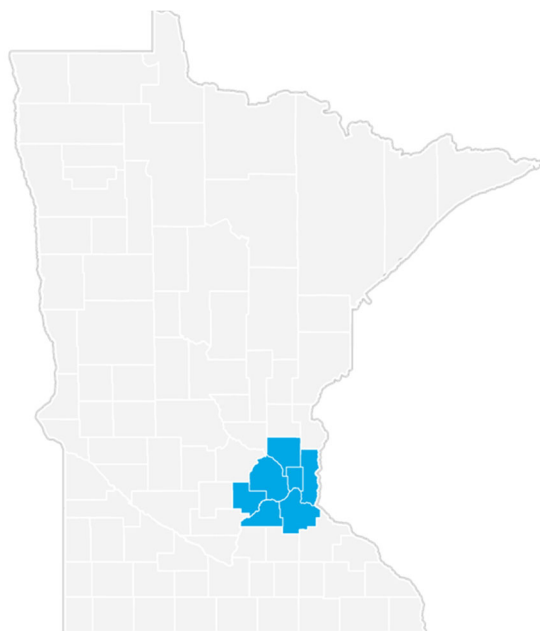# Workforce Trends

CAREER & TECHNICAL EDUCATION

MSP Metro Minnesota

RealTime Talent

370 Wabasha Street N.

St. Paul, MN 55102

Minnesota State

30 East 7th Street

St. Paul, MN 55101

RealTime Talent
Using data to build the
world's best workforce

MINNESOTA STATE

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 still experiencing 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:

- Regional 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 at RealTime Talent, Erin Olson at erin@realtimetalentmn.org.

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

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MSP Metro Minnesota

Introduction

This report highlights the current and future talent needs in the seven counties of MSP Metro Minnesota.[2] 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 the MSP Metro.

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, and 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)

[2] Aitkin, Carlton, Cass, Cook, Crow Wing, Itasca, Koochiching, Lake, Lake of the Woods, and St. Louis Counties.

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 ($57,900 in the MSP Metro). 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 ($57,900 in the MSP Metro). 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 MSP Metro is home to about 55.3% of Minnesota's total population. In all, about 3,136,376 people live in the MSP Metro, according to 2017-2021 American Community Survey Estimates—an increase of just over 45,600 people from the prior year's estimates. Based on year-over-year population growth, about 3,149,205 people are estimated to live in the region as of 2022. Approximately 23.5% of The MSP Metro's population are minors under 18 years of age. Overall, the region's median age is 0.9 years younger (37.3 years) than the statewide median (38.2 years).

Resident Population of The MSP Metro

Source: JobsEQ® , Powered by ESRI.
American Community Survey 2017-2021
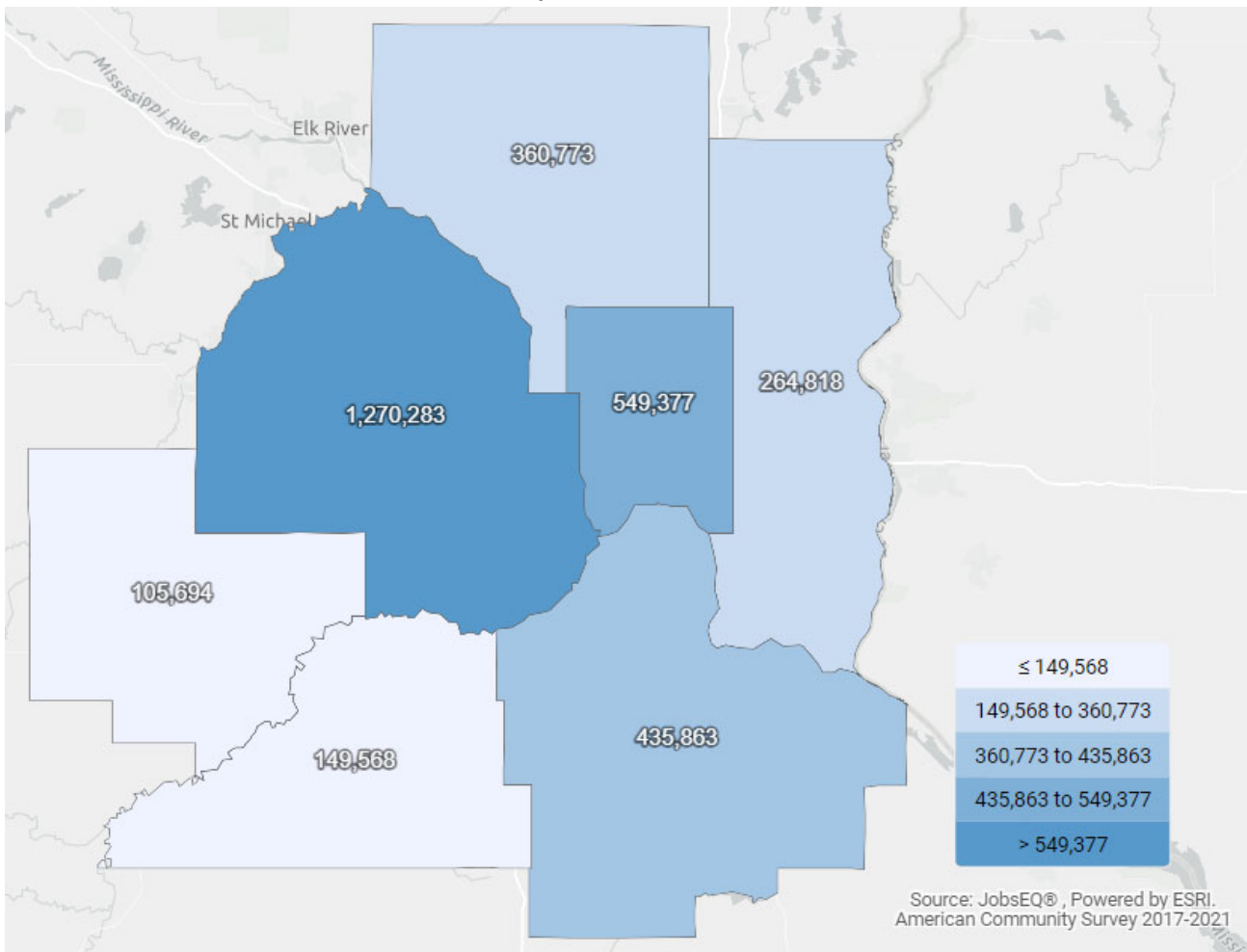
Population diversity increased between the two most recent population estimates for the 7-county MSP Metro by half of a percentage point. Across the region overall, 26.2% the population identify as Black, Asian, American Indian, Native Hawaiian, or some other race—a 0.9 percentage point increase from the prior year's estimates. The demographic makeup of Suburban Twin Cities communities continues to be similar to the average Minnesota population overall,

which also became more diverse: In the suburbs, 20.2% of the population is BIPOC, rising from 18.7% in the 2015-2019 estimates and 17.5% in 2014-2018. Within the MSP Metro's urban communities, St. Paul has a greater share of Asian residents than the other areas in the MSP Metro—and is rising steadily. Minneapolis continues to have a greater share of Black or African American residents (18.4% of the population), though the overall share of Black or African American residents declined each year by 0.5, 0.3, and 0.2 percentage points in Minneapolis between the three most recent population estimates. Approximately 6.6% of the MSP Metro's residents are Hispanic or Latinx, one percentage point ahead of Minnesota overall (5.6%). The share of the population that is Hispanic or Latinx increased by 0.2 percentage points in the Suburban Metro to 5.6% and Minneapolis to 9.8% but declined in Saint Paul by 0.5 percentage points to 8.7% between the most recent population estimates.

Population Race, All Ages

	White	Black or African American	American Indian or Alaska Native	Asian	Native Hawaiian or Other Pacific Islander	Some Other Race	Two or More Races
Suburban MSP	78.5%	7.5%	0.3%	6.6%			4.9%
St. Paul	54.9%	16.0%	0.7%	19.0%			6.6%
Minneapolis	63.1%	18.4%	1.3%	5.7%			6.9%
MSP Metro	73.7%	10.0%	0.5%	7.8%			5.3%
Minnesota	80.7%	6.6%	0.9%	5.0%			4.6%
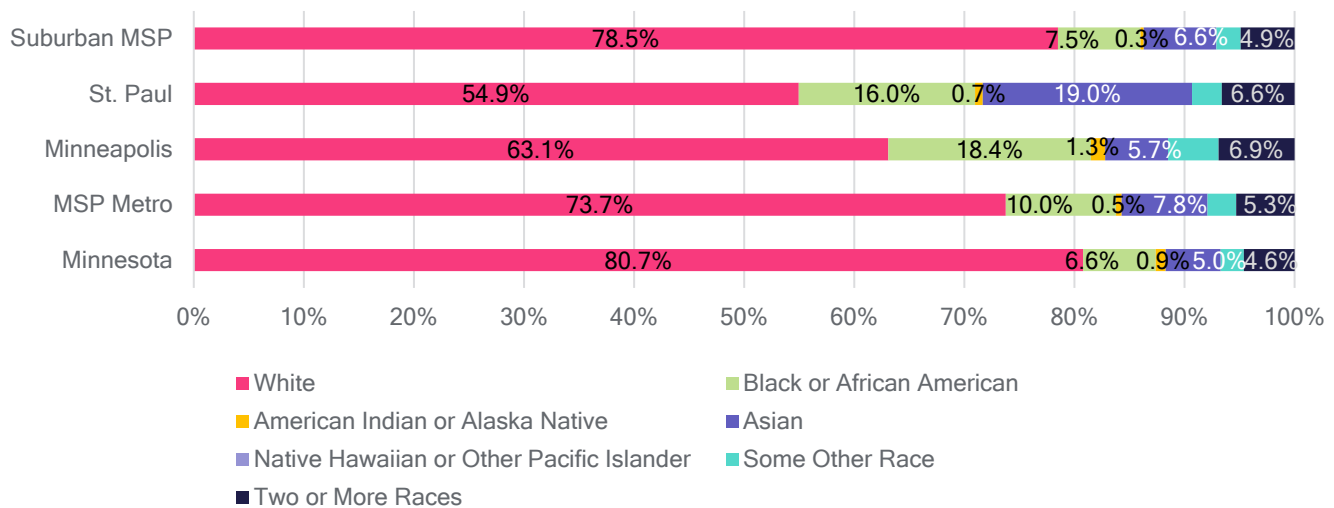
American Community Survey 2017-2021.

Population Ethnicity, All Ages

	Non-Hispanic, Any Race	Hispanic/Latinx, Any Race
Suburban MSP	94.4%	5.6%
St. Paul	91.3%	8.7%
Minneapolis	90.2%	9.8%
MSP Metro	93.4%	6.6%
Minnesota	94.6%	5.6%
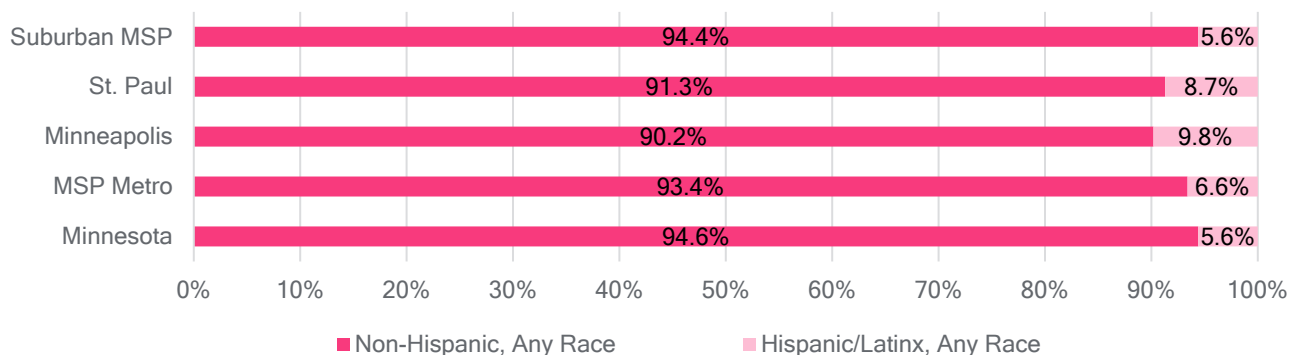
American Community Survey 2017-2021.

Community Demographics

Demographics	Percent						Value		
	City of Minneapolis, MN	City of St. Paul, 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	49.6%	50.7%	49.1%	49.7%	50.1%	49.5%	1,558,017	2,839,135	163,206,615
Female	50.4%	49.3%	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	24.3%	19.7%	24.7%	23.5%	23.3%	22.5%	736,143	1,323,569	74,234,075
18 to 24 Years	7.1%	13.2%	10.9%	8.3%	8.8%	9.2%	261,779	499,402	30,339,089
25 to 34 Years	12.8%	21.7%	18.2%	14.8%	13.3%	13.8%	462,821	756,215	45,360,942
35 to 44 Years	13.7%	14.6%	13.5%	13.8%	13.0%	12.9%	432,562	738,714	42,441,883
45 to 54 Years	13.3%	10.5%	10.9%	12.5%	12.1%	12.6%	393,079	688,596	41,631,458
55 to 64 Years	13.9%	10.1%	10.7%	13.0%	13.4%	13.0%	407,478	762,459	42,829,413
65 to 74 Years	9.1%	6.6%	7.3%	8.6%	9.4%	9.6%	270,658	535,592	31,590,619
75 Years, and Over	5.9%	3.5%	3.8%	5.5%	6.5%	6.5%	171,856	365,925	21,298,002
Race: White	78.5%	63.1%	54.9%	73.7%	80.7%	68.2%	2,311,935	4,576,758	224,789,109
Race: Black or African American	7.5%	18.4%	16.0%	10.0%	6.6%	12.6%	313,299	376,406	41,393,012
Race: American Indian and Alaska Native	0.3%	1.3%	0.7%	0.5%	0.9%	0.8%	16,230	52,695	2,722,661
Race: Asian	6.6%	5.7%	19.0%	7.8%	5.0%	5.7%	243,917	283,382	18,782,924
Race: Native Hawaiian and Other Pacific Islander	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	928	2,338	615,557
Race: Some Other Race	2.2%	4.6%	2.7%	2.6%	2.1%	5.6%	82,538	120,011	18,382,796
Race: Two or More Races	4.9%	6.9%	6.6%	5.3%	4.6%	7.0%	167,529	258,882	23,039,422
Hispanic or Latino (of any race)	5.6%	9.8%	8.7%	6.6%	5.6%	18.4%	206,457	319,828	60,806,969

American Community Survey 2017-2021 unless noted otherwise.

Employment

After a drop in overall employment volume due to the COVID-19 pandemic, over the year ending 2022Q2, employment increased by 3.6% in the region. As of 2023Q2, total employment for the Twin Cities 7-County Metro was 1,840,095 (based on a four-quarter moving average). Over the 12-month period ending 2023Q2, employment increased 1.6% in the region—aligned to employment growth statewide. Minneapolis and St. Paul saw slightly higher employment growth at about 1.8% annual employment change, while suburban communities saw employment growth closer to 1.5% over the 12-month period ending 2023Q2.

Employment in MSP Metro Minnesota
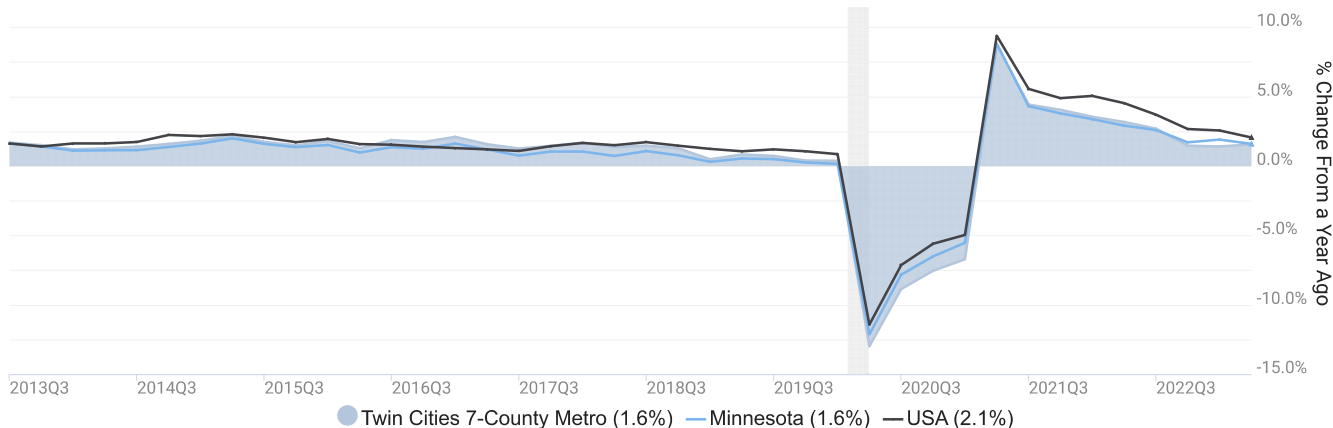
Twin Cities 7-County Metro (1.6%) — Minnesota (1.6%) — USA (2.1%)

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

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 the MSP Metro was 2.7% as of September 2023. The regional unemployment rate was higher than the statewide rate (2.6%), but lower than the national rate of 3.6%. One year earlier, in September 2022, the unemployment rate in the MSP Metro was 2.3%.

Unemployment in MSP Metro Minnesota

Twin Cities 7-County Metro (2.7%) — Minnesota (2.6%) — USA (3.6%)

Source: JobsEQ®. Data as of Sep 2023. The shaded areas of the graph represent national recessions.
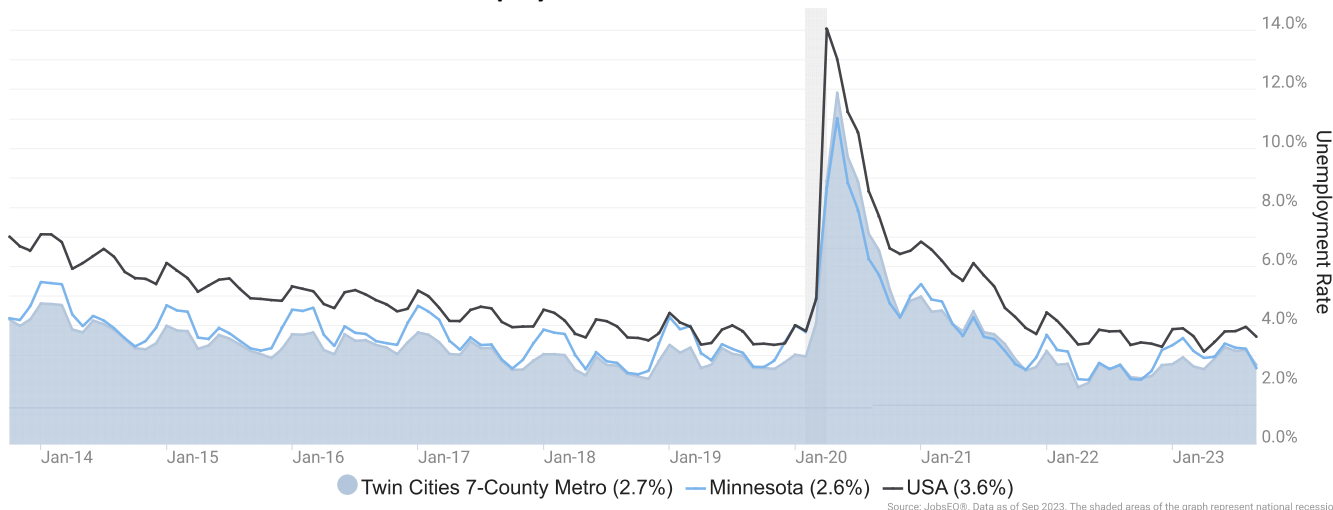
Unemployment rate data are from the Local Area Unemployment Statistics, provided by the Bureau of Labor Statistics and updated through September 2023.

The average worker in the MSP Metro earned annual wages of $77,454 as of 2023Q2. Average annual wages per worker increased 4.5% in the region over the preceding four quarters (compared to last year's increase of 5.5%). Wages rose similarly nationwide, where annual average wages were $70,318 as of 2023Q2.

Average Annual Wage Growth for MSP Metro Minnesota

% Change From a Year Ago

● Twin Cities 7-County Metro (4.5%) — Minnesota (5.0%) — USA (4.4%)

Source: JobsEQ®. Data as of 2023Q2. The shaded areas of the graph represent national recessions.
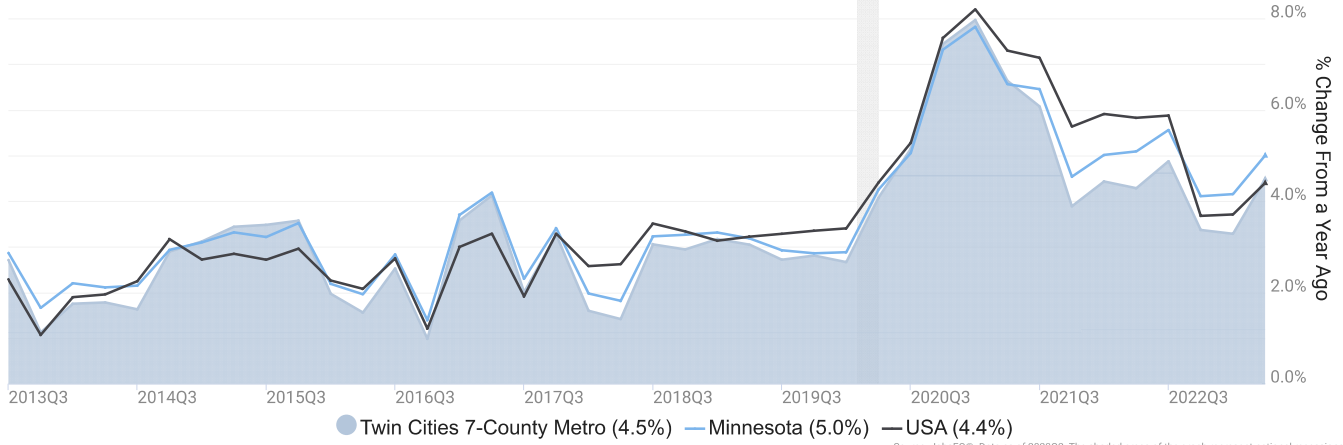
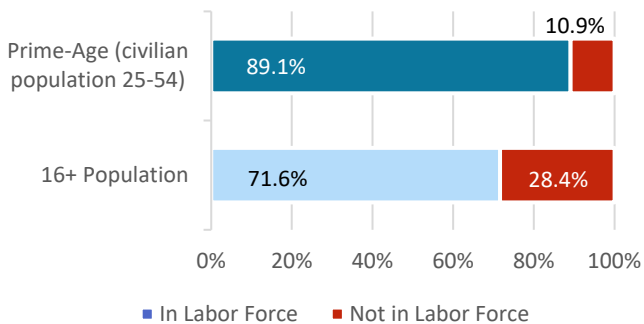Annual average wages per worker data are derived from the Quarterly Census of Employment and Wages, provided by the Bureau of Labor Statistics and imputed where necessary. Data are updated through 2023Q1 with preliminary estimates updated to 2023Q2.

Labor Force Participation Rate

Prime-Age (civilian population 25-54): 89.1% / 10.9%

16+ Population: 71.6% / 28.4%

■ In Labor Force   ■ Not in Labor Force

The size of the MSP Metro labor force has increased significantly over the past four quarters, signaling a strong recovery. As of the most recent American Community Survey estimates, the region has a civilian labor force of 1,775,168 (up about 27,455 workers from the prior year's estimates) with a participation rate of 71.6%, ahead of Minnesota's labor force participation rate for the population over 16 by 2.5 percentage points. The regional participation rate of the prime working age population (between the ages of 25 and 64) also leads the statewide rate—89.1% compared to the statewide 88.4%.

American Community Survey 2017-2021 unless noted otherwise.

The MSP Metro area has a lower share of veterans in the region, at 3.1% of the regional population compared to 3.6% broadly across the state. However, veteran labor force participation rate is higher in the MSP Metro, 83.3% compared to 80.6% statewide. Similarly, the MSP Metro area has a lower share of people with a disability, 8.2% compared to 9.0% statewide, but a higher labor force participation rate for the population with a disability, 54.2% compared to 52.8% statewide. Between the most recent American Community Survey estimates, the labor force participation rate of the MSP Metro's workforce with a disability increased by an impressive 1.2 percentage points and by 0.7 points at the statewide level.

As of the 2017-2021 American Community Survey estimates, the share of youth that are disconnected from school or work sits at 1.7% in the MSP Metro (statewide rate, 1.8%). While just 1.3% of 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).

Economic and Social Characteristics of MSP Metro Minnesota

Economic and Social Characteristics	Percent						Values		
	City of Minneapolis, MN	City of St. Paul, 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)	74.4%	70.3%	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)	88.5%	84.7%	89.8%	89.1%	88.4%	82.5%	1,145,958	1,926,180	106,173,534
Armed Forces Labor Force	0.1%	0.1%	0.1%	0.1%	0.1%	0.5%	2,072	4,029	1,196,529
Veterans, Age 18-64	2.2%	2.5%	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	73.5%	75.8%	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)	17.0%	17.6%	5.7%	8.4%	9.2%	12.6%	260,948	512,312	40,661,636
Households Receiving Food Stamps/SNAP	13.1%	16.2%	5.2%	7.4%	7.5%	11.4%	91,347	167,348	14,105,231
Enrolled in Grade 12 (% of total population)	1.1%	1.4%	1.6%	1.5%	1.4%	1.3%	46,340	78,960	4,425,322
Disconnected Youth[3]	2.2%	2.8%	1.3%	1.7%	1.8%	2.5%	2,650	5,245	432,389
Children in Single Parent Families (% of all children)	40.1%	38.8%	25.4%	28.6%	28.4%	34.0%	203,322	361,209	23,909,672
Uninsured	6.1%	6.1%	3.7%	4.4%	4.6%	8.8%	135,751	258,292	28,489,142
With a Disability, Age 18-64	9.8%	11.6%	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	54.9%	48.0%	57.5%	55.4%	53.5%	44.2%	88,814	164,030	9,068,973
Foreign Born	14.8%	19.1%	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.
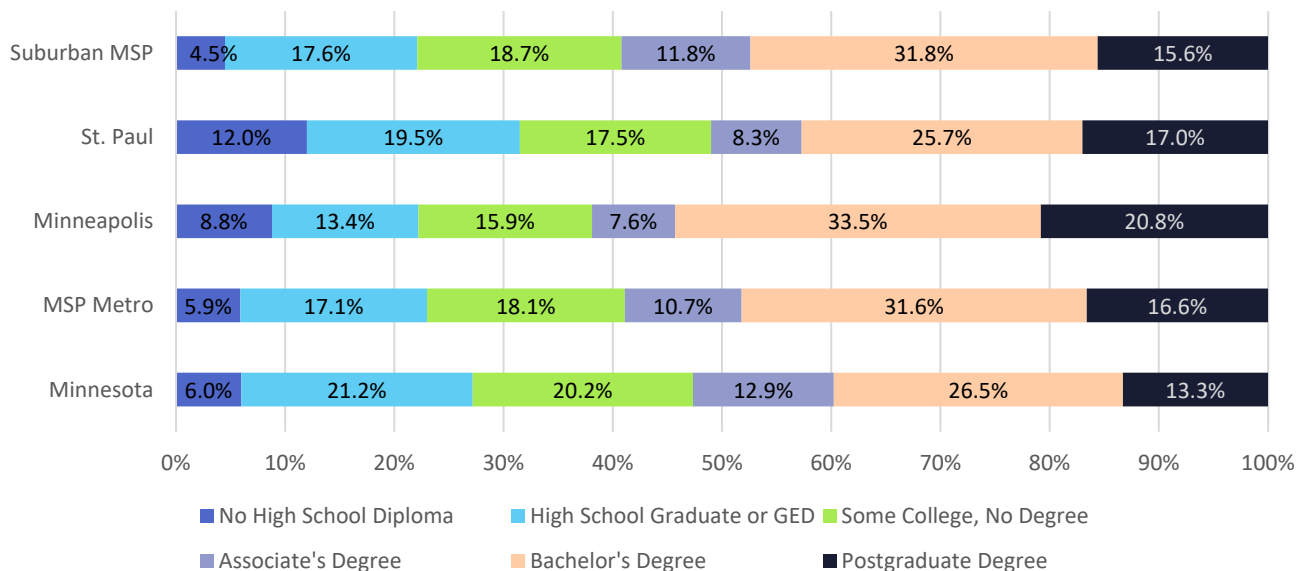
Education

The share of MSP Metro adults between the ages of 25 and 64 that do not have a high school diploma or equivalent dropped to 5.9% as of the 2017-2021 American Community Survey estimates. However, some communities of the MSP Metro 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 17.2% to 17.1% (compared with 21.2% statewide). A larger share of the prime working age population of St. Paul holds 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.

