

Central Minnesota

CAREER & TECHNICAL EDUCATION

Workforce Trends & Careers of Tomorrow

RealTime Talent

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RealTime Talent

Using data to build the
world's best workforce

Workforce Trends & Careers of Tomorrow

Overview

Two and a half years after COVID-19 first appeared, the U.S. economy has shifted and strained under the weight of disrupted supply chains and an ever-tightening labor pool. The continuing effects of the pandemic, domestic and international unrest, and shifting economic models have been felt in disparate ways across the nation. Between July and August 2022, unemployment rose in 32 states, fell in 7 states, and remained unchanged in 12. Minnesota's unemployment rate rose by 0.1 percentage point, but remains the lowest unemployment rate nationwide at just 1.9% compared to the national average of 3.7%.¹ Since August, the market has remained tight with unemployment dropping nationally to an all-time nonwartime low of 3.5% unemployment in September. As of October 2022, US unemployment returned to 3.7% with 261,000 net new jobs added to the economy and about two open jobs for every one jobseeker. Despite the Federal Reserve raising interest rates, significantly high corporate profits throughout 2022 mean that companies are likely to continue to invest in their businesses, hold onto their employees, and seek to hire more workers in this tight market.

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.² Each of the six regional reports—and statewide report—include:

- 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
 - Certification gaps
 - Skill gaps
- An origin-to-gateway-to-target model analysis for how to help move students from entrypoints 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

¹ Bureau of Labor Statistics (BLS), Dataset released September 16, 2022.

² All labor market data in this report comes from Chmura Economics JobsEQ Dataset 2022Q2 unless otherwise noted. www.jobseq.com

About This Report

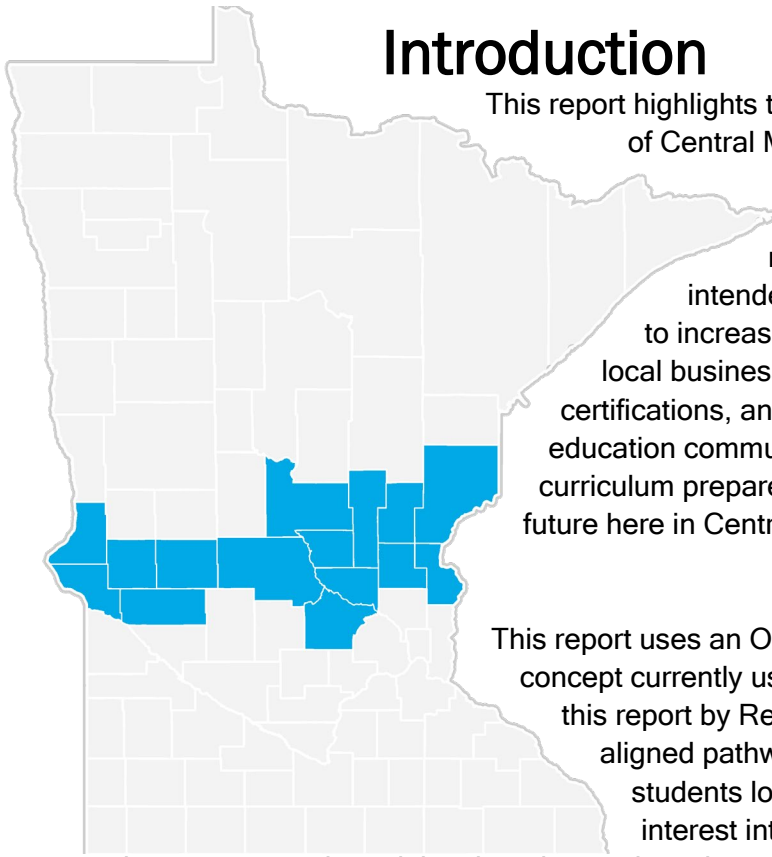
This report was developed by RealTime Talent for the Career and Technical Education Consortia of Minnesota with funding provided by Minnesota State. The contents of this publication were made possible through the Strengthening Career and Technical Education for the 21st Century Act (Perkins V) Federal 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 Director of Strategic Research Erin Olson at erin@realtimetalentmn.org

