectural, Engineering, and Related Services	1.2%	1,796	1,328	128	1,457
All Others	30.6%	44,491	37,804	912	38,716

Career Field Demographics

The Arts, Communications, and Information Systems field statewide is predominantly male (71.3%, down 1.6 percentage points) and white (77.9%, down 0.6 percentage points), but with notably more diversity than other career fields and continuing to increase in diversity. While 19.7% of Arts, Communications, and Information Systems talent was BIPOC by race as of 2021Q1 estimates, now 22.1% is—a full 2.4 percentage point increase in just two years. All regions saw racial diversity increase in this field, with the largest gains in the MSP Metro and Southeast where diversity was already greatest, continuing trends observed in 2022Q2. The share of Hispanic and Latinx talent in Arts, Communications, and Information Systems roles grew by 0.2 percentage points at the statewide level. The age of the workforce in this field skews young, but the fastest growing age cohorts are 65 and older (up 0.9 percentage points) and 55 to 64 years (up 0.6 percentage points) while younger cohorts now comprise a smaller share of the overall field's workforce.

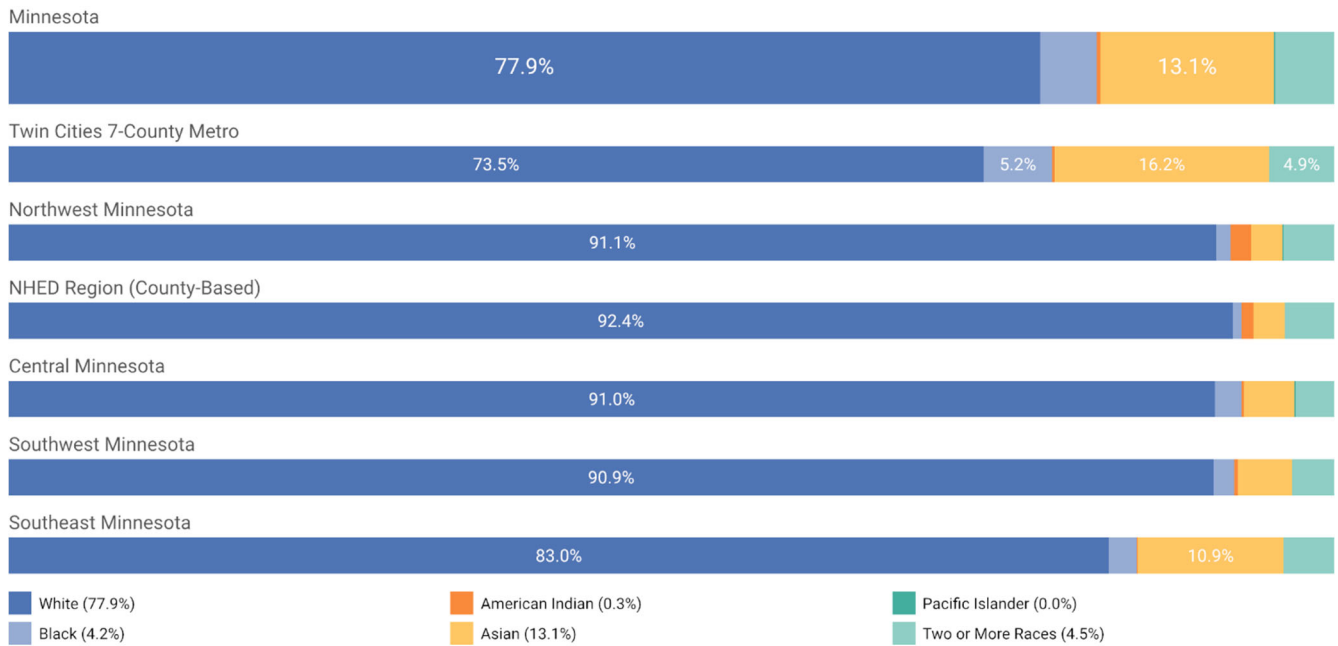


Age



Data for Arts, Communications, & Information Systems (CTE Field)
Source: JobsEQ®. Data as of 2023Q2.

Race

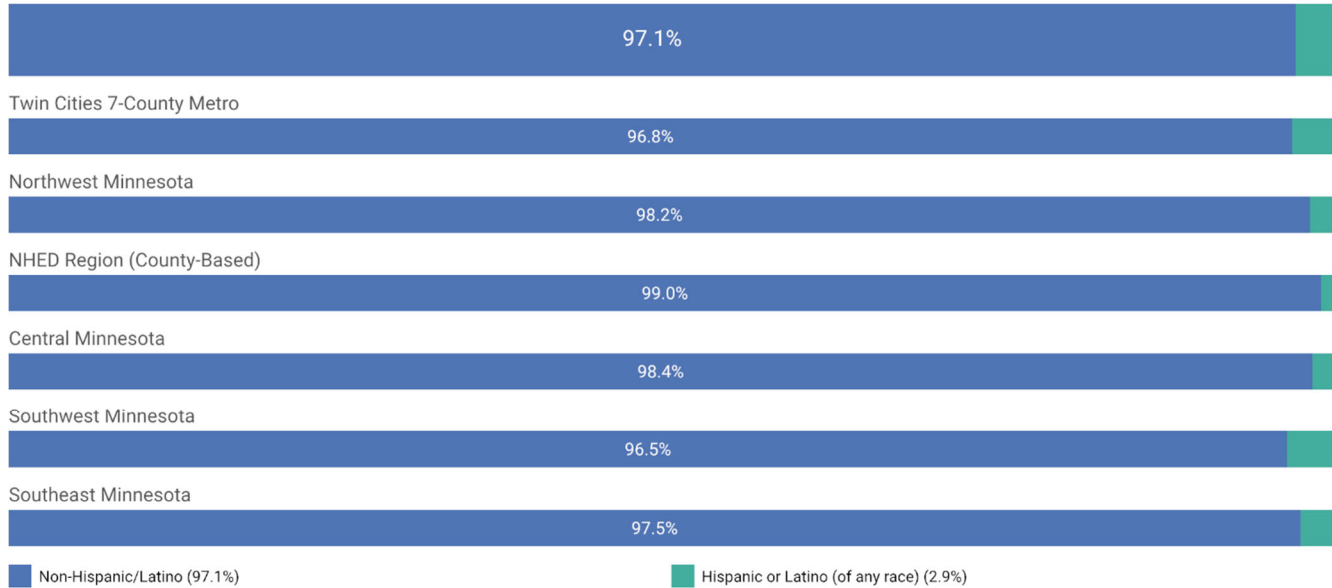


Data for Arts, Communications, & Information Systems (CTE Field)
Source: JobsEQ®. Data as of 2023Q2.



Ethnicity

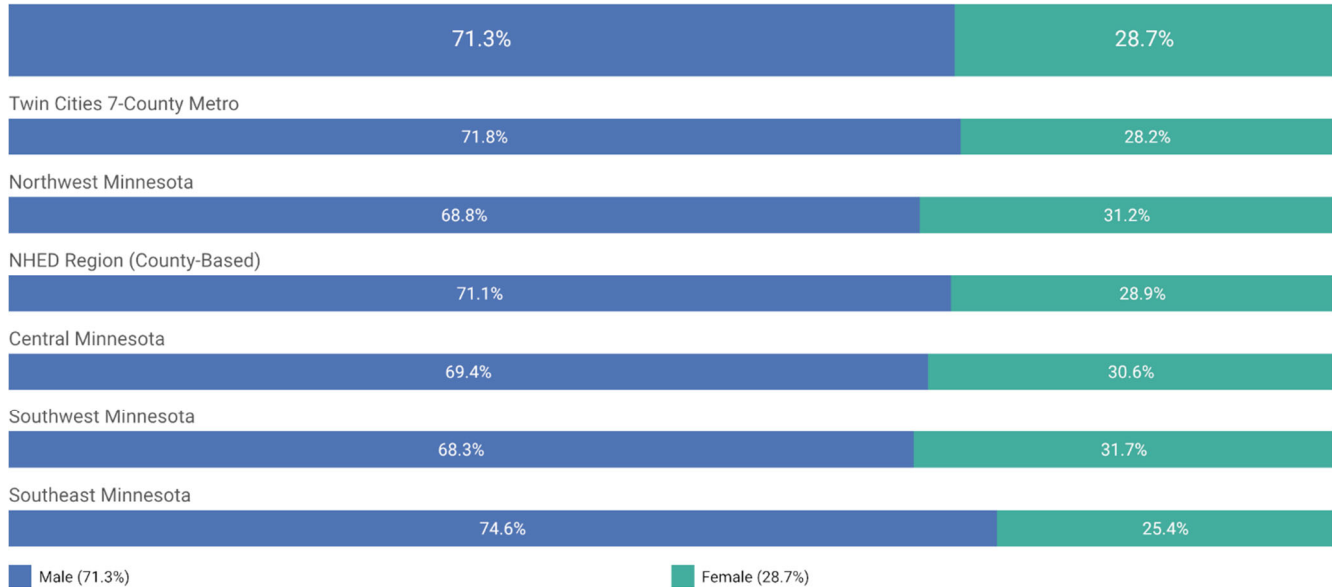
Minnesota



Data for Arts, Communications, & Information Systems (CTE Field)
Source: JobsEQ®. Data as of 2023Q2.

Gender

Minnesota



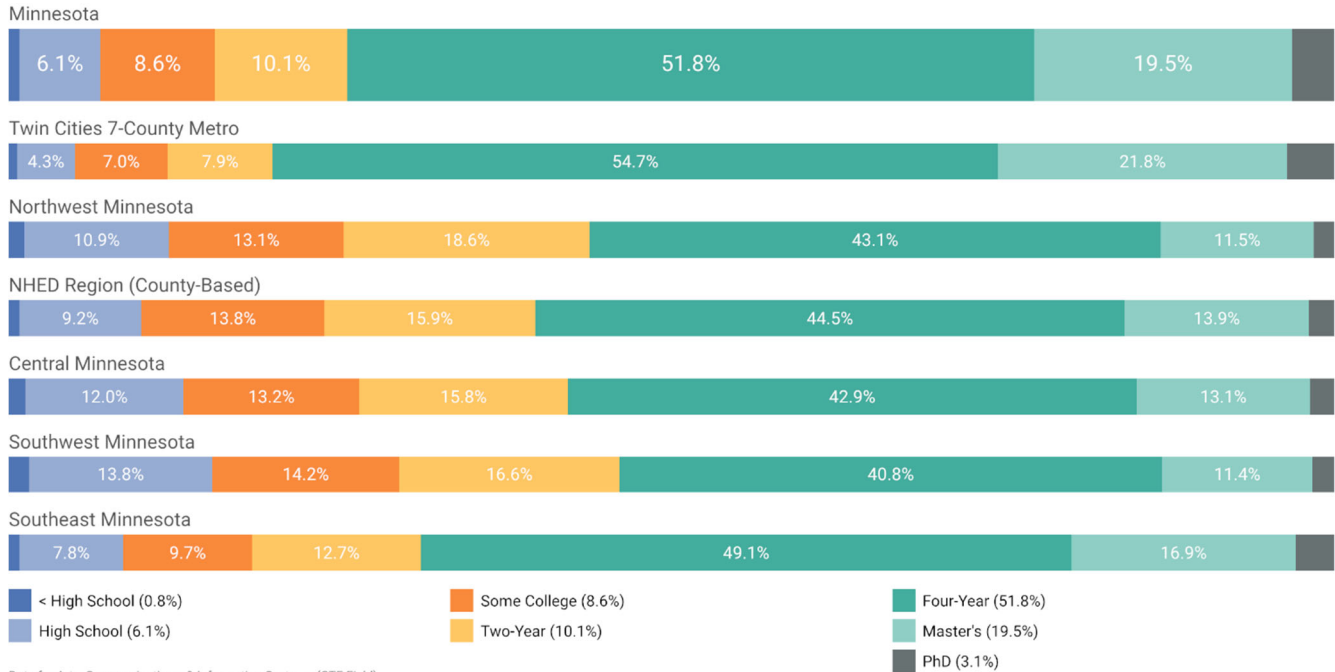
Data for Arts, Communications, & Information Systems (CTE Field)
Source: JobsEQ®. Data as of 2023Q2.

Educational Attainment and Requirements

The stacked bar chart here illustrates the estimated mix of educational attainment of the workers in this occupation(s) in aggregate, as well as the educational background required for positions. The types of roles in demand regionally plays a significant role in the education and training requirements of roles as well as the educational background of the workforce. The Arts, Communications, and Information Systems field has one of the greatest differences in workforce educational attainment between regions; about 80% of the workforce in the MSP Metro holds a four-year degree or higher, while closer to 5% of the field's workforce in Southwest Minnesota holds a four-year degree or higher. Overall, the educational attainment of the workforce by region reflects the requirements of positions.

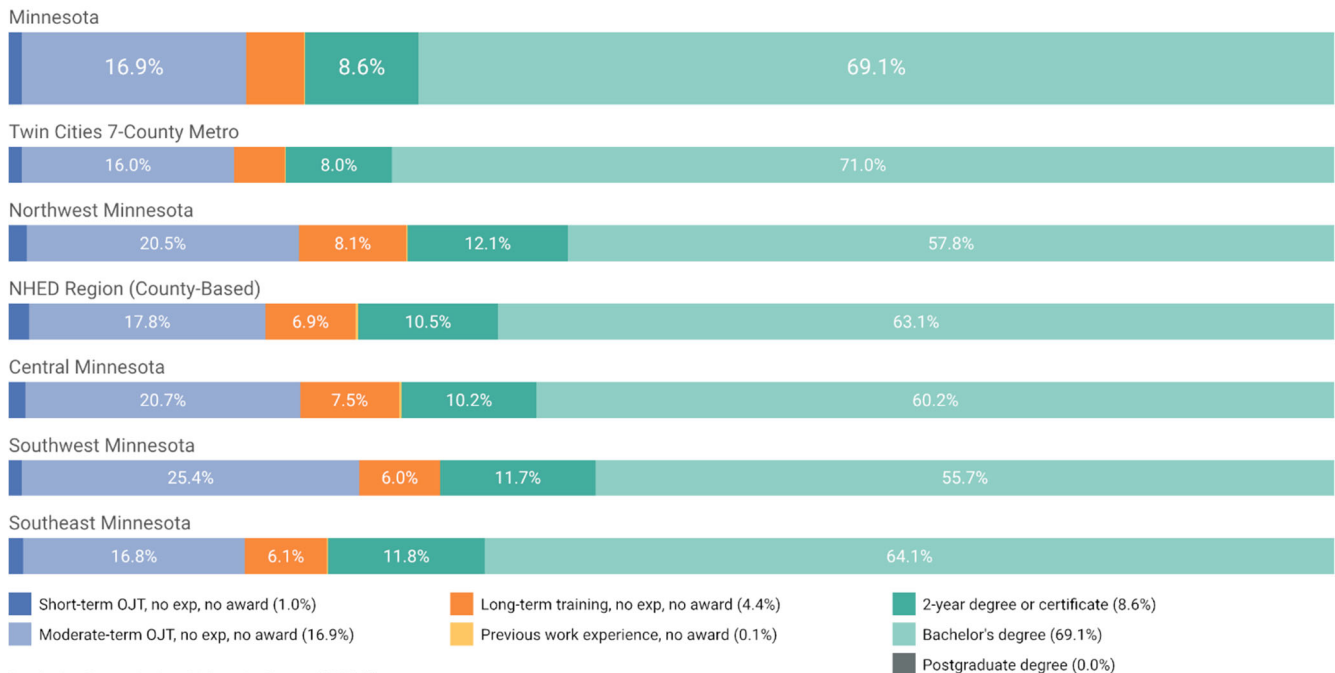


Educational Attainment



Data for Arts, Communications, & Information Systems (CTE Field)
Source: JobsEQ®. Data as of 2023Q2.

Education and Training Requirements



Data for Arts, Communications, & Information Systems (CTE Field)
Source: JobsEQ®. Data as of 2023Q2.