Educational Characteristics of MSP Metro Minnesota

Educational Characteristics	Percent						Values		
	City of Minneapolis, MN	City of St. Paul, MN	Suburban Twin Cities Metro	MSP Metro Minnesota	Minnesota	USA	MSP Metro Minnesota	Minnesota	USA
No High School Diploma	8.8%	12.0%	4.5%	5.9%	6.0%	10.3%	100,087	176,696	17,756,046
High School Graduate	13.4%	19.5%	17.6%	17.1%	21.2%	25.3%	289,174	623,436	43,535,564
Some College, No Degree	15.9%	17.5%	18.7%	18.1%	20.2%	20.1%	306,861	593,618	34,637,141
Associate Degree	7.6%	8.3%	11.8%	10.7%	12.9%	9.3%	181,749	379,909	15,944,395
Bachelor's Degree	33.5%	25.7%	31.8%	31.6%	26.5%	22.0%	536,469	780,055	37,890,674
Postgraduate Degree	20.8%	17.0%	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

	No High School Diploma	High School Graduate or GED	Some College, No Degree	Associate's Degree	Bachelor's Degree	Postgraduate Degree
Suburban MSP	4.5%	17.6%	18.7%	11.8%	31.8%	15.6%
St. Paul	12.0%	19.5%	17.5%	8.3%	25.7%	17.0%
Minneapolis	8.8%	13.4%	15.9%	7.6%	33.5%	20.8%
MSP Metro	5.9%	17.1%	18.1%	10.7%	31.6%	16.6%
Minnesota	6.0%	21.2%	20.2%	12.9%	26.5%	13.3%

American Community Survey 2017-2021.

Regional Colleges and Universities

The MSP Metro has 44 institutions of higher education that offer 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 71,564 awards conferred in the region (including distance learning opportunities), a drop of 158 awards from the 2020-21 school year. 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. The University of St. Thomas, Century College, and Metropolitan State University rank fourth, fifth, and sixth by volume of awards conferred, but with much lower volumes of completions overall.

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
University of St Thomas	0	0	48	29	1,722	206	954	3	199	3,161	9,336	$30,099
Century College	477	410	1,188	38	0	0	0	0	0	2,113	7,678	$10,901
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
Hennepin Technical College	730	393	533	82	0	0	0	0	0	1,738	4,083	$11,194
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
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
Hamline University	4	6	0	0	494	166	357	36	5	1,068	2,931	$20,239
Anoka Technical College	526	200	187	72	0	0	0	0	0	985	1,690	$12,407
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
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
Macalester College	0	0	0	0	711	0	0	0	0	711	2,244	$30,939

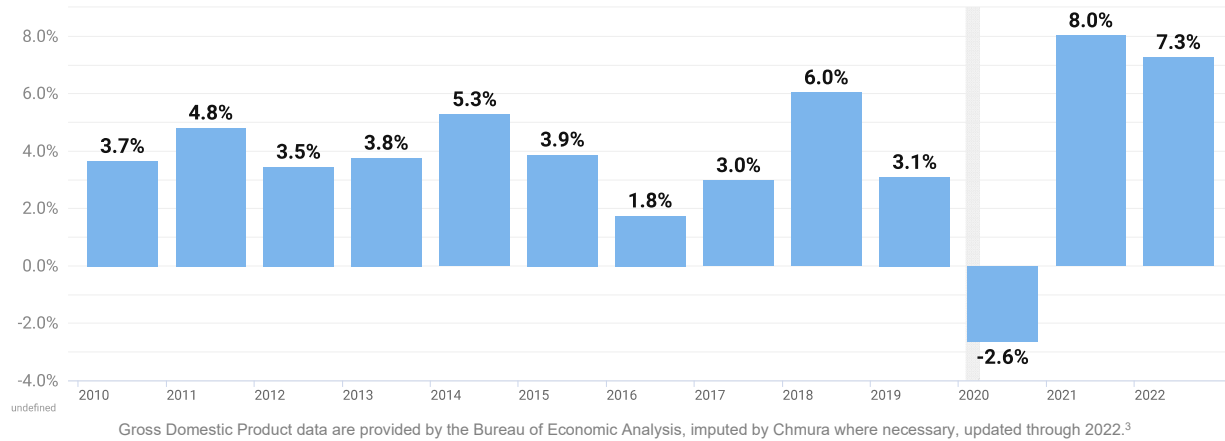|												
Summit Academy Opportunities Industrialization Center	500	0	0	0	0	0	0	0	0	500	409	$16,725
Dunwoody College of Technology	20	15	316	0	102	0	0	0	0	453	1,382	$24,738
Mitchell Hamline School of Law	0	0	0	0	0	0	1	0	350	351	1,220	
Crown College	7	0	18	0	182	0	120	0	0	327	1,476	$25,513
Aveda Arts & 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
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
Minneapolis College of Art and Design	0	0	0	0	119	0	33	0	0	152	775	$28,520
Minnesota School of Cosmetology-Woodbury Campus	91	52	0	0	0	0	0	0	0	143	189	$16,730
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	
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
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	**5,093**	**2,085**	**8,276**	**336**	**25,397**	**1,756**	**22,766**	**276**	**5,579**	**71,564**		

* 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 2020-2021 academic year.
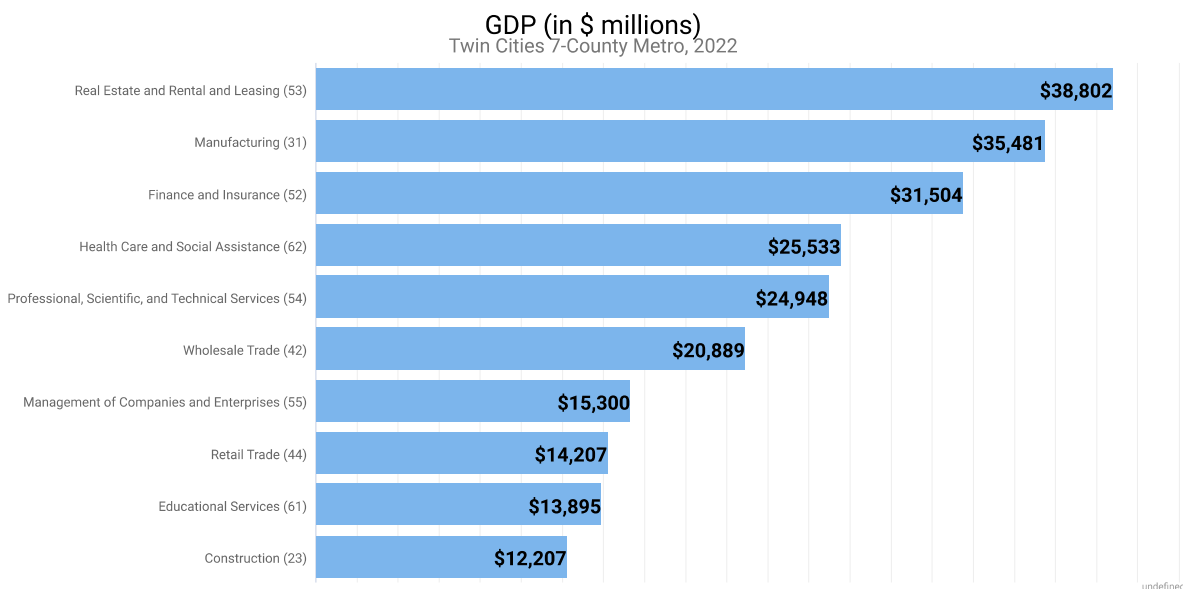
Economic Indicators

Gross Domestic Product (GDP) is the total value of goods and services produced by a region. In 2022, nominal GDP in the MSP Metro region grew by 7.3%. This follows an expansion of 8.0% in 2021, and a contraction of 3.1% in 2020. As of 2022, total GDP in the region was $294,264,742,000.

One-Year % Change in GDP, MSP Metro Minnesota

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 the MSP Metro, Real Estate and Rental and Leasing contributed the largest portion of GDP in 2022, $38,802,273,000—though dropping roughly $2 billion from 2021. The next-largest contributions came from Manufacturing ($35,480,802,000), which increased by over $2.6 billion from 2021; Finance and Insurance ($31,503,574,000), up about $400 million; and Health Care and Social Assistance ($25,533,279,000), which grew by over $2.2 billion. All industries in the region saw increased output.

GDP (in $ millions)
Twin Cities 7-County Metro, 2022

Industry	GDP ($ millions)
Real Estate and Rental and Leasing (53)	$38,802
Manufacturing (31)	$35,481
Finance and Insurance (52)	$31,504
Health Care and Social Assistance (62)	$25,533
Professional, Scientific, and Technical Services (54)	$24,948
Wholesale Trade (42)	$20,889
Management of Companies and Enterprises (55)	$15,300
Retail Trade (44)	$14,207
Educational Services (61)	$13,895
Construction (23)	$12,207

[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.

RealTime Talent
Using data to build the
world's best workforce

Labor Market
Workforce Forecast

Employment rose by 1.2% in the region between 2022Q2 and 2023Q2, lower than the previous estimates from one year prior of 3.5%. An estimated 3.6% of the MSP Metro Minnesota workforce is unemployed as of September 2023 (about 46,166 people). Employment in the region is forecast to grow by 0.1% on average annually through 2028 in a baseline scenario.

5-Year Forecast in MSP Metro Minnesota
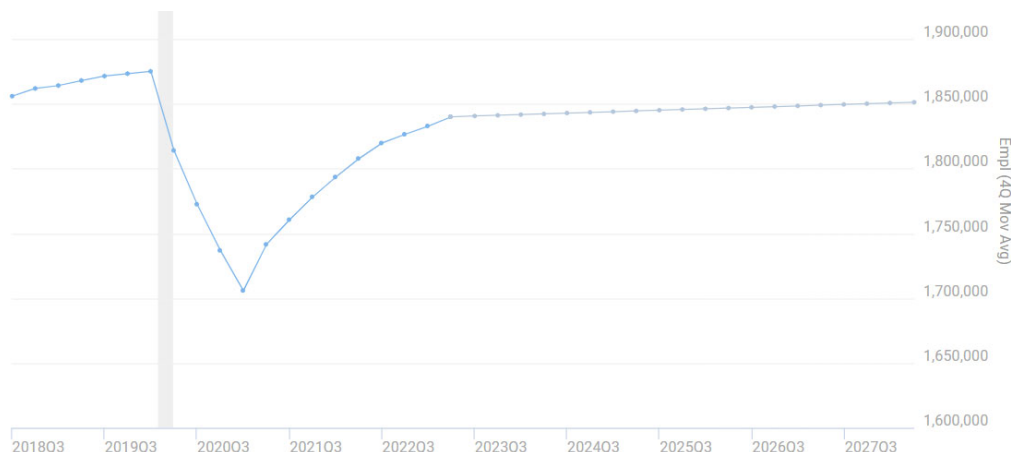
Employment forecasts vary considerably by industry. An industry cluster is a geographic concentration of interrelated industries or occupations. The industry cluster in the MSP Metro region with the highest relative concentration remains Electric and Electronics Manufacturing with a location quotient of 2.29. This cluster employs 44,747 workers in the region (an increase of nearly 1,000 workers from 2022) with an average wage of $109,460—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 MSP Metro Minnesota as of 2023Q2
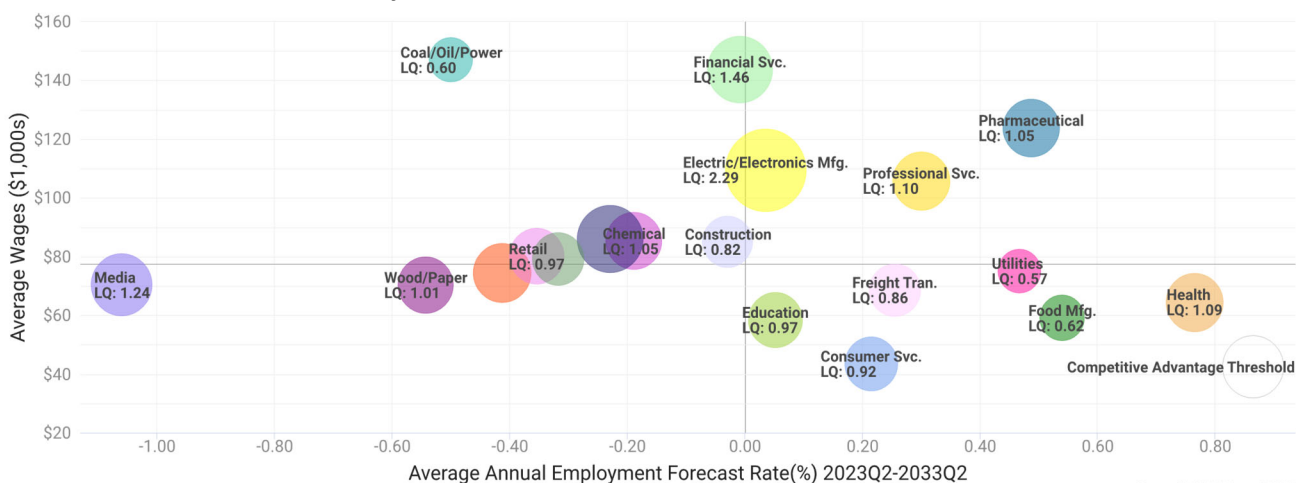
Source: JobsEQ®,Data as of 2023Q2

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 available 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 regionally.
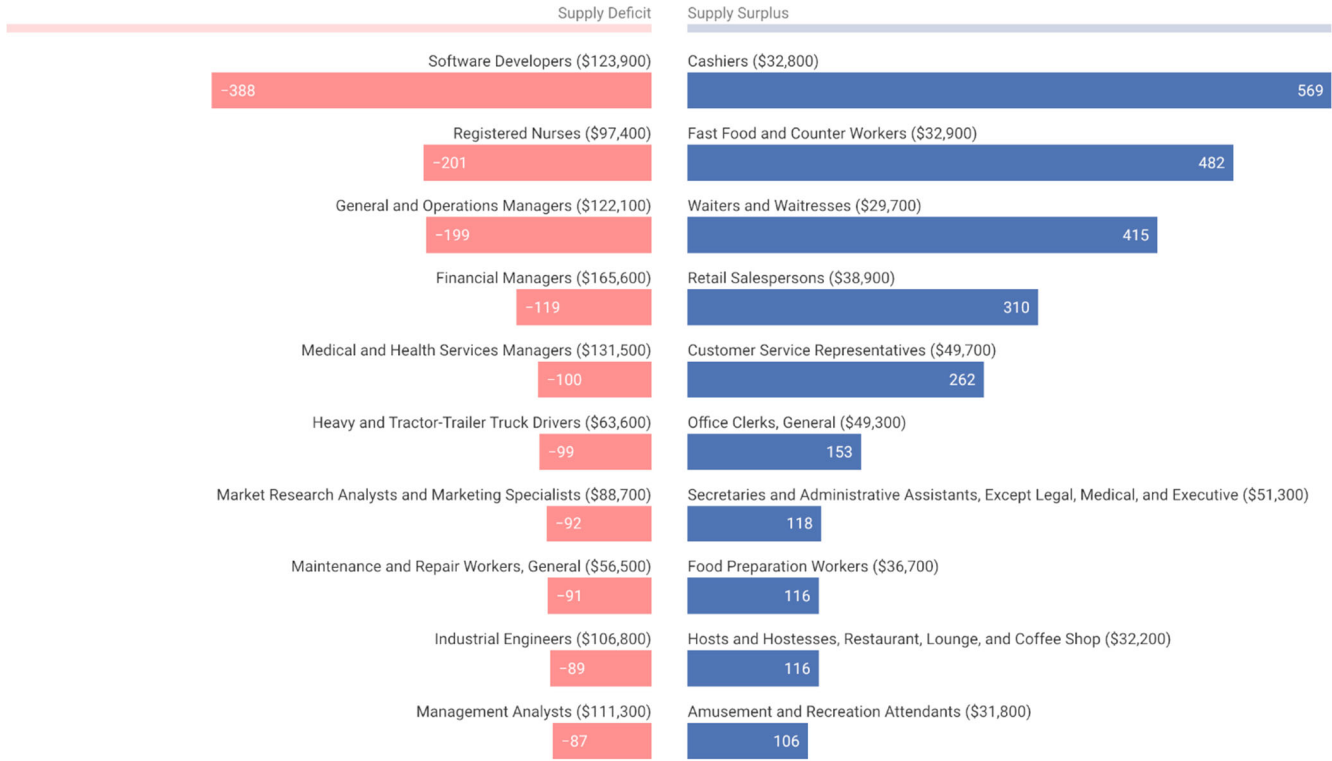
The chart below shows the potential average annual talent gaps over ten years. Many variables go into this analysis, but at its core it is based on a forecast comparing occupation demand growth to the local population growth and the projected educational attainment of those residents, then matched to 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 is 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 forecasting 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 the top ten occupations in highest shortage. Although these roles continue to forecast shortages, as of 2023Q2 both have dropped considerably in rank to 38th and 10th greatest shortage, respectively. Software Developers, Registered Nurses, and General and Operations Managers continue to rank as the top three occupations of highest forecasted shortage over the next five to ten years, with employers needing hundreds more workers in these roles each year currently in our existing talent pool. Financial Managers, Medical and Health Services Managers, and Management Analysts remain in critical shortage; Industrial Engineers and Drivers joined the top shortages this year as well.
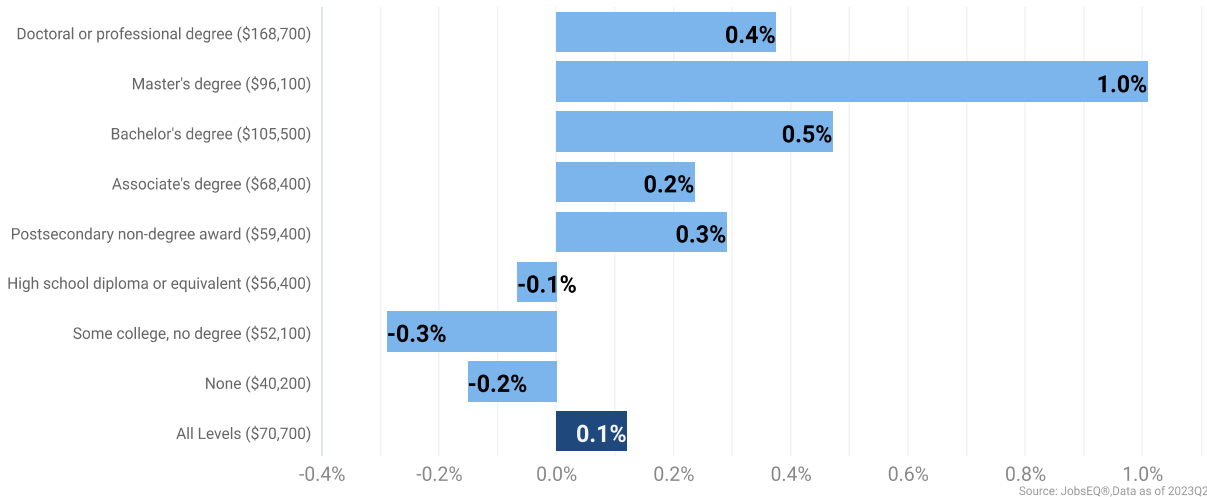
Average Annual Occupation Gaps (i.e. Talent Shortage), 2023Q2 through 2033Q2

Supply Deficit		Supply Surplus	
Software Developers ($123,900)	−388	Cashiers ($32,800)	569
Registered Nurses ($97,400)	−201	Fast Food and Counter Workers ($32,900)	482
General and Operations Managers ($122,100)	−199	Waiters and Waitresses ($29,700)	415
Financial Managers ($165,600)	−119	Retail Salespersons ($38,900)	310
Medical and Health Services Managers ($131,500)	−100	Customer Service Representatives ($49,700)	262
Heavy and Tractor-Trailer Truck Drivers ($63,600)	−99	Office Clerks, General ($49,300)	153
Market Research Analysts and Marketing Specialists ($88,700)	−92	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive ($51,300)	118
Maintenance and Repair Workers, General ($56,500)	−91	Food Preparation Workers ($36,700)	116
Industrial Engineers ($106,800)	−89	Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop ($32,200)	116
Management Analysts ($111,300)	−87	Amusement and Recreation Attendants ($31,800)	106

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 only 0.1% on average annually over the next ten years. Occupations typically requiring a doctoral degree are now expected to grow by about 0.4% on average annually, whereas those requiring a master's degree are expected to grow by 1.0% annually. Those requiring either a bachelor's degree 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 MSP Metro Minnesota, 2023Q2

Doctoral or professional degree ($168,700)	0.4%
Master's degree ($96,100)	1.0%
Bachelor's degree ($105,500)	0.5%
Associate's degree ($68,400)	0.2%
Postsecondary non-degree award ($59,400)	0.3%
High school diploma or equivalent ($56,400)	-0.1%
Some college, no degree ($52,100)	-0.3%
None ($40,200)	-0.2%
All Levels ($70,700)	0.1%

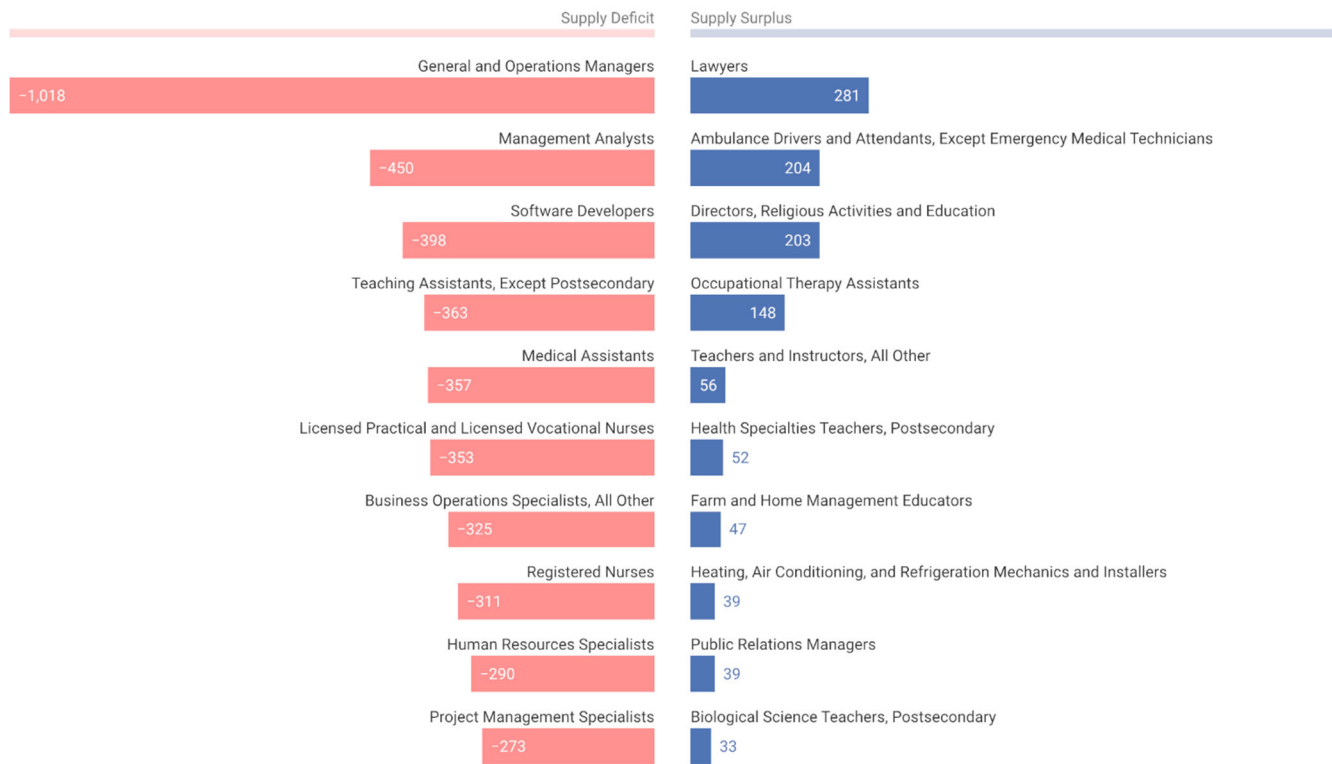Source: JobsEQ®,Data as of 2023Q2

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. In the MSP Metro region, local postsecondary programs are likely underproducing General and Operations Managers, Management Analysts, and Software Developers in high volumes. There is a moderate-to-low oversupply of Lawyers, Religious Directors, and Occupational Therapy Assistants completing local postsecondary programs compared to national volumes.

Award Gaps, All Occupations, MSP Metro Minnesota, 2023Q2

Supply Deficit		Supply Surplus	
General and Operations Managers	−1,018	Lawyers	281
Management Analysts	−450	Ambulance Drivers and Attendants, Except Emergency Medical Technicians	204
Software Developers	−398	Directors, Religious Activities and Education	203
Teaching Assistants, Except Postsecondary	−363	Occupational Therapy Assistants	148
Medical Assistants	−357	Teachers and Instructors, All Other	56
Licensed Practical and Licensed Vocational Nurses	−353	Health Specialties Teachers, Postsecondary	52
Business Operations Specialists, All Other	−325	Farm and Home Management Educators	47
Registered Nurses	−311	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	39
Human Resources Specialists	−290	Public Relations Managers	39
Project Management Specialists	−273	Biological Science Teachers, Postsecondary	33

Several occupations are likely to have zero unemployed talent in the MSP Metro as of 2023Q2 estimates, resulting in an estimated unemployment rate of 0%. The occupations listed below have nonexistent unemployed talent at the regional level and 75 people or more working in these positions locally. Some of these roles have low volumes of online job postings due to unique methods of recruiting talent for specialty roles, while others show high posting volumes which indicates unmet demand and significant likely shortages. All but one of these roles pay well over the regional average of $70,700 annually.