Table of Contents

Workforce Trends & Careers of Tomorrow	1
Overview	1
About This Report	2
Central Minnesota	4
Introduction	4
Community Profile	6
Demographics	6
Employment	7
Education	10
The Workforce of Today and Tomorrow	13
Workforce Forecast	13
Emerging Critical Needs	15
Career Field Insights	25
Conclusion	68

Central Minnesota

Introduction

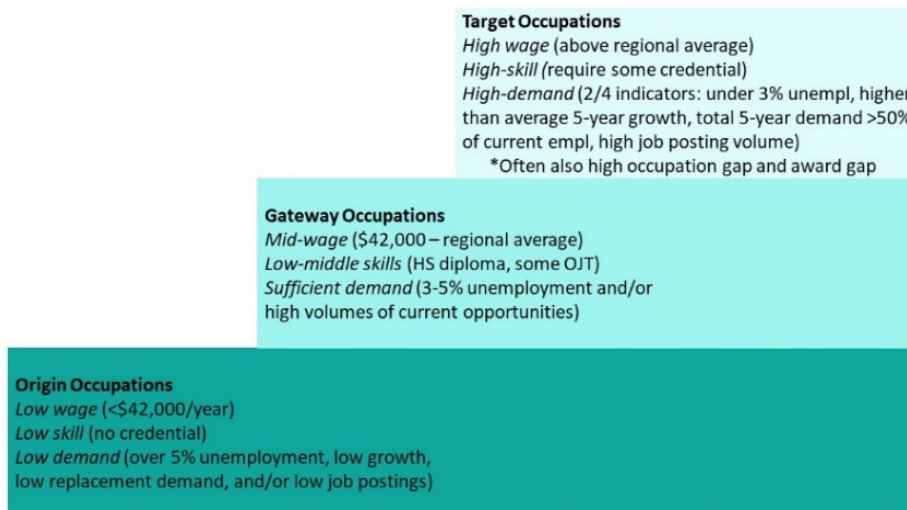


This report highlights the current and future talent needs in the 15 counties of Central Minnesota.³ Starting from the community demographics, unique opportunities, and the critical occupations and industries underpinning the regional economy, this macroeconomic overview is intended to support educators 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 prepares students for relevant job opportunities of the future here in Central Minnesota.

This report uses an Origin-to-Gateway-to-Target Occupation model, a concept currently used by the Rework America Alliance and modified in this report by RealTime Talent, illustrates promising likely and aligned pathways into each career field. This model supports students looking for entrypoints from an initial occupation of interest into other aligned careers, taking into account