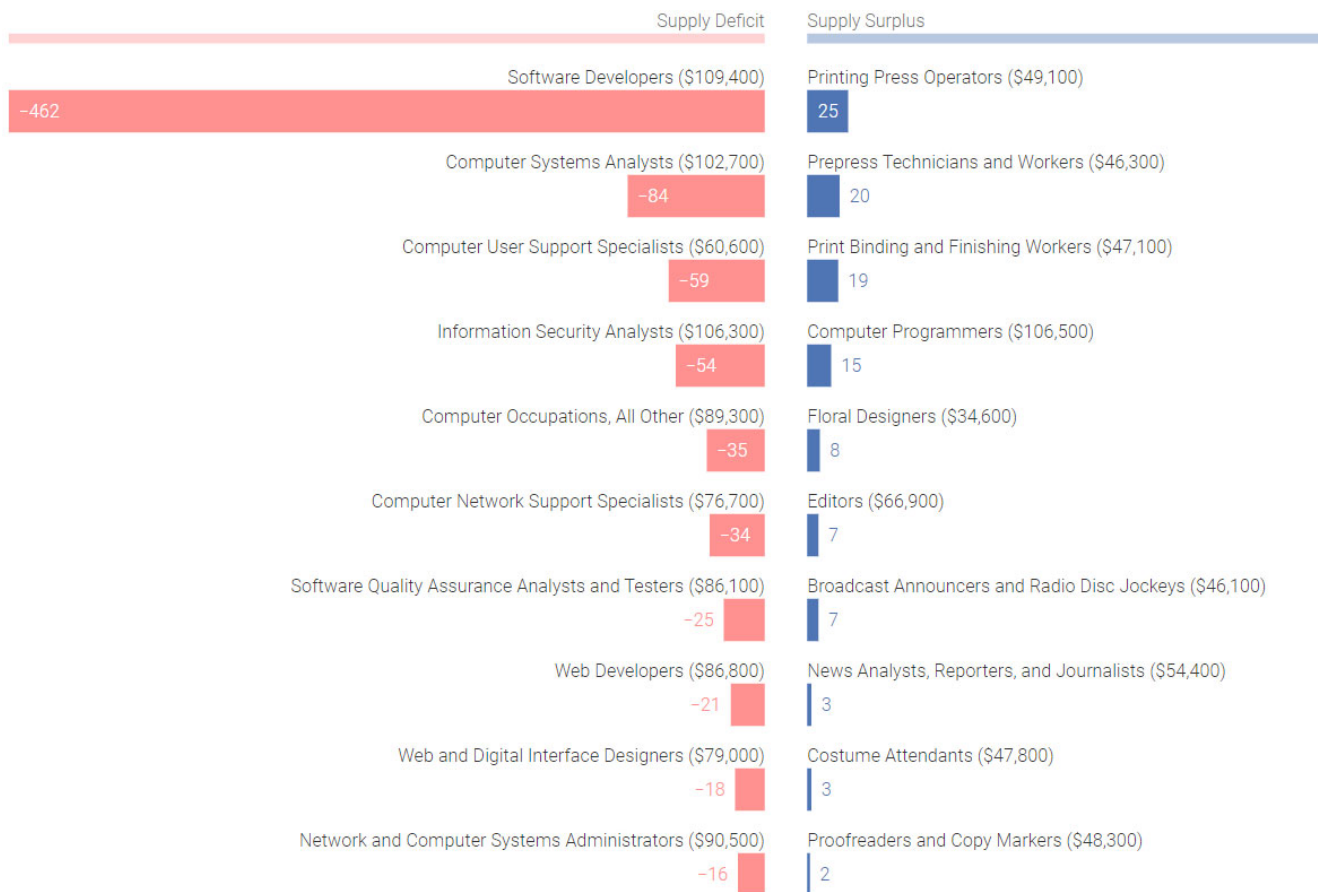
Occupation Gaps

The chart below shows the potential average annual talent shortages over 10 years. Software Developers continues to be the top occupation of shortage statewide, growing in its forecast shortage to about -462 skilled workers needed annually (averaged over the next ten years) to meet employer demand, increasing from estimates the prior year (previously -453 shortage). This critical talent shortage is primarily due to employment growth which is far outpacing the growth in supply of trained software professionals in this region. Other



occupations of shortage are consistent with prior estimates, including Computer Systems Analysts, Computer User Support Specialists, Information Security Analysts, and other Computer Occupations. Occupations in talent shortage are almost exclusively from the Information Technology cluster, while occupations where talent supply is sufficient or even slightly in surplus are from the Arts, Audio/Video Technology, and Communications cluster.

Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Arts, Communications, and Information Systems, Minnesota, 2023Q2

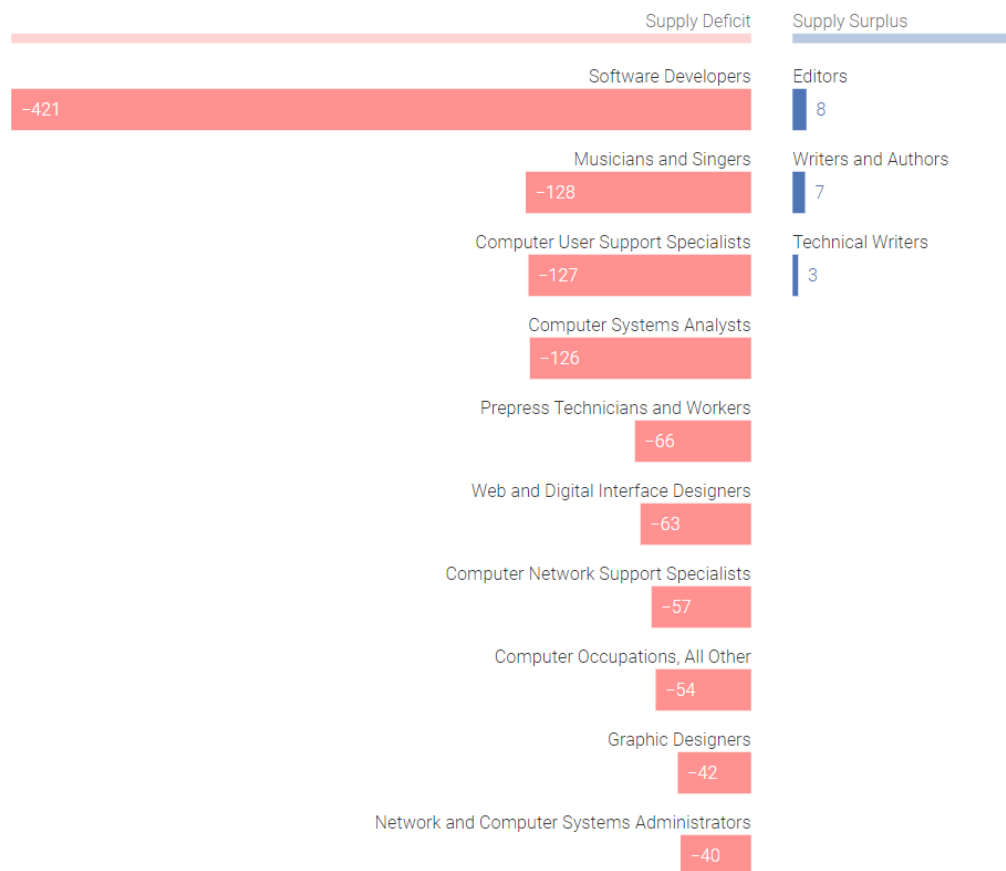




Award Gaps

A comparison of the graduate talent pipeline through certificate and other postsecondary degree programs to the current estimated openings by occupation draw attention to several critical shortages of awards conferred toward Arts, Communications, and Information Systems careers. Minnesota colleges and universities are underproducing around 421 graduates annually that are needed to fill Software Developer positions open with employers statewide (down from 453 graduates last year). This suggests that despite the national downward trend in aspects of the tech industry, there is still strong local demand for skilled talent in the Computer Sciences. Postsecondary education also underproduces postsecondary degreed talent in most other Information Technology and Computer Science roles, as well as Graphic Designers, Producers, and Music Directors. The three occupations that show very slightly higher awards given than what is currently needed in the local talent market are examples of programs that serve other occupations as well with transferrable skillsets.

Award Gaps in Arts, Communications, and Information Systems, Minnesota, 2023Q2



Origin-Gateway-Target

This section offers an Origin-to-Gateway-to-Target model analysis for how to help move students from entry points into their field of interest into both likely and other aligned careers, Considering automation, remote work, and the changing work environment. All of the top five Target occupations by employment volume in this field are experiencing talent shortages and undersupply of postsecondary awards.



Origin-to-Gateway-to-Target Occupations for Arts, Communications, and Information Systems, Minnesota, 2023Q2

Target Occupations (All HW, HS, HD, OG, AG)

Software Developers
 Computer User Support Specialists
 Computer Systems Analysts
 Computer Network Support Specialists
 Computer Occupations, All Other

Gateway Occupations

Printing Press Operators
 Photographers (OG, AG)
 Telecommunications Equipment Installers & Repairers (HS, HD, OG, AG)
 Telecommunications Line Installers & Repairers (HD, OG, AG)
 Prepress Technicians & Workers (HS, AG)

Origin Occupations (All AG)

Floral Designers
 Dancers (HD)
 Craft Artists (HD)

HW = High-Wage; HS=High-Skill; HD=High-Demand; OG=Occupation Gaps; AG=Award Gaps

Origin-to-Gateway-to-Target Occupations for Arts, Communications, and Information Systems, By Region 2023Q2

	MSP Metro	Northeast	Northwest	Central	Southwest	Southeast
Avg. Wage	Region: \$70,700 Field: \$95,800	Region: \$57,900 Field: \$77,900	Region: \$55,600 Field: \$72,100	Region: \$57,400 Field: \$75,400	Region: \$56,500 Field: \$73,000	Region: \$68,000 Field: \$84,500
Unempl	Region: 2.6% Field: 2.0%	Region: 3.9% Field: 3.0%	Region: 3.2% Field: 2.4%	Region: 3.4% Field: 2.4%	Region: 2.9% Field: 2.4%	Region: 2.4% Field: 1.9%
Origin Occupations	<ul style="list-style-type: none"> Floral Designers Dancers 	<ul style="list-style-type: none"> Printing Press Operators Floral Designers Print Binding & Finishing Workers Disc Jockeys Dancers 	<ul style="list-style-type: none"> Printing Press Operators Floral Designers Prepress Technicians Print Binding & Finishing Workers Reporters & Journalists Disc Jockeys 	<ul style="list-style-type: none"> Prepress Technicians Floral Designers Broadcast Announcers Disc Jockeys Dancers 	<ul style="list-style-type: none"> Prepress Technicians Print Binding & Finishing Workers Broadcast Announcers Floral Designers Reporters & Journalists 	<ul style="list-style-type: none"> Floral Designers Broadcast Announcers Disc Jockeys Dancers Craft Artists
Gateway Occupations	<ul style="list-style-type: none"> Computer User Support Specialists Printing Press Operators Photographers Telecommunications Equipment Installers Prepress Technicians 	<ul style="list-style-type: none"> Graphic Designers Photographers Audio & Video Technicians Prepress Technicians Designers, All Other 	<ul style="list-style-type: none"> Graphic Designers Photographers Broadcast Announcers Designers, All Other Broadcast Technicians 	<ul style="list-style-type: none"> Printing Press Operators Photographers Print Binding & Finishing Workers Reporters & Journalists Designers, All Other 	<ul style="list-style-type: none"> Printing Press Operators Graphic Designers Telecommunications Line Installers & Repairers Entertainers & Performers Camera Operators 	<ul style="list-style-type: none"> Computer User Support Specialists Graphic Designers Telecommunications Equipment Installers Printing Press Operators Photographers
Target Occupations	<ul style="list-style-type: none"> Software Developers Computer Systems Analysts Computer Network Support Specialists Computer Occupations, Other Network & Sys Admins 	<ul style="list-style-type: none"> Software Developers Computer Systems Analysts Computer Network Support Specialists Computer Occupations, Other Telecommunications Equipment Installers 	<ul style="list-style-type: none"> Software Developers Computer Systems Analysts Computer Network Support Specialists Telecommunications Equipment Installers Computer Occupations, Other Writers & Authors 	<ul style="list-style-type: none"> Software Developers Computer Systems Analysts Computer Network Support Specialists Computer Occupations, Other Telecommunications Equipment Installers 	<ul style="list-style-type: none"> Software Developers Computer Systems Analysts Computer Network Support Specialists Computer Occupations, Other Telecommunications Equipment Installers 	<ul style="list-style-type: none"> Software Developers Computer Systems Analysts Computer Network Support Specialists Computer Occupations, Other Software Quality Assurance Analysts & Testers

High Location Quotient (LQ) Occupations for Arts, Communications, and Information Systems, By Region 2023Q2

	MSP Metro	Northeast	Northwest	Central	Southwest	Southeast
LQ > 1.20	<ul style="list-style-type: none"> Prepress Technicians Print Binding & Finishing Workers Desktop Publishers Computer Network Support Specialists Printing Press Operators 	<ul style="list-style-type: none"> Broadcast Announcers Prepress Technicians Dancers Computer Network Support Specialists 	<ul style="list-style-type: none"> Prepress Technicians Broadcast Announcers Print Binding & Finishing Workers Commercial & Industrial Designers Floral Designers 	<ul style="list-style-type: none"> Prepress Technicians Print Binding & Finishing Workers Printing Press Operators Broadcast Announcers Commercial & Industrial Designers 	<ul style="list-style-type: none"> Prepress Technicians Print Binding & Finishing Workers Printing Press Operators Broadcast Announcers Desktop Publishers 	<ul style="list-style-type: none"> Sound Engineering Technicians Prepress Technicians Computer Network Support Specialists Broadcast Announcers

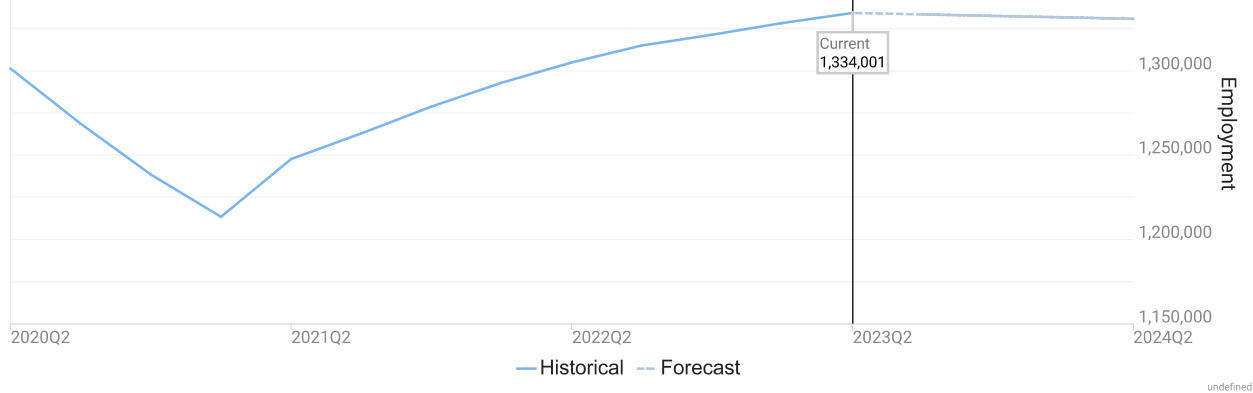
High Location Quotient (LQ) Occupations for Arts, Communications, and Information Systems, Minnesota 2023Q2

- 1) Prepress Technicians (3.46)
- 2) Print Binding & Finishing Workers (2.13)
- 3) Printing Press Operators (1.90)
- 4) Computer Network Support Specialists (1.86)
- 5) Desktop Publishers (1.83)

Business, Management, and Administration

Business, Management, and Administration includes a wide variety of career paths. Following an average annual employment decline of -0.2% over the past five years, this field’s employment is forecast to decline further by about -0.34% annually over the coming five years. The 1,334,001 Business, Management, and Administration careers statewide pay about \$64,000 annually on average and are about as concentrated in Minnesota than other states (LQ 0.98). This is the most significant career field by total volume of employment, with Business, Management, and Administration roles employing about 43.4% of Minnesota’s workforce. As of 2023Q2, there are about 41,435 unemployed Business, Management, and Administration professionals in Minnesota, giving an unemployment rate of 3.1%. Total five-year demand for Business, Management, and Administration talent is 828,092 new professionals needed to meet replacement and growth demand.

Baseline 3-Year Forecast for Business, Management, and Administration Careers, Minnesota, 2023Q2



Top Ten Business, Management, and Administration Systems Occupations by Employment Volume in Minnesota, 2023Q2

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Change
General and Operations Managers	74,840	\$112,900	1.13	8,407	6,622	0.1%
Retail Salespersons	69,158	\$37,400	0.98	-439	9,524	-0.5%
Cashiers	61,228	\$31,300	0.96	-249	10,238	-1.3%
Customer Service Representatives	58,274	\$47,900	1.05	1,404	7,391	-0.9%
Fast Food and Counter Workers	54,738	\$31,600	0.85	-72	11,570	-0.2%
Office Clerks, General	54,564	\$47,400	1.09	-1,345	6,132	-0.9%
Stockers and Order Fillers	44,613	\$38,300	0.83	4,256	7,830	0.4%
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	43,471	\$38,900	0.97	276	5,924	-0.2%
Waiters and Waitresses	38,726	\$28,600	0.92	1,748	7,409	-0.6%
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	35,727	\$49,300	0.95	-313	3,483	-1.5%
Remaining Component Occupations	798,660	\$73,900	1.04	19,228	89,883	-0.1%
Business, Management, & Administration (CTE Field)	1,334,001	\$64,000	0.98	32,898	166,006	-0.3%

“Annual Demand” is the projected need for new entrants into an occupation. New entrants are needed due to expected growth and to replace workers who left the occupation due to factors such as retirement or switching careers.