Occupations with No Unemployed Workforce and Employing over 75 Workers, MSP Metro 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
49-9043	Maintenance Workers, Machinery	766	$64,700	1.06	0	n/a	2	5	0.1%	429	191	222	16	0.4%
17-2011	Aerospace Engineers	429	$124,700	0.60	0	n/a	14	-13	-0.6%	123	47	73	2	0.1%
33-9021	Private Detectives and Investigators	425	$68,200	0.99	0	n/a	6	-46	-2.0%	203	75	124	4	0.2%
11-1031	Legislators	359	$84,600	0.77	0	n/a	n/a	2	0.1%	143	56	86	1	0.0%
13-2031	Budget Analysts	312	$92,400	0.57	0	n/a	30	-51	-3.0%	119	44	74	2	0.1%
49-9091	Coin, Vending, and Amusement Machine Servicers and Repairers	293	$53,200	0.65	0	n/a	2	-24	-1.6%	168	71	100	-3	-0.2%
49-2097	Audiovisual Equipment Installers and Repairers	240	$57,400	0.79	0	n/a	12	-104	-6.9%	116	43	80	-7	-0.6%
47-4021	Elevator and Escalator Installers and Repairers	229	$96,200	0.79	0	n/a	1	-46	-3.6%	98	31	69	-2	-0.2%
53-4031	Railroad Conductors and Yardmasters	228	$81,800	0.50	0	n/a	13	-35	-2.8%	99	26	73	0	0.0%
11-9131	Postmasters and Mail Superintendents	184	$87,500	1.21	0	n/a	n/a	-16	-1.7%	60	27	42	-9	-1.0%
25-4013	Museum Technicians and Conservators	151	$50,900	0.92	0	n/a	5	0	0.0%	99	46	48	6	0.7%
53-6099	Transportation Workers, All Other	128	$44,000	0.89	0	n/a	1	-41	-5.4%	81	29	51	1	0.1%
51-8012	Power Distributors and Dispatchers	110	$113,800	0.98	0	n/a	1	11	2.2%	47	17	34	-4	-0.7%
51-4035	Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic	101	$59,000	0.57	0	n/a	9	-25	-4.3%	56	33	32	-8	-1.6%
25-4011	Archivists	99	$64,500	1.00	0	n/a	5	0	0.0%	64	30	31	3	0.6%
45-4011	Forest and Conservation Workers	82	$43,000	0.67	0	n/a	7	6	1.5%	64	22	47	-5	-1.3%
19-2012	Physicists	81	$134,100	0.34	0	n/a	11	7	2.0%	30	11	19	1	0.2%
00-0000	Total - All Occupations	1,840,095	$70,700	1.00	46,166	2.6%	84,854	-5,142	-0.1%	1,051,895	431,874	609,125	10,896	0.1%

Job Posting Trends in the MSP Metro

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 376,606 unique job postings advertised online in The MSP Metro on job boards, according to analysis using Gartner TalentNeuron Plan (compared to 512,054 postings statewide). This was -15% 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 nearly 44,500 unique jobs posted in the region. About 20% of all positions advertised over the most recent 12-month period were explicitly listed as remote or telecommute roles—either permanently or temporarily—an increase of two percentage points from the prior year. The share of remote work opportunities has increased significantly among Information Technology careers and Human Service roles in the last year (by six and five percentage points respectively).
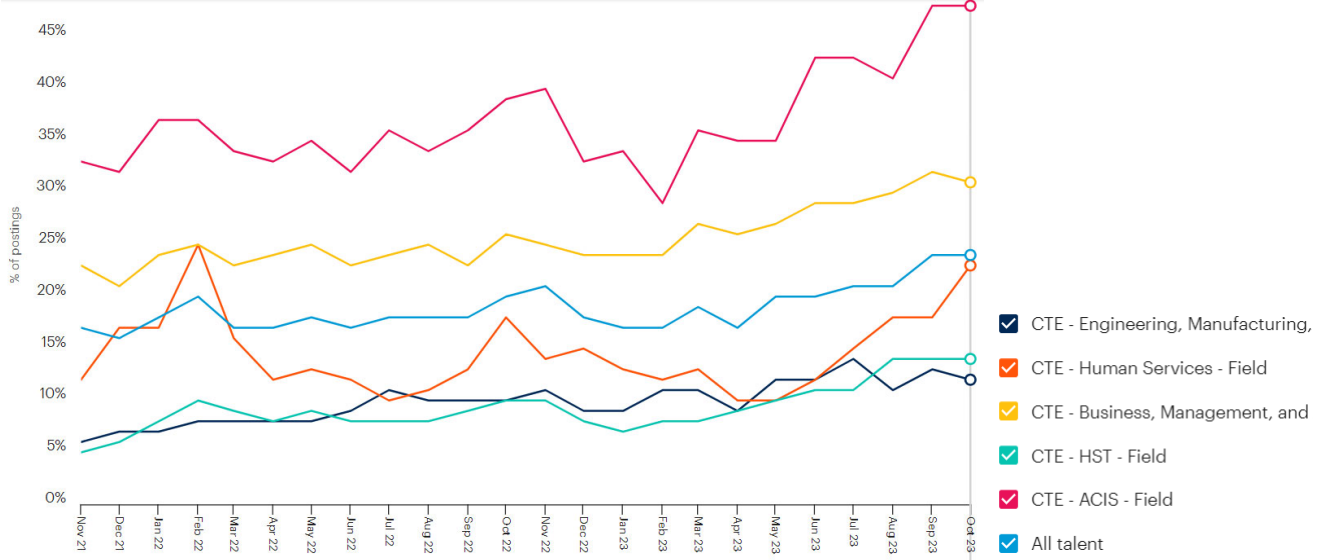

Total Jobs Advertised Monthly in MSP Metro Minnesota, October 2022-2023
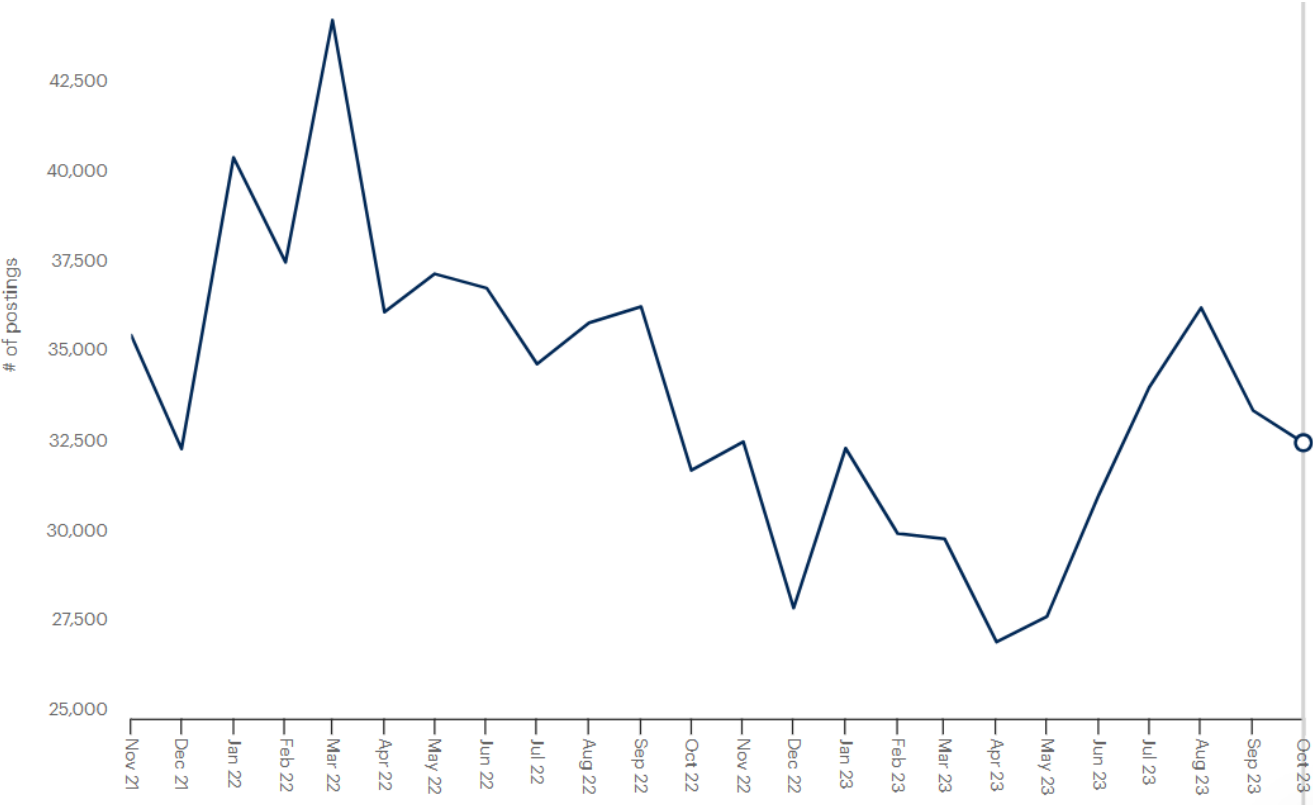
SOURCE: Gartner TalentNeuron Plan accessed 11/22/2023

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

- CTE - Engineering, Manufacturing,
- CTE - Human Services - Field
- CTE - Business, Management, and
- CTE - HST - Field
- CTE - ACIS - Field
- All talent

SOURCE: Gartner TalentNeuron Plan accessed 11/22/2023

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

- Fully remote Temporary remote Hybrid remote
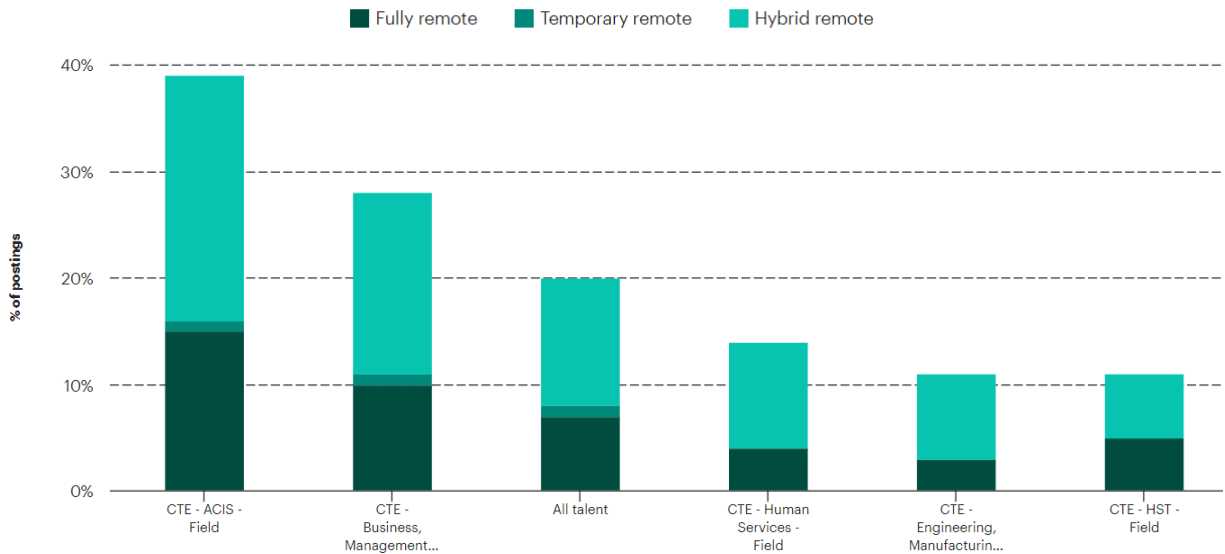
Talent Profile	Unspecified /Onsite	Total remote	% of postings Fully remote	Temporary remote	Hybrid remote
CTE - ACIS - Field	61% ▼ -5 pp	39% ▲ 5 pp	15% ▼ -3 pp	1% ▲ 0 pp	23% ▲ 8 pp
CTE - Business, Management, and Administration - Field	72% ▼ -4 pp	28% ▲ 4 pp	10% ▼ -2 pp	1% ▲ 0 pp	17% ▲ 6 pp
All talent	80% ▼ -2 pp	20% ▲ 2 pp	7% ▼ -2 pp	1% ▲ 0 pp	12% ▲ 4 pp
CTE - Human Services - Field	86% ▲ 1 pp	14% ▼ -1 pp	4% ▼ -4 pp	0% ▼ -1 pp	10% ▲ 4 pp
CTE - Engineering, Manufacturing, and Technology - Field	89% ▼ -3 pp	11% ▲ 3 pp	3% ▲ 0 pp	0% ▲ 0 pp	8% ▲ 3 pp
CTE - HST - Field	89% ▼ -3 pp	11% ▲ 3 pp	5% ▲ 0 pp	0% ▲ 0 pp	6% ▲ 3 pp

SOURCE: Gartner TalentNeuron Plan accessed 11/22/2023

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. Most of the newest skills on the rise in regional job postings are specific to Health Science and Human Services (education) related career clusters, while emerging skills that have been trending over a longer period of time are tied to Engineering, Finance, and Older Adult Services. Skills in decline over the past year are related to tutoring and mathematics, appearing less frequently in postings in 2023Q4 compared to 2022Q4. Core skills have remained consistent with human skills such as communication and relationship management ranking in high importance.

Top Evolving Skills in MSP Metro Minnesota, October 2022-2023

New	Emerging	Growing	Core	Declining
1. Trauma centers - Level 1	1. GE Energy Positive Sequence L...	1. Prioritization	1. Collaboration	1. Tutoring
2. Educlimber	2. Financial counseling	2. Research	2. Relationships	2. Mathematics
3. Consumer-driven health care	3. Prescription medications		3. Scheduling	
New skills whose future is uncertain.	Relatively new skills that are becoming more prevalent.	Fast-growing skills that are becoming core skills.	Skills that have been present in a high percentage of job postings for some time.	Skills that used to be essential but are becoming obsolete.

Career Fields

The Business, Management, and Administration field continues to account for the largest share of employment by career field in the MSP Metro region yet are no more concentrated locally than found nationally on average. Arts, Communications, and Information Systems careers are slightly more concentrated in the MSP Metro region than what is typically observed nationwide (LQ of 1.2, or 20% more highly concentrated than an average community of its size). Agriculture, Food, and Natural Resources careers are smallest in local employment volume and local concentration but had relatively high job posting volumes and five-year employment growth.

Unemployment is highest among Engineering, Manufacturing, and Technology careers, at 3.1% unemployment. The MSP Metro region can expect talent shortages in all career fields, with the highest shortages among Health Science Technology, Human Services, and several pathways within Arts, Communications, and Information Systems.

CTE Field Employment and Wages in the MSP Metro Minnesota, 2023Q2[1]

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 9/25/2023-10/25/2023[3]	Empl Change	Ann %
Health Science Technology	166,466	$40,600	$90,500	0.99	2,607	1.7%	12,080	1,435	0.2%
Human Services	294,503	$44,000	$62,300	1.03	6,265	2.2%	11,304	10,007	0.7%
Arts, Communications, and Information Systems	102,426	$65,100	$95,800	1.20	1,980	2.0%	6,565	-2,715	-0.5%
Business, Management, and Administration	830,065	$45,300	$69,500	1.02	22,531	2.8%	37,684	-24,399	-0.6%
Engineering, Manufacturing, and Technology	428,655	$47,600	$65,600	0.95	12,212	3.1%	15,494	10,055	0.5%
Agriculture, Food, and Natural Resources*	69,422	$46,800	$66,600	0.72	1,817	2.8%	2,768	1,632	0.5%
Total - All Occupations	1,840,095	$34,700	$70,700	1.00	46,166	2.6%	84,854	-5,142	-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.

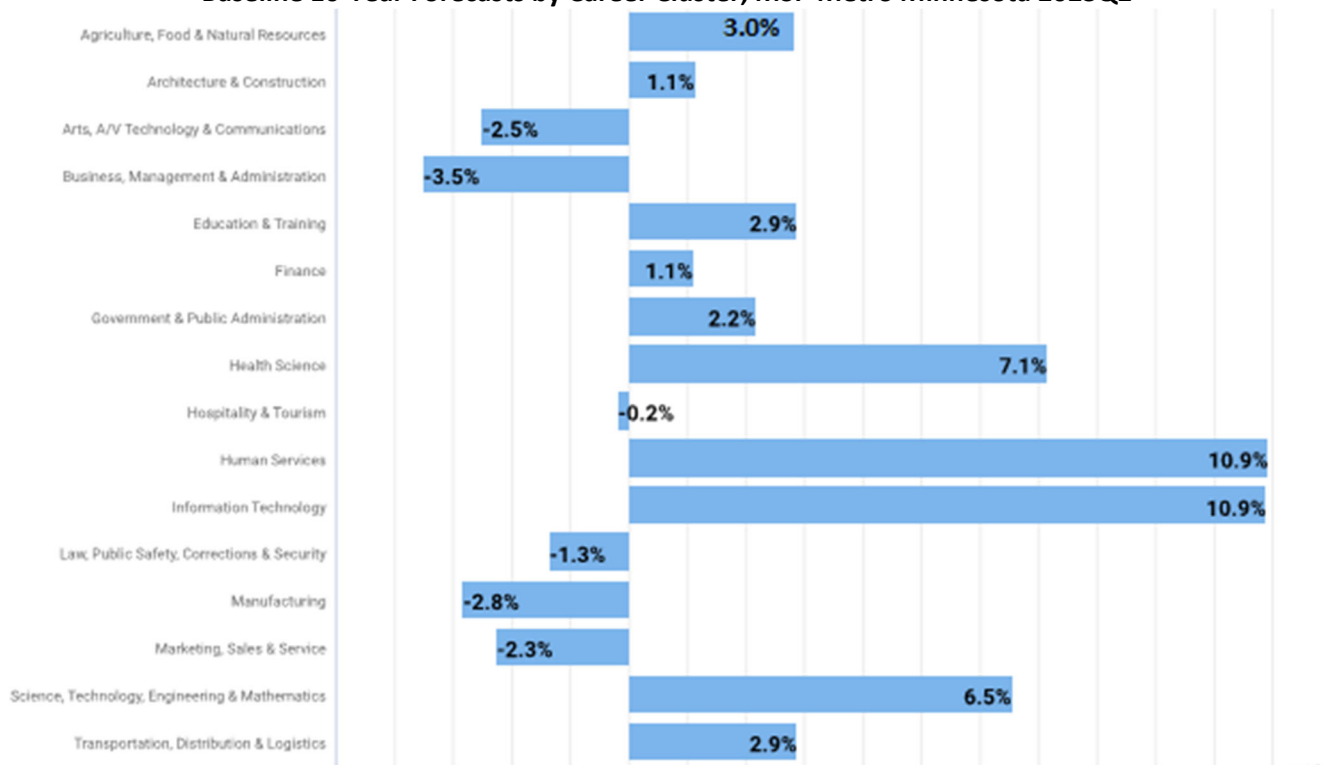### CTE Field Baseline Employment Forecast for the MSP Metro Minnesota, 2028Q2

CTE Field (occupation overlap exists, will not sum)	Current 2023Q2 Empl (Place of Work)	5-Year Growth 2028Q2				
		Total Demand	Exits	Transfers	Empl Change	Ann % Change
Health Science Technology	166,466	77,905	33,148	38,937	5,820	0.7%
Human Services	294,503	171,650	76,775	87,034	7,841	0.5%
Arts, Communications, and Information Systems	102,426	45,406	14,521	27,708	3,177	0.6%
Business, Management, and Administration	830,065	509,914	216,640	302,135	-8,861	-0.2%
Engineering, Manufacturing, and Technology	428,655	233,129	86,540	145,355	1,234	0.1%
Agriculture, Food, and Natural Resources*	69,422	42,118	14,326	26,938	854	0.2%
Total - All Occupations	1,840,095	1,051,895	431,874	609,125	10,896	0.1%

*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), six 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. Human Services and Information Technology have the highest overall forecasted growth rates, but total demand volume over the next ten years is highest for Business, Management, and Administration cluster careers due to high turnover rates. All pathways saw a decline in their overall forecasted employment outlook except for the Science, Technology, Engineering, and Mathematics cluster, which maintained the same employment growth outlook of 6.5% total employment growth through 2023Q2. Eight of the sixteen career clusters have average wages above the average occupation wage in the region ($70,700 in 2023—an increase of $6,400 from 2022).[4]

Baseline 10-Year Forecasts by Career Cluster, MSP Metro Minnesota 2023Q2

Career Cluster	Forecast
Agriculture, Food & Natural Resources	3.0%
Architecture & Construction	1.1%
Arts, A/V Technology & Communications	-2.5%
Business, Management & Administration	-3.5%
Education & Training	2.9%
Finance	1.1%
Government & Public Administration	2.2%
Health Science	7.1%
Hospitality & Tourism	-0.2%
Human Services	10.9%
Information Technology	10.9%
Law, Public Safety, Corrections & Security	-1.3%
Manufacturing	-2.8%
Marketing, Sales & Service	-2.3%
Science, Technology, Engineering & Mathematics	6.5%
Transportation, Distribution & Logistics	2.9%

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. In the MSP Metro, 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.

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[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	32,363	$113,100	3,095	6.5%	203	2,469
Information Technology	69,711	$108,400	5,847	10.9%	722	5,758
Finance	88,185	$99,700	4,055	1.1%	93	7,652
Health Science	166,466	$90,500	11,781	7.1%	1,145	15,458
Law, Public Safety, Corrections & Security	47,062	$87,600	1,887	-1.3%	-67	4,468
Government & Public Administration	16,344	$80,700	609	2.2%	34	1,588
Business, Management & Administration	357,473	$79,400	13,224	-3.5%	-1,295	37,834
Architecture & Construction	107,291	$73,400	2,184	1.1%	110	10,688
Marketing, Sales & Service	190,116	$69,400	8,711	-2.3%	-443	22,983
Arts, A/V Technology & Communications	32,715	$69,000	726	-2.5%	-85	3,283
Agriculture, Food & Natural Resources*	69,422	$66,600	2,624	3.0%	181	8,437
Education & Training	106,422	$65,800	4,448	2.9%	302	10,335
Transportation, Distribution & Logistics	138,930	$57,500	3,845	2.9%	377	17,667
Manufacturing	150,071	$57,300	5,981	-2.8%	-442	15,782
Human Services	124,674	$47,400	4,007	10.9%	1,295	17,742
Hospitality & Tourism	194,291	$37,500	10,718	-0.2%	-52	33,853
Total - All Occupations	**1,840,095**	**$70,700**	**81,915**	**1.0%**	**2,131**	**210,229**

*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.

Priorities by Career Field

Health Science Technology

Critical Issues:

- Largest volumes of occupations forecasting shortages
- Award gaps for Therapeutic Services talent at all education levels
- Prominent Medical Scientist occupation in high shortage poised for career pathway focus
- High student interest for limited seats at regional institutions
- Opportunities for expanded career laddering, stackable credentials, or microcredentials

Human Services

Critical Issues:

- Educational institutions dominate overall demand
- Education and Training pathway in significant talent shortage
- High share of workforce over-credentialed for the roles they currently hold; 45.9% of positions do not require postsecondary
- Critical occupations in mental health, behavioral health, and counseling have an undersupply of talent and low volumes of postsecondary awards
- Growing diversity in many pathways, not yet reflected in highest-wage and leadership roles

Arts, Communications, and Information Technology

Critical Issues:

- Occupations in this field offer the highest average entry-level wages
- Systematic undersupply of Information Technology cluster talent and postsecondary awards
- Software Development and Network Security pathways will not encounter sufficient local talent without improvement in education and training pipeline coordination with employers

Business, Management, and Administration

Critical Issues:

- Largest share of employment by career field
- Forecasting moderate decline in overall employment, but with significant replacement demand needs for mid-level and senior positions
- Finance and Insurance roles in high local concentration experiencing shortages unlikely to be met by existing local talent providers

Engineering, Manufacturing, and Technology

Critical Issues:

- Comparatively high unemployment (3.1%)
- Transportation, Automotive Service, and Industrial Engineering have some of the greatest needs for career pathway expansion
- Growing diversity by race, ethnicity, and gender, but not by age
- Aging talent signaling exacerbation of talent shortage due to upcoming retirements with 23.2% being 55 or older

Agriculture, Food, and Natural Resources

Critical Issues:

- Biochemists and Biological Scientists are uniquely concentrated in the region and have significantly low unemployment
- Conservation and Food Science pathways have significant local demand and talent shortages to address
- All of the top ten occupations by employment volume forecast growth over the next three years

Health Science Technology

Over the next three years, Health Science Technology employment is forecast to grow by 0.7% on average annually, a drop from last year's projected 1.1% average annual growth.

Baseline 3-Year Forecast for Health Science Technology Careers, MSP Metro Minnesota 2023Q2
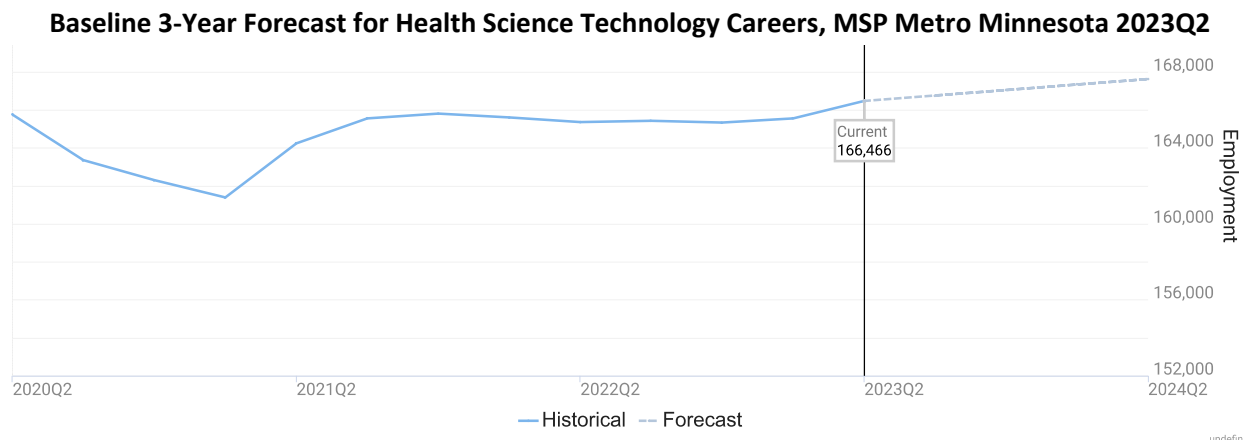
Top Ten Health Science Technology Occupations by Employment Volume in MSP Metro Minnesota, 2023Q2

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Change
Registered Nurses	35,151	$97,400	0.98	-131	2,109	0.3%
Home Health Aides	16,898	$34,300	1.52	-1,704	2,288	1.7%
Nursing Assistants	13,679	$49,400	0.89	-978	2,078	0.1%
Medical Secretaries and Administrative Assistants	8,184	$50,400	1.04	490	975	0.3%
Licensed Practical and Licensed Vocational Nurses	7,620	$61,100	1.03	-779	640	0.2%
Medical Assistants	6,601	$51,000	0.75	440	1,006	1.0%
Medical and Health Services Managers	5,831	$131,500	1.01	424	622	2.3%
Pharmacy Technicians	4,730	$47,100	0.93	142	441	0.2%
Dental Assistants	3,787	$64,500	0.90	397	566	0.4%
Pharmacists	3,733	$144,800	1.00	32	145	0.0%
Remaining Component Occupations	60,251	$122,800	1.04	2,385	4,540	0.7%
Health Science Technology (CTE Field)	**166,466**	**$90,500**	**0.99**	**720**	**15,458**	**0.7%**

"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 the MSP Metro working in Health Science Technology roles are employed by General Medical and Surgical Hospitals (27.7%, decreasing slightly for the second consecutive year by 0.5 percentage points) followed by Office of Physicians (15.0%, rising 0.6 percentage points).