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

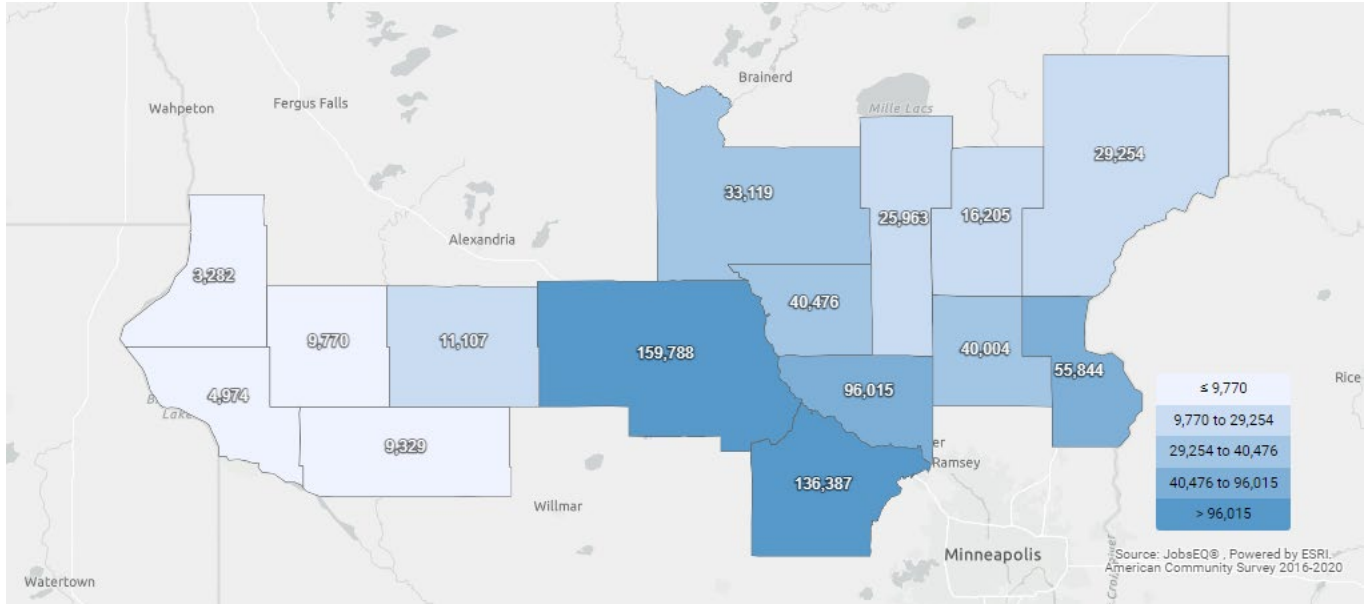


The cities of St. Cloud, Elk River, Buffalo, Sauk Rapids, and Monticello are home to the largest local concentrations of population, and are economic hubs for the region. In all, about 671,517 people live in Central

³ Benton, Big Stone, Chisago, Isanti, Kanabec, Mille Lacs, Morrison, Pine, Pope, Sherburne, Stearns, Stevens, Swift, Traverse, Wright Counties.

Minnesota, according to 2016-2020 American Community Survey Estimates—an increase of about 6,546 people from the prior year’s estimates (664,971 people). Based on year-over-year population growth, about 683,746 people are estimated to live in the region as of 2021. About 24.5% of Central Minnesota’s population are minors under 18 years of age. The region’s median age is the same as the statewide median (38 years).