“Forecast Ann Growth” is the expected baseline (most pessimistic) yearly change in employment due to national, long-term trend projections (per the BLS) as well as local factors such as industry mix, labor force participation rates, and population growth (as computed and modeled by RealTime Talent in JobsEQ).



Employment in Business, Management, and Administration careers is spread out across a number of different industries. Statewide, the industries with the greatest share of Business, Management, and Administration talent are Restaurants (12.5%) and Management of Companies and Enterprises (4.3%). These two industries account for a substantial amount of talent demand over the next ten years.

Business, Management, and Administration Field Employment by Industry, Minnesota, 2023Q2

Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Change	10-Year Total Demand
Restaurants and Other Eating Places	12.5%	167,143	301,209	-2,566	298,643
Management of Companies and Enterprises	4.3%	57,388	57,768	2,360	60,128
Depository Credit Intermediation	3.2%	43,327	40,897	-2,039	38,858
Grocery and Convenience Retailers	2.9%	38,478	61,299	-2,109	59,190
Warehouse Clubs, Supercenters, and Other General Merchandise Retailers	2.8%	37,786	56,713	-2,346	54,367
Insurance Carriers	2.1%	28,371	27,611	-542	27,069
Management, Scientific, and Technical Consulting Services	2.1%	27,993	27,474	1,884	29,358
Gasoline Stations	1.9%	25,832	42,187	-2,561	39,626
Traveler Accommodation	1.9%	25,354	38,509	-388	38,122
Services to Buildings and Dwellings	1.8%	23,769	30,950	-556	30,393
Elementary and Secondary Schools	1.7%	22,861	29,671	-1,504	28,167
Agencies, Brokerages, and Other Insurance Related Activities	1.7%	22,791	22,959	926	23,885
Building Material and Supplies Dealers	1.6%	20,857	29,406	-417	28,989
General Medical and Surgical Hospitals	1.6%	20,817	25,344	-1,297	24,047
Employment Services	1.5%	20,219	24,308	-631	23,677
Executive, Legislative, and Other General Government Support	1.4%	18,552	21,696	-1,338	20,358
Other Amusement and Recreation Industries	1.3%	17,763	31,713	853	32,566
Offices of Physicians	1.3%	17,072	19,910	-742	19,168
Department Stores	1.3%	16,936	25,606	-919	24,686
Accounting, Tax Preparation, Bookkeeping, and Payroll Services	1.2%	16,276	15,769	-582	15,187
All Others	49.8%	664,416	761,029	-19,931	741,099

Career Field Demographics

The Business, Management, and Administration field has a slightly higher concentration of female workers (54.4%) than male, though the share of female talent dropped by 1.2 percentage points from 2022Q2 estimates. Racial diversity has increased in the field in line with growing overall population diversity to 15.6% of the field's workforce identifying as BIPOC (an increase of 0.9 percentage points). About 39.9% of workers in Business, Management, and Administration roles are under 35 years old, with relative uniformity in age demographics observed regionally statewide.

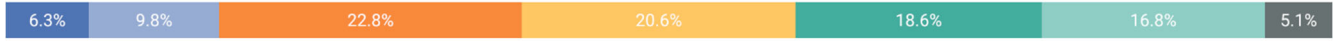


Age

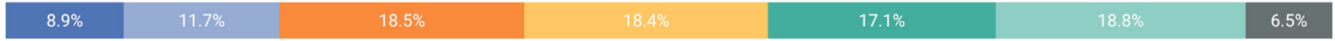
Minnesota



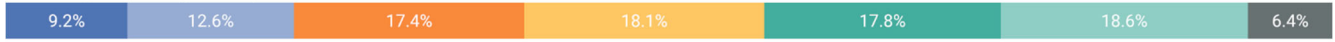
Twin Cities 7-County Metro



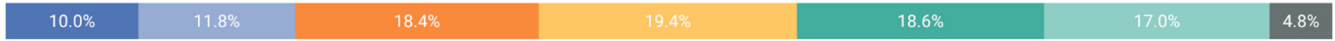
Northwest Minnesota



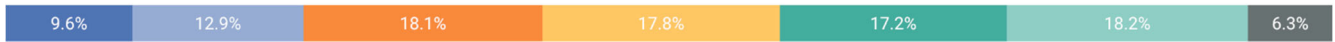
NHED Region (County-Based)



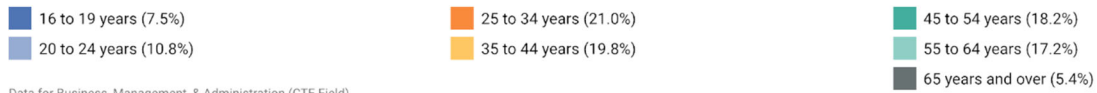
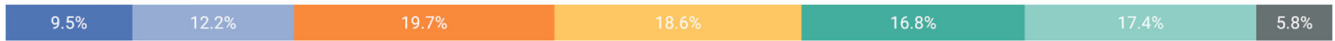
Central Minnesota



Southwest Minnesota



Southeast Minnesota



Data for Business, Management, & Administration (CTE Field)
Source: JobsEQ®. Data as of 2023Q2.

Race

Minnesota



Twin Cities 7-County Metro



Northwest Minnesota



NHED Region (County-Based)



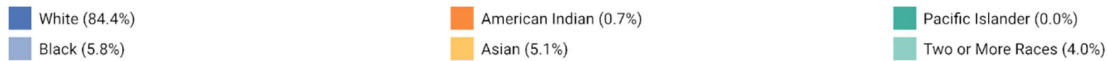
Central Minnesota



Southwest Minnesota



Southeast Minnesota

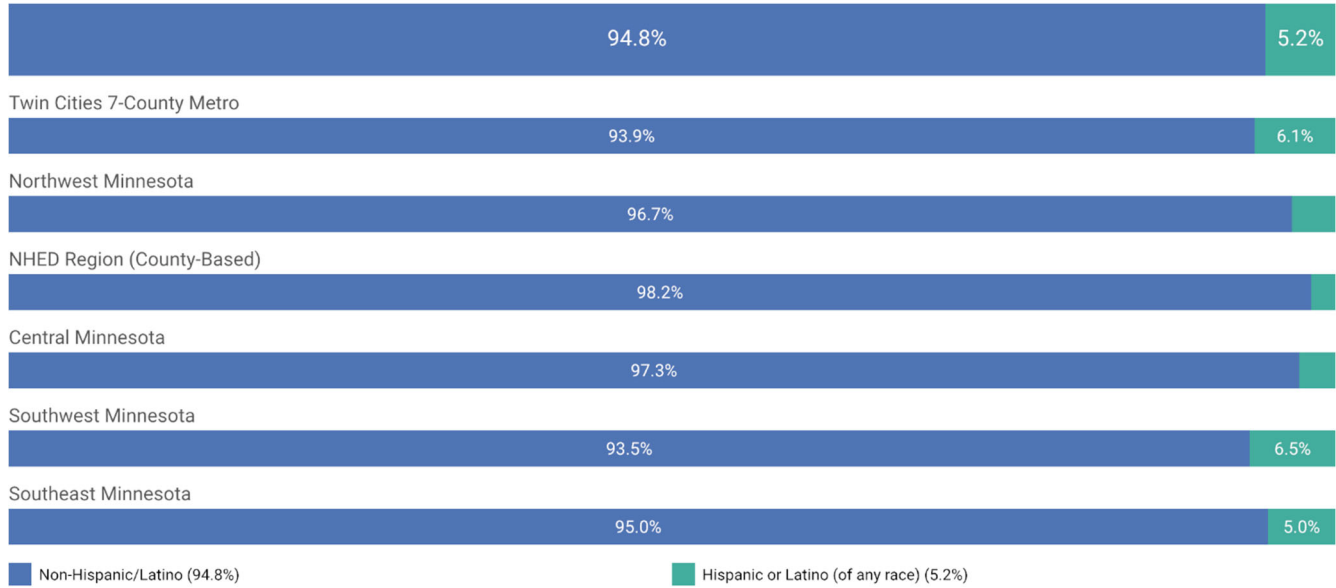


Data for Business, Management, & Administration (CTE Field)
Source: JobsEQ®. Data as of 2023Q2.



Ethnicity

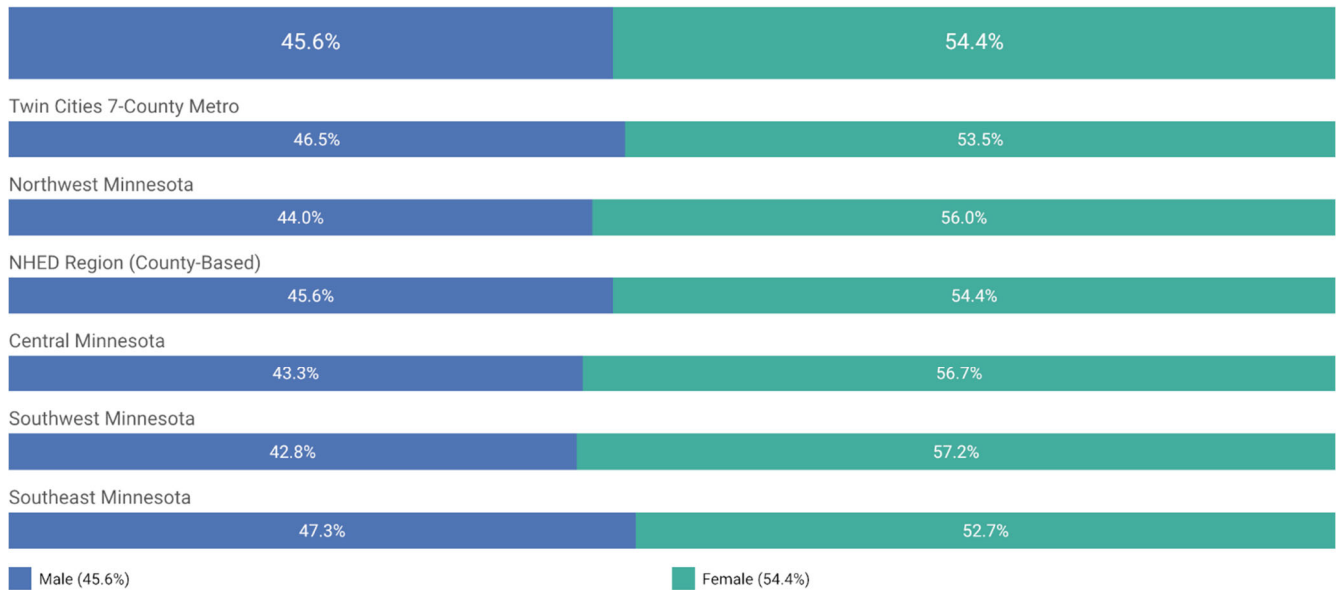
Minnesota



Data for Business, Management, & Administration (CTE Field)
Source: JobsEQ®. Data as of 2023Q2.

Gender

Minnesota



Data for Business, Management, & Administration (CTE Field)
Source: JobsEQ®. Data as of 2023Q2.

Educational Attainment and Requirements

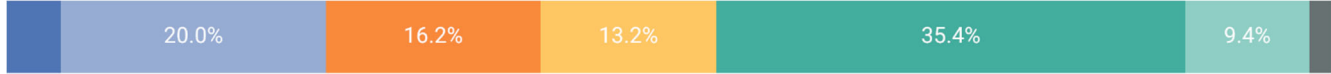
The stacked bar charts here illustrate the estimated mix of educational attainment of the workers in this occupation(s) in aggregate, and the education requirements of occupations in the field. In general, the Minnesota Business, Management, and Administration workforce continues to be over skilled for the typical credentials of positions. About half of all positions in this field (51.5%) require no degree, no experience, and only short-term on-the-job training. Another 20.5% require experience or some on-the-job training, but still no degree. In contrast, only 4.1% of the workforce in this field has no degree at all, and 20.0% hold a high school diploma as their highest credential, suggesting that potentially a large share of talent in low-education roles actually hold postsecondary degrees—in fact, 35.4% of talent in this field holds a Bachelor's degree and 11.1%



hold a Master’s or PhD, both cohorts increasing in their share of the field’s workforce from 2022Q2 estimates. The MSP Metro has the workforce with the highest levels of educational attainment as well as more local jobs that require those advanced degrees.

Educational Attainment

Minnesota



Twin Cities 7-County Metro



Northwest Minnesota



NHED Region (County-Based)



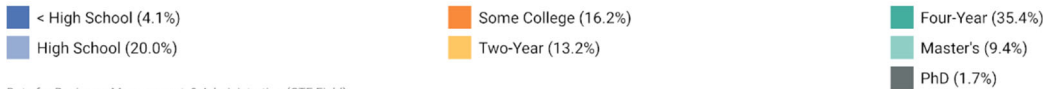
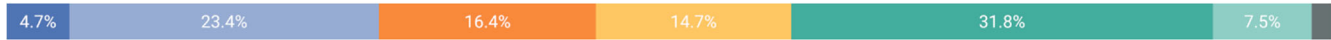
Central Minnesota



Southwest Minnesota



Southeast Minnesota



Data for Business, Management, & Administration (CTE Field)
Source: JobsEQ®. Data as of 2023Q2.

Education and Training Requirements

Minnesota



Twin Cities 7-County Metro



Northwest Minnesota



NHED Region (County-Based)



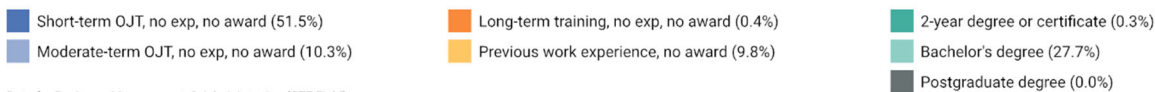
Central Minnesota



Southwest Minnesota



Southeast Minnesota



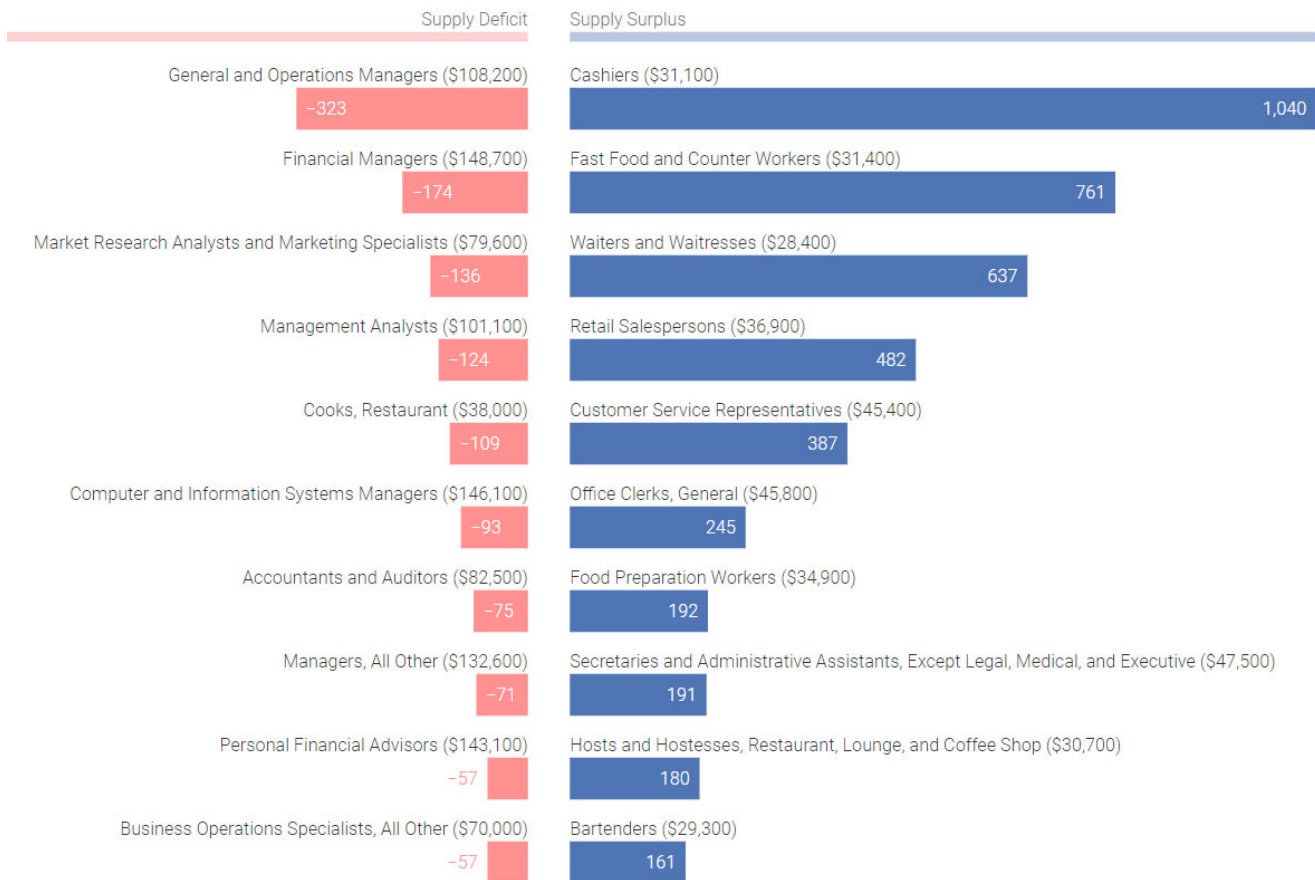
Data for Business, Management, & Administration (CTE Field)
Source: JobsEQ®. Data as of 2023Q2.