Health Science Technology Field Employment by Industry, MSP Metro Minnesota, 2023Q2
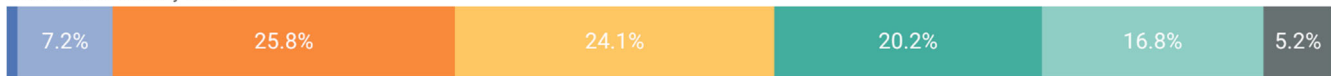
Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Change	10-Year Total Demand
General Medical and Surgical Hospitals	27.7%	46,041	33,753	1,069	34,821
Offices of Physicians	15.0%	24,916	19,307	1,761	21,068
Individual and Family Services	7.3%	12,072	14,558	3,071	17,629
Nursing Care Facilities (Skilled Nursing Facilities)	6.0%	10,053	10,871	-467	10,404
Offices of Dentists	5.1%	8,518	8,448	408	8,856
Home Health Care Services	4.9%	8,087	7,992	1,390	9,382
Offices of Other Health Practitioners	4.2%	6,932	5,679	1,008	6,687
Health and Personal Care Retailers	2.9%	4,799	3,648	-94	3,554
Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	2.8%	4,665	5,650	574	6,223
Outpatient Care Centers	2.8%	4,648	3,885	914	4,799
Other Professional, Scientific, and Technical Services	2.2%	3,671	3,993	693	4,686
Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities	2.1%	3,421	3,458	89	3,547
Employment Services	1.9%	3,219	2,800	9	2,809
Management of Companies and Enterprises	1.7%	2,775	2,182	283	2,465
Colleges, Universities, and Professional Schools	1.4%	2,276	1,611	78	1,689
Insurance Carriers	1.3%	2,221	1,537	209	1,745
Other Ambulatory Health Care Services	1.2%	2,031	1,989	298	2,287
Elementary and Secondary Schools	1.1%	1,892	1,384	123	1,507
Medical and Diagnostic Laboratories	0.8%	1,330	1,103	81	1,184
Specialty (except Psychiatric and Substance Abuse) Hospitals	0.6%	1,039	835	108	943
All Others	7.1%	11,860	9,576	286	9,862

Career Field Demographics

The Health Science Technology field is predominantly female (78.8%, rising 0.9 percentage points) and white (73.2%, a decrease of 3.2 percentage points from 2022Q2 estimates); racial diversity continues to grow in this field, while ethnic diversity continues to sit at about 4.3% of the Health Science Technology workforce being Hispanic or Latinx (the same as 2022Q2 estimates). Similar to the prior year's estimates, half of the Health Science Technology workforce in the region (49.9%) is between the ages of 25 and 44—a larger share in this age group than seen at the statewide level.

Age

Twin Cities 7-County Metro

| 7.2% | 25.8% | 24.1% | 20.2% | 16.8% | 5.2% |

Minnesota

| 8.0% | 24.2% | 23.6% | 20.1% | 17.6% | 5.4% |

- 16 to 19 years (0.9%)
- 20 to 24 years (7.2%)
- 25 to 34 years (25.8%)
- 35 to 44 years (24.1%)
- 45 to 54 years (20.2%)
- 55 to 64 years (16.8%)
- 65 years and over (5.2%)

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

Race

Twin Cities 7-County Metro

| 73.2% | 12.2% | 10.5% | |

Minnesota

| 80.8% | 8.1% | 7.2% | |

- White (73.2%)
- Black (12.2%)
- American Indian (0.3%)
- Asian (10.5%)
- Pacific Islander (0.0%)
- Two or More Races (3.8%)
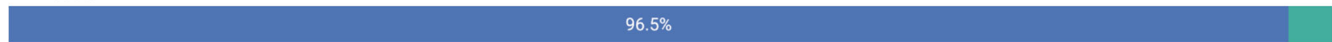
Data for Health Science (CTE Cluster)
Source: JobsEQ®. Data as of 2023Q2.

Ethnicity

Twin Cities 7-County Metro

| 95.7% | |

Minnesota

| 96.5% | |

- Non-Hispanic/Latino (95.7%)
- Hispanic or Latino (of any race) (4.3%)

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

Gender

Twin Cities 7-County Metro

| 21.2% | 78.8% |

Minnesota

| 21.0% | 79.0% |

- Male (21.2%)
- Female (78.8%)

Data for Health Science (CTE Cluster)
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 career field in aggregate. In general, the MSP Metro Health Science Technology workforce has a close match to the education and training required for existing roles. For example, 17.6% of the Health Science Technology workforce hold a two-year degree (down by 0.9 percentage points) and 11.9% completed some college (such as a certificate, down by 0.2 percentage points), or 29.5% in all, compared to about 31.0% of local jobs in Health Science Technology that typically require a certificate or two-year degree. Compared to last year, the Health Science Technology workforce became more highly educated. Where the share holding a Bachelor's degree rose between 2021 and 2022, It was Master's degrees (12.4%) and PhDs (15.1%) that rose by 2023Q2, by 0.2 and 1.3 percentage points, respectively. particularly with Bachelor's degrees (up 0.5 percentage points) and Master's degrees (up 0.7 percentage points). Similarly, the mix of local jobs saw more positions requiring a postgraduate degree than a year prior (19.5%, up by 1.5 percentage points).

Educational Attainment

Twin Cities 7-County Metro

| 9.2% | 11.9% | 17.6% | 32.1% | 12.4% | 15.1% |

Minnesota

| 10.7% | 13.0% | 21.7% | 28.6% | 10.6% | 13.8% |

- < High School (1.8%)
- High School (9.2%)
- Some College (11.9%)
- Two-Year (17.6%)
- Four-Year (32.1%)
- Master's (12.4%)
- PhD (15.1%)

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

Education and Training Requirements

Twin Cities 7-County Metro

| 12.6% | 8.3% | | 31.0% | 28.0% | 19.5% |

Minnesota

| 10.6% | 8.2% | | 32.5% | 28.3% | 19.8% |

- Short-term OJT, no exp, no award (12.6%)
- Moderate-term OJT, no exp, no award (8.3%)
- Long-term training, no exp, no award (0.7%)
- Previous work experience, no award (0.0%)
- 2-year degree or certificate (31.0%)
- Bachelor's degree (28.0%)
- Postgraduate degree (19.5%)

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 in the MSP Metro, with the shortage of Medical and Health Services managers growing. While the region had a slight surplus of Pharmacists 2022Q2, the current talent supply is now tighter for this critical role and is currently forecast to be sufficient for local demand if talent supply does not drop further.

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

Supply Deficit	Supply Surplus
Registered Nurses ($97,400) **−201**	Pharmacy Aides ($42,600) **3**
Medical and Health Services Managers ($131,500) **−100**	Veterinary Assistants and Laboratory Animal Caretakers ($41,000) **2**
Nurse Practitioners ($135,400) **−79**	Medical Transcriptionists ($56,200) **2**
Licensed Practical and Licensed Vocational Nurses ($61,100) **−70**	Pediatricians, General ($219,500) **1**
Medical Assistants ($51,000) **−44**	Surgeons, All Other ($387,300) **1**
Nursing Assistants ($49,400) **−32**	Medical Equipment Preparers ($47,900) **1**
Physician Assistants ($138,200) **−29**	
Medical Secretaries and Administrative Assistants ($50,400) **−24**	
Pharmacy Technicians ($47,100) **−24**	
Veterinary Technologists and Technicians ($46,300) **−24**	

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. The MSP Metro has several Health Science Technology award gaps, meaning that the region is underproducing local talent in relation to employer dem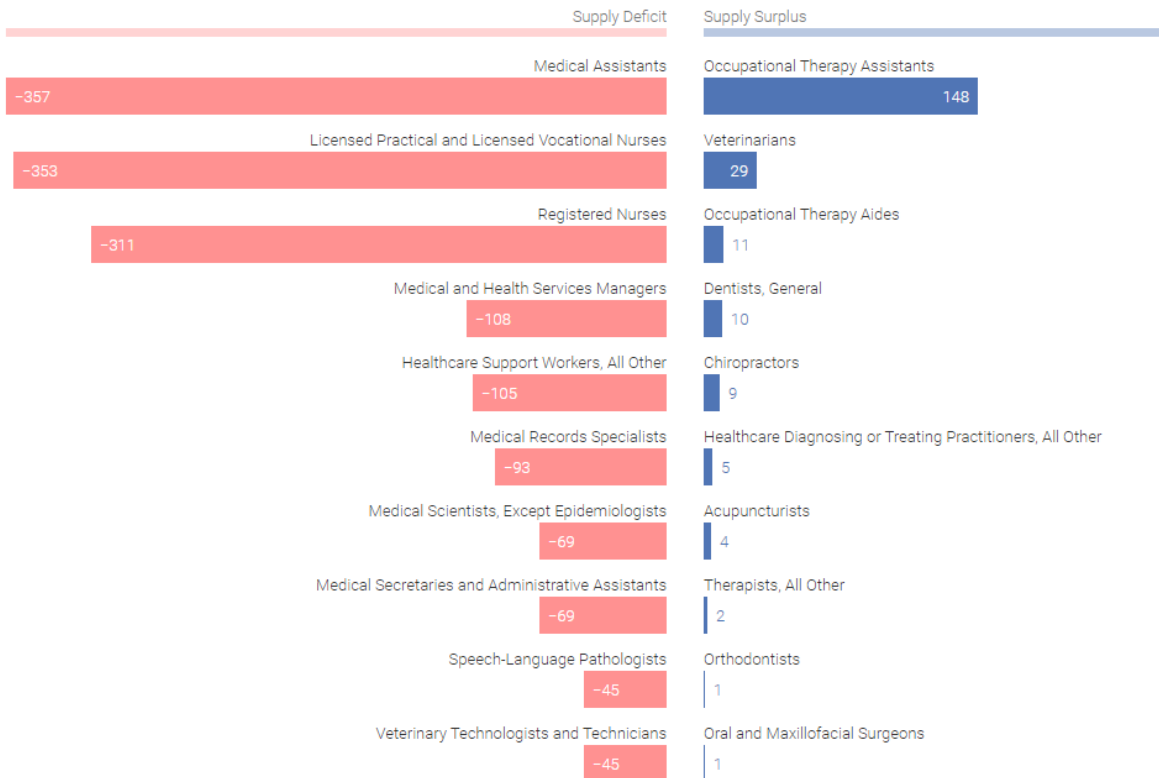and. MSP Metro colleges and universities are underproducing about 311 Registered Nursing graduates at all levels of educational attainment (rising from last year's annual graduate shortage of -292) and about 100 Medical and Health Services Managers graduates annually that are needed to fill positions open with employers in the region. These shortages also include completions coming from virtual or distance learning programs, conferred at institutions based in the MSP Metro area, meaning that shortages for local graduates may be even more severe than estimated here. Medical Assistants continues to be the top occupation with local postsecondary award shortages (-357), now followed by Licensed Practical Nurses (-353).

Occupations that show higher awards given than what is currently needed in the local talent market are examples of programs that serve other parts of the state where talent demand is high but relevant programs may not exist, such as Occupational Therapy Assistants and Veterinarians, which are in significant shortages in most other regions. The oversupply of graduates in the MSP Metro is likely helping to meet award gaps found in the 7-county MSP Metro and elsewhere.

Award Gaps in Health Science Technology, MSP Metro Minnesota, 2023Q2

Supply Deficit	Supply Surplus
Medical Assistants	Occupational Therapy Assistants
−357	148
Licensed Practical and Licensed Vocational Nurses	Veterinarians
−353	29
Registered Nurses	Occupational Therapy Aides
−311	11
Medical and Health Services Managers	Dentists, General
−108	10
Healthcare Support Workers, All Other	Chiropractors
−105	9
Medical Records Specialists	Healthcare Diagnosing or Treating Practitioners, All Other
−93	5
Medical Scientists, Except Epidemiologists	Acupuncturists
−69	4
Medical Secretaries and Administrative Assistants	Therapists, All Other
−69	2
Speech-Language Pathologists	Orthodontists
−45	1
Veterinary Technologists and Technicians	Oral and Maxillofacial Surgeons
−45	1

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, taking into account automation, remote work, and the changing work environment. Nursing Assistant roles saw average wages rise sufficiently to move it from an Origin occupation to a Gateway occupation; Phlebotomists rose in total volume of employment while also seeing demand and shortages grow.

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

Target Occupations (All HW, HD, HS)
Registered Nurses (OG, AG)
Medical & Health Services Managers (OG, AG)
Nurse Practitioners (OG, AG)
Medical Scientists (OG, AG)
Dental Hygienists (OG)

Gateway Occupations
Nursing Assistants (HS, HD, OG)
Medical Secretaries & Administrative Assistants (HD, OG, AG)
Licensed Practical & Licensed Vocational Nurses (HS, HD, OG, AG)
Medical Assistants (HS, HD, OG, AG)
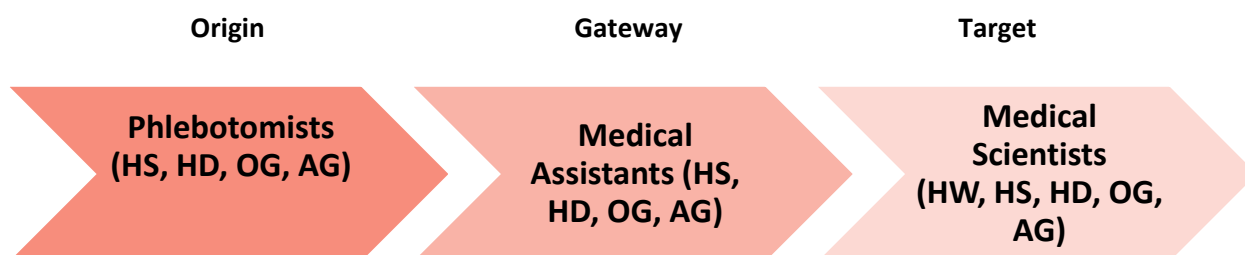Pharmacy Technicians (HD, OG, AG)

Origin Occupations
Home Health Aides (HD, AG)
Healthcare Support Workers, All Other (HD, AG)
Psychiatric Technicians (HS, OG, AG)
Phlebotomists (HS, HD, OG, AG)
Veterinary Assistants & Laboratory Animal Caretakers (HD, AG)

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

Featured Pathway

Most pathways within Health Science Technology have significant demand and local shortages, and any one of these roles could be featured as a pathway of significant need. Careers in Nursing and other Therapeutic Services, as well as Diagnostic Services and Biomedical Technology all have significant talent needs that are currently going unmet. The dramatic shortage of Medical Assistant graduates locally (-357) and overall annual estimated talent shortage of at least -44 Medical Assistants in a perfectly aligned market necessitate a focus on this Gateway career. Although no more concentrated locally than a typical community (LQ 0.75), an additional 5,083 new Medical Assistants will be needed in the region by 2028Q2 to fill retirements, job changes, and to meet the forecast 1.0% annual average employment growth—this is 77% of the total employed Medical Assistant workforce in the region. The Medical Assistant career is also a strong starting point to enter into a variety of Target occupations, including office management, program management, clinical supervisor roles, registered nursing, care coordination, personal care, physician assisting, and more. One of the more highly concentrated Health Science careers in the MSP Metro region is Medical Scientists, which are in the top ten programs with award gaps and also forecast talent shortages—facing an unemployment rate of just 0.3% (8 people) currently). Nearly one thousand new Medical Scientists will be needed in the field across the MSP Metro by 2028Q2. Stackability of credentials from Medical Assistant programs to be able to easily move into these quality Target occupations is vital to building viable career pathways up to Registered Nursing positions at the two-year (AS), four-year (BSN), or Master's (MSN/MRN) levels.

Origin	Gateway	Target
Phlebotomists (HS, HD, OG, AG)	Medical Assistants (HS, HD, OG, AG)	Medical Scientists (HW, HS, HD, OG, AG)

OGT Wages and Experience Level Requirements, Health Science Technology, MSP Metro Minnesota, 2023Q2

SOC	Occupation	Empl	Mean	Entry Level	Experienced	10%	25%	50% (Median)	75%	90%	Typical Entry-Level Education	Previous Work Experience	Typical On-the-Job Training
29-1141	Registered Nurses	35,151	$97,400	$77,200	$107,600	$72,100	$85,900	$92,500	$110,600	$114,500	BA	None	None
11-9111	Medical and Health Services Managers	5,831	$131,500	$85,800	$154,400	$81,500	$95,300	$112,700	$138,500	$178,400	BA	<5 years	None
29-1171	Nurse Practitioners	2,880	$135,400	$111,500	$147,400	$110,400	$116,500	$133,500	$145,000	$158,100	MA	None	None
19-1042	Medical Scientists, Except Epidemiologists	2,826	$120,800	$76,200	$143,100	$71,600	$86,500	$104,300	$143,700	$181,100	PhD	None	None
29-1292	Dental Hygienists	2,669	$91,700	$86,100	$94,600	$85,900	$86,900	$89,900	$96,800	$101,400	AS	None	None
31-1131	Nursing Assistants	13,679	$49,400	$39,600	$54,300	$39,300	$40,900	$44,400	$50,700	$55,700	Certificate	None	None
43-6013	Medical Secretaries and Administrative Assistants	8,184	$50,400	$41,300	$54,900	$40,800	$43,300	$50,000	$53,000	$61,300	HS/GED	None	Mod-term OJT
29-2061	Licensed Practical and Licensed Vocational Nurses	7,620	$61,100	$52,500	$65,400	$52,100	$54,300	$60,600	$64,100	$68,500	Certificate	None	None
31-9092	Medical Assistants	6,601	$51,000	$43,800	$54,600	$40,500	$49,100	$51,400	$52,900	$59,400	Certificate	None	None
29-2052	Pharmacy Technicians	4,730	$47,100	$38,300	$51,600	$38,000	$40,200	$47,700	$51,200	$59,600	HS/GED	None	Mod-term OJT
31-1121	Home Health Aides	16,898	$34,300	$30,200	$36,300	$29,900	$31,100	$33,500	$37,500	$39,700	HS/GED	None	Short-term OJT
31-9099	Healthcare Support Workers, All Other	2,195	$44,100	$35,600	$48,400	$36,000	$36,300	$43,000	$50,200	$51,900	HS/GED	None	None
29-2053	Psychiatric Technicians	1,117	$43,400	$35,700	$47,200	$35,600	$36,600	$40,400	$51,500	$54,100	Certificate	<5 years	Short-term OJT
31-9097	Phlebotomists	966	$44,200	$34,900	$48,800	$35,400	$36,100	$45,300	$49,100	$50,800	Certificate	None	None
31-9096	Veterinary Assistants and Laboratory Animal Caretakers	887	$41,000	$33,600	$44,700	$32,900	$35,600	$39,700	$43,900	$53,500	HS/GED	None	Short-term OJT

Human Services

Over the next three years, Human Services employment is forecast to grow by 0.5% annually—significantly lower than forecasts estimated in 2022Q2 (1.4% forecasted growth at that time). Human Services roles pay an average annual wage of $62,300 as of 2023Q2, a drop of about $2,100 from the prior year's estimates and have high replacement demand needs in the MSP Metro region. A total of 171,650 new professionals will be needed in this field between now and 2028Q2 to meet total demand for talent.

Baseline 3-Year Forecast for Human Services Careers, MSP Metro Minnesota, 2023Q2
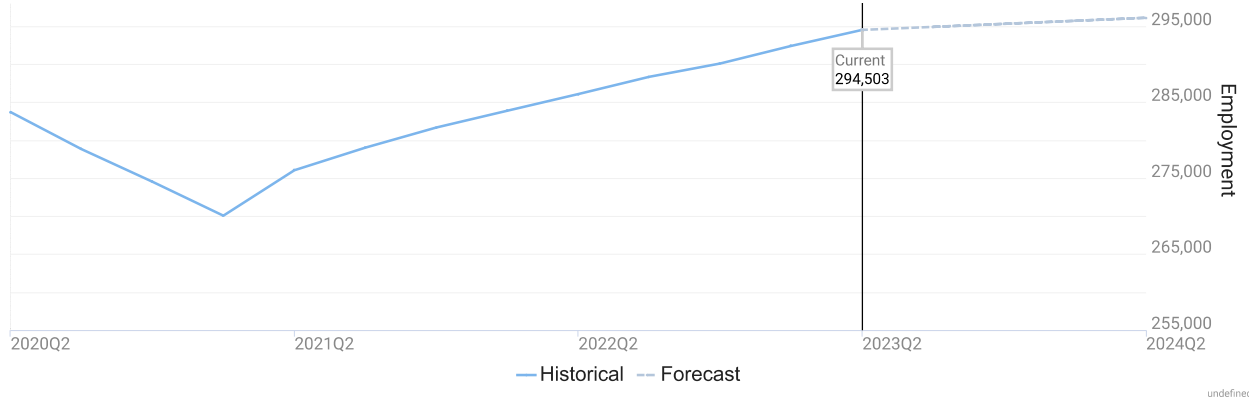
Top Ten Human Services Occupations by Employment Volume in MSP Metro Minnesota, 2023Q2

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Change
Personal Care Aides	47,867	$34,300	1.52	8,919	7,840	1.7%
Teaching Assistants, Except Postsecondary	17,798	$41,000	1.25	-198	2,133	0.2%
Elementary School Teachers, Except Special Education	12,805	$72,700	0.82	-134	991	0.4%
Secondary School Teachers, Except Special and Career/Technical Education	9,953	$70,900	0.85	-6	725	0.4%
Childcare Workers	9,915	$34,000	1.08	-294	1,619	-0.2%
Lawyers	9,256	$182,800	1.00	-143	472	0.4%
Security Guards	8,425	$41,100	0.63	276	1,093	-0.5%
Preschool Teachers, Except Special Education	8,349	$40,500	1.48	27	913	0.2%
Social and Human Service Assistants	6,589	$46,000	1.40	269	831	0.9%
Hairdressers, Hairstylists, and Cosmetologists	5,721	$46,300	0.91	-302	839	0.6%
Remaining Component Occupations	157,821	$70,100	0.97	2,379	16,617	0.3%
Human Services (CTE Field)	**294,503**	**$62,300**	**1.03**	**10,798**	**34,082**	**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 regional Human Services talent in the MSP Metro is employed by Elementary and Secondary Schools (21.3%, consistent with estimates the prior year) or Individual and Family Services (13.5%), which has the highest 10-year total employment demand needs.

Human Services Field Employment by Industry, MSP Metro 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	21.3%	62,816	57,553	2,235	59,788
Individual and Family Services	13.5%	39,901	56,559	9,835	66,394
Colleges, Universities, and Professional Schools	5.7%	16,744	14,948	412	15,360
Executive, Legislative, and Other General Government Support	5.2%	15,214	14,193	-31	14,161
Child Care Services	4.3%	12,640	15,866	-519	15,347
Legal Services	3.9%	11,566	8,780	-186	8,594
Personal Care Services	3.6%	10,525	14,620	870	15,490
Religious Organizations	3.3%	9,756	10,424	-83	10,341
Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities	3.2%	9,295	11,780	168	11,948
Home Health Care Services	2.9%	8,562	12,399	1,378	13,778
Other Schools and Instruction	2.7%	7,903	9,730	116	9,846
Justice, Public Order, and Safety Activities	2.6%	7,650	7,003	-203	6,800
Investigation and Security Services	2.1%	6,059	8,016	-203	7,813
Other Amusement and Recreation Industries	1.8%	5,284	9,213	554	9,767
Offices of Other Health Practitioners	1.6%	4,782	4,698	867	5,566
Administration of Human Resource Programs	1.5%	4,434	3,989	-243	3,746
Other Residential Care Facilities	1.3%	3,868	4,815	-81	4,734
Management of Companies and Enterprises	1.3%	3,706	3,467	295	3,762
Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	1.2%	3,530	5,214	675	5,889
General Medical and Surgical Hospitals	1.0%	3,010	2,954	8	2,962
All Others	16.0%	47,257	51,558	540	52,099

Career Field Demographics

The Human Services field is predominantly female (64.7%, down 0.5 percentage points from the prior year) and white (77.9%, a drop of 1.7 percentage points from the prior year) continuing a trend toward a more diverse regional Human Services workforce. Diversity increased in this sector, as the share of Human Services talent in the MSP Metro that are BIPOC by race increased by 1.7 percentage points to 22.1% as of 2023Q2—owing most to the rise in local Human Services talent that identifies with two or more races (one percentage point increase). Hispanic and Latinx talent increased by 0.2 percentage points to 4.8% of the regional Human Services workforce. Nearly 23% of the Human Services workforce in the region is between the ages of 25 and 34, increasing in younger age cohorts in comparison to the field as a whole statewide.
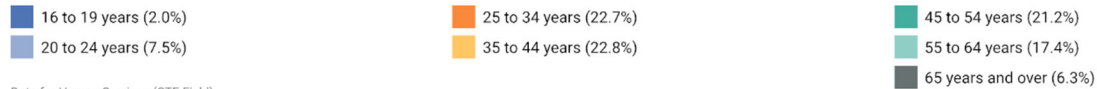
Age

Twin Cities 7-County Metro

7.5%	22.7%	22.8%	21.2%	17.4%	6.3%

Minnesota

8.0%	21.4%	22.5%	21.5%	18.0%	6.4%

- 16 to 19 years (2.0%)
- 20 to 24 years (7.5%)
- 25 to 34 years (22.7%)
- 35 to 44 years (22.8%)
- 45 to 54 years (21.2%)
- 55 to 64 years (17.4%)
- 65 years and over (6.3%)

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

Race

Twin Cities 7-County Metro

77.9%	10.3%	7.2%	

Minnesota

83.3%	7.1%	5.0%	

- White (77.9%)
- Black (10.3%)
- American Indian (0.4%)
- Asian (7.2%)
- Pacific Islander (0.0%)
- Two or More Races (4.2%)

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

Ethnicity

Twin Cities 7-County Metro

95.2%	

Minnesota

96.0%	

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

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

Gender

Twin Cities 7-County Metro

35.3%	64.7%

Minnesota

34.9%	65.1%

- Male (35.3%)
- Female (64.7%)

Data for Human Services (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 career field in aggregate, followed by the typical education and training requirements in the field. In general, the MSP Metro Human Services workforce is over-skilled for the typical credentials of entry-level positions. For example, 2.5% of the Human Services workforce has no diploma at all, and 10.1% hold a high school diploma as their highest credential. In contrast, about 45.9% of positions in this field do not require any kind of postsecondary award (up by one percentage point from 2022Q2).