Resident Population of Central Minnesota

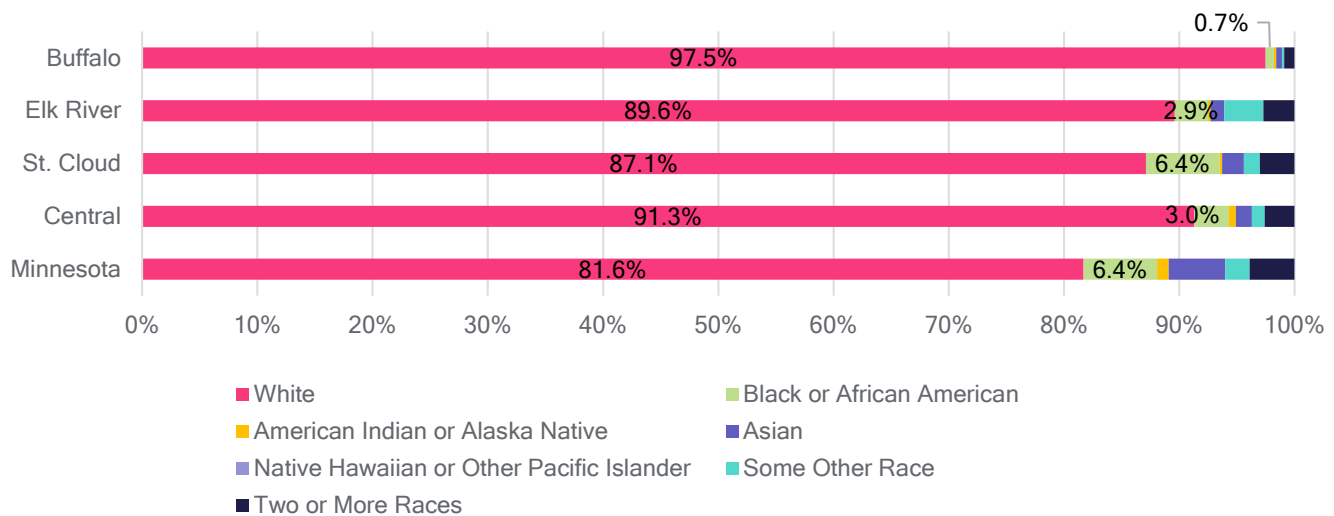


Community Profile

Demographics

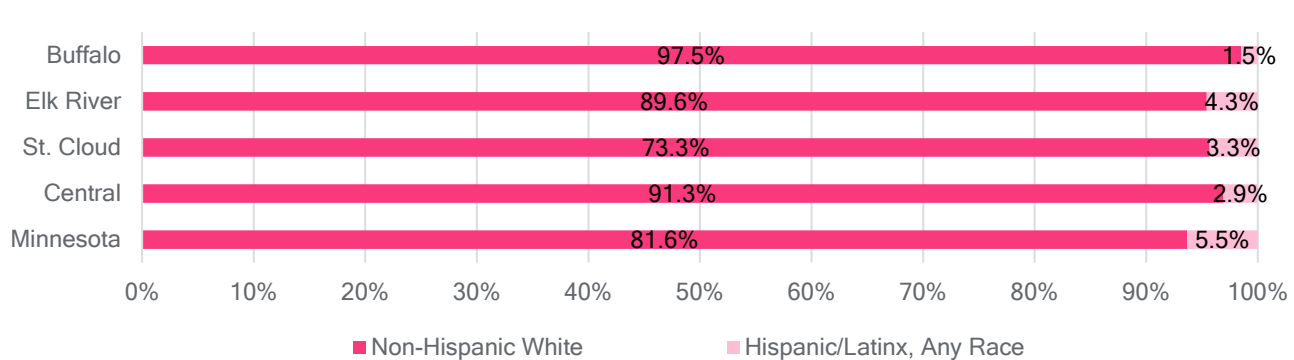
Population diversity increased between the two most recent population estimates statewide by half of a percentage point, and slightly more so in the Central region by 0.6 percentage points. Across the region overall, just 6.1%, a decrease from 7.8%, of the population identify as Black, Asian, American Indian, Native Hawaiian, or some other race. The demographic makeup of communities across the Central look quite different from one another. St. Cloud has a much larger share of people who identify as Black or African American, 6.4%, compared to just 0.7% of people who identify as Black or African American in Buffalo. Approximately 2.9% of Central Minnesota's residents are Hispanic or Latinx. This was an increase of 0.1 percentage point from last year's estimates. Elk River has the largest share of the population that is Hispanic/Latinx in Central Minnesota (4.3%), approximately 1% less than the overall share of the Hispanic/Latinx population in the state of Minnesota (5.5%).

Population Race, All Ages



American Community Survey 2016-2020.

Population Ethnicity, All Ages



American Community Survey 2016-2020.