Occupation Gaps

The chart below shows the potential average annual talent shortages over ten years. A number of management roles indicate significant shortages in the years ahead, with the General and Operations Manager talent pool likely falling short at least -323 skilled workers needed annually (averaged over the next ten years) to meet employer demand—a moderate improvement from the shortage estimated the year prior. Financial management, market research, and other management and marketing roles comprise the majority of occupations in this field that forecast shortages. Hospitality and Tourism cluster careers have rebounded from the pandemic and several specialized roles are forecasting talent shortages, with Cooks jumping into second place as of 2022Q2 and falling to fifth place as of 2023Q2. However, most Hospitality and Tourism positions are forecasting regional talent surpluses, particularly positions that are considered Origin occupations.

Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Business, Management, and Administration, Minnesota, 2023Q2

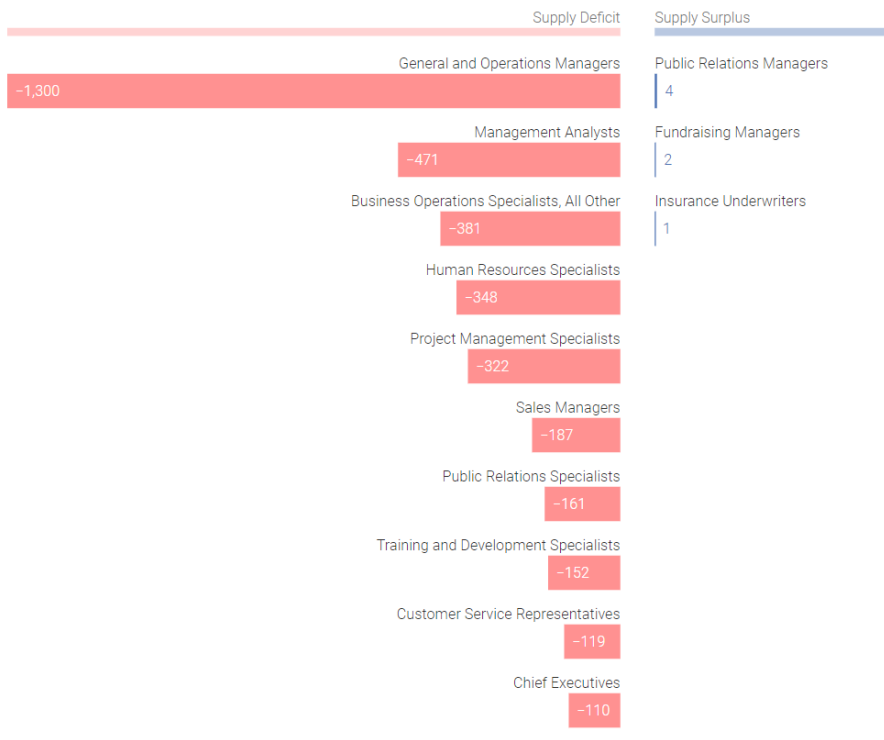


Award Gaps

A comparison of the graduate talent pipeline through certificate and other postsecondary degree programs to the current estimated openings by occupation reveal several dramatic shortages. Minnesota postsecondary institutions currently under-trains talent across the entire Business, Management, and Administration field when compared to national benchmarks. Minnesota-based colleges and universities are underproducing around 1,300 graduates annually that are needed to fill General and Operations Manager positions open statewide, worsening from the 2022Q2 estimates by about 100 graduates. In addition, there are about 471 fewer Management Analysts graduating from Minnesota institutions locally each year than would be expected in a state of Minnesota's industry and occupation mix nationally, similar to estimates from 2022Q2. Only Public Relations Managers, Fundraising Managers, and Insurance Underwriters have sufficient local postsecondary graduate awards compared to national benchmarks.



Award Gaps in Business, Management, and Administration, Minnesota, 2023Q2



Promising Pathways

This section offers an Origin-to-Gateway-to-Target model analysis for how to help move students from entry points into their field of interest into both likely and other aligned careers, considering automation, remote work, and the changing work environment. All of the top five Business, Management and Administration field occupations by total employment are experiencing both talent shortages and shortages of postsecondary awards conferred in the MSP Metro region.

Origin-to-Gateway-to-Target Occupations for Business, Management, and Administration, Minnesota, 2023Q2

Target Occupations (All HW, HS, HD, OG)

General & Operations Managers (AG)
 Accountants & Auditors
 Market Research Analysts & Marketing Specialists (AG)
 Management Analysts (AG)
 Business Operations Specialists, All Other (AG)

Gateway Occupations (All HD)

Customer Service Representatives (AG)
 Office Clerks, General (AG)
 Secretaries & Administrative Assistants, Except Legal, Medical, & Executive
 Bookkeeping, Accounting, & Auditing Clerks (HS, AG)
 Supervisors of Retail Sales Workers

Origin Occupations (All HD)

Retail Salespersons
 Cashiers
 Fast Food & Counter Workers
 Stockers & Order Fillers
 Janitors & Cleaners, Except Maids & Housekeeping Cleaners

HW = High-Wage; HS=High-Skill; HD=High-Demand; OG=Occupation Gaps; AG=Award Gaps

Origin-to-Gateway-to-Target Occupations for Business, Management, and Administration, By Region 2023Q2

	MSP Metro	Northeast	Northwest	Central	Southwest	Southeast
Avg. Wage	Region: \$70,700 Field: \$69,500	Region: \$57,900 Field: \$50,500	Region: \$55,600 Field: \$51,300	Region: \$57,400 Field: \$52,900	Region: \$56,500 Field: \$53,100	Region: \$68,000 Field: \$55,100
Une Impl	Region: 2.6% Field: 2.8%	Region: 3.9% Field: 4.4%	Region: 3.2% Field: 3.6%	Region: 3.4% Field: 3.8%	Region: 2.9% Field: 3.2%	Region: 2.4% Field: 2.9%
Origin Occupations	<ul style="list-style-type: none"> Retail Salespersons Fast Food Workers Cashiers Janitors & Cleaners Stockers & Order Fillers 	<ul style="list-style-type: none"> Retail Salespersons Cashiers Fast Food Workers Waiters & Waitresses Office Clerks, General 	<ul style="list-style-type: none"> Cashiers Retail Salespersons Fast Food & Counter Workers Office Clerks, General Stockers & Order Fillers 	<ul style="list-style-type: none"> Cashiers Retail Salespersons Fast Food Workers Office Clerks, General Stockers & Order Fillers 	<ul style="list-style-type: none"> Cashiers Retail Salespersons Fast Food Workers Office Clerks, General Stockers & Order Fillers 	<ul style="list-style-type: none"> Customer Service Reps Stockers & Order Fillers Receptionists & Info Clerks Shipping, Receiving, & Inventory Clerks Interviewers
Gateway Occupations	<ul style="list-style-type: none"> Customer Service Representatives Office Clerks, General Secretaries & Administrative Assistants Bookkeeping Clerks Supervisors of Retail Workers 	<ul style="list-style-type: none"> Secretaries & Administrative Assistants Supervisors of Retail Workers Bookkeeping, Accounting, & Auditing Workers Billing & Posting Clerks Supervisors of Housekeeping & Janitorial Workers 	<ul style="list-style-type: none"> Supervisors of Retail Workers Bookkeeping, Accounting, & Auditing Clerks Property, Real Estate, & Community Assn Managers Billing & Posting Clerks Supervisors of Housekeeping & Janitorial Workers 	<ul style="list-style-type: none"> Supervisors of Retail Workers Secretaries & Administrative Assistants Bookkeeping, Accounting, & Auditing Clerks Billing & Posting Clerks Postal Service Mail Carriers 	<ul style="list-style-type: none"> Secretaries & Administrative Assistants Supervisors of Retail Workers Bookkeeping, Accounting, & Auditing Clerks Real Estate Sales Agents Property, Real Estate, & Community Assn Managers 	<ul style="list-style-type: none"> Office Clerks, General Secretaries & Administrative Assistants Bookkeeping, Accounting, & Auditing Clerks Billing & Posting Clerks Executive Secretaries & Executive Administrative Assistants
Target Occupations	<ul style="list-style-type: none"> General & Operations Managers Accountants & Auditors Market Research Analysts Management Analysts Business Operations Specialists 	<ul style="list-style-type: none"> General & Operations Managers Accountants & Auditors Managers, All Other Business Operations Specialists, All Other Market Research Analysts 	<ul style="list-style-type: none"> General & Operations Managers Accountants & Auditors Managers, All Other Business Operations Specialists Market Research Analysts 	<ul style="list-style-type: none"> General & Operations Managers Accountants & Auditors Managers, All Other Market Research Analysts Business Operations Specialists, All Other Project Management Specialists 	<ul style="list-style-type: none"> General & Operations Managers Accountants & Auditors Managers, All Other Market Research Analysts Business Operations Specialists, All Other 	<ul style="list-style-type: none"> General & Operations Managers Business Operations Specialists Human Resource Specialists Project Management Specialists Management Analysts

High Location Quotient (LQ) Occupations for Business, Management, and Administration, By Region 2023Q2

	MSP Metro	Northeast	Northwest	Central	Southwest	Southeast
LQ > 1.20	<ul style="list-style-type: none"> Gambling Service Workers Gambling & Sports Book Writers & Runners Labor Relations Specialists Brokerage Clerks Human Resources Assistants 	<ul style="list-style-type: none"> Gambling Service Workers Gambling & Sports Book Writers & Runners Gambling Cage Workers Gambling Change Persons & Booth Cashiers Supervisors of Gambling Service Workers 	<ul style="list-style-type: none"> Gambling Service Workers Gambling & Sports Book Writers & Runners Gambling Cage Workers Chief Executives Supervisors of Gambling Services Workers 	<ul style="list-style-type: none"> Gambling Service Workers Gambling & Sports Book Writers & Runners Supervisors of Gambling Service Workers Bartenders Food Servers, Nonrestaurant 	<ul style="list-style-type: none"> Gambling Service Workers Gambling & Sports Book Writers & Runners Gambling Cage Workers Gambling Change Persons & Booth Cashiers Supervisors of Gambling Service Workers 	<ul style="list-style-type: none"> Gambling Service Workers, All Other Telephone Operators Food Servers, Nonrestaurant Receptionists & Information Clerks Billing & Posting Clerks

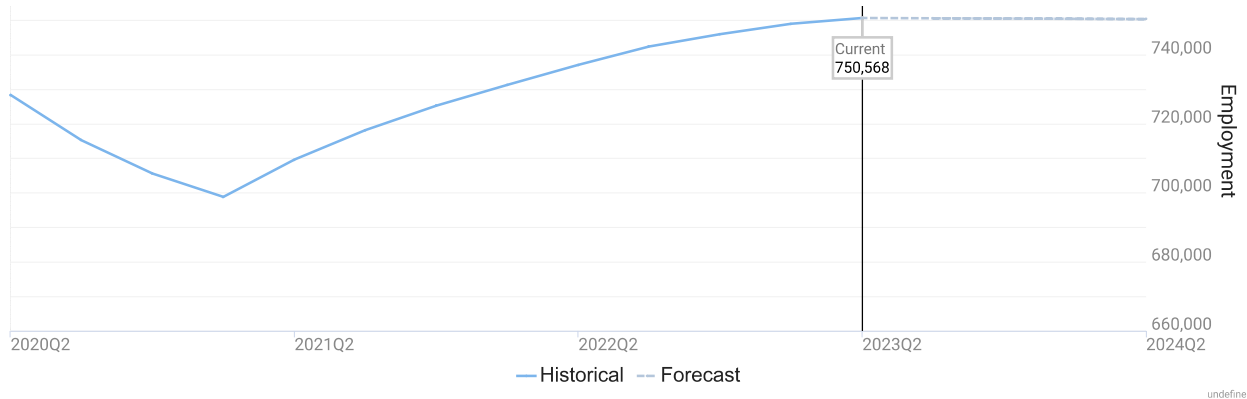
High Location Quotient (LQ) Occupations for Business, Management, and Administration, Minnesota 2023Q2

- 1) Gambling Service Workers, All Other (8.41)
- 2) Gambling & Sports Book Writers & Runners (3.40)
- 3) Chief Executives (1.77)
- 4) Food Servers, Nonrestaurant (1.75)
- 5) Actuaries (1.66)

Engineering, Manufacturing, and Technology

Engineering, Manufacturing, and Technology is a wide career field with transportation, logistics, STEM, architecture, construction, manufacturing, and machining careers. As of 2023Q2, there are 750,568 employees working in roles specifically aligned to these career clusters across Minnesota. Over the next three years, employment is likely to drop by about -1,147 workers by 2026, though with high replacement demand needs (242,447 new workers needed in total over the next three years). Demand is highest among engineering, transportation, general maintenance, and trades careers in this field.

3-Year Forecast for Engineering, Manufacturing, and Technology Careers, Minnesota, 2023Q2



Top Ten Engineering, Manufacturing, and Technology Occupations by Employment Volume in Minnesota, 2023Q2

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Change
Laborers and Freight, Stock, and Material Movers, Hand	53,695	\$43,800	0.96	3,657	7,650	0.2%
Heavy and Tractor-Trailer Truck Drivers	39,788	\$60,300	0.96	2,125	4,677	0.1%
Maintenance and Repair Workers, General	29,647	\$54,000	0.98	669	2,884	0.0%
Construction Laborers	28,189	\$56,800	1.04	1,934	2,848	0.2%
Team Assemblers	27,054	\$43,700	1.15	1,515	2,730	-1.2%
Light Truck Drivers	20,704	\$49,700	0.96	-68	2,611	0.7%
Landscaping and Groundskeeping Workers	20,033	\$42,300	0.90	832	2,633	0.1%
Carpenters	19,358	\$63,500	1.08	-57	1,764	-0.1%
Industrial Engineers	14,903	\$101,500	2.36	1,445	1,051	0.8%
First-Line Supervisors of Production and Operating Workers	14,015	\$74,500	1.08	434	1,384	-0.3%
Remaining Component Occupations	483,174	\$65,000	0.98	9,744	50,605	-0.1%
Engineering, Manufacturing, & Technology (CTE Field)	750,568	\$61,600	1.00	22,223	80,837	-0.1%

“Annual Demand” is the projected need for new entrants into an occupation. New entrants are needed due to expected growth and to replace workers who left the occupation due to factors such as retirement or switching careers.

“Forecast Ann Growth” is the expected baseline (most pessimistic) yearly change in employment due to national, long-term trend projections (per the BLS) as well as local factors such as industry mix, labor force participation rates, and population growth (as computed and modeled by RealTime Talent in JobsEQ).

Many different industries employ Engineering, Manufacturing, and Technology talent in Minnesota. The industries with the greatest share of this field’s talent are Building Equipment Contractors (4.4%) followed by Employment Services agencies (4.0%). Most industries employing talent in this field touch less than 1% of total

talent skilled in this field, suggesting that education and training programs will need to build broad strategies that cross each of these sectors.