Educational Attainment
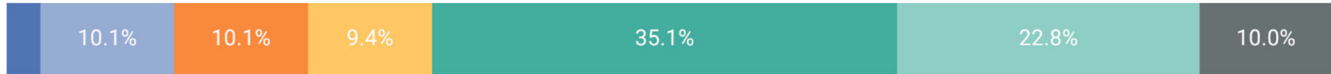
Twin Cities 7-County Metro

10.1%	10.1%	9.4%	35.1%	22.8%	10.0%

Minnesota

12.0%	11.6%	11.8%	33.2%	20.9%	8.2%

- < High School (2.5%)
- High School (10.1%)
- Some College (10.1%)
- Two-Year (9.4%)
- Four-Year (35.1%)
- Master's (22.8%)
- PhD (10.0%)

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

Education and Training Requirements

Twin Cities 7-County Metro

35.8%			10.4%	29.1%	14.7%

Minnesota

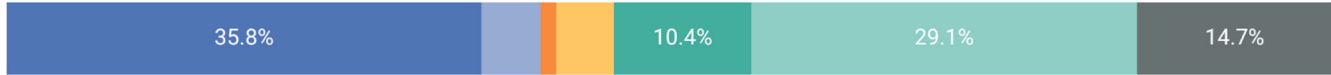| 34.5%	5.0%	4.3%	10.2%	30.8%	13.9%

- Short-term OJT, no exp, no award (35.8%)
- Moderate-term OJT, no exp, no award (4.5%)
- Long-term training, no exp, no award (1.2%)
- Previous work experience, no award (4.4%)
- 2-year degree or certificate (10.4%)
- Bachelor's degree (29.1%)
- Postgraduate degree (14.7%)

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. In the MSP Metro Human Services workforce space, teaching roles continue to be top occupations of shortage, but Lawyers are now the number one occupation of shortage in the region through 2028Q2. These most prominent talent shortages are due in large part to forecasted employment growth and replacement demand needs due to retirements combined with insufficient talent coming through both local legal and teacher training programs. Other talent shortages in mental health counseling and public safety will continue to have noticeable impacts on the community if not addressed.

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

Supply Deficit | Supply Surplus

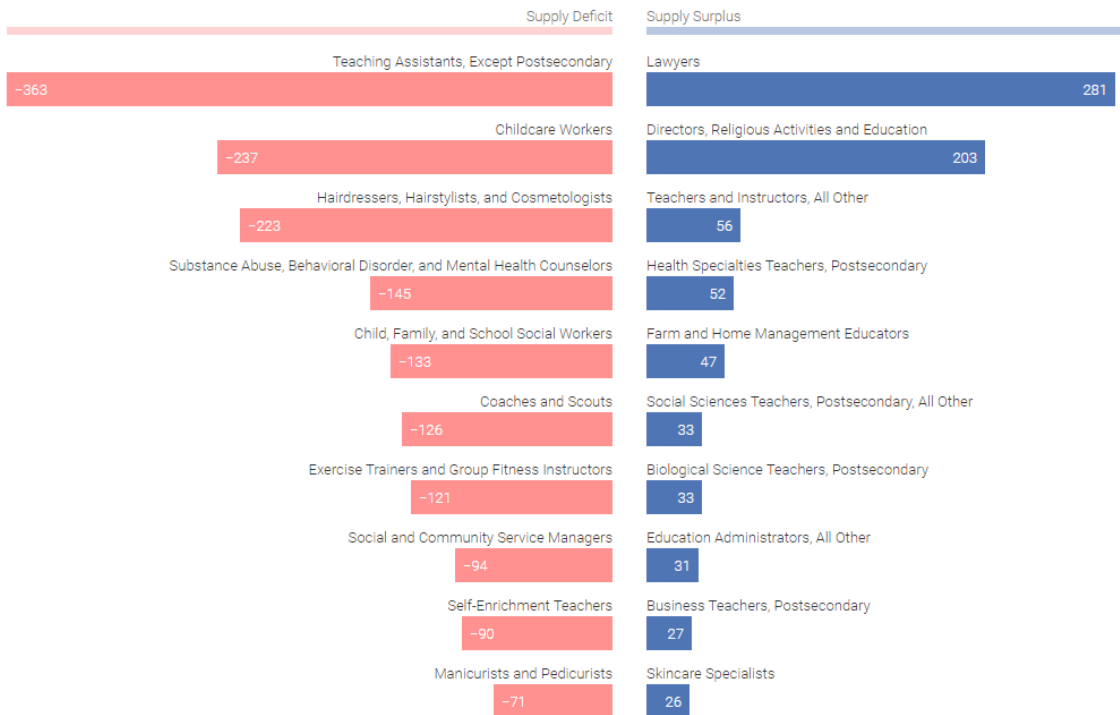| Supply Deficit		Supply Surplus	
Lawyers ($182,800)	−47	Childcare Workers ($34,000)	67
Elementary School Teachers, Except Special Education ($72,700)	−43	Exercise Trainers and Group Fitness Instructors ($56,000)	44
Secondary School Teachers, Except Special and Career/Technical Education ($70,900)	−38	Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers ($31,400)	36
Substance Abuse, Behavioral Disorder, and Mental Health Counselors ($57,800)	−38	Security Guards ($41,100)	34
Social and Community Service Managers ($85,000)	−25	Legal Secretaries and Administrative Assistants ($68,100)	26
Health Specialties Teachers, Postsecondary ($88,700)	−23	Residential Advisors ($46,400)	20
Hairdressers, Hairstylists, and Cosmetologists ($46,300)	−22	Coaches and Scouts ($55,200)	15
Police and Sheriff's Patrol Officers ($88,000)	−20	Protective Service Workers, All Other ($48,100)	13
Middle School Teachers, Except Special and Career/Technical Education ($71,900)	−19	School Bus Monitors ($37,300)	12
Compliance Officers ($89,500)	−18	Directors, Religious Activities and Education ($67,800)	12

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 shortages. The MSP Metro 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 the mental health and social work professions. MSP Metro colleges and universities are underproducing about 145 graduates annually which are needed to fill Substance Abuse, Behavioral Disorder, and Mental Health Counselor positions with employers based in the region, improving by about 20 graduates from 20222Q2. Child, Family, and School Social Workers also require a postsecondary credential and have an undersupply of graduates in the MSP Metro region. Some roles that typically do not require a credential higher than an industry credential or certificate continue to have an undersupply of individuals completing related degree programs, such as Teaching Assistants, Childcare Workers, Hairdressers, and Cosmetologists. Occupations that show higher awards given than what is currently needed in the local talent market are examples of programs that serve other parts of the state where talent demand is high but relevant programs may not exist.

Award Gaps in Human Services, MSP Metro Minnesota, 2023Q2

Supply Deficit		Supply Surplus	
Teaching Assistants, Except Postsecondary	−363	Lawyers	281
Childcare Workers	−237	Directors, Religious Activities and Education	203
Hairdressers, Hairstylists, and Cosmetologists	−223	Teachers and Instructors, All Other	56
Substance Abuse, Behavioral Disorder, and Mental Health Counselors	−145	Health Specialties Teachers, Postsecondary	52
Child, Family, and School Social Workers	−133	Farm and Home Management Educators	47
Coaches and Scouts	−126	Social Sciences Teachers, Postsecondary, All Other	33
Exercise Trainers and Group Fitness Instructors	−121	Biological Science Teachers, Postsecondary	33
Social and Community Service Managers	−94	Education Administrators, All Other	31
Self-Enrichment Teachers	−90	Business Teachers, Postsecondary	27
Manicurists and Pedicurists	−71	Skincare Specialists	26

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. 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, MSP Metro Minnesota, 2023Q2

Target Occupations (All HW, HS, HD, OG)
Elementary School Teachers
Secondary School Teachers
Lawyers
Middle School Teachers
Compliance Officers (AG)

Gateway Occupations
Social & Human Service Assistants (HD, AG)
Hairdressers, Hairstylists, & Cosmetologists (HS, HD, OG, AG)
Self-Enrichment Teachers (HD, AG)
Substance Abuse, Behavioral Disorder, & Mental Health Counselors (HS, HD, OG, AG)
Child, Family, & School Social Workers (HS, HD, OG, AG)

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

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

Featured Pathway

All pathways in Human Services—from education to public safety to personal care—have significant talent needs. Education pathways most need to address wage and workplace conditions that are leading to widespread burnout, while public safety is facing a public image and talent attraction challenge. Mental health counseling and social work are fields of dramatic need from in-school to clinic and hospital settings, making this an ideal pathway of focus for this report. Social Workers are uniquely concentrated in the MSP Metro region with a location quotient of 2.80. This role is in high demand and currently experiencing an occupation gap, as well as a shortage of local postsecondary graduates. Substance Abuse, Behavioral Disorder, and Mental Health Counselors are less concentrated (LQ 1.08) but are facing an unemployment rate of just 0.8% (40 people unemployed) and a forecasted average annual growth rate of 1.8% over the next five years. Nearly 3,000 new professionals will be needed to fill both new and replacement roles by 2028Q2. There are some excellent Origin occupations for this pathway, with Community and Social Service Specialists being one of the most varied and uniquely concentrated in the MSP Metro (LQ 1.81), with an unemployment rate of just 1.3% as of 2023Q2.

| Origin	Gateway	Target
Community and Social Service Specialists (HD, AG)	Substance Abuse, Behavioral Disorder, and Mental Health Counselors (HS, HD, OG, AG)	Social Workers, All Other (HW, HS, HD, OG, AG)
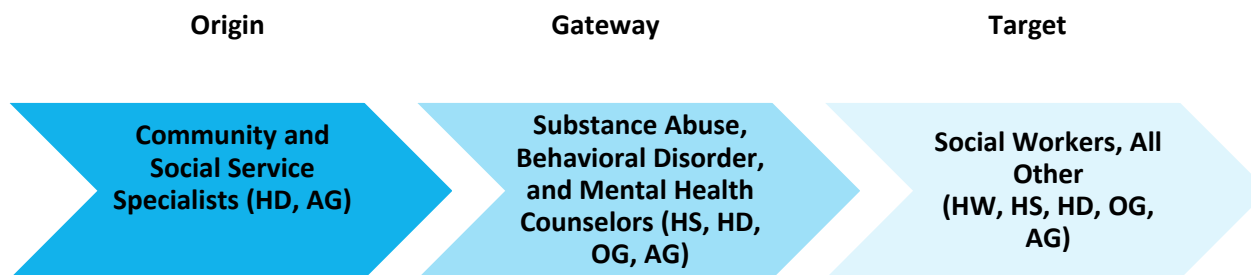
OGT Wages and Experience Level Requirements, Human Services, MSP Metro Minnesota, 2023Q2

SOC	Occupation	Empl	Mean	Entry Level	Experienced	10%	25%	50% (Median)	75%	90%	Typical Entry-Level Education	Previous Work Experience	Typical On-the-Job Training
25-2021	Elementary School Teachers, Except Special Education	12,805	$72,700	$50,400	$83,800	$50,600	$52,900	$67,700	$83,600	$104,700	BA	None	None
25-2031	Secondary School Teachers, Except Special and Career/Technical Education	9,953	$70,900	$51,600	$80,500	$51,200	$54,900	$68,100	$83,800	$85,700	BA	None	None
23-1011	Lawyers	9,256	$182,800	$92,500	$228,000	$85,500	$111,100	$159,300	$230,900	$325,400	PhD	None	None
25-2022	Middle School Teachers, Except Special and Career/Technical Education	5,450	$71,900	$50,800	$82,500	$51,200	$53,000	$67,100	$85,600	$103,800	BA	None	None
13-1041	Compliance Officers	4,395	$89,500	$56,900	$105,800	$51,600	$67,500	$84,500	$104,500	$131,700	BA	None	Mod-term OJT
21-1093	Social and Human Service Assistants	6,589	$46,000	$35,600	$51,200	$33,700	$39,300	$44,300	$51,400	$60,400	HS/GED	None	Short-term OJT
39-5012	Hairdressers, Hairstylists, and Cosmetologists	5,721	$46,300	$29,600	$54,700	$29,100	$31,500	$40,800	$60,300	$78,900	Certificate	None	None
25-3021	Self-Enrichment Teachers	5,083	$47,700	$29,300	$56,900	$27,700	$31,800	$42,100	$54,600	$75,300	HS/GED	<5 years	None
21-1018	Substance Abuse, Behavioral Disorder, and Mental Health Counselors	4,927	$57,800	$45,700	$63,900	$42,700	$50,500	$53,600	$63,500	$75,000	BA	None	None
21-1021	Child, Family, and School Social Workers	4,625	$70,300	$47,200	$81,800	$46,500	$51,400	$67,800	$85,000	$98,600	BA	None	None
31-1122	Personal Care Aides	47,867	$34,300	$30,200	$36,300	$29,900	$31,100	$33,500	$37,500	$39,700	HS/GED	None	Short-term OJT
25-9045	Teaching Assistants, Except Postsecondary	17,798	$41,000	$33,000	$45,000	$30,600	$36,900	$40,100	$47,600	$50,000	Certificate	None	None
39-9011	Childcare Workers	9,915	$34,000	$27,800	$37,100	$26,100	$30,000	$32,900	$38,000	$41,700	HS/GED	None	Short-term OJT
33-9032	Security Guards	8,425	$41,100	$31,500	$45,900	$29,100	$35,000	$39,100	$47,100	$51,400	HS/GED	None	Short-term OJT
25-2011	Preschool Teachers, Except Special Education	8,349	$40,500	$33,600	$43,900	$31,900	$36,500	$38,800	$40,000	$52,100	AS	None	None

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. This field saw employment grow by about 9,000 workers between 2021Q1 and 2022Q2, exceeding forecasted growth and bringing current employment in this field beyond pre-pandemic levels. Growth was more subdued over the most recent twelve-month period, adding just under one thousand new jobs. Over the next three years, Arts, Communications, and Information Systems Field employment is forecast to grow by 0.6% annually, a small drop from the estimated 0.8% annual growth in 2022Q2. Careers in this field pay an average annual wage of $95,800 (over $6,000 more than estimated in 2022Q2), and roles are still more concentrated in the MSP Metro than a typical community nationwide (LQ 1.20), though to a lesser extent than observed in prior years. Software Developers continues to be the occupation of largest employment in the region for this field; in 2021Q1 employment of Software Developers was 758 workers, rising to 26,572 employed as Software Developers metro-wide as of 2023Q2. Total employment of Software Developers is forecast to grow in the MSP Metro by at least 10% over the next five years.

Baseline 3-Year Forecast for Arts, Communications, and Information Systems Careers, MSP Metro Minnesota, 2023Q2
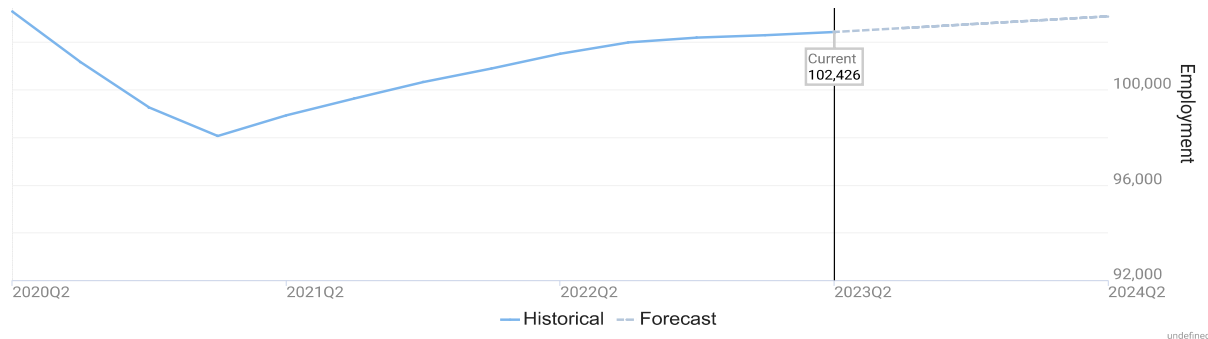
Top Ten Arts, Communications, and Information Systems Occupations by Employment Volume in MSP Metro Minnesota, 2023Q2

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Change
Software Developers	26,572	$123,900	1.44	1,723	2,370	1.9%
Computer User Support Specialists	9,555	$67,700	1.16	418	753	0.2%
Computer Systems Analysts	9,257	$113,100	1.57	-357	710	0.5%
Computer Network Support Specialists	4,351	$82,500	2.20	-108	359	0.4%
Graphic Designers	4,208	$71,800	1.38	-140	378	0.0%
Computer Occupations, All Other	3,910	$105,900	0.79	87	302	0.4%
Network and Computer Systems Administrators	3,530	$102,800	0.93	-195	233	-0.1%
Printing Press Operators	3,516	$50,700	2.01	-363	324	-1.3%
Information Security Analysts	2,168	$122,700	1.13	213	219	2.3%
Computer Network Architects	2,091	$133,300	1.02	42	130	0.0%
Remaining Component Occupations	33,264	$80,100	1.10	-2,179	3,227	0.0%
Arts, Communications, & Information Systems (CTE Field)	**102,426**	**$95,800**	**1.20**	**-860**	**9,008**	**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 the MSP Metro working in Arts, Communications, and Information Systems roles are employed by IT Companies (16.5%, up 0.7 percentage points)) or Management of Companies and Enterprises organizations (9.9%). 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, MSP Metro Minnesota, 2023Q2

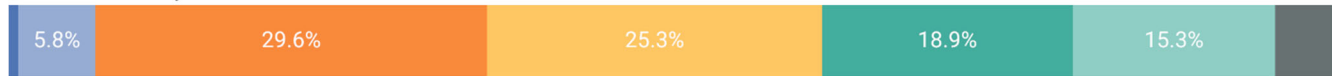| Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Change	10-Year Total Demand
Computer Systems Design and Related Services	16.5%	16,856	12,780	3,099	15,879
Management of Companies and Enterprises	9.9%	10,158	7,717	1,036	8,754
Printing and Related Support Activities	5.2%	5,294	5,219	-971	4,248
Independent Artists, Writers, and Performers	3.9%	4,020	4,163	42	4,205
Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	3.7%	3,806	2,688	270	2,958
Insurance Carriers	3.6%	3,696	2,679	291	2,970
Software Publishers	3.5%	3,585	2,710	650	3,360
Management, Scientific, and Technical Consulting Services	2.9%	2,936	2,331	343	2,674
Newspaper, Periodical, Book, and Directory Publishers	2.8%	2,913	2,764	14	2,779
Employment Services	2.5%	2,580	1,973	27	2,000
Computing Infrastructure Providers, Data Processing, Web Hosting, and Related Services	2.5%	2,516	1,902	412	2,314
Advertising, Public Relations, and Related Services	2.3%	2,387	2,342	184	2,526
Depository Credit Intermediation	2.3%	2,375	1,703	191	1,894
Professional and Commercial Equipment and Supplies Merchant Wholesalers	2.1%	2,109	1,531	44	1,575
Other Professional, Scientific, and Technical Services	1.9%	1,907	1,647	48	1,695
Religious Organizations	1.8%	1,827	1,972	-27	1,944
Colleges, Universities, and Professional Schools	1.8%	1,822	1,421	-6	1,415
Wired and Wireless Telecommunications (except Satellite)	1.5%	1,573	1,476	-9	1,468
Architectural, Engineering, and Related Services	1.3%	1,356	1,001	90	1,092
Performing Arts Companies	1.3%	1,305	1,621	-7	1,614
All Others	26.8%	27,405	22,850	1,050	23,900

Career Field Demographics

The Arts, Communications, and Information Systems field is predominantly male (71.8%, down 1.3 percentage points) and about 73.5% of workers are white (down one percentage point). The share of talent that is BIPOC by race increased by 1.3 percentage points from 2023Q2 estimates, continuing the multi-year trend of growing diversity. The share of Hispanic and Latinx talent also grew by 0.3 percentage points over the past year, reaching 3.2% of the field's workforce. Over half (54.9%) of the Arts, Communications, and Information Systems workforce in the region is between the ages of 25 and 44, continuing to have a larger share of talent in this age range than observed in most other Minnesota regions.

Age

Twin Cities 7-County Metro

| 5.8% | 29.6% | 25.3% | 18.9% | 15.3% | |

Minnesota

| 6.3% | 28.2% | 25.0% | 19.2% | 15.8% | 4.6% |

- 16 to 19 years (0.7%)
- 20 to 24 years (5.8%)
- 25 to 34 years (29.6%)
- 35 to 44 years (25.3%)
- 45 to 54 years (18.9%)
- 55 to 64 years (15.3%)
- 65 years and over (4.4%)

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

Race

Twin Cities 7-County Metro

| 73.5% | 5.2% | 16.2% | 4.9% |

Minnesota

| 77.9% | 4.2% | 13.1% | 4.5% |

- White (73.5%)
- Black (5.2%)
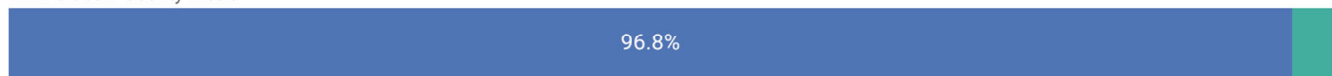- American Indian (0.2%)
- Asian (16.2%)
- Pacific Islander (0.0%)
- Two or More Races (4.9%)

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

Ethnicity

Twin Cities 7-County Metro

| 96.8% | |

Minnesota

| 97.1% | |

- Non-Hispanic/Latino (96.8%)
- Hispanic or Latino (of any race) (3.2%)

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

Gender

Twin Cities 7-County Metro

| 71.8% | 28.2% |

Minnesota

| 71.3% | 28.7% |

- Male (71.8%)
- Female (28.2%)

Data for Arts, Communications, & Information Systems (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 career field in aggregate, followed by the typical education and training requirements in the field. In general, the MSP Metro Arts, Communications, and Information Systems workforce is over skilled for the typical credentials of entry-level positions. About 1 in 5 (20.9%) positions in this career field do not require any postsecondary certificate or higher credential. In contrast, only 4.9% of the workforce in this field holds a high school diploma or less.

Educational Attainment
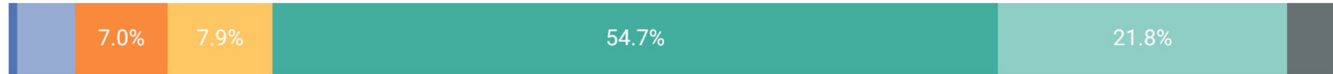
Twin Cities 7-County Metro

	7.0%	7.9%	54.7%	21.8%	

Minnesota

6.1%	8.6%	10.1%	51.8%	19.5%	

- ■ < High School (0.6%)
- ■ High School (4.3%)
- ■ Some College (7.0%)
- ■ Two-Year (7.9%)
- ■ Four-Year (54.7%)
- ■ Master's (21.8%)
- ■ PhD (3.6%)

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

Education and Training Requirements

Twin Cities 7-County Metro

16.0%	8.0%	71.0%	

Minnesota

16.9%	4.4%	8.6%	69.1%

- ■ Short-term OJT, no exp, no award (1.0%)
- ■ Moderate-term OJT, no exp, no award (16.0%)
- ■ Long-term training, no exp, no award (3.8%)
- ■ Previous work experience, no award (0.1%)
- ■ 2-year degree or certificate (8.0%)
- ■ Bachelor's degree (71.0%)
- ■ Postgraduate degree (0.0%)

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 in the MSP Metro region, growing in its forecast shortage to about -388 skilled workers needed annually (averaged over the next ten years) to meet employer demand, increasing from estimates the prior year. 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 include Computer Systems Analysts, Information Security Analysts, and Computer User Support Specialists.

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

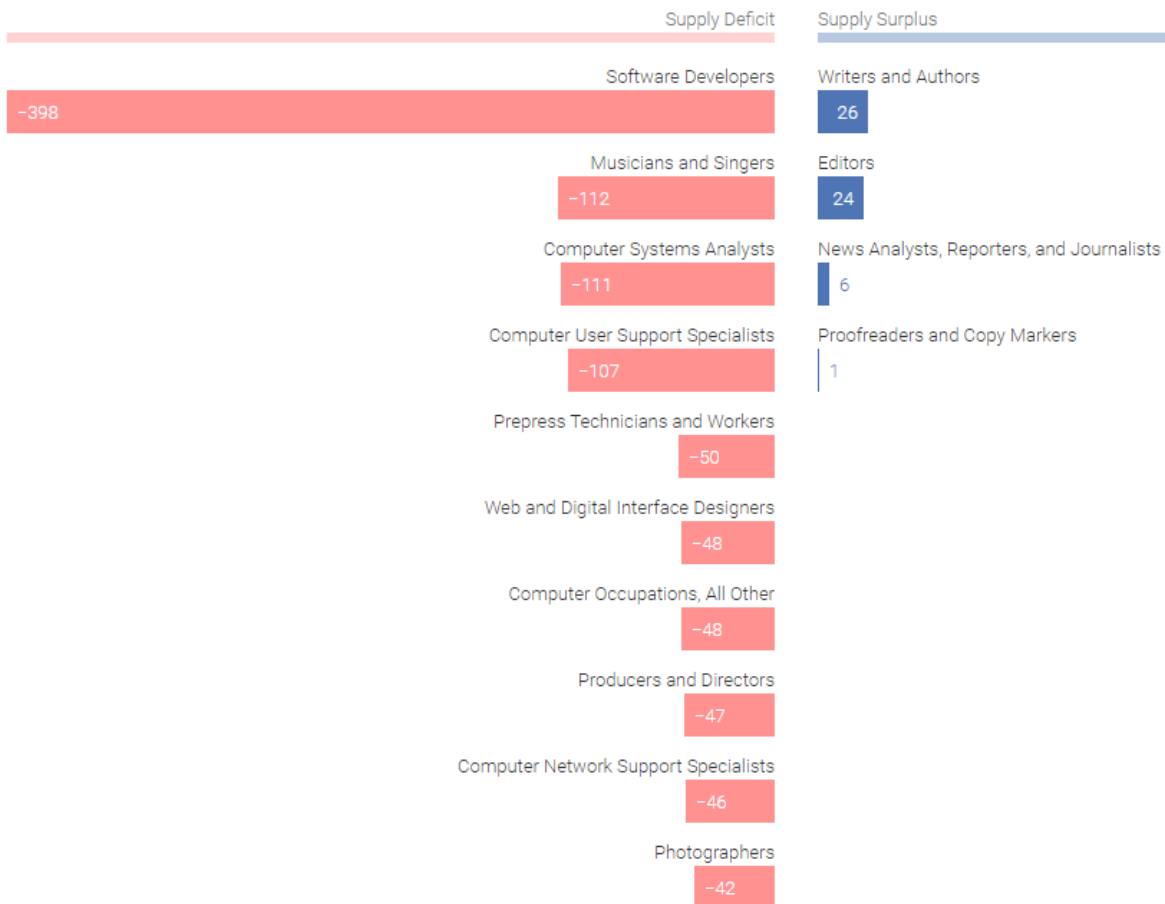| Supply Deficit	Supply Surplus
Software Developers ($123,900)	Printing Press Operators ($50,700)
-388	16
Computer Systems Analysts ($113,100)	Prepress Technicians and Workers ($48,500)
-61	13
Information Security Analysts ($122,700)	Computer Programmers ($124,600)
-39	12
Computer User Support Specialists ($67,700)	Print Binding and Finishing Workers ($49,300)
-39	12
Computer Network Support Specialists ($82,500)	Editors ($74,600)
-26	4
Computer Occupations, All Other ($105,900)	Floral Designers ($38,200)
-22	4
Software Quality Assurance Analysts and Testers ($105,700)	Costume Attendants ($49,800)
-21	3
Web Developers ($98,200)	Broadcast Announcers and Radio Disc Jockeys ($46,500)
-17	3
Web and Digital Interface Designers ($91,000)	Proofreaders and Copy Markers ($52,300)
-15	2
Network and Computer Systems Administrators ($102,800)	News Analysts, Reporters, and Journalists ($62,000)
-10	2

Award Gaps

A comparison of the graduate talent pipeline through certificate and other postsecondary degree programs to the current estimated openings by occupation reveal critical shortages of awards conferred toward Arts, Communications, and Information Systems careers. MSP Metro colleges and universities are underproducing around 398 graduates annually needed to fill Software Developer positions open with employers based in the 7-county MSP Metro alone (down from 629 graduates last year). Postsecondary education also underproduces postsecondary degreed talent in performing arts, computer analysis, and computer user support. The four occupations that show lightly higher awards given than what is currently needed in the local talent market are examples of programs that serve other parts of the state where talent demand is high but relevant programs may not exist.