Community Demographics

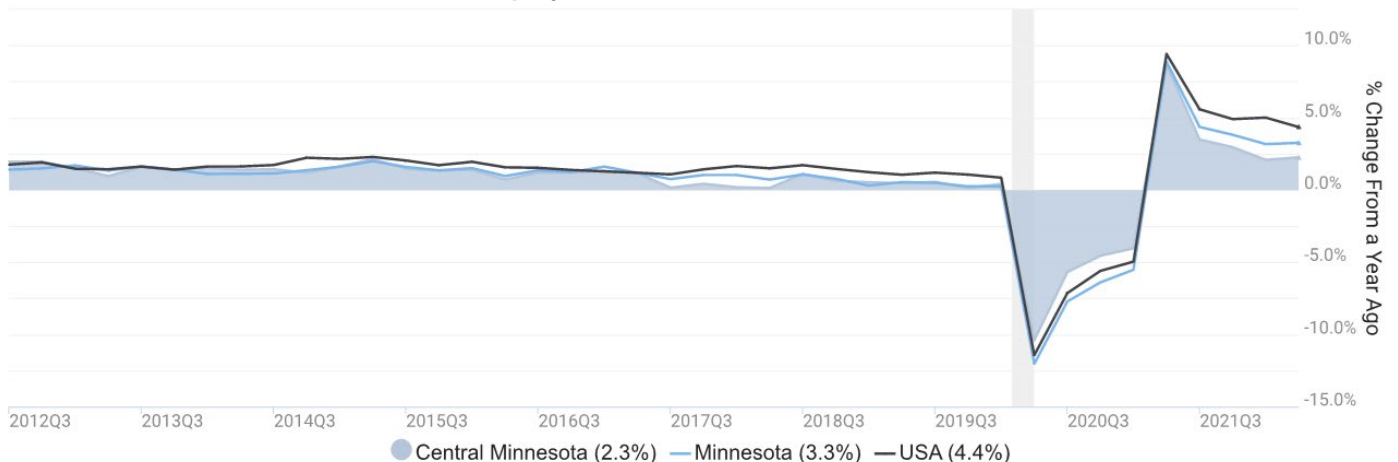
Demographics	City of Buffalo, MN	Percent			Percent		Value		
		City of Elk River, MN	St. Cloud MSA, MN	Central Minnesota	Minnesota	USA	Central Minnesota	Minnesota	USA
Population (ACS)	—	—	—	—	—	—	671,517	5,600,166	326,569,308
Male	48.6%	50.0%	50.2%	50.7%	49.8%	49.2%	340,649	2,789,017	160,818,530
Female	51.4%	50.0%	49.8%	49.3%	50.2%	50.8%	330,868	2,811,149	165,750,778
Median Age ²	—	—	—	—	—	—	38.1	38.1	38.2
Under 18 Years	25.1%	26.6%	23.6%	24.5%	23.2%	22.4%	164,402	1,299,284	73,296,738
18 to 24 Years	8.3%	6.9%	13.4%	9.4%	8.9%	9.3%	62,798	498,444	30,435,736
25 to 34 Years	12.5%	15.5%	12.8%	12.3%	13.6%	13.9%	82,384	760,033	45,485,165
35 to 44 Years	13.1%	14.4%	11.9%	12.7%	12.7%	12.7%	85,570	710,985	41,346,677
45 to 54 Years	13.3%	12.8%	11.3%	12.8%	12.4%	12.7%	86,113	692,277	41,540,736
55 to 64 Years	11.9%	11.6%	12.2%	13.2%	13.4%	12.9%	88,794	751,567	42,101,439
65 to 74 Years	9.0%	7.1%	8.2%	8.7%	9.1%	9.4%	58,232	511,127	30,547,950
75 Years, and Over	6.7%	5.2%	6.5%	6.4%	6.7%	6.7%	43,224	376,449	21,814,867
Race: White	97.5%	89.6%	87.1%	91.3%	81.6%	70.4%	613,339	4,572,149	229,960,813
Race: Black or African American	0.7%	2.9%	6.4%	3.0%	6.4%	12.6%	20,020	359,817	41,227,384
Race: American Indian and Alaska Native	0.2%	0.2%	0.2%	0.6%	1.0%	0.8%	4,121	54,558	2,688,614
Race: Asian	0.5%	1.2%	1.9%	1.4%	4.9%	5.6%	9,066	275,242	18,421,637
Race: Native Hawaiian and Other Pacific Islander	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	191	2,201	611,404
Race: Some Other Race	0.2%	3.4%	1.4%	1.1%	2.1%	5.1%	7,072	118,748	16,783,914
Race: Two or More Races	0.9%	2.7%	3.0%	2.6%	3.9%	5.2%	17,708	217,451	16,875,542
Hispanic or Latino (of any race)	1.5%	4.3%	3.3%	2.9%	5.5%	18.2%	19,543	307,675	59,361,020

American Community Survey 2016-2020 unless noted otherwise.