Engineering, Manufacturing, and Technology Field Employment by Industry, Minnesota, 2023Q2

Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Change	10-Year Total Demand
Building Equipment Contractors	4.4%	32,810	32,706	427	33,133
Employment Services	4.0%	30,116	37,288	355	37,644
General Freight Trucking	2.6%	19,674	22,899	-2	22,897
Building Finishing Contractors	2.6%	19,471	17,555	-148	17,407
Other Specialty Trade Contractors	2.2%	16,694	16,726	62	16,787
Architectural, Engineering, and Related Services	2.2%	16,446	13,751	89	13,840
Residential Building Construction	2.1%	15,789	14,517	26	14,543
Foundation, Structure, and Building Exterior Contractors	2.1%	15,680	15,021	-70	14,951
Animal Slaughtering and Processing	2.1%	15,609	19,249	-533	18,717
Automotive Repair and Maintenance	2.0%	14,672	15,672	-75	15,597
Executive, Legislative, and Other General Government Support	1.9%	14,623	15,156	-113	15,042
Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	1.9%	14,525	13,240	-413	12,827
Services to Buildings and Dwellings	1.9%	14,367	17,651	-69	17,583
Couriers and Express Delivery Services	1.9%	13,891	18,176	1,892	20,067
Highway, Street, and Bridge Construction	1.8%	13,356	13,083	-142	12,941
Plastics Product Manufacturing	1.7%	12,997	14,080	-235	13,845
Medical Equipment and Supplies Manufacturing	1.7%	12,715	13,501	-162	13,340
Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	1.6%	11,713	12,511	-70	12,441
Nonresidential Building Construction	1.5%	11,480	10,569	-24	10,545
Management of Companies and Enterprises	1.5%	11,192	10,757	912	11,669
All Others	56.3%	422,749	467,695	-4,679	463,016

Career Field Demographics

The Engineering, Manufacturing, and Technology field is heavily male (81.4%) and white (85.3%), but both the share of female talent increased by 0.6 percentage points and talent that is BIPOC by race increased by about 1.1 percentage points from 2022Q2—for the second consecutive year due in large part to a significant number of individuals identifying with two or more races entering the field's workforce. Overall, the workforce is older than average, but with relative consistency by region across the state. This field the challenges of having an older overall workforce, with 24.9% being 55 or older (up by 0.8 percentage points from 2022Q2).

Age

Minnesota



Twin Cities 7-County Metro



Northwest Minnesota



NHED Region (County-Based)



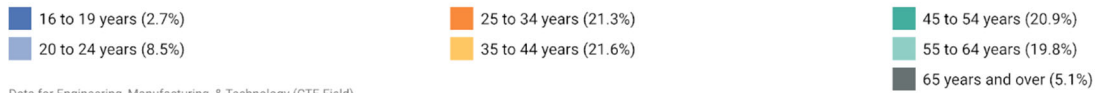
Central Minnesota



Southwest Minnesota



Southeast Minnesota



Data for Engineering, Manufacturing, & Technology (CTE Field)
Source: JobsEQ®. Data as of 2023Q2.

Race

Minnesota



Twin Cities 7-County Metro



Northwest Minnesota



NHED Region (County-Based)



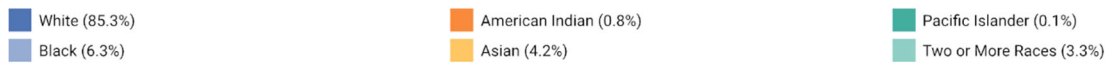
Central Minnesota



Southwest Minnesota



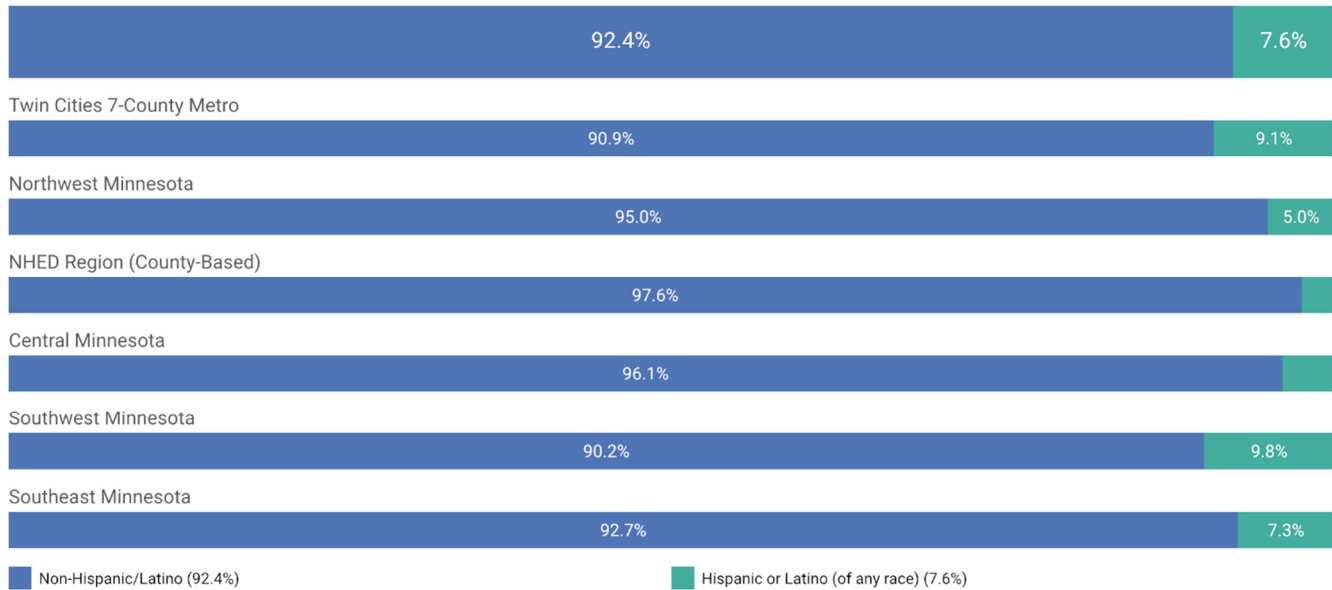
Southeast Minnesota



Data for Engineering, Manufacturing, & Technology (CTE Field)
Source: JobsEQ®. Data as of 2023Q2.

Ethnicity

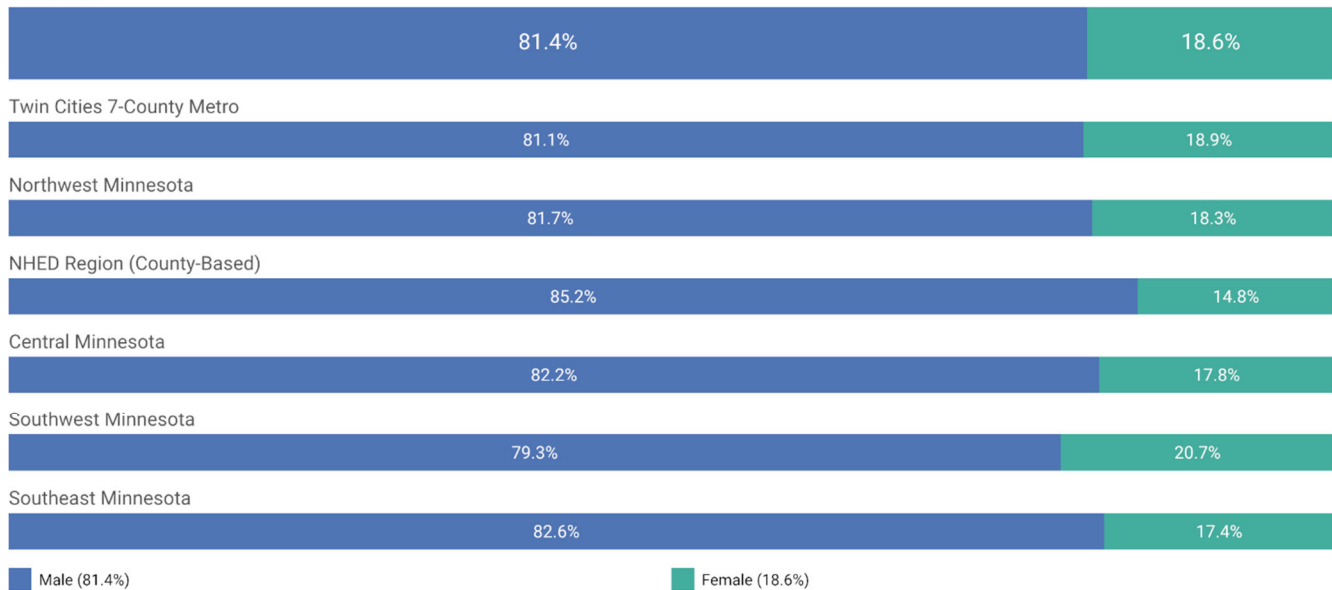
Minnesota



Data for Engineering, Manufacturing, & Technology (CTE Field)
Source: JobsEQ®. Data as of 2023Q2.

Gender

Minnesota



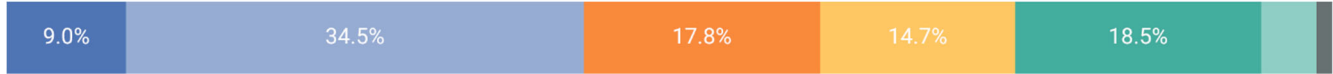
Data for Engineering, Manufacturing, & Technology (CTE Field)
Source: JobsEQ®. Data as of 2023Q2.

Educational Attainment and Requirements

The stacked bars chart here illustrates the estimated mix of educational attainment of the workers in this occupation(s) in aggregate, as well as the typical education requirements for local jobs. In general, each region's Engineering, Manufacturing, and Technology workforce is well-aligned for the typical credentials of positions in their regions; most communities with the exception of Northwest and Southwest Minnesota have a workforce that is over credentialed for the positions available locally. Just over one in four of all positions in this field (27.4%) require no degree, no experience, and only short-term on-the-job training. About half (50.2%) require experience or some on-the-job training, but still no degree. About one in ten of the workforce in this field (9.0%) has no degree at all, and about one in three (34.5%) hold a high school diploma as their highest credential.

Educational Attainment

Minnesota



Twin Cities 7-County Metro



Northwest Minnesota



NHED Region (County-Based)



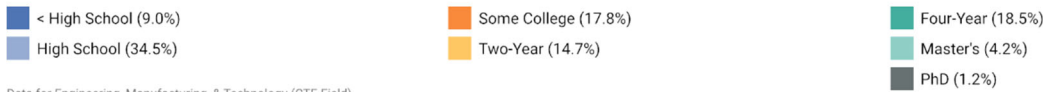
Central Minnesota



Southwest Minnesota



Southeast Minnesota



Data for Engineering, Manufacturing, & Technology (CTE Field)
Source: JobsEQ®. Data as of 2023Q2.

Education and Training Requirements

Minnesota



Twin Cities 7-County Metro



Northwest Minnesota



NHED Region (County-Based)



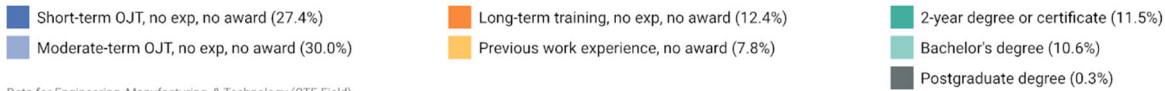
Central Minnesota



Southwest Minnesota



Southeast Minnesota



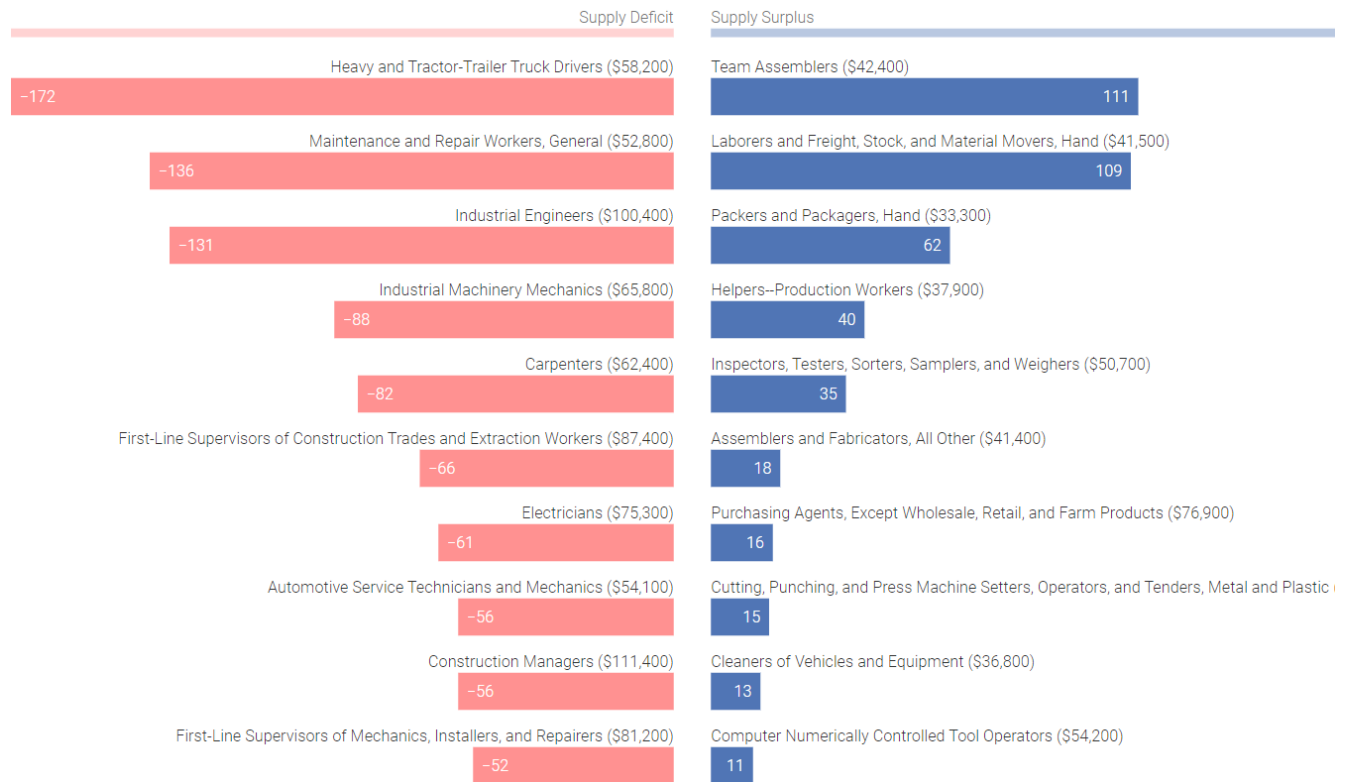
Data for Engineering, Manufacturing, & Technology (CTE Field)
Source: JobsEQ®. Data as of 2023Q2.

Occupation Gaps

The chart below shows the potential average annual talent shortages over ten years. On trend with the increasing talent shortages observed in 2022Q2, all top occupations with talent shortages were sustained or worsened in 2023Q2. The top occupation of shortage in this field is now Heavy and Tractor Trailer Truck Drivers, falling short about 172 workers needed annually to fill open roles. General Maintenance Workers, Industrial Engineers, Carpenters, Electricians, Automotive Service Technicians and Mechanics, and

Construction Managers all saw an increase in forecast shortages statewide, heavily influenced by shortages in the MSP Metro region. Industrial Machinery Mechanics and several other management, maintenance, construction, and automotive roles continue to forecast shortages in the region as well similar to prior forecasts, while many Origin occupations continue to forecast small to moderate talent surpluses.