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

Supply Deficit		Supply Surplus	
Software Developers	−398	Writers and Authors	26
Musicians and Singers	−112	Editors	24
Computer Systems Analysts	−111	News Analysts, Reporters, and Journalists	6
Computer User Support Specialists	−107	Proofreaders and Copy Markers	1
Prepress Technicians and Workers	−50		
Web and Digital Interface Designers	−48		
Computer Occupations, All Other	−48		
Producers and Directors	−47		
Computer Network Support Specialists	−46		
Photographers	−42		

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, MSP Metro Minnesota, 2023Q2

Target Occupations (All HW, HS, HD, OG, AG)
Software Developers
Computer Systems Analysts
Computer Network Support Specialists
Computer Occupations, All Other
Network & Computer Systems Administrators

Gateway Occupations
Computer User Support Specialists (HS, HD, OG, AG)
Printing Press Operators (AG)
Photographers (OG, AG)
Telecommunications Equipment Installers & Repairers (HS, HD, OG, AG)
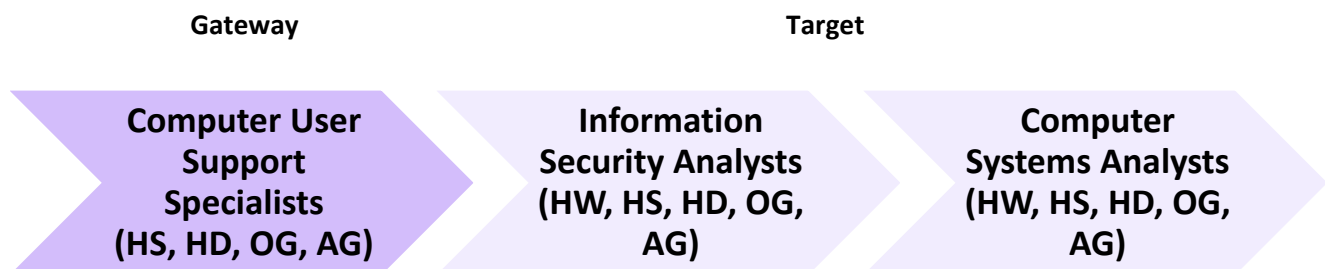Prepress Technicians & Workers (HS, AG)

Origin Occupations
Floral Designers
Dancers (HD, AG)

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

Featured Pathway

With many roles experiencing occupation gaps and high demand, while also offering high wages, there are a number of different pathways that could be featured in this field for greater development. Given the growing importance of information security, the impacts of AI, and how computer systems need to be managed to support growing needs, the Computer System Analyst pathway is uniquely important to the MSP Metro's future. This occupation is uniquely concentrated in the region with a location quotient of 1.57 and unemployment of 1.6%. Another Target occupation with related skillsets facing even tighter talent conditions is Information Security Analysts, which has an unemployment rate of 0.9% and a forecasted average annual growth rate of 2.3%. The Gateway occupation of Computer User Support Specialists is a potential feeder occupation into both of these roles, has a projected shortage of graduates and talent overall to fill these roles, and is considered high skill. However, rarely do internal employee programs or postsecondary programs stack credentials between computer user support training and information security, despite significant overlapping skillsets. There are not related Information Technology Origin occupations, but entry-level customer services and office support roles may have transferrable skills.

Gateway	Target	
Computer User Support Specialists (HS, HD, OG, AG)	**Information Security Analysts (HW, HS, HD, OG, AG)**	**Computer Systems Analysts (HW, HS, HD, OG, AG)**

OGT Wages and Experience Level Requirements, Arts, Communications, and Information Systems, MSP Metro Minnesota, 2023Q2

SOC	Occupation	Empl	Mean	Entry Level	Experienced	10%	25%	50% (Median)	75%	90%	Typical Entry-Level Education	Previous Work Experience	Typical On-the-Job Training
15-1252	Software Developers	26,572	$123,900	$90,100	$140,800	$82,600	$104,000	$119,700	$142,900	$172,300	BA	None	None
15-1211	Computer Systems Analysts	9,257	$113,100	$75,200	$132,100	$69,300	$88,500	$112,300	$134,900	$146,600	BA	None	None
15-1231	Computer Network Support Specialists	4,351	$82,500	$56,800	$95,300	$53,400	$64,300	$77,700	$90,900	$116,400	AS	None	Mod-term OJT
15-1299	Computer Occupations, All Other	3,910	$105,900	$55,700	$131,000	$45,200	$71,900	$105,500	$136,000	$169,800	BA	None	None
15-1244	Network and Computer Systems Administrators	3,530	$102,800	$71,100	$118,600	$64,900	$83,900	$102,800	$119,700	$137,300	BA	None	None
15-1232	Computer User Support Specialists	9,555	$67,700	$47,900	$77,600	$46,300	$52,800	$65,500	$79,900	$93,900	Certificate	None	Mod-term OJT
51-5112	Printing Press Operators	3,516	$50,700	$35,000	$58,500	$33,500	$38,700	$49,400	$63,900	$70,100	HS/GED	None	Mod-term OJT
27-4021	Photographers	1,805	$60,600	$38,300	$71,700	$39,200	$39,500	$51,400	$68,600	$94,600	HS/GED	None	Mod-term OJT
49-2022	Telecommunications Equipment Installers and Repairers, Except Line Installers	1,290	$65,000	$45,000	$75,000	$42,500	$51,100	$66,600	$78,900	$81,700	Certificate	None	Mod-term OJT
51-5111	Prepress Technicians and Workers	1,081	$48,500	$35,400	$55,100	$33,400	$39,500	$47,700	$58,600	$62,600	Certificate	None	None
27-1023	Floral Designers	442	$38,200	$30,000	$42,300	$29,900	$31,300	$37,400	$40,600	$47,700	HS/GED	None	Mod-term OJT
27-2031	Dancers	156	$44,500	$27,300	$53,100	$25,100	$29,200	$40,000	$53,200	$70,400	None	None	Long-term OJT

Business, Management, and Administration

Business, Management, and Administration is a diverse career field with Hospitality and Tourism, Finance, Administration, Human Resources, and Marketing careers, which all experienced different timing of recovery from the pandemic's impacts. Compared to the forecast provided in 2021Q1, the recovery of this field's careers is impressive, hitting 812,613 employed in Business, Management, and Administration roles as of 2022Q2—an increase of about 51,300 from 2021Q1—and now 830,065 in 2023Q2. Over the next three years, Business, Management, and Administration Field employment is forecast to decline by -0.2%, a noticeable shift from estimates in 2021 and 2022.

Baseline 3-Year Forecast for Business, Management, and Administration Careers, MSP Metro Minnesota, 2023Q2
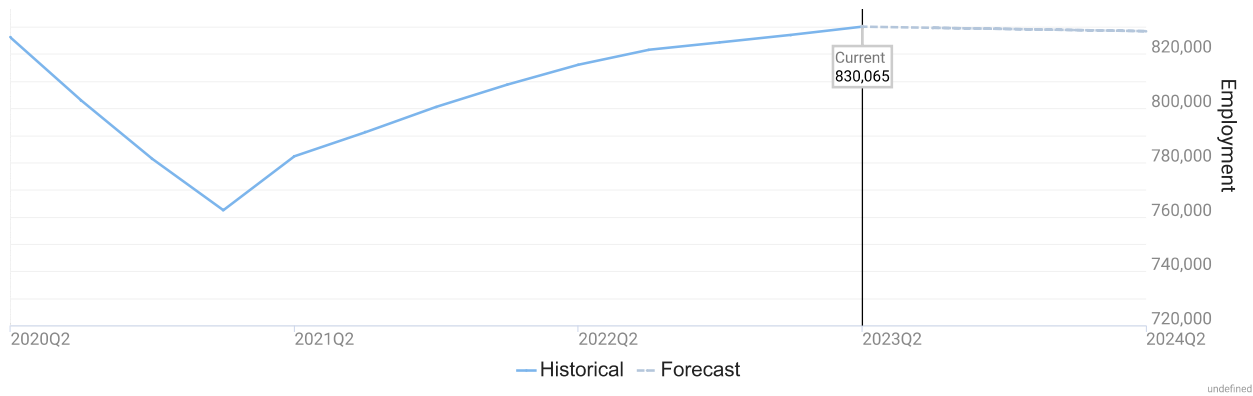
Top Ten Business, Management, and Administration Systems Occupations by Employment Volume in MSP Metro Minnesota, 2023Q2

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Change
General and Operations Managers	47,688	$122,100	1.20	4,536	4,244	0.2%
Retail Salespersons	40,692	$38,900	0.96	-1,198	5,644	-0.4%
Customer Service Representatives	38,901	$49,700	1.17	-414	4,936	-0.9%
Office Clerks, General	33,440	$49,300	1.12	-1,407	3,786	-0.9%
Fast Food and Counter Workers	32,543	$32,900	0.84	-398	6,936	-0.1%
Cashiers	31,033	$32,800	0.82	-651	5,228	-1.3%
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	26,383	$39,800	0.98	-384	3,617	-0.1%
Stockers and Order Fillers	26,093	$39,500	0.81	2,472	4,613	0.4%
Waiters and Waitresses	23,548	$29,700	0.94	849	4,529	-0.6%
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	22,036	$51,300	0.98	-500	2,163	-1.4%
Remaining Component Occupations	507,705	$80,100	1.07	1,040	56,432	-0.1%
Business, Management, & Administration (CTE Field)	**830,065**	**$69,500**	**1.02**	**3,942**	**102,122**	**-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).

Employment in Business, Management, and Administration careers is spread across a number of different industries. In the MSP Metro, the industries with the greatest share of Business, Management, and Administration talent are Restaurants (12.4%, up by 0.5 percentage points) and Management of Companies and Enterprises (6.1%). These two industries account for a substantial amount of talent demand over the next ten years; 51.8% of the total ten-year demand in this field will be in these two industries alone.

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

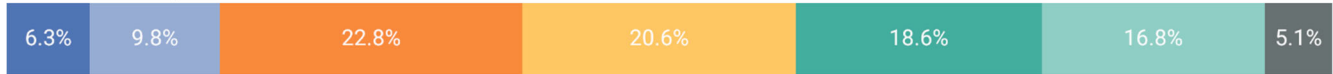| Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Change	10-Year Total Demand
Restaurants and Other Eating Places	12.4%	102,808	185,895	-781	185,114
Management of Companies and Enterprises	6.0%	49,901	50,136	1,868	52,004
Depository Credit Intermediation	3.3%	27,188	25,523	-1,530	23,993
Insurance Carriers	3.1%	25,455	24,784	-630	24,154
Management, Scientific, and Technical Consulting Services	2.7%	22,773	22,188	1,135	23,323
Grocery and Convenience Retailers	2.5%	20,842	33,419	-874	32,544
Warehouse Clubs, Supercenters, and Other General Merchandise Retailers	2.2%	18,462	27,903	-891	27,012
Services to Buildings and Dwellings	1.9%	15,929	20,745	-411	20,333
Agencies, Brokerages, and Other Insurance Related Activities	1.8%	14,628	14,648	411	15,059
Employment Services	1.8%	14,528	17,171	-926	16,245
Department Stores	1.5%	12,381	18,796	-573	18,223
Elementary and Secondary Schools	1.5%	12,076	15,862	-363	15,499
Computer Systems Design and Related Services	1.4%	11,869	11,680	1,163	12,844
Traveler Accommodation	1.4%	11,732	18,078	153	18,231
Other Amusement and Recreation Industries	1.3%	11,100	19,737	644	20,381
Accounting, Tax Preparation, Bookkeeping, and Payroll Services	1.3%	11,035	10,664	-453	10,211
Building Material and Supplies Dealers	1.3%	10,714	15,216	-59	15,156
General Medical and Surgical Hospitals	1.3%	10,557	12,909	-558	12,350
Colleges, Universities, and Professional Schools	1.2%	10,090	11,120	-662	10,458
Activities Related to Real Estate	1.2%	9,882	10,227	84	10,312
All Others	48.9%	406,114	470,388	-12,938	457,450

Career Field Demographics

The Business, Management, and Administration field has a slightly higher concentration of female workers (53.5%) than male, though the share of female talent dropped by 1.1 percentage points from 2022Q2 estimates. Racial diversity has increased in the field in line with growing overall population diversity to 20.5% of the field's workforce identifying as BIPOC (an increase of 1.2 percentage points). About 38.9% of workers in Business, Management, and Administration roles are under 35 years old, a smaller share than observed in prior years and lower than observed statewide.
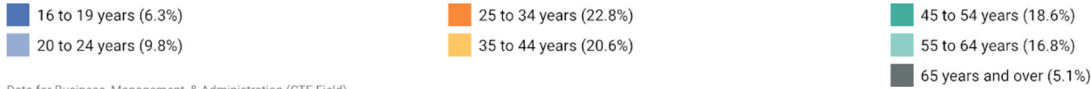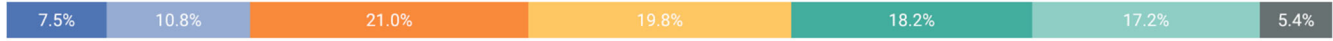
Age

Twin Cities 7-County Metro

| 6.3% | 9.8% | 22.8% | 20.6% | 18.6% | 16.8% | 5.1% |

Minnesota

| 7.5% | 10.8% | 21.0% | 19.8% | 18.2% | 17.2% | 5.4% |

- 16 to 19 years (6.3%)
- 20 to 24 years (9.8%)
- 25 to 34 years (22.8%)
- 35 to 44 years (20.6%)
- 45 to 54 years (18.6%)
- 55 to 64 years (16.8%)
- 65 years and over (5.1%)

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

Race

Twin Cities 7-County Metro

| 79.5% | 8.3% | 7.3% | |

Minnesota

| 84.4% | 5.8% | 5.1% | |

- White (79.5%)
- Black (8.3%)
- American Indian (0.4%)
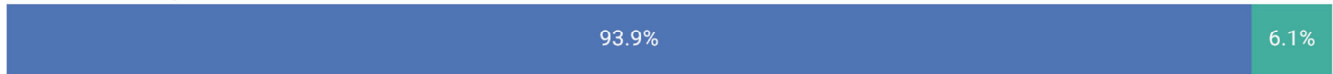- Asian (7.3%)
- Pacific Islander (0.0%)
- Two or More Races (4.5%)

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

Ethnicity

Twin Cities 7-County Metro

| 93.9% | 6.1% |

Minnesota

| 94.8% | 5.2% |

- Non-Hispanic/Latino (93.9%)
- Hispanic or Latino (of any race) (6.1%)

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

Gender

Twin Cities 7-County Metro

| 46.5% | 53.5% |

Minnesota

| 45.6% | 54.4% |

- Male (46.5%)
- Female (53.5%)

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 career field in aggregate, followed by the typical education and training requirements in the field. In general, the MSP Metro Business, Management, and Administration workforce continues to be over skilled for the typical credentials of entry-level positions. About half of all positions in this field (49.0%) 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 3.9% of the workforce in this field has no degree at all, and 16.0% 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, 41.0% of talent in this field hold a Bachelor's degree and 13.9% hold a Master's or PhD, both cohorts increasing in their share of the field's workforce from

2022Q2 estimates. For the third consecutive year, a larger share of roles now requires a Bachelor's degree as compared to one year prior, 30.3%, up by 1.2 percentage points from the prior years' estimates.

Educational Attainment

Twin Cities 7-County Metro

| 16.0% | 14.2% | 11.0% | 41.0% | 11.7% | |

Minnesota

| 20.0% | 16.2% | 13.2% | 35.4% | 9.4% | |

- < High School (3.9%)
- High School (16.0%)
- Some College (14.2%)
- Two-Year (11.0%)
- Four-Year (41.0%)
- Master's (11.7%)
- PhD (2.2%)

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

Education and Training Requirements

Twin Cities 7-County Metro

| 49.0% | 10.5% | 9.5% | 30.3% |

Minnesota

| 51.5% | 10.3% | 9.8% | 27.7% |

- Short-term OJT, no exp, no award (49.0%)
- Moderate-term OJT, no exp, no award (10.5%)
- Long-term training, no exp, no award (0.5%)
- Previous work experience, no award (9.5%)
- 2-year degree or certificate (0.3%)
- Bachelor's degree (30.3%)
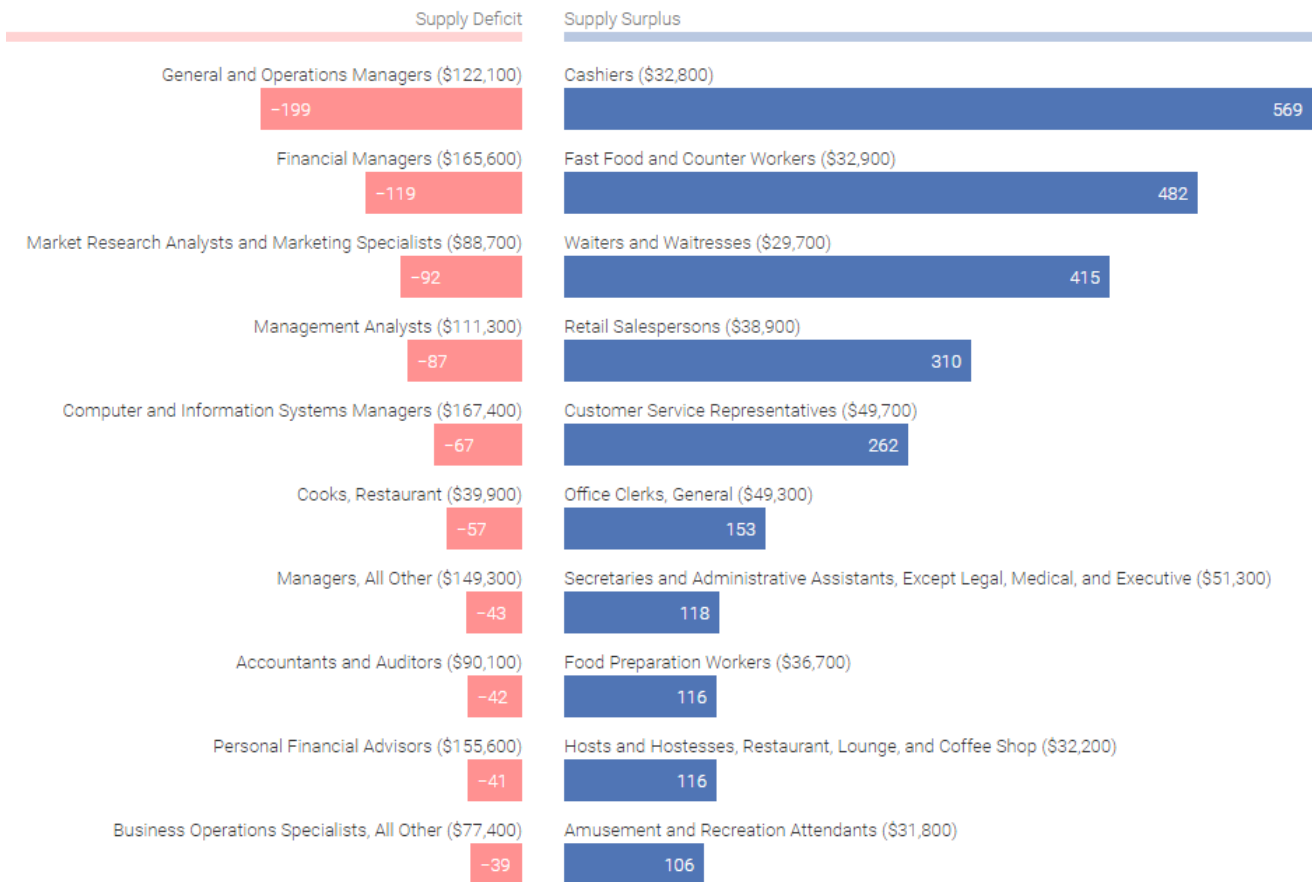- Postgraduate degree (0.0%)

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 by at least 199 skilled workers needed annually (averaged over the next ten years) to meet employer demand—a decrease 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 sixth 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, MSP Metro Minnesota, 2023Q2
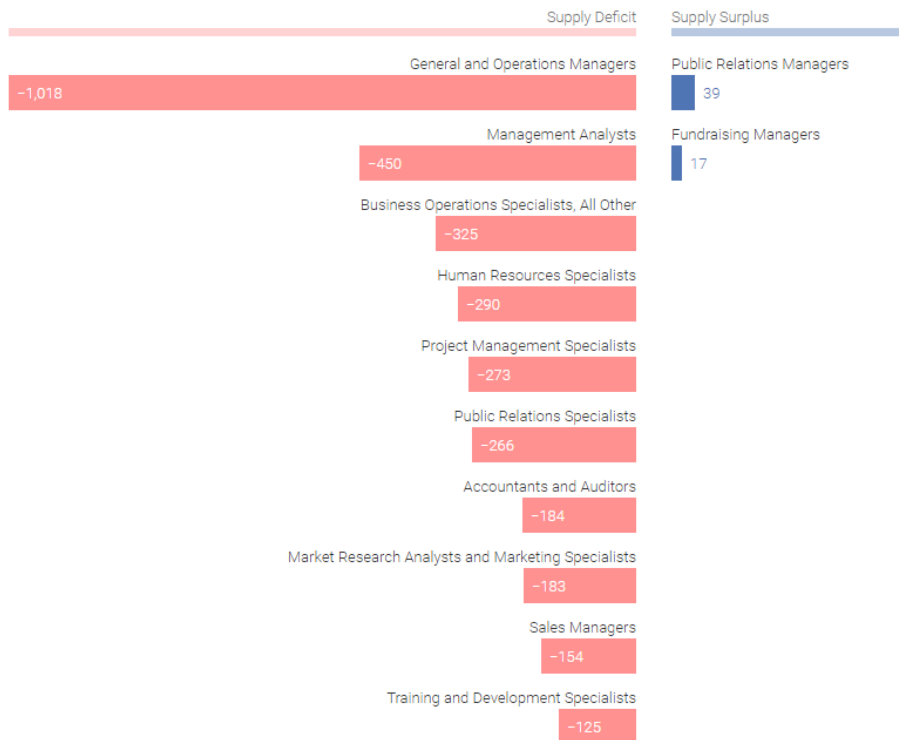
Supply Deficit		Supply Surplus	
General and Operations Managers ($122,100)	−199	Cashiers ($32,800)	569
Financial Managers ($165,600)	−119	Fast Food and Counter Workers ($32,900)	482
Market Research Analysts and Marketing Specialists ($88,700)	−92	Waiters and Waitresses ($29,700)	415
Management Analysts ($111,300)	−87	Retail Salespersons ($38,900)	310
Computer and Information Systems Managers ($167,400)	−67	Customer Service Representatives ($49,700)	262
Cooks, Restaurant ($39,900)	−57	Office Clerks, General ($49,300)	153
Managers, All Other ($149,300)	−43	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive ($51,300)	118
Accountants and Auditors ($90,100)	−42	Food Preparation Workers ($36,700)	116
Personal Financial Advisors ($155,600)	−41	Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop ($32,200)	116
Business Operations Specialists, All Other ($77,400)	−39	Amusement and Recreation Attendants ($31,800)	106

Award Gaps

A comparison of the graduate talent pipeline through certificate and other postsecondary degree programs to the current estimated openings by occupation demonstrate a number of dramatic shortages. MSP Metro postsecondary institutions currently under-train talent across the entire Business, Management, and Administration field when compared to national benchmarks. MSP Metro colleges and universities are underproducing around 1,018 graduates annually that are needed to fill General and Operations Manager positions open with employers based in the 7-county MSP Metro alone (worsening from the 2022Q2 estimate of 942 short, tracking closely to award gap estimates in 2020 and 2021). Second, there are about 450 fewer Management Analysts graduating locally annually than what employers currently need to support demand, similar to estimates from 2022Q2. Only Public Relations Managers and Fundraising Managers have sufficient local postsecondary graduate awards compared to national benchmarks.