Employment

As of 2020Q1, total employment in Central Minnesota was 277,708 (based on a four-quarter moving average). By 2021Q1, employment in the region dropped to 259,782 (based on a four-quarter moving average). Over the year ending 2021Q1, employment declined an average of 4.6% in the region. Over the year ending in 2022Q2, total employment for the Central Minnesota increased 2.3% to 272,364 in the region.

Employment for Central Minnesota

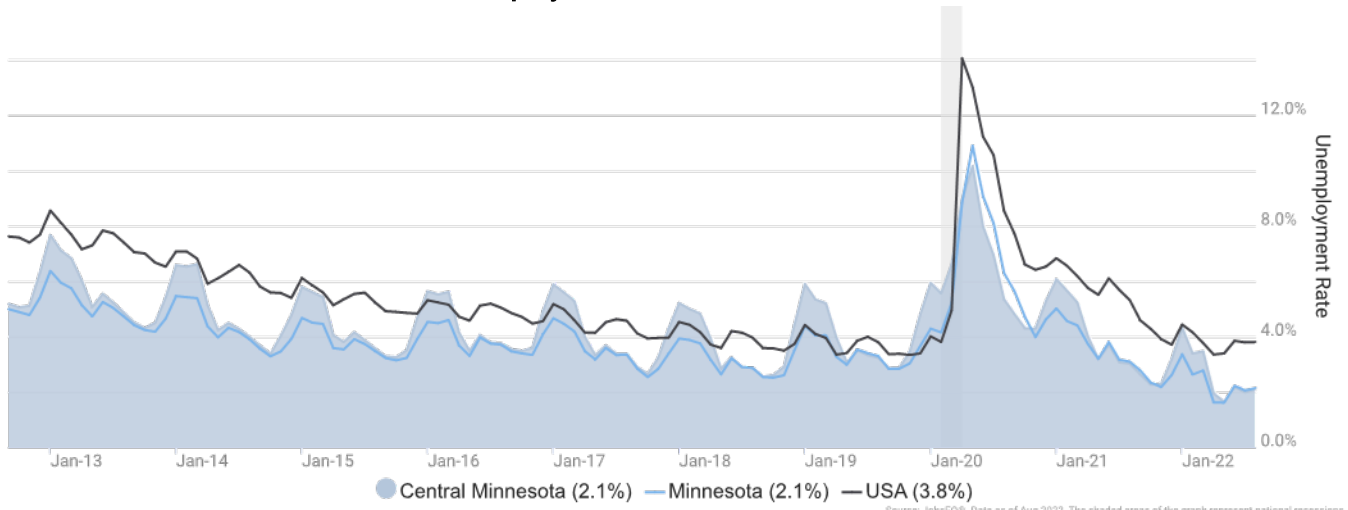


Source: JobsEQ®. Data as of 2022Q2. The shaded areas of the graph represent national recessions.

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 2022Q1 with preliminary estimates updated to 2022Q2.

The unemployment rate for the Central Minnesota was 2.1% as of August 2022. The regional unemployment rate was lower than the national rate of 3.8%. One year earlier, in August 2021, the unemployment rate in the Central Minnesota was 3.0%.