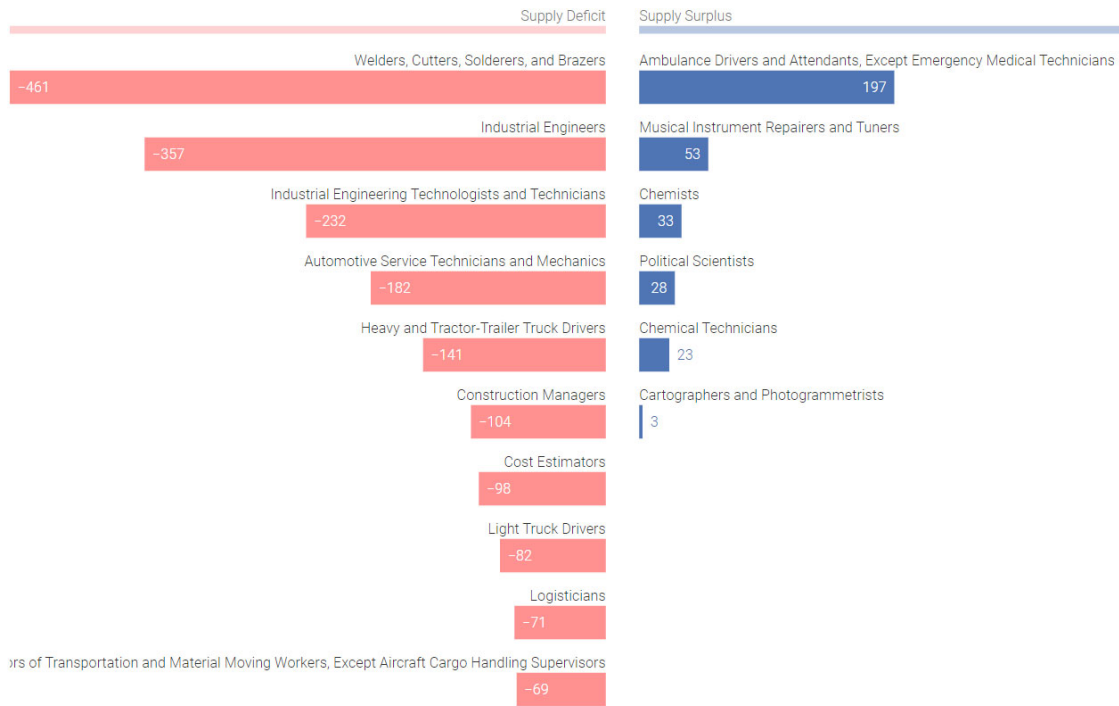
Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Engineering, Manufacturing, and Technology, Minnesota, 2023Q2



Award Gaps

A comparison of the graduate talent pipeline through certificate and other postsecondary degree programs to the current estimated openings by occupation illuminate several important shortages. Minnesota colleges and universities currently under-train talent in Engineering, Manufacturing, and Technology when compared to national benchmarks. Minnesota colleges and universities continue to underproduce graduates that are needed to fill Welder positions, falling short of national benchmarks by about 461 awards—rising in shortage over the past three years. Industrial Engineers continues to rank as the second largest forecast postsecondary award shortage, falling short of national benchmarks by at least 357 graduates needed statewide. Industrial Engineering Technicians, Automotive Service Technicians, and other construction management and engineering roles are likely seeing an undersupply of trained graduates in Minnesota as well.

Award Gaps in Engineering, Manufacturing, and Technology, Minnesota, 2023Q2



Promising Pathways

This section offers an Origin-to-Gateway-to-Target model analysis for how to help move students from entry points into their field of interest into both likely and other aligned careers, considering automation, remote work, and the changing work environment. All of the top five Target occupations by total volume of employment are experiencing talent shortages in the region.

Origin-to-Gateway-to-Target Occupations for Engineering, Manufacturing, and Technology, Minnesota, 2023Q2

Target Occupations (All HW, HS, HD, OG)

Industrial Engineers (AG)
 Construction Managers (AG)
 Mechanical Engineers (AG)
 HVAC Mechanics & Installers
 Civil Engineers (AG)

Gateway Occupations

Heavy & Tractor-Trailer Truck Drivers (HS, HD, OG, AG)
 Maintenance & Repair Workers, General (HD, OG)
 Construction Laborers (HD)
 Light Truck Drivers (HD, AG)
 Carpenters (OG)

Origin Occupations

Laborers & Freight, Stock, and Material Movers, Hand (HD)
 Team Assemblers
 Landscaping & Groundskeeping Workers (HD)
 Packers & Packagers, Hand
 Packaging & Filling Machine Operators & Tenders (HD, OG)

HW = High-Wage; HS=High-Skill; HD=High-Demand; OG=Occupation Gaps; AG=Award Gaps

Origin-to-Gateway-to-Target Occupations for Engineering, Manufacturing, and Technology, By Region 2023Q2

	MSP Metro	Northeast	Northwest	Central	Southwest	Southeast
Avg. Wage	Region: \$70,700 Field: \$65,600	Region: \$57,900 Field: \$60,500	Region: \$53,400 Field: \$55,600	Region: \$57,400 Field: \$56,000	Region: \$56,500 Field: \$53,800	Region: \$68,000 Field: \$56,700
Une Impl	Region: 2.6% Field: 3.1%	Region: 3.9% Field: 4.4%	Region: 3.2% Field: 3.7%	Region: 3.4% Field: 3.7%	Region: 2.9% Field: 3.3%	Region: 2.4% Field: 2.9%
Origin Occupations	<ul style="list-style-type: none"> Team Assemblers Landscaping & Groundskeeping Workers Packers & Packagers Packaging & Filling Machine Operators Cleaners of Vehicles & Equipment 	<ul style="list-style-type: none"> Laborers & Stock Movers Landscaping & Groundskeeping Workers Team Assemblers Packers & Packagers, Hand Shuttle Drivers & Chauffeurs 	<ul style="list-style-type: none"> Laborers & Stock Movers Team Assemblers Landscaping & Groundskeeping Workers Food Batchmakers Packaging & Filling Machine Operators 	<ul style="list-style-type: none"> Laborers & Stock Movers Team Assemblers Landscaping & Groundskeeping Workers School Bus Drivers Packaging & Filling Machine Operators & Tenders 	<ul style="list-style-type: none"> Laborers & Stock Movers Team Assemblers Landscaping & Groundskeeping Workers Packaging & Filling Machine Operators Slaughterers & Meat Packers 	<ul style="list-style-type: none"> Laborers & Stock Movers Team Assemblers Landscaping & Groundskeeping Workers Slaughterers & Meat Packers Meat, Poultry, & Fish Cutters
Gateway Occupations	<ul style="list-style-type: none"> Laborers & Stock Movers Heavy & Tractor Trailer Drivers Maintenance & Repair Workers, General Construction Laborers Light Truck Drivers 	<ul style="list-style-type: none"> Construction Laborers Maintenance & Repair Workers, General Heavy & Tractor-Trailer Truck Drivers Carpenters Light Truck Drivers 	<ul style="list-style-type: none"> Heavy & Tractor-Trailer Truck Drivers Construction Laborers Maintenance & Repair Workers, General Carpenters Light Truck Drivers 	<ul style="list-style-type: none"> Heavy & Tractor Trailer Truck Drivers Construction Laborers Maintenance & Repair Workers, All Other Light Truck Drivers Automotive Service Techs 	<ul style="list-style-type: none"> Heavy & Tractor Trailer Drivers Maintenance & Repair Workers, All Other Construction Laborers Light Truck Drivers Carpenters 	<ul style="list-style-type: none"> Heavy & Tractor Trailer Drivers Maintenance & Repair Workers, General Construction Laborers Carpenters Automotive Service Techs
Target Occupations	<ul style="list-style-type: none"> Industrial Engineers Construction Managers Mechanical Engineers HVAC Mechanics Architectural & Engineering Managers 	<ul style="list-style-type: none"> Construction Managers Industrial Engineers HVAC Mechanics Civil Engineers Mechanical Engineers 	<ul style="list-style-type: none"> Industrial Engineers Construction Managers HVAC Mechanics Mechanical Engineers Civil Engineers 	<ul style="list-style-type: none"> Industrial Engineers Construction Managers HVAC Mechanics Mechanical Engineers Civil Engineers 	<ul style="list-style-type: none"> Industrial Engineers Construction Managers Mechanical Engineers HVAC Mechanics Electrical Engineers 	<ul style="list-style-type: none"> Industrial Engineers Construction Managers Mechanical Engineers Electrical Engineers Logisticians

High Location Quotient (LQ) Occupations for Engineering, Manufacturing, and Technology, By Region 2023Q2

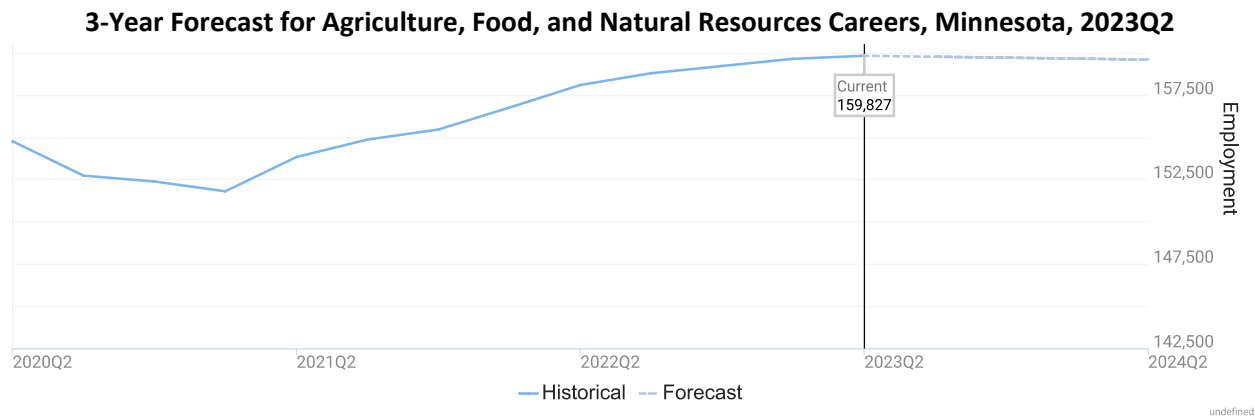
	MSP Metro	Northeast	Northwest	Central	Southwest	Southeast
LQ > 1.20	<ul style="list-style-type: none"> Ophthalmic Laboratory Technicians Industrial Engineering Techs Medical Appliance Techs Timing Device Assemblers & Adjusters Photographic Process Workers & Processing Machine Operators 	<ul style="list-style-type: none"> Underground Mining Machine Operators, All Other Loading & Moving Machine Operators, Underground Mining Mining Machine Operators Other Extraction Workers Rail Yard Engineers 	<ul style="list-style-type: none"> Fiberglass Laminators & Fabricators Slaughterers & Meat Packers Food & Tobacco Machine Operators Woodworking Machine Operators Food Batchmakers 	<ul style="list-style-type: none"> Nuclear Power Reactor Operators Nuclear Technicians Recreational Vehicle Service technicians Cabinetmakers & Bench Carpenters Nuclear Engineers 	<ul style="list-style-type: none"> Shoe Machine Operators Slaughterers & Meat Packers Shoe & Leather Workers Meat, Poultry, & Fish Cutters & Trimmers Food Cooking Machine Operators & Tenders 	<ul style="list-style-type: none"> Slaughterers & Meat Packers Meat, Poultry, & Fish Cutters Ambulance Drivers, Except EMTs Food Processing Workers Food Cooking Machine Operators

High Location Quotient (LQ) Occupations for Engineering, Manufacturing, and Technology, Minnesota 2023Q2

- 1) Underground Mining Machine Operators, All Other (4.30)
- 2) Ophthalmic Laboratory Technicians (2.83)
- 3) Shoe Machine Operators & Tenders (2.81)
- 4) Industrial Engineering Technologists & Technicians (2.75)
- 5) Slaughterers & Meat Packers (2.64)

Agriculture, Food, and Natural Resources

There are eight career pathways within Agriculture, Food, and Natural Resources: 1) Food Products and Processing Systems, 2) Plant Systems, 3) Animal Systems, 4) Natural Resources Systems, 5) Agribusiness Systems, 6) Environmental Services Systems, 7) Power, Structural and Technical Systems, and 8) Biotechnology Systems. These roles represent positions that are at least 50% or more concentrated in Agriculture, Food, and Natural Resources industries, and as such exclude some occupations that are critical to the industry but may have smaller in-industry employment numbers (such as Ag Loan Officers, Ag Financing, or some trades). Employment growth has been strong in this field since the pandemic, growing by 1,733 jobs from 2022Q2—a 1.1% growth rate. Over the next three years, this career field’s employment is forecast to taper off and fall by about 0.2% on average annually statewide, due to tight labor conditions.



Top Ten Agriculture, Food, and Natural Resources Occupations by Employment Volume in Minnesota, 2023Q2

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Change
Farmers, Ranchers, and Other Agricultural Managers	24,623	\$71,100	1.68	-1,057	2,132	-1.3%
Landscaping and Groundskeeping Workers	20,033	\$42,300	0.90	832	2,633	0.1%
Plumbers, Pipefitters, and Steamfitters	9,152	\$79,700	0.99	384	920	0.0%
Farmworkers and Laborers, Crop, Nursery, and Greenhouse	7,049	\$38,300	0.65	617	1,052	-0.7%
Food Batchmakers	6,035	\$39,900	1.85	543	854	0.2%
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	5,890	\$73,200	0.75	662	577	0.3%
Animal Caretakers	5,597	\$35,800	0.88	892	1,134	1.2%
Farmworkers, Farm, Ranch, and Aquacultural Animals	5,534	\$36,700	1.97	-148	786	-1.2%
Meat, Poultry, and Fish Cutters and Trimmers	4,249	\$38,900	1.61	-41	515	-0.3%
Bakers	3,417	\$39,100	0.83	185	490	0.1%
Remaining Component Occupations	68,246	\$69,800	0.97	2,186	7,587	0.1%
AFNR - Agriculture, Food, and Natural Resources (CTE Field)	159,827	\$60,900	1.00	5,054	18,679	-0.2%

“Annual Demand” is the projected need for new entrants into an occupation. New entrants are needed due to expected growth and to replace workers who left the occupation due to factors such as retirement or switching careers.

“Forecast Ann Growth” is the expected baseline (most pessimistic) yearly change in employment due to national, long-term trend projections (per the BLS) as well as local factors such as industry mix, labor force participation rates, and population growth (as computed and modeled by RealTime Talent in JobsEQ).

Many different industries employ Agriculture, Food, and Natural Resources talent, owing to the diversity of occupation types included in this field. The industries with the greatest share of this field's talent are Animal Production (9.2%) and Services to Buildings and Dwellings (8.6%) where most Environmental Service Systems pathway roles are found. Most industries employing talent in this field only less than 3% of total talent skilled in this field, and span from grocery to greenhouse and power generation.

Agriculture, Food, and Natural Resources Field Employment by Industry, Minnesota, 2023Q2

Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Change	10-Year Total Demand
Animal Production (Proprietors)	9.2%	14,672	14,344	-2,211	12,133
Services to Buildings and Dwellings	8.6%	13,744	17,363	-40	17,323
Building Equipment Contractors	7.9%	12,602	12,583	194	12,776
Other Professional, Scientific, and Technical Services	4.3%	6,842	8,014	1,238	9,253
Crop Production (Proprietors)	3.6%	5,774	5,824	-831	4,994
Executive, Legislative, and Other General Government Support	3.2%	5,154	5,551	-105	5,446
Animal Slaughtering and Processing	3.0%	4,784	6,120	-111	6,008
Cattle Ranching and Farming	2.6%	4,220	5,640	-388	5,252
Other Personal Services	2.5%	4,070	7,483	664	8,147
Architectural, Engineering, and Related Services	2.2%	3,550	3,420	25	3,445
Electric Power Generation, Transmission and Distribution	2.1%	3,364	2,937	-275	2,662
Other Amusement and Recreation Industries	2.1%	3,344	4,375	204	4,579
Grocery and Convenience Retailers	2.0%	3,118	3,962	-166	3,796
Colleges, Universities, and Professional Schools	1.9%	3,065	3,171	19	3,190
Hog and Pig Farming	1.7%	2,776	3,667	-315	3,353
Greenhouse, Nursery, and Floriculture Production	1.6%	2,492	3,582	35	3,617
Restaurants and Other Eating Places	1.5%	2,350	3,243	49	3,291
Support Activities for Crop Production	1.4%	2,284	3,388	-161	3,227
Poultry and Egg Production	1.4%	2,182	2,937	-172	2,765
Wired and Wireless Telecommunications (except Satellite)	1.3%	2,140	2,422	138	2,560
All Others	35.9%	57,301	69,196	-3	69,193

Career Field Demographics

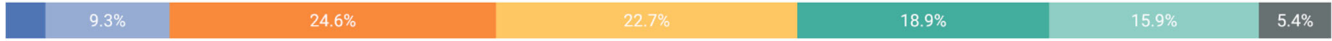
The Agriculture, Food, and Natural Resources field is predominantly male (73.2%, consistent with 2022Q2 estimates) and white (89.0%, down 0.9 percentage points), but with variation by career pathway. The share of talent that is BIPOC by race increased by 0.9 percentage points compared to 2022Q2, while the share that is Hispanic or Latinx remained flat (7.9%). The MSP Metro has by far the youngest Agriculture, Food, and Natural Resources talent pool, yet overall, the Agriculture, Food, and Natural Resources workforce continues to have more older workers compared to prior years' estimates, now with 28.5% 55 years or older.

Age

Minnesota



Twin Cities 7-County Metro



Northwest Minnesota



NHED Region (County-Based)



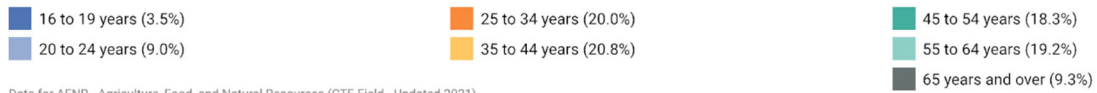
Central Minnesota



Southwest Minnesota



Southeast Minnesota



Data for AFNR - Agriculture, Food, and Natural Resources (CTE Field - Updated 2021)
Source: JobsEQ®. Data as of 2023Q2.