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

Supply Deficit		Supply Surplus
General and Operations Managers		Public Relations Managers
−1,018		39
Management Analysts		Fundraising Managers
−450		17
Business Operations Specialists, All Other		
−325		
Human Resources Specialists		
−290		
Project Management Specialists		
−273		
Public Relations Specialists		
−266		
Accountants and Auditors		
−184		
Market Research Analysts and Marketing Specialists		
−183		
Sales Managers		
−154		
Training and Development Specialists		
−125		

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, MSP Metro Minnesota, 2023Q2

Target Occupations (All HW, HS, HD, OG, AG)
General & Operations Managers
Accountants & Auditors
Market Research Analysts & Marketing Specialists
Management Analysts
Business Operations Specialists, All Other

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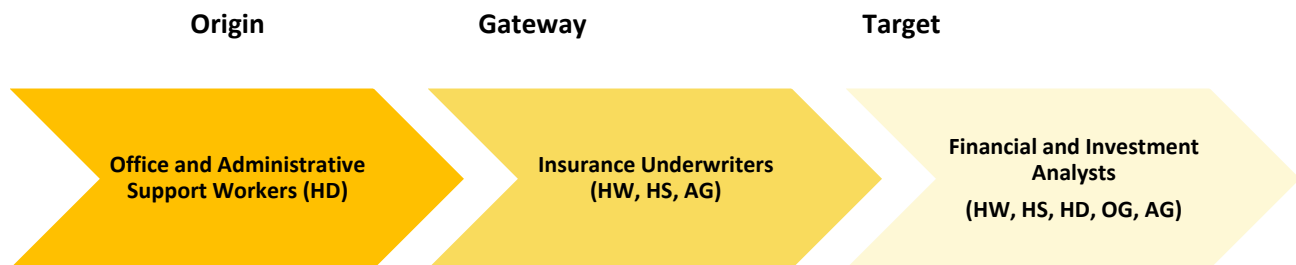First-Line Supervisors of Retail Sales Workers (HD)

Origin Occupations
Retail Salespersons (HD)
Fast Food & Counter Workers (HD)
Cashiers
Janitors & Cleaners, Except Maids & Housekeeping Cleaners (HD)
Stockers & Order Fillers (HD)

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

Featured Pathway

With a projected occupation gap, a projected award gap, roles in marketing, general management, or finance could be featured as promising pathways in the MSP Metro. Financial and Investment Analysts are uniquely concentrated in the MSP Metro (LQ 1.40) and have a current unemployment rate of about 0.7% (34 unemployed workers in the 7-county region). Average wages in the MSP Metro sit at $102,200, making this a truly high-wage Target occupation in the field. With several other Target occupations with related skillsets and comparable wages (Financial Risk Specialists, Insurance Sales, and Financial Managers), there are numerous opportunities to grow in a variety of different industries and career paths within this pathway. Loan Interviewers, Insurance Claims Processors, and Insurance Underwriters are three Gateway occupations that could be considered for talent interested in this path, having high local concentration (LQ 1.30-1.51) in the region and low unemployment rates. Related Origin occupations include Office and Administrative Support roles that cultivate strong customer service skills.

Origin	Gateway	Target
Office and Administrative Support Workers (HD)	Insurance Underwriters (HW, HS, AG)	Financial and Investment Analysts (HW, HS, HD, OG, AG)

OGT Wages and Experience Level Requirements, Business, Management, and Administration, MSP Metro Minnesota, 2023Q2

SOC	Occupation	County Empl	Mean	Entry Level	Experienced	10%	25%	50% (Median)	75%	90%	Typical Entry-Level Education	Previous Work Experience	Typical On-the-Job Training
11-1021	General and Operations Managers	47,688	$122,100	$54,800	$155,800	$49,100	$66,800	$105,700	$151,900	$218,900	BA	5+ Years	None
13-2011	Accountants and Auditors	20,356	$90,100	$58,100	$106,100	$54,700	$66,300	$82,700	$104,900	$134,600	BA	None	None
13-1161	Market Research Analysts and Marketing Specialists	16,832	$88,700	$54,000	$106,100	$50,000	$63,200	$83,500	$108,100	$136,200	BA	None	None
13-1111	Management Analysts	16,341	$111,300	$68,800	$132,500	$64,400	$79,700	$104,000	$135,800	$171,300	BA	<5 years	None
13-1199	Business Operations Specialists, All Other	12,901	$77,400	$48,400	$91,900	$45,900	$54,700	$69,100	$89,100	$115,200	BA	None	None
43-4051	Customer Service Representatives	38,901	$49,700	$35,400	$56,800	$33,900	$39,000	$48,700	$55,700	$66,500	HS/GED	None	Short-term OJT
43-9061	Office Clerks, General	33,440	$49,300	$35,300	$56,300	$33,200	$39,500	$48,200	$56,500	$67,000	HS/GED	None	Short-term OJT
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	22,036	$51,300	$40,600	$56,600	$39,100	$44,200	$51,000	$57,500	$64,600	HS/GED	None	Short-term OJT
43-3031	Bookkeeping, Accounting, and Auditing Clerks	19,275	$55,000	$41,600	$61,700	$38,700	$47,000	$53,000	$62,200	$70,300	Certificate	None	Mod-term OJT
41-1011	First-Line Supervisors of Retail Sales Workers	13,652	$55,500	$40,100	$63,200	$38,700	$43,700	$51,300	$63,000	$76,800	HS/GED	<5 years	None
41-2031	Retail Salespersons	40,692	$38,900	$29,200	$43,700	$28,100	$31,300	$35,100	$39,200	$51,300	None	None	Short-term OJT
35-3023	Fast Food and Counter Workers	32,543	$32,900	$28,200	$35,300	$26,200	$30,800	$32,500	$35,600	$37,900	None	None	Short-term OJT
41-2011	Cashiers	31,033	$32,800	$28,500	$34,900	$27,900	$29,800	$31,600	$35,900	$38,400	None	None	Short-term OJT
37-2011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	26,383	$39,800	$31,400	$44,000	$31,400	$32,700	$38,600	$42,600	$53,000	None	None	Short-term OJT
53-7065	Stockers and Order Fillers	26,093	$39,500	$31,400	$43,500	$30,700	$33,300	$37,700	$41,700	$52,000	HS/GED	None	Short-term OJT

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 428,655 employees working in roles specifically aligned to these career clusters. Over the next three years, employment is likely to remain flat, though with high replacement demand needs (46,557 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, MSP Metro Minnesota, 2023Q2
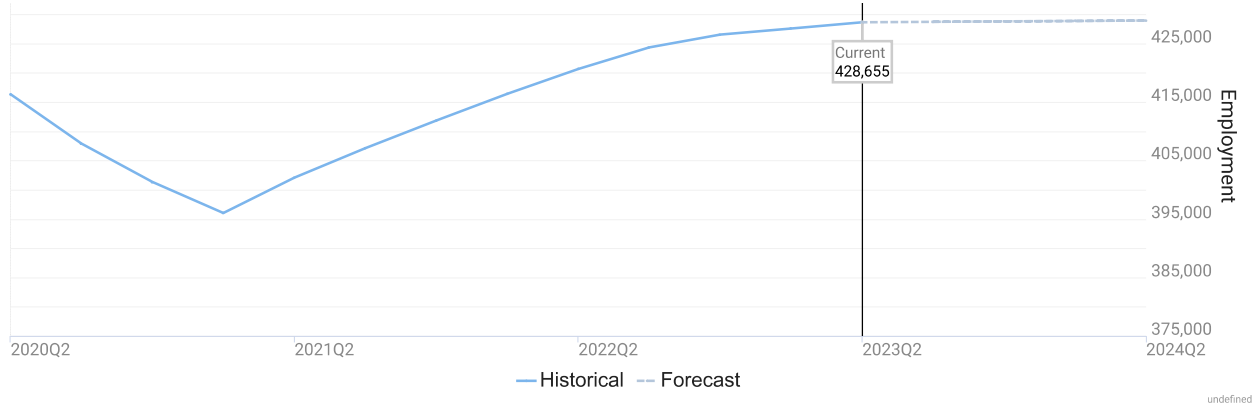
Top Ten Engineering, Manufacturing, and Technology Occupations by Employment Volume in the MSP Metro Minnesota, 2023Q2

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	33,354	$45,200	1.00	2,291	4,783	0.2%
Heavy and Tractor-Trailer Truck Drivers	20,108	$63,600	0.81	1,793	2,405	0.2%
Maintenance and Repair Workers, General	17,326	$56,500	0.95	285	1,716	0.2%
Team Assemblers	15,192	$44,800	1.08	916	1,545	-1.1%
Construction Laborers	14,460	$61,300	0.89	959	1,483	0.3%
Light Truck Drivers	13,182	$51,500	1.02	-60	1,685	0.8%
Landscaping and Groundskeeping Workers	11,332	$44,500	0.85	247	1,503	0.2%
Carpenters	10,953	$68,700	1.03	-48	1,010	-0.1%
Industrial Engineers	10,048	$106,800	2.67	950	723	0.9%
First-Line Supervisors of Production and Operating Workers	7,504	$77,700	0.97	229	756	-0.2%
Remaining Component Occupations	275,187	$69,800	0.91	4,723	28,950	0.0%
Engineering, Manufacturing, & Technology (CTE Field)	**428,655**	**$65,600**	**0.95**	**12,278**	**46,557**	**0.0%**

"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 the MSP Metro. Locally, the industries with the greatest share of this field's talent are Employment Services (5.1%), or staffing and temp agencies which play a critical role in filling the talent needs of MSP Metro direct employers. Second highest employment is with Building Equipment Contractors (4.4%). 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, MSP Metro Minnesota, 2023Q2

Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Change	10-Year Total Demand
Employment Services	5.1%	21,710	26,436	-487	25,950
Building Equipment Contractors	4.4%	18,864	18,863	343	19,206
Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	3.1%	13,333	12,166	-354	11,812
Architectural, Engineering, and Related Services	2.9%	12,553	10,486	29	10,515
Building Finishing Contractors	2.8%	12,128	10,973	-33	10,939
Medical Equipment and Supplies Manufacturing	2.7%	11,664	12,374	-163	12,211
General Freight Trucking	2.4%	10,255	11,969	57	12,027
Couriers and Express Delivery Services	2.3%	9,863	12,910	1,376	14,286
Management of Companies and Enterprises	2.3%	9,727	9,329	753	10,083
Scheduled Air Transportation	2.1%	9,049	11,322	155	11,476
Services to Buildings and Dwellings	2.0%	8,680	10,696	8	10,704
Foundation, Structure, and Building Exterior Contractors	2.0%	8,532	8,243	67	8,310
Residential Building Construction	2.0%	8,435	7,816	96	7,912
Other Specialty Trade Contractors	1.9%	8,328	8,379	115	8,494
Warehousing and Storage	1.9%	8,289	11,506	1,707	13,212
Automotive Repair and Maintenance	1.9%	7,957	8,597	72	8,670
Plastics Product Manufacturing	1.8%	7,877	8,526	-152	8,374
Nonresidential Building Construction	1.6%	6,934	6,412	19	6,431
Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	1.5%	6,562	7,015	-28	6,987
Executive, Legislative, and Other General Government Support	1.5%	6,260	6,499	69	6,567
All Others	51.7%	221,654	243,228	-573	242,654

Career Field Demographics

The Engineering, Manufacturing, and Technology field is heavily male (81.1%) and White (78.1%), but both the share of female talent increased by 0.6 percentage points and talent that is BIPOC by race increased by about 1.6 percentage points from 2022Q2. About 45.7% of workers in this field are between 25 and 44 years old, a greater share than observed statewide. However, this field still faces the challenges of having an overall olderworkforce, with 23.2% being 55 or older (up by 0.7 percentage points from 2022Q2).

Age

Twin Cities 7-County Metro

8.0%	23.3%	22.4%	20.8%	18.5%	

Minnesota

8.5%	21.3%	21.6%	20.9%	19.8%	5.1%

- 16 to 19 years (2.3%)
- 20 to 24 years (8.0%)
- 25 to 34 years (23.3%)
- 35 to 44 years (22.4%)
- 45 to 54 years (20.8%)
- 55 to 64 years (18.5%)
- 65 years and over (4.7%)

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

Race

Twin Cities 7-County Metro

78.1%	10.3%	7.0%	

Minnesota

85.3%	6.3%	4.2%	

- White (78.1%)
- Black (10.3%)
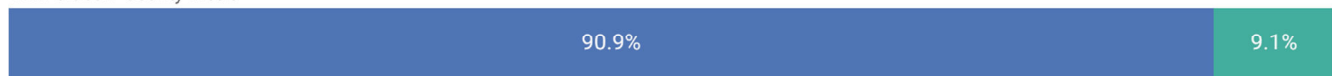- American Indian (0.5%)
- Asian (7.0%)
- Pacific Islander (0.0%)
- Two or More Races (4.0%)

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

Ethnicity

Twin Cities 7-County Metro

90.9%	9.1%

Minnesota

92.4%	7.6%

- Non-Hispanic/Latino (90.9%)
- Hispanic or Latino (of any race) (9.1%)

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

Gender

Twin Cities 7-County Metro

81.1%	18.9%

Minnesota

81.4%	18.6%

- Male (81.1%)
- Female (18.9%)

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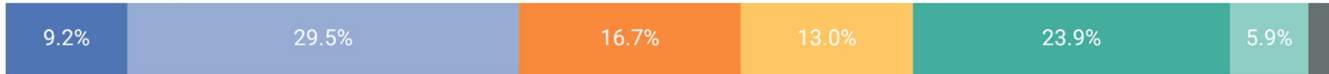Source: JobsEQ®. Data as of 2023Q2.

Educational Attainment and Requirements

The stacked bar charts here illustrate the estimated mix of educational attainment of the workers in this career field in aggregate, followed by the typical education and training requirements in the field. In general, the MSP Metro Engineering, Manufacturing, and Technology workforce is well-aligned for the typical credentials of entry-level positions. Just over one in four of all positions in this field (27.2%) require no degree, no experience, and only short-term on-the-job training. About half (48.8%) require experience or some on-the-job training, but still no degree. About one in ten of the workforce in this field (9.2%) has no degree at all, and about one in three (29.5%) hold a high school diploma as their highest credential. In all, 55.4% of the Engineering, Manufacturing, and Technology workforce of the MSP Metro has not completed a postsecondary credential higher than a certificate. Roles requiring no educational award or experience and needing only short-term on-the-job training increased by 0.8 percentage points from the prior year, continuing the trend toward lower work experience requirements observed over the past four years in this field.

Educational Attainment

Twin Cities 7-County Metro

9.2%	29.5%	16.7%	13.0%	23.9%	5.9%	

Minnesota

9.0%	34.5%	17.8%	14.7%	18.5%	4.2%	

- ■ < High School (9.2%)
- ■ High School (29.5%)
- ■ Some College (16.7%)
- ■ Two-Year (13.0%)
- ■ Four-Year (23.9%)
- ■ Master's (5.9%)
- ■ PhD (1.7%)

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

Education and Training Requirements

Twin Cities 7-County Metro

27.2%	29.0%	12.0%	7.8%	11.3%	12.3%

Minnesota

27.4%	30.0%	12.4%	7.8%	11.5%	10.6%

- ■ Short-term OJT, no exp, no award (27.2%)
- ■ Moderate-term OJT, no exp, no award (29.0%)
- ■ Long-term training, no exp, no award (12.0%)
- ■ Previous work experience, no award (7.8%)
- ■ 2-year degree or certificate (11.3%)
- ■ Bachelor's degree (12.3%)
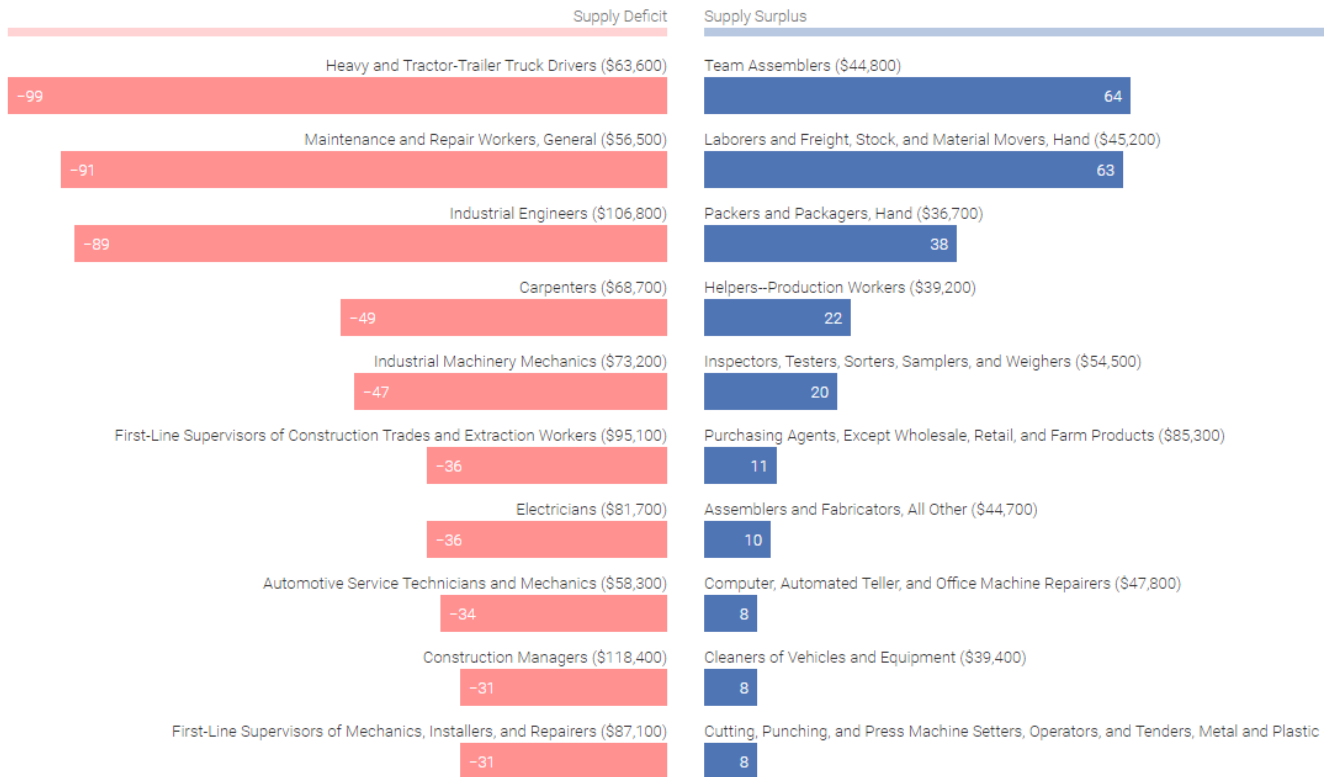- ■ Postgraduate degree (0.4%)

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

Occupation Gaps

The chart below shows the potential average annual gaps 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 nearly 100 workers needed annually to fill open roles. General Maintenance Workers, Industrial Engineers, and Carpenters all saw an increase in forecast 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, 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, MSP Metro Minnesota, 2023Q2
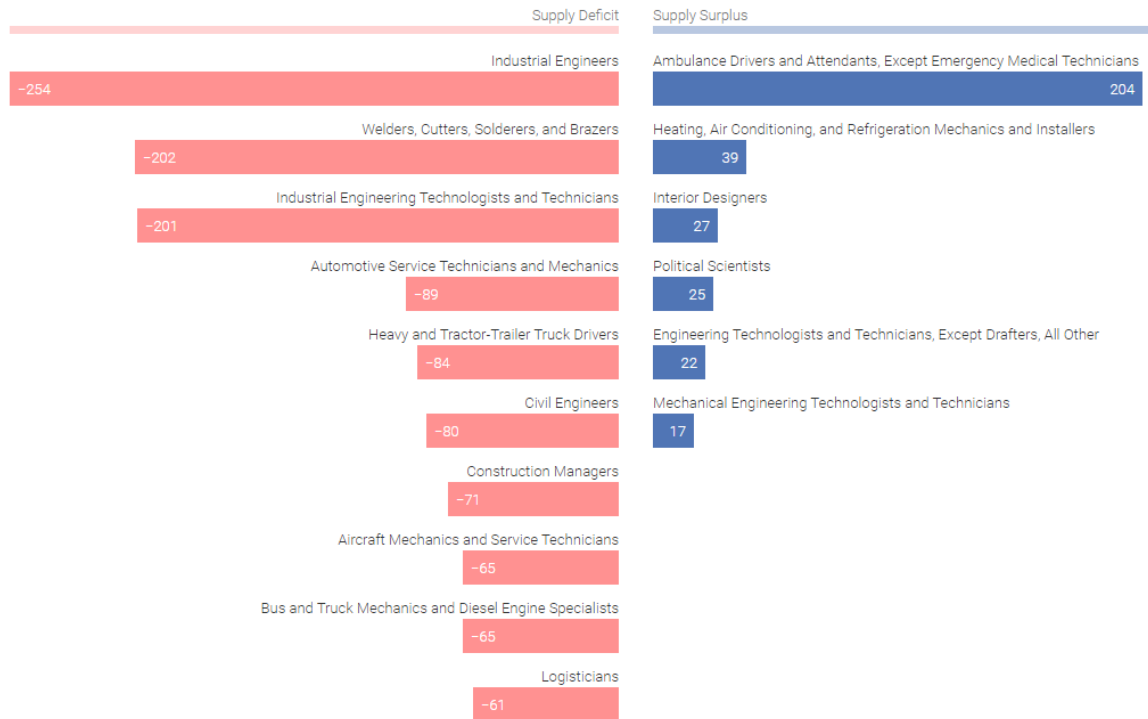
Supply Deficit	Supply Surplus
Heavy and Tractor-Trailer Truck Drivers ($63,600) — −99	Team Assemblers ($44,800) — 64
Maintenance and Repair Workers, General ($56,500) — −91	Laborers and Freight, Stock, and Material Movers, Hand ($45,200) — 63
Industrial Engineers ($106,800) — −89	Packers and Packagers, Hand ($36,700) — 38
Carpenters ($68,700) — −49	Helpers--Production Workers ($39,200) — 22
Industrial Machinery Mechanics ($73,200) — −47	Inspectors, Testers, Sorters, Samplers, and Weighers ($54,500) — 20
First-Line Supervisors of Construction Trades and Extraction Workers ($95,100) — −36	Purchasing Agents, Except Wholesale, Retail, and Farm Products ($85,300) — 11
Electricians ($81,700) — −36	Assemblers and Fabricators, All Other ($44,700) — 10
Automotive Service Technicians and Mechanics ($58,300) — −34	Computer, Automated Teller, and Office Machine Repairers ($47,800) — 8
Construction Managers ($118,400) — −31	Cleaners of Vehicles and Equipment ($39,400) — 8
First-Line Supervisors of Mechanics, Installers, and Repairers ($87,100) — −31	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic — 8

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 important shortages. The MSP Metro currently under-trains some talent in Engineering, Manufacturing, and Technology when compared to national benchmarks. MSP Metro colleges and universities continue to underproduce graduates needed to fill Welder positions open with employers based in the 7-county MSP Metro, falling short of national benchmarks by about 202 awards—consistent with trends observed over the past three years. As of 2023Q2, Industrial Engineers now ranks as the top occupation with regional shortages of postsecondary awards, falling short of national benchmarks by at least 254 graduates needed in the region. Industrial Engineering Technicians, Automotive Service Technicians, and other construction management and engineering roles are likely experiencing an undersupply of trained graduates in the MSP Metro as well.

RealTime Talent
Using data to build the
world's best workforce

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

Supply Deficit		Supply Surplus	
Industrial Engineers	−254	Ambulance Drivers and Attendants, Except Emergency Medical Technicians	204
Welders, Cutters, Solderers, and Brazers	−202	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	39
Industrial Engineering Technologists and Technicians	−201	Interior Designers	27
Automotive Service Technicians and Mechanics	−89	Political Scientists	25
Heavy and Tractor-Trailer Truck Drivers	−84	Engineering Technologists and Technicians, Except Drafters, All Other	22
Civil Engineers	−80	Mechanical Engineering Technologists and Technicians	17
Construction Managers	−71		
Aircraft Mechanics and Service Technicians	−65		
Bus and Truck Mechanics and Diesel Engine Specialists	−65		
Logisticians	−61		

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, MSP Metro Minnesota, 2023Q2

Target Occupations (All HW, HS, HD, OG)
Industrial Engineers (AG)
Construction Managers (AG)
Mechanical Engineers (AG)
HVAC Mechanics & Installers
Architectural & Engineering Managers

Gateway Occupations
Laborers & Freight, Stock, & Material Movers, Hand (HD)
Heavy & Tractor-Trailer Truck Drivers (HS, HD, OG, AG)
Maintenance & Repair Workers, General (HD, OG)
Construction Laborers (HD)
Light Truck Drivers (HD, AG)

Origin Occupations
Team Assemblers
Landscaping & Groundskeeping Workers (HD)
Packers & Packagers, Hand
Packaging & Filling Machine Operators & Tenders (HD, OG)
Cleaners of Vehicles & Equipment (HD)

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

Featured Pathway

With a projected occupation gap, a projected award gap, and high demand, the pathway to the occupation of Industrial Engineers should be considered in the MSP Metro region. This occupation is highly concentrated in the region with a location quotient of 2.67. The related Target occupation of Industrial Engineering Technologists and Technicians is also highly concentrated in the region (LQ of 3.77), with significant replacement demand needs over the next five years (587 workers, or over half of the currently employed workforce). CNC Operator roles are a potential entry point to the pathway, though Electromechanical Equipment Assemblers have higher volumes of total employment demand and are experiencing a local shortage of postsecondary awards conferred compared to national benchmarks. Multiple Origin occupations could serve as starting points for this career pathway, with any role that gives practical electrical and engineering experience having the greatest skill relevance.

Gateway		Target
Electrical, Electronic, and Electromechanical Equipment Assemblers (AG)	**Industrial Engineering Technologists and Technicians (HW, HS, OG, AG)**	**Industrial Engineers (HW, HS, HD, OG, AG)**

OGT Wages and Experience Level Requirements, Engineering, Manufacturing, and Technology, MSP Metro Minnesota, 2023Q2

SOC	Occupation	Empl	Mean	Entry Level	Experienced	10%	25%	50% (Median)	75%	90%	Typical Entry-Level Education	Previous Work Experience	Typical On-the-Job Training
17-2112	Industrial Engineers	10,048	$106,800	$73,200	$123,500	$68,400	$84,400	$105,200	$131,300	$140,500	BA	None	None
11-9021	Construction Managers	4,393	$118,400	$80,400	$137,400	$76,500	$89,500	$107,100	$134,200	$162,300	BA	None	Mod-term OJT
17-2141	Mechanical Engineers	3,988	$103,800	$72,700	$119,400	$67,500	$82,400	$93,200	$111,600	$142,000	BA	None	None
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	3,179	$80,100	$53,600	$93,400	$49,900	$62,500	$83,200	$95,300	$113,300	Certificate	None	Long-term OJT
11-9041	Architectural and Engineering Managers	2,959	$173,800	$123,200	$199,100	$115,600	$140,200	$171,500	$199,400	$223,300	BA	5+ years	None
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	33,354	$45,200	$35,500	$50,100	$33,700	$39,100	$44,900	$49,100	$59,700	None	None	Short-term OJT
53-3032	Heavy and Tractor-Trailer Truck Drivers	20,108	$63,600	$48,000	$71,400	$46,600	$52,200	$63,200	$70,000	$84,100	Certificate	None	Short-term OJT
49-9071	Maintenance and Repair Workers, General	17,326	$56,500	$40,800	$64,300	$37,800	$46,300	$53,400	$66,300	$76,900	HS/GED	None	Mod-term OJT
47-2061	Construction Laborers	14,460	$61,300	$41,700	$71,100	$38,000	$48,300	$56,500	$79,800	$87,800	None	None	Short-term OJT
53-3033	Light Truck Drivers	13,182	$51,500	$37,400	$58,600	$32,700	$44,200	$48,500	$57,500	$70,400	HS/GED	None	Short-term OJT
51-2092	Team Assemblers	15,192	$44,800	$36,400	$49,000	$34,500	$39,800	$42,400	$49,500	$57,200	HS/GED	None	Mod-term OJT
37-3011	Landscaping and Groundskeeping Workers	11,332	$44,500	$34,900	$49,400	$32,400	$39,000	$41,800	$48,800	$62,200	None	None	Short-term OJT
53-7064	Packers and Packagers, Hand	6,020	$36,700	$28,900	$40,700	$28,100	$30,600	$36,800	$40,100	$44,600	None	None	Short-term OJT
51-9111	Packaging and Filling Machine Operators and Tenders	3,858	$43,700	$34,300	$48,400	$33,700	$36,200	$40,900	$50,200	$57,000	HS/GED	None	Mod-term OJT
53-7061	Cleaners of Vehicles and Equipment	3,417	$39,400	$30,900	$43,700	$29,700	$33,300	$38,400	$44,500	$46,900	None	None	Short-term OJT

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 over one thousand jobs from 2022Q2. Over the next three years, this career field's employment is forecast to grow by 0.2% on average annually in the MSP Metro; a drop from last year's forecast of 0.7% average annual growth.