Race

Minnesota



Twin Cities 7-County Metro



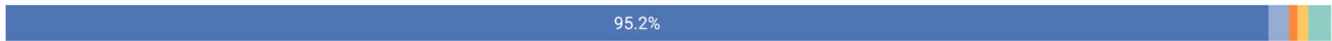
Northwest Minnesota



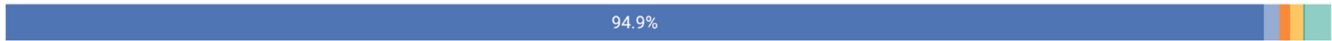
NHED Region (County-Based)



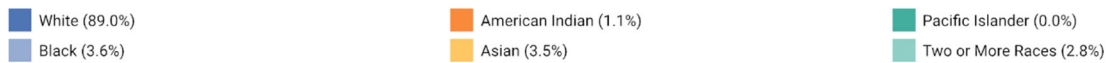
Central Minnesota



Southwest Minnesota



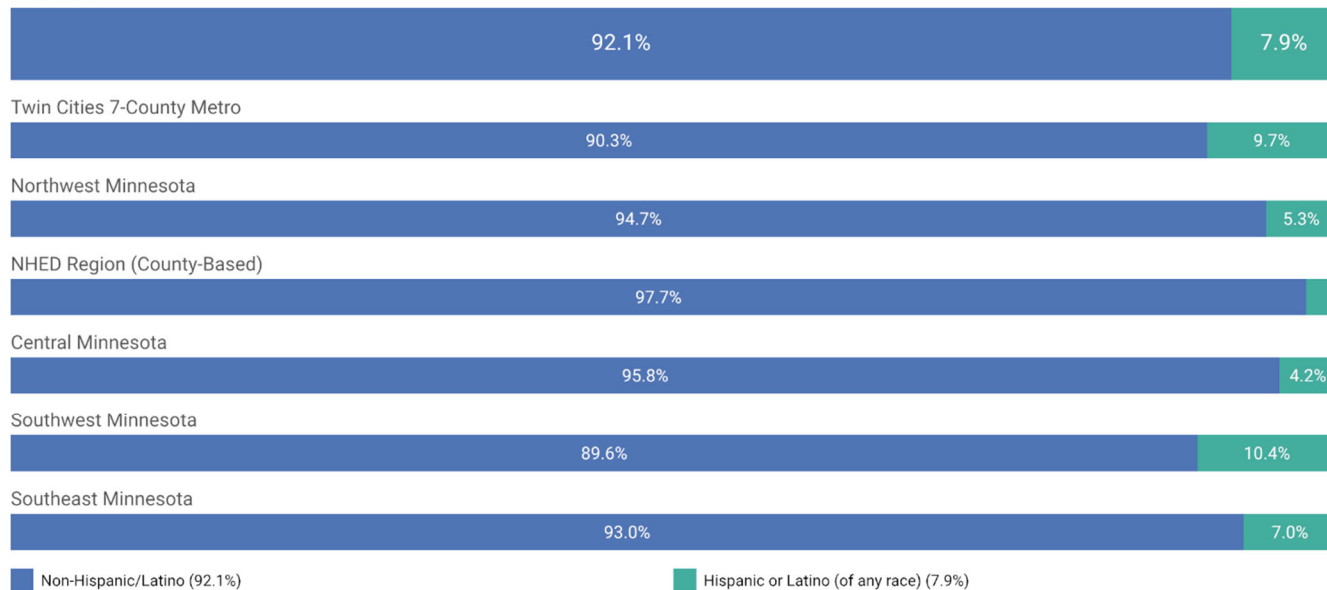
Southeast Minnesota



Data for AFNR - Agriculture, Food, and Natural Resources (CTE Field - Updated 2021)
Source: JobsEQ®. Data as of 2023Q2.

Ethnicity

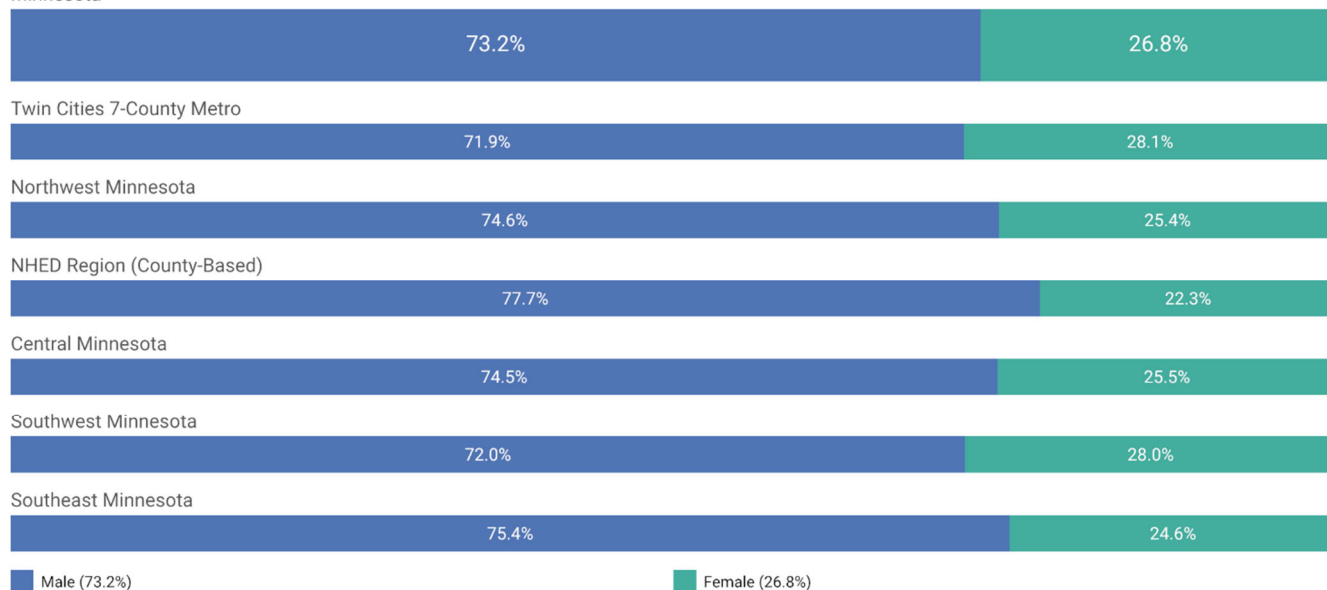
Minnesota



Data for AFNR - Agriculture, Food, and Natural Resources (CTE Field - Updated 2021)
Source: JobsEQ®. Data as of 2023Q2.

Gender

Minnesota



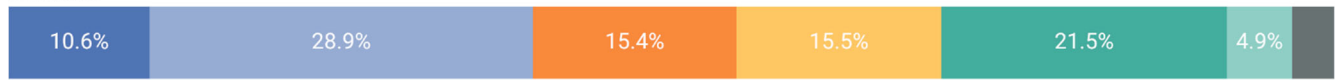
Data for AFNR - Agriculture, Food, and Natural Resources (CTE Field - Updated 2021)
Source: JobsEQ®. Data as of 2023Q2.

Educational Attainment and Requirements

The stacked bar charts here illustrate the estimated mix of educational attainment of the workers in this occupation(s) in aggregate, and the typical education requirements of local roles in the field. In general, Minnesota's Agriculture, Food, and Natural Resources workforce is well-aligned for the typical credentials of positions, if not slightly over-credentialed in comparison to the local mix of occupations. Consistent with 2022Q2 estimates, nearly one-third of all positions in this field (30.3%) require no degree, no experience, and only short-term on-the-job training. Slightly more than one-third (47.2%) require experience or some on-the-job training, but still no degree. About one in ten of the field's workforce in this field has no degree at all (10.6%), and nearly three in ten (28.9%) hold a high school diploma as their highest credential.

Educational Attainment

Minnesota



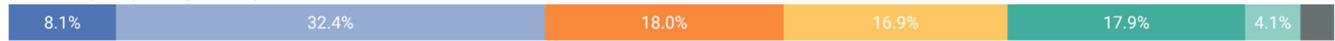
Twin Cities 7-County Metro



Northwest Minnesota



NHED Region (County-Based)



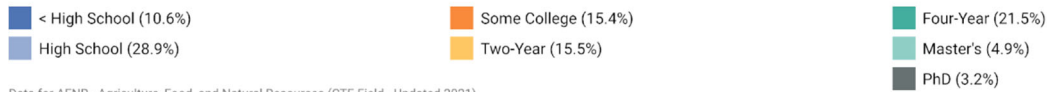
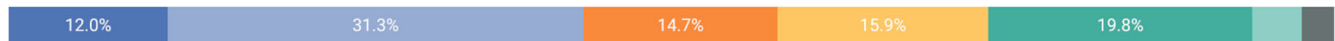
Central Minnesota



Southwest Minnesota



Southeast Minnesota



Data for AFNR - Agriculture, Food, and Natural Resources (CTE Field - Updated 2021)
Source: JobsEQ®. Data as of 2023Q2.

Education and Training Requirements

Minnesota



Twin Cities 7-County Metro



Northwest Minnesota



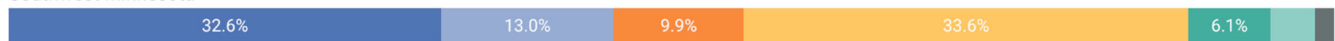
NHED Region (County-Based)



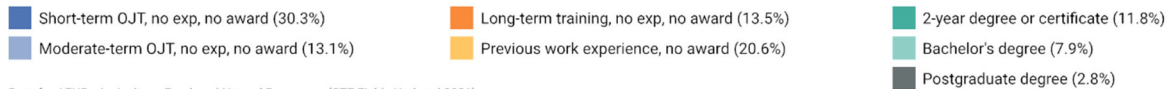
Central Minnesota



Southwest Minnesota



Southeast Minnesota

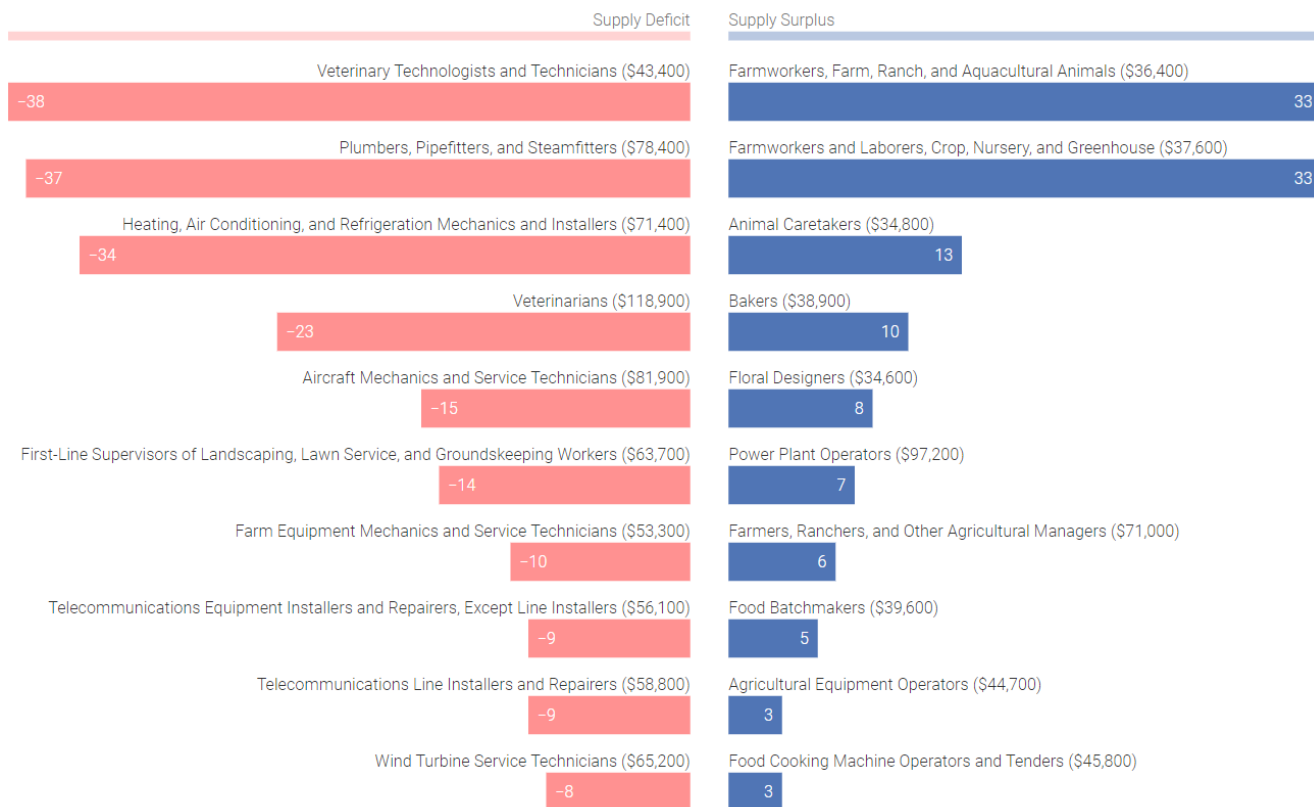


Data for AFNR - Agriculture, Food, and Natural Resources (CTE Field - Updated 2021)
Source: JobsEQ®. Data as of 2023Q2.

Occupation Gaps

The chart below shows the potential average annual talent shortages over ten years in a conservative estimate of talent shortfall. A number of crucial trades, veterinary, environmental services, and natural sciences roles indicate shortages in the years ahead. As of 2023Q2, Veterinary Technologists and Technicians is now the state's top Agriculture, Food, and Natural Resources talent shortage (and ranking first in several regions), falling short at least 38 Veterinary Technicians needed to meet regional demand. The related Target occupation, Veterinarians, has the fourth highest talent shortage in this field.

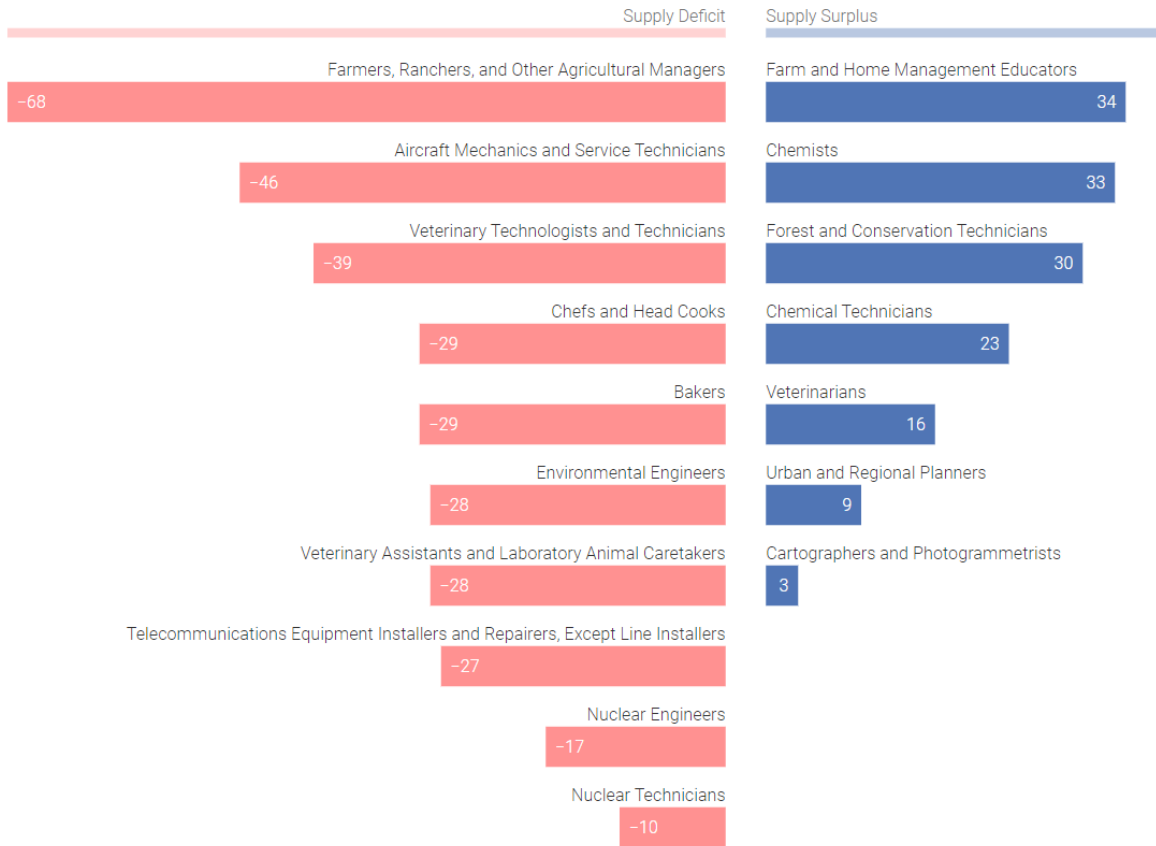
Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Agriculture, Food, and Natural Resources, Minnesota, 2023Q2



Award Gaps

A comparison of the graduate talent pipeline through certificate and other postsecondary degree programs to the current estimated openings by occupation illuminates several important postsecondary shortages. Colleges and universities in Minnesota currently under-train talent in a variety of career pathways within Agriculture, Food, and Natural Resources when compared to national benchmarks. Minnesota-based colleges and universities are underproducing around 68 graduates annually that are needed to fill Farmers, Ranchers, and Other Agricultural Managers roles (a drop from 154 in 2022Q2), 46 graduates of Aircraft Mechanics and Service Technician programs, and at least 39 graduates for Veterinary Technologist positions open with Minnesota businesses (up from a shortage of 28 in 2022Q2).

Award Gaps in Agriculture, Food, and Natural Resources, Minnesota, 2023Q2



Promising Pathways

This section offers an Origin-to-Gateway-to-Target model analysis for how to help move students from entry points into their field of interest into both likely and other aligned careers, considering automation, remote work, and the changing work environment.

Origin-to-Gateway-to-Target Occupations for Agriculture, Food, and Natural Resources, Minnesota, 2023Q2

Target Occupations (All HW, HS, HD, OG)

HVAC Mechanics & Installers
 Aircraft Mechanics & Service Technicians (AG)
 Veterinarians
 Chemists
 Environmental Scientists & Specialists (AG)

Gateway Occupations (All HD)

Supervisors of Landscaping, Lawn Service, & Groundskeeping Workers (OG)
 Chefs & Head Cooks (AG)
 Telecommunications Equipment Installers & Repairers (HS, OG, AG)
 Refuse & Recyclable Material Collectors (AG)
 Farm Equipment Mechanics & Service Technicians (OG, AG)

Origin Occupations

Landscaping & Groundskeeping Workers (HD)
 Farmworkers & Laborers, Crop, Nursery, and Greenhouse (AG)
 Food Batchmakers (HD, AG)
 Animal Caretakers (HD, AG)
 Farmworkers, Farm, Ranch, and Aquacultural Animals

HW = High-Wage; HS=High-Skill; HD=High-Demand; OG=Occupation Gaps; AG=Award Gaps

Origin-to-Gateway-to-Target Occupations for Agriculture, Food, and Natural Resources, By Region 2023Q2

	MSP Metro	Northeast	Northwest	Central	Southwest	Southeast
Avg. Wage	Region: \$70,700 Field: \$66,600	Region: \$57,900 Field: \$58,800	Region: \$55,600 Field: \$53,900	Region: \$57,400 Field: \$57,300	Region: \$56,500 Field: \$54,900	Region: \$68,000 Field: \$58,400
Une mplt	Region: 2.6% Field: 2.8%	Region: 3.9% Field: 3.6%	Region: 3.2% Field: 2.9%	Region: 3.4% Field: 3.0%	Region: 2.9% Field: 2.6%	Region: 2.4% Field: 2.3%
Origin Occupations	<ul style="list-style-type: none"> Landscaping & Groundskeeping Workers Animal Caretakers Food Batchmakers Bakers Farmworkers & Laborers 	<ul style="list-style-type: none"> Landscaping & Groundskeeping Workers Animal Caretakers Refuse & Recyclable Material Collectors Veterinary Technicians Bakers 	<ul style="list-style-type: none"> Landscaping & Groundskeeping Workers Farmworkers & Laborers Food Batchmakers Meat, Poultry, & Fish Cutters Farmworkers, Farm, Ranch & Aquacultural Animals 	<ul style="list-style-type: none"> Landscaping & Groundskeeping Workers Farmworkers, Farm, Ranch, & Aquacultural Animals Farmworkers & Laborers Meat, Poultry, & Fish Cutters Food Batchmakers 	<ul style="list-style-type: none"> Farmworkers, Farm, Ranch, & Aquacultural Animals Landscaping & Groundskeeping Workers Farmworkers & Laborers Meat, Poultry, & Fish Cutters Food Batchmakers 	<ul style="list-style-type: none"> Landscaping & Groundskeeping Workers Meat, Poultry, & Fish Cutters Farmworkers, Farm, Ranch, & Aquacultural Animals Farmworkers & Laborers Animal Caretakers
Gateway Occupations	<ul style="list-style-type: none"> Veterinary Technicians Supervisors of Groundskeeping Workers Chefs & Head Cooks Telecommunications Equipment Installers Refuse & Recyclable Material Collectors 	<ul style="list-style-type: none"> Logging Equipment Operators Chefs & Head Cooks Tree Trimmers & Pruners Outdoor Power Equipment & Other Small Engine Mechanics Forest & Conservation Technicians 	<ul style="list-style-type: none"> Farm Equipment Mechanics Chefs & Head Cooks Refuse & Recyclable Material Collectors Logging Equipment Operators Tree Trimmers & Pruners 	<ul style="list-style-type: none"> Farm Equipment Mechanics Refuse & Recyclable Material Collectors Chefs & Head Cooks Tree Trimmers & Pruners Food Cooking Machine Operators 	<ul style="list-style-type: none"> Farm Equipment Mechanics & Service Technicians Refuse & Recyclable Material Collectors Supervisors of Farming, Fishing, & Forestry Workers Chefs & Head Cooks Food & Tobacco Roasting Machine Operators 	<ul style="list-style-type: none"> Food Batchmakers HVAC Mechanics Supervisors of Landscaping Workers Telecommunications Equipment Installers Chefs & Head Cooks
Target Occupations	<ul style="list-style-type: none"> HVAC Technicians Chemists Environmental Scientists Veterinarians Natural Sciences Managers 	<ul style="list-style-type: none"> HVAC Technicians Telecommunications Equipment Installers Aircraft Mechanics Chemical Technicians Surveyors 	<ul style="list-style-type: none"> HVAC Technicians Telecommunications Equipment Installers Urban & Regional Planners Biological Science Teachers, Postsecondary Aircraft Mechanics 	<ul style="list-style-type: none"> HVAC Mechanics Telecommunications Equipment Installers Nuclear Engineers Chemists Life, Physical, & Social Science Technicians 	<ul style="list-style-type: none"> HVAC Mechanics Telecommunications Equipment Installers Chemists Biological Science Teachers, Postsecondary Life & Physical Science Techs 	<ul style="list-style-type: none"> Natural Sciences Managers Aircraft Mechanics Life, Physical, & Social Science Technicians, All Other Biological Science Teachers, Postsecondary Conservation Scientists

High Location Quotient (LQ) Occupations for Agriculture, Food, and Natural Resources, By Region 2023Q2

	MSP Metro	Northeast	Northwest	Central	Southwest	Southeast
LQ > 1.20	<ul style="list-style-type: none"> Hydrologists Animal Scientists Foresters Stationary Engineers & Boiler Operators Food Scientists & Technologists 	<ul style="list-style-type: none"> Mining & Geological Engineers Logging Equipment Operators Logging Workers, Other Fallers Foresters 	<ul style="list-style-type: none"> Farmers & Ranchers Farm Equipment Mechanics Food Cooking Machine Operators Animal Scientists Food Batchmakers 	<ul style="list-style-type: none"> Nuclear Power Reactor Operators Nuclear Technicians Animal Breeders Farmworkers, Farm, Ranch, & Aquacultural Animals Animal Scientists 	<ul style="list-style-type: none"> Farmers & Ranchers Farmworkers, Farm, Ranch & Aquacultural Animals Landscaping & Groundskeeping Workers Farmworkers & Laborers Meat, Poultry, & Fish Cutters 	<ul style="list-style-type: none"> Meat, Poultry, & Fish Cutters Farmworkers, Farm Ranch & Aquacultural Animals Animal Breeders Food & Tobacco Machine Operators & Tenders Farmers & Ranchers

High Location Quotient (LQ) Occupations for Agriculture, Food, and Natural Resources, Minnesota 2023Q2

- 1) Animal Scientists (2.97)
- 2) Foresters (2.07)
- 3) Hydrologists (2.07)
- 4) Food Cooking Machine Operators & Tenders (2.06)
- 5) Farm Equipment Mechanics & Service Technicians (2.05)

Conclusion

Nationally, about 218,000 workers filed for new unemployment benefits during the week ending November 25, 2023, an increase of about 7,000 workers from the previous week. About 1.9 million people nationwide continue to claim unemployment benefits as of the final week of November—the highest levels of unemployment claims in the past two years.⁵ With national unemployment rates at their highest in the past two years as well and more jobseekers reporting challenges finding work, the nation is facing a challenging dichotomy of talent shortage and weakening demand due perhaps in part to the effects of the tight talent market itself.

In Minnesota, some new occupations of shortage have emerged in 2022 and 2023, normalizing demand by occupation to closely reflect pre-pandemic demand in many ways. However, most award gaps have grown, pointing to dropping enrollment and postsecondary completion rates. The highest growth and highest demand occupations typically require a two-year degree or higher, offer higher average wages, and will likely experience talent shortages within the next three years and beyond due to low talent supply in Minnesota.

Even as workers begin facing a more daunting job market, the talent pool has continued to tighten with Minnesota employers struggling to find talent for Origin, Gateway, and Target roles across the spectrum. Gateway occupations pose the greatest opportunities for skills-based hiring innovations and workforce system strategies. Overall, digital skills, human skills, and business enablers will be the foundational skills of the future both in Minnesota and nationwide. Remote work opportunities are proving to be a more permanent change to the landscape of work in Minnesota.

Minnesota is poised to see changes in demand for talent over the next five years and beyond as the region continues to wrestle with deepening talent shortages and face the possibility of recession as interest rates continue to rise. By focusing on high-demand, high-wage roles and pathways that support the occupations and industry clusters most unique to each region will help Minnesota continue to thrive in the new economy that is taking shape.

⁵ U.S. Department of Labor. News Release Thursday, November 30, 2023. Accessed November 30, 2023 at [News Release \(dol.gov\)](https://www.dol.gov/newsroom/releases/2023/20231130)

Data Notes

- This 2023 publication was compiled by Erin Olson, Senior Director of Strategic Research for RealTime Talent in November 2023. She can be reached at erin@realtimetalentmn.org
- Occupation employment by default indicates employment by place of work. Occupation employment is as of 2023Q2 and based on industry employment and local staffing patterns calculated by Chmura and utilizing BLS OES data. Employment forecasts are by RealTime Talent using models provided by Chmura and are consistent with BLS national-level 10-year forecasts. Occupation wages (mean, median, and percentiles) are derived from BLS OES data as of 2022 and represent the average for all Covered Employment. Entry-level and experienced wages are derived from these source data, computed by Chmura.
- Industry employment is as of 2023Q2 and based upon BLS QCEW data that are imputed by Chmura where necessary and supplemented by additional sources including Census ZBP data.
- Education and training requirements are from the BLS. Educational attainment mix and other occupation demographics data are modeled by Chmura for 2023Q2 using regional occupation employment from JobsEQ, ZCTA-level demographics data from the Census Bureau, and national occupation-demographics patterns from the BLS.
- Postsecondary awards are per the NCES and for the 2021-2022 academic year. Any programs shown are linked with the occupation(s) being analyzed via the program-occupation crosswalk, which may not be comprehensive. Any programs shown reflect only data reported to the NCES; reporting is required of all Title IV schools. Training providers that do not report data to the NCES are not reflected.
- General job ads data are online job posts from the Real-Time Intelligence (RTI) data set, produced by Chmura and gleaned from over 40,000 websites. Data reflect ads active during September 2023 and advertised for any Zip Code Tabulation Area in or intersecting with the region for which this report was produced. Historical ad volume is revised as additional data are made available and processed. The sections on Employer Demand include Job ads data from Gartner TalentNeuron Plan, which allows for greater specificity on education, experience level, and employer names. Since many extraneous factors can affect short-term volume of online job postings, time-series data can be volatile and should be used with caution. All ad counts represent deduplicated figures.
- Occupation gaps are modeled by Chmura, indicating long-term potential supply and demand mismatches in a region due, in part, to job demand and labor pool dynamics, including educational attainment and projected growth.
- Occupation employment by place of residence is as of 2023Q2 and modeled by Chmura based upon occupation employment by place of work and commuting patterns. Commuting patterns are derived from source data from the Census Bureau, occupation-specific commuting tendencies, and updated to reflect more recent population and employment estimates.
- Annual demand is the sum of the annual projected growth demand and 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. Growth demand is the increase or decrease of jobs expected due to expansion or contraction of the overall number of jobs.

- Career clusters and pathways have been identified for this report by the Source: National Career Clusters® Framework external site implemented by Department of Defense ASVAB Career Exploration Program, Advance CTE. <https://careertech.org/career-clusters> and viewable on ONET <https://www.onetonline.org/find/career?c=8>, but updated to the 2020 SOC classification system.
- Figures may not sum due to rounding.

Definitions and Methodology

<p>High-Wage</p> <p>High-Wage occupations are defined as occupations that have average annual wages greater than the overall regional average wage (\$66,100 in Minnesota as of 2023Q2).</p>
<p>High-Skill</p> <p>High-Skill occupations are those that typically require a certificate or other formal credential for employment. Occupation by educational attainment are regional data modeled by Chmura using U.S. Census Bureau Educational Attainment data projected to 2023Q2 along with source data from the BLS.</p>
<p>High-Demand</p> <p>High-Demand occupations are defined as occupations that fulfill two or more of the following demand criteria: 1) high growth, 2) high total demand, 3) low unemployment, 4) high unemployment-to-posting ratio, and/or 5) high posting volume.</p>
<p>D1: 5-Yr Growth</p> <p>An occupation is considered to have high growth in that occupation has forecasted 5-year growth that is greater than the overall regional forecasted 5-year pessimistic growth model.</p>
<p>D2: Total Demand</p> <p>An occupation is considered to have high total demand if the total 5-year forecast employment growth, transfers, and exits combined is greater than 50% of total employment in that occupation as of 2023Q2 (i.e. high long-term demand)</p>
<p>D3: Unempl <3%</p> <p>An occupation is considered to have low unemployment if the estimated unemployment rate for the occupation is below 3% in the region as of 2023Q2 (i.e. high employer retention demand)</p>
<p>D4: Unempl:Posting Ratio</p> <p>An occupation is considered to have a strained unemployment-to-posting ratio if the estimated volume of unemployed individuals regionally exceeds the number of online job postings advertised in the month of October 2023 (i.e. ratio of unemployed-to-posts is greater than 1; low talent supply)</p>
<p>D5: Posting Volume</p> <p>An occupation is considered to have high posting volumes if the volume of online job postings in October 2023 was greater than 500 statewide, the occupation is considered to have high job posting volumes (i.e. high immediate employer demand).</p>
<p>Occupation Gaps</p> <p>Occupation gaps are developed by Chmura and use a multitude of data sources. Employment supply and demand projections are based on a starting date of 2023Q2 using baseline low-growth forecasts modeled from the Bureau of Labor Statistics (more pessimistic forecast outlook than utilized in D1 and D2). The potential supply shortfall is an underlying force that the market needs to resolve one way or another, such as by employers recruiting from further distances for these occupations, wages going up to attract more candidates, and/or increased demand and wages enticing more local residents to get training for these occupations. While this an important analysis for determining local occupation needs, the occupation gap should be considered along with other regional data including growth and separation forecasts, unemployment rates, wage trends, and award and skill gap analyses.</p>
<p>Award Gaps</p>

This metric illustrates the difference between the number of awards conferred (which are post-secondary certificates or degrees) and the occupation demand in your region. Negative values represent the gap, or shortage, of degrees being awarded in the region to meet the demand for the occupations selected. The positive values represent the surplus of awards meaning that the number of awards awarded are greater than the target range of demand for the region. Awards data are based upon degrees conferred for the academic year 2021-2022 and are provided by the National Center for Education Statistics (NCES). Occupation employment data are derived from the most recent four quarters of industry employment (from the Bureau of Labor Statistics, updated quarterly) and the industry/occupation matrix available for the region. Occupation training concentrations and shortfalls are calculated by Chmura. The percent college educated are provided by the BLS per the Employment Projections Program.

Location Quotient

Location quotient 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. [Click here to see the formula for LQ.](#) Occupations with a LQ greater than or equal to 1.2 have been flagged in this analysis of having a unique specialization in the region.