3-Year Forecast for Agriculture, Food, and Natural Resources Careers, MSP Metro Minnesota, 2023Q2
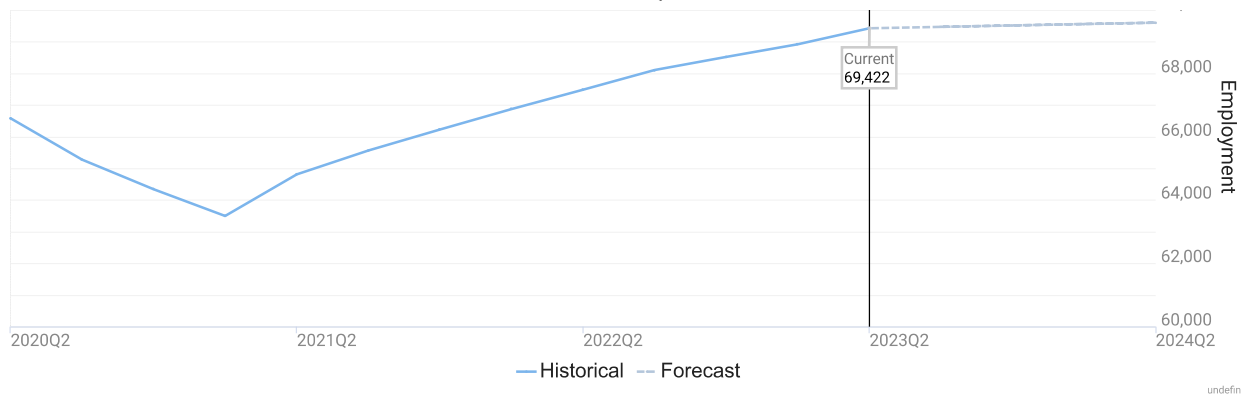
Top Ten Agriculture, Food, and Natural Resources Occupations by Employment Volume in the MSP Metro Minnesota, 2023Q2

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Change
Landscaping and Groundskeeping Workers	11,332	$44,500	0.85	247	1,503	0.2%
Plumbers, Pipefitters, and Steamfitters	5,035	$86,200	0.91	175	508	0.0%
Animal Caretakers	3,601	$37,300	0.94	571	735	1.3%
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	3,179	$80,100	0.67	353	313	0.4%
Food Batchmakers	2,233	$41,800	1.15	260	326	0.5%
Bakers	2,134	$40,500	0.87	124	309	0.2%
Farmworkers and Laborers, Crop, Nursery, and Greenhouse	1,992	$40,200	0.31	193	310	-0.3%
Veterinary Technologists and Technicians	1,987	$46,300	1.44	295	235	1.6%
Aircraft Mechanics and Service Technicians	1,784	$86,500	1.07	92	140	0.1%
First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	1,758	$67,700	0.67	108	186	0.1%
Remaining Component Occupations	34,385	$77,600	0.81	427	3,823	0.1%
Agriculture, Food, and Natural Resources (CTE Field)	**69,422**	**$66,600**	**0.72**	**2,839**	**8,392**	**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 in the MSP Metro. Locally, the industries with the greatest share of this field's talent are Services to Buildings and Dwellings (11.9%) and Building Equipment Contractors (10.0%, up two percentage points from 2022Q2). Most industries employing talent in this field touch 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, MSP Metro Minnesota, 2023Q2

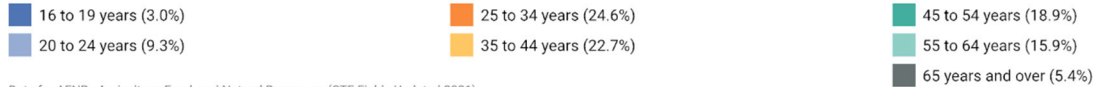| Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Change	10-Year Total Demand
Services to Buildings and Dwellings	11.9%	8,293	10,539	33	10,572
Building Equipment Contractors	10.0%	6,968	6,977	137	7,114
Other Professional, Scientific, and Technical Services	5.9%	4,088	4,791	750	5,541
Other Personal Services	4.0%	2,775	5,132	465	5,596
Architectural, Engineering, and Related Services	3.9%	2,694	2,594	14	2,609
Executive, Legislative, and Other General Government Support	3.2%	2,245	2,425	-7	2,418
Colleges, Universities, and Professional Schools	3.2%	2,194	2,270	18	2,288
Other Amusement and Recreation Industries	2.8%	1,913	2,520	145	2,665
Greenhouse, Nursery, and Floriculture Production	2.5%	1,703	2,454	34	2,488
Grocery and Convenience Retailers	2.4%	1,688	2,160	-68	2,092
Bakeries and Tortilla Manufacturing	2.2%	1,516	2,207	92	2,300
Employment Services	2.1%	1,453	1,733	-34	1,699
Restaurants and Other Eating Places	2.1%	1,449	2,006	41	2,047
Management of Companies and Enterprises	1.9%	1,318	1,336	69	1,405
Management, Scientific, and Technical Consulting Services	1.9%	1,316	1,296	87	1,383
Electric Power Generation, Transmission and Distribution	1.9%	1,313	1,144	-101	1,043
Scientific Research and Development Services	1.8%	1,219	1,219	52	1,271
Justice, Public Order, and Safety Activities	1.5%	1,041	1,098	-25	1,073
Wired and Wireless Telecommunications (except Satellite)	1.3%	911	1,022	43	1,065
Scheduled Air Transportation	1.2%	841	653	-4	649
All Others	32.4%	22,486	26,979	76	27,056

Career Field Demographics

The Agriculture, Food, and Natural Resources field is predominantly male (71.9%, down 0.3 percentage points) and White (81.2%, down 1.5 percentage points), but with variation by career pathway. The share of talent that is BIPOC by race increased by 1.5 percentage points compared to 2022Q2, and the share that is Hispanic or Latinx increased by 0.1 percentage point (9.7%). The largest age cohort is between the ages of 25 and 34 (24.6%), but key career pathways in Animal Systems and Food Products and Processing Systems in particular have a rapidly aging workforce with limited new talent entering. Overall, the Agriculture, Food, and Natural Resources workforce continues to have more older workers compared to prior years' estimates, now with 21.3% 55 years or older.
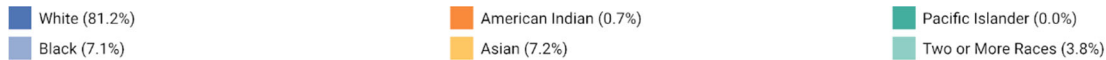
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Age

Twin Cities 7-County Metro

| 9.3% | 24.6% | 22.7% | 18.9% | 15.9% | 5.4% |

Minnesota

| 9.0% | 20.0% | 20.8% | 18.3% | 19.2% | 9.3% |

- 16 to 19 years (3.0%)
- 20 to 24 years (9.3%)
- 25 to 34 years (24.6%)
- 35 to 44 years (22.7%)
- 45 to 54 years (18.9%)
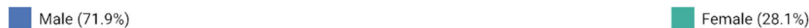- 55 to 64 years (15.9%)
- 65 years and over (5.4%)

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

Race

Twin Cities 7-County Metro

| 81.2% | 7.1% | 7.2% | |

Minnesota

| 89.0% | | | |

- White (81.2%)
- Black (7.1%)
- American Indian (0.7%)
- Asian (7.2%)
- Pacific Islander (0.0%)
- Two or More Races (3.8%)

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

Ethnicity

Twin Cities 7-County Metro

| 90.3% | 9.7% |

Minnesota

| 92.1% | 7.9% |

- Non-Hispanic/Latino (90.3%)
- Hispanic or Latino (of any race) (9.7%)

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

Gender

Twin Cities 7-County Metro

| 71.9% | 28.1% |

Minnesota

| 73.2% | 26.8% |

- Male (71.9%)
- Female (28.1%)

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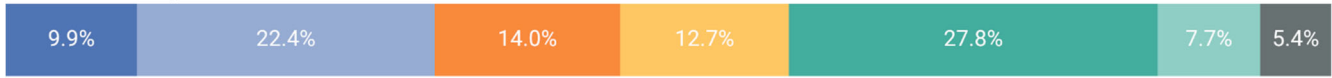Source: JobsEQ®. Data as of 2023Q2.

Educational Attainment and Requirements

The stacked bar charts here illustrate the estimated mix of educational attainment of the workers in this career field in aggregate, followed by the typical education and training requirements in the field. In general, the MSP Metro Agriculture, Food, and Natural Resources workforce is well-aligned for the typical credentials of entry-level positions. Consistent with 2022Q2 estimates, nearly one-third of all positions in this field (29.8%) require no degree, no experience, and only short-term on-the-job training. Slightly more than one-third (37.7%, up 1.8 percentage points) require experience or some on-the-job training, but still no degree. About one in ten workers in this field has no degree at all 9.9%), and nearly one in four (22.4%) hold a high school diploma as their highest credential. In all, 46.3% of the Agriculture, Food, and Natural Resources workforce in the MSP Metro have not completed a postsecondary credential.
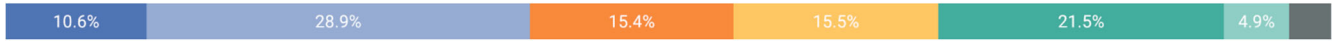
Educational Attainment

Twin Cities 7-County Metro

| 9.9% | 22.4% | 14.0% | 12.7% | 27.8% | 7.7% | 5.4% |

Minnesota
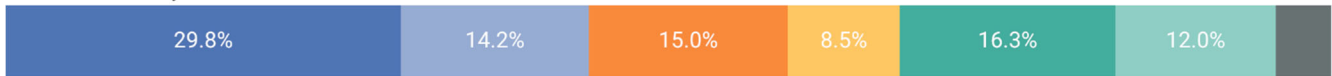
| 10.6% | 28.9% | 15.4% | 15.5% | 21.5% | 4.9% | |

- < High School (9.9%)
- High School (22.4%)
- Some College (14.0%)
- Two-Year (12.7%)
- Four-Year (27.8%)
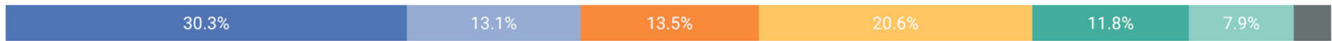- Master's (7.7%)
- PhD (5.4%)

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

Education and Training Requirements

Twin Cities 7-County Metro

| 29.8% | 14.2% | 15.0% | 8.5% | 16.3% | 12.0% | |

Minnesota

| 30.3% | 13.1% | 13.5% | 20.6% | 11.8% | 7.9% | |

- Short-term OJT, no exp, no award (29.8%)
- Moderate-term OJT, no exp, no award (14.2%)
- Long-term training, no exp, no award (15.0%)
- Previous work experience, no award (8.5%)
- 2-year degree or certificate (16.3%)
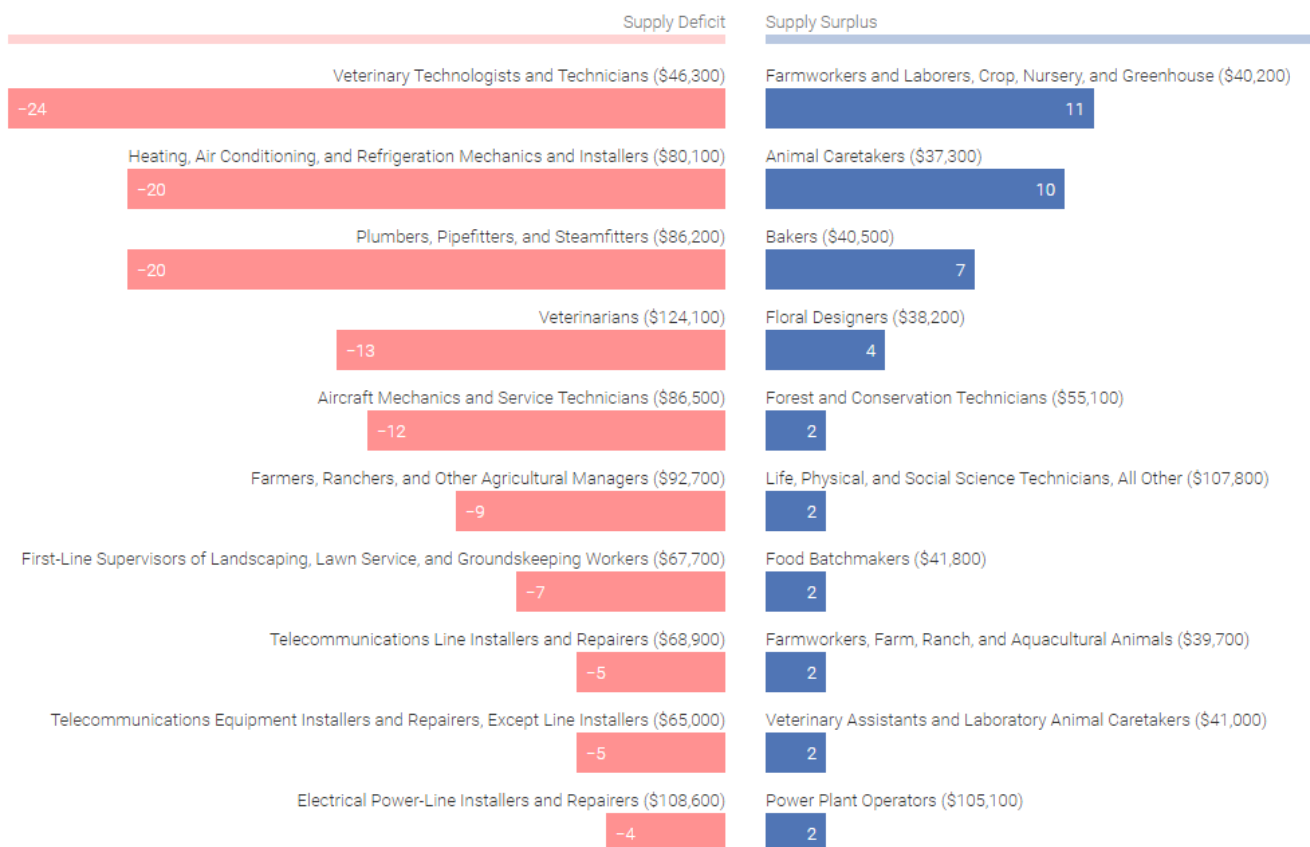- Bachelor's degree (12.0%)
- Postgraduate degree (4.2%)

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

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Occupation Gaps

The chart below shows the potential average annual gaps 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 region's top Agriculture, Food, and Natural Resources talent shortage, falling short at least 24 Vet Techs 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, MSP Metro Minnesota, 2023Q2
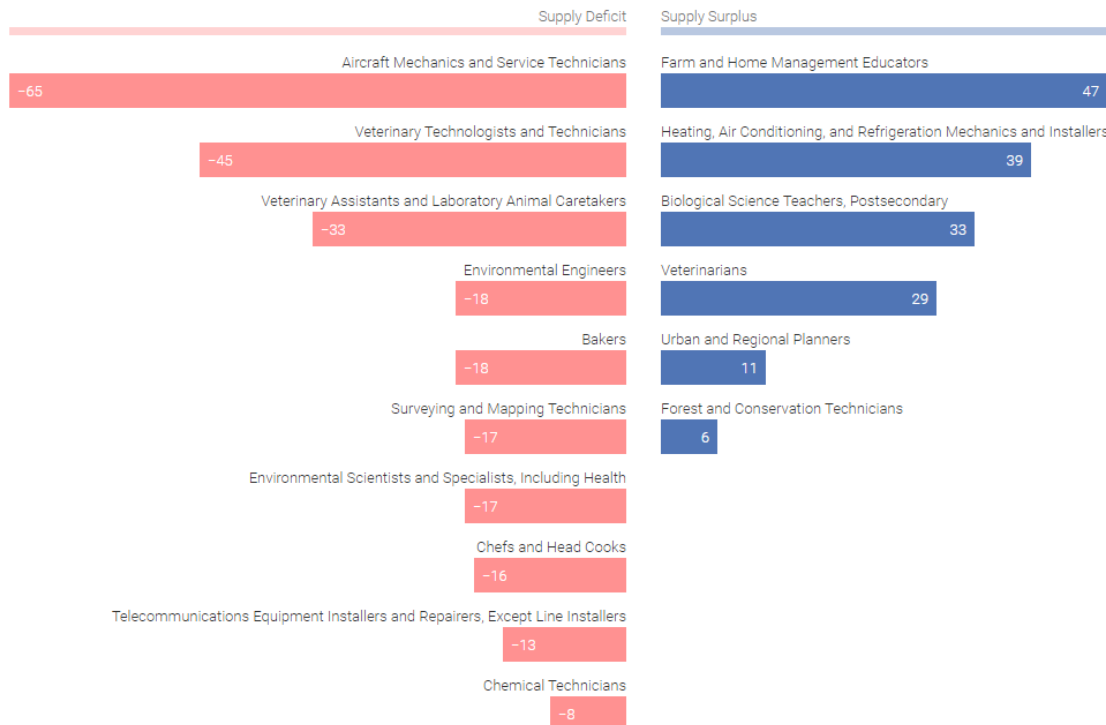
Supply Deficit		Supply Surplus	
Veterinary Technologists and Technicians ($46,300)	−24	Farmworkers and Laborers, Crop, Nursery, and Greenhouse ($40,200)	11
Heating, Air Conditioning, and Refrigeration Mechanics and Installers ($80,100)	−20	Animal Caretakers ($37,300)	10
Plumbers, Pipefitters, and Steamfitters ($86,200)	−20	Bakers ($40,500)	7
Veterinarians ($124,100)	−13	Floral Designers ($38,200)	4
Aircraft Mechanics and Service Technicians ($86,500)	−12	Forest and Conservation Technicians ($55,100)	2
Farmers, Ranchers, and Other Agricultural Managers ($92,700)	−9	Life, Physical, and Social Science Technicians, All Other ($107,800)	2
First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers ($67,700)	−7	Food Batchmakers ($41,800)	2
Telecommunications Line Installers and Repairers ($68,900)	−5	Farmworkers, Farm, Ranch, and Aquacultural Animals ($39,700)	2
Telecommunications Equipment Installers and Repairers, Except Line Installers ($65,000)	−5	Veterinary Assistants and Laboratory Animal Caretakers ($41,000)	2
Electrical Power-Line Installers and Repairers ($108,600)	−4	Power Plant Operators ($105,100)	2

Award Gaps

A comparison of the graduate talent pipeline through certificate and other postsecondary degree programs to the current estimated openings by occupation illuminate a number of important shortages. The MSP Metro currently under-trains talent in a variety of career pathways within Agriculture, Food, and Natural Resources when compared to national benchmarks. MSP Metro colleges and universities are underproducing around 45 graduates annually that are needed to fill Veterinary Technician positions (up from 36 in 2022Q2) and at least 33 graduates for Veterinary Assistant positions open with employers based in the 7-county MSP Metro alone (up from 32 in 2022Q2). Veterinary shortages should be considered particularly dire, since the MSP Metro is the only region with Veterinary programs serving the state. Shortages of Aircraft Mechanic awards worsened from the prior year, ranking the top shortage for this pathway with an undersupply of about 65 postsecondary awards annually.

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

Supply Deficit		Supply Surplus	
Aircraft Mechanics and Service Technicians	−65	Farm and Home Management Educators	47
Veterinary Technologists and Technicians	−45	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	39
Veterinary Assistants and Laboratory Animal Caretakers	−33	Biological Science Teachers, Postsecondary	33
Environmental Engineers	−18	Veterinarians	29
Bakers	−18	Urban and Regional Planners	11
Surveying and Mapping Technicians	−17	Forest and Conservation Technicians	6
Environmental Scientists and Specialists, Including Health	−17		
Chefs and Head Cooks	−16		
Telecommunications Equipment Installers and Repairers, Except Line Installers	−13		
Chemical Technicians	−8		

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, MSP Metro Minnesota, 2023Q2

Target Occupations (All HW, HS, HD, OG)
HVAC Mechanics & Installers
Chemists
Environmental Scientists & Specialists (AG)
Veterinarians
Natural Sciences Managers

Gateway Occupations
Veterinary Technologists & Technicians (HS, HD, OG, AG)
First-Line Supervisors of Landscaping, Lawn Service, & Groundskeeping Workers (HD, OG)
Chefs & Head Cooks (HD, AG)
Telecommunications Equipment Installers & Repairers (HS, HD, OG, AG)
Refuse & Recyclable Material Collectors (HD, AG)

Origin Occupations
Landscaping & Groundskeeping Workers (HD)
Animal Caretakers (HD, AG)
Food Batchmakers (HD, AG)
Bakers (HD, AG)
Farmworkers & Laborers, Crop, Nursery, and Greenhouse

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

Featured Pathway

There is an opportunity to expand the local pipeline for Veterinarians, given that the MSP Metro is the only region with existing postsecondary programming in the state producing talent, and this pathway is a top shortage in every region. Each of the roles below shows a projected 5-year growth forecast of 1.6%. There are only an estimated two Veterinarians in the MSP Metro region who are currently unemployed—which is a 0.1% unemployment rate. Veterinary Assistants and Laboratory Animal Caretakers have an average annual salary of $41,000, are in high demand and have regional award gaps. The Veterinary Technician and Technologists occupation, with an average annual salary of $46,300, is both in high demand and is considered a high skill role – there is also a uniquely high local concentration of Veterinary Technicians in the MSP Metro region with a location quotient of 1.44.

Veterinary Assistants and Laboratory Animal Caretakers (HD, AG) → **Veterinary Technican and Technologists (HS, HD, OG, AG)** → **Veterinarians (HW, HS, HD, OG, AG)**

OGT Wages and Experience Level Requirements, Agriculture, Food, and Natural Resources, MSP Metro Minnesota, 2023Q2

SOC	Occupation	County Empl	Mean	Entry Level	Experienced	10%	25%	50% (Median)	75%	90%	Typical Entry-Level Education	Previous Work Experience	Typical On-the-Job Training
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	3,179	$80,100	$53,600	$93,400	$49,900	$62,500	$83,200	$95,300	$113,300	Certificate	None	Long-term OJT
19-2031	Chemists	1,219	$99,700	$61,800	$118,600	$53,600	$76,400	$96,200	$120,700	$141,100	BA	None	None
19-2041	Environmental Scientists and Specialists, Including Health	1,133	$91,200	$61,500	$106,000	$61,100	$66,200	$87,200	$105,700	$129,800	BA	None	None
29-1131	Veterinarians	1,040	$124,100	$88,300	$142,100	$85,100	$95,900	$111,300	$132,500	$173,700	PhD	None	None
11-9121	Natural Sciences Managers	848	$158,200	$99,600	$187,400	$93,300	$114,400	$143,700	$178,100	$220,800	BA	5+ years	None
29-2056	Veterinary Technologists and Technicians	1,987	$46,300	$39,100	$49,900	$39,100	$40,600	$48,200	$49,400	$53,100	AS	None	None
37-1012	First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	1,758	$67,700	$55,100	$74,000	$52,800	$59,400	$64,900	$74,200	$89,100	HS/GED	<5 years	None
35-1011	Chefs and Head Cooks	1,656	$58,000	$39,000	$67,500	$37,200	$43,400	$54,100	$67,500	$80,900	HS/GED	5+ years	None
49-2022	Telecommunications Equipment Installers and Repairers, Except Line Installers	1,290	$65,000	$45,000	$75,000	$42,500	$51,100	$66,600	$78,900	$81,700	Certificate	None	Mod-term OJT
53-7081	Refuse and Recyclable Material Collectors	1,185	$54,300	$39,300	$61,800	$39,900	$40,700	$52,300	$63,500	$67,400	None	None	Short-term OJT
37-3011	Landscaping and Groundskeeping Workers	11,332	$44,500	$34,900	$49,400	$32,400	$39,000	$41,800	$48,800	$62,200	None	None	Short-term OJT
39-2021	Animal Caretakers	3,601	$37,300	$29,200	$41,300	$27,800	$31,600	$35,000	$38,500	$49,200	HS/GED	None	Short-term OJT
51-3092	Food Batchmakers	2,233	$41,800	$34,500	$45,500	$34,400	$35,400	$38,700	$44,500	$58,500	HS/GED	None	Mod-term OJT
51-3011	Bakers	2,134	$40,500	$32,300	$44,600	$31,200	$34,600	$38,700	$42,000	$53,700	None	None	Mod-term OJT
45-2092	Farmworkers and Laborers, Crop, Nursery, and Greenhouse	1,992	$40,200	$32,100	$44,200	$30,900	$34,000	$35,000	$47,600	$54,300	None	None	Short-term OJT

Conclusion

A variety of new occupations of need have emerged, which signals some rebounding and recovery following the pandemic, and reflects the tight labor market across all levels of experience, education requirements, and each industry sector. What continues to be true is the most in-demand occupations of the future 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 a low qualified talent pool located within the region. An exciting new development likely to have impact across all industries is the Governor's decision to remove degree requirements for most Minnesota government jobs.

As the talent pool has tightened, Minnesota employers are struggling to find talent for Origin, Gateway, and Target roles across the spectrum, but with Gateway occupations posing 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.

The region is poised to see changes in demand for talent over the next five years and into the future as the region continues to wrestle with deepening talent shortages and face the possibility of a recession as interest rates continue to rise. Of greatest importance for the MSP Metro region is a renewed focus on the stackability of credentials in Therapeutic Services career pathways, growth of all Veterinary, Nursing, Mental Health, Information Technology, and Engineering programs regionally, and addressing the Business and Finance talent pipeline shortcomings due to retirements and turnover among mid-level and senior-level leadership.

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 dyanamics, 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 tendancies, 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

High-Wage
High-Wage occupations are defined as occupations that have average annual wages greater than the overall regional average wage ($70,700 in the region as of 2023Q2).

High-Skill
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.

High-Demand
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.

D1: 5-Yr Growth
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.

D2: Total Demand
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)

D3: Unempl <3%
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)

D4: Unempl:Posting Ratio
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)

D5: Posting Volume
An occupation is considered to have high posting volumes if the volume of online job postings in August 2023 was greater than 200 in the region, the occupation is considered to have high job posting volumes (i.e. high immediate employer demand).

Occupation Gaps
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.

Award Gaps

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.