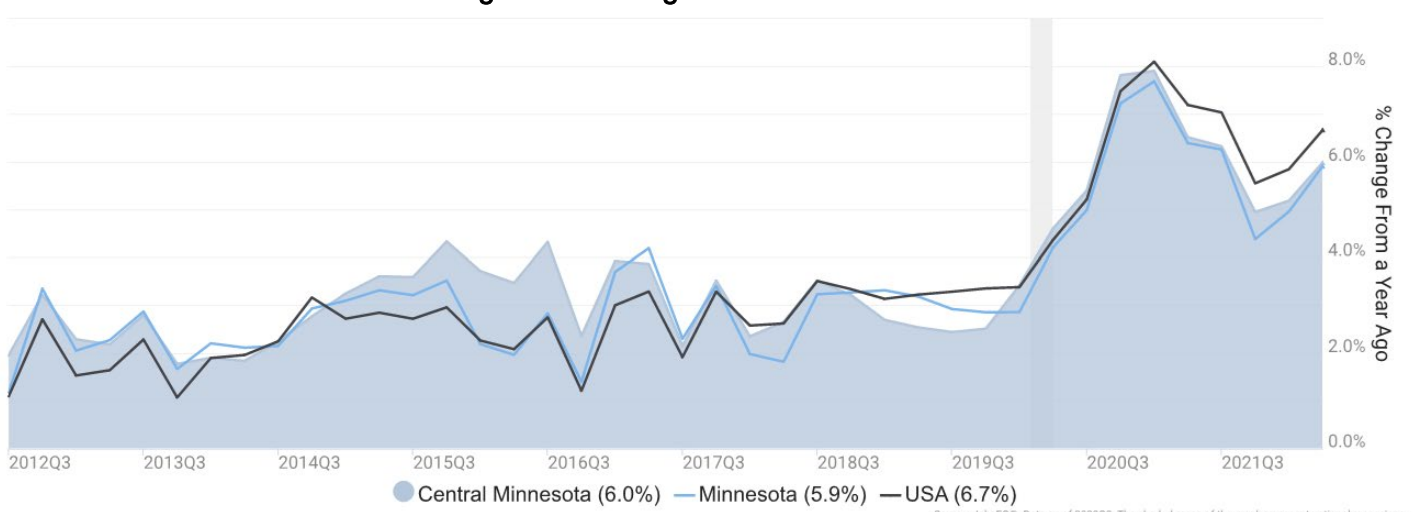
Unemployment for Central Minnesota



Unemployment rate data are from the Local Area Unemployment Statistics, provided by the Bureau of Labor Statistics and updated through August 2022.

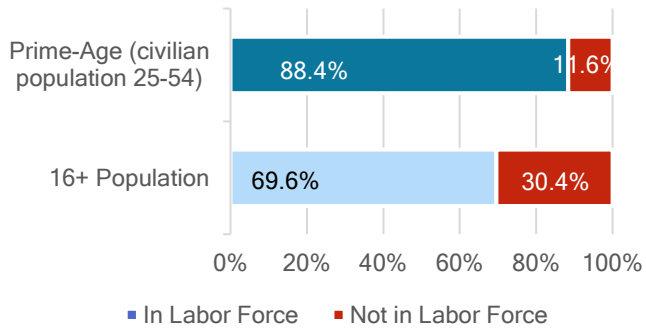
The average worker in the Central Minnesota earned annual wages of \$51,346 as of 2022Q2, an increase of about \$9,000 from one year prior, 2021Q1. Average annual wages per worker increased 6.0% in the region over the preceding four quarters. Wages rose similarly nationwide, where annual average wages were \$67,777 in the nation as of 2022Q2 compared to \$63,393 as of 2021Q1. This is due in large part to the loss of low-wage workers during the COVID-19 pandemic and the ongoing challenge of recruiting and hiring talent for entry-level, lower-wage jobs, particularly in sectors like hospitality, tourism, retail that were hit hardest by the pandemic.

Average Annual Wages for Central Minnesota



Annual average wages per worker data are derived from the Quarterly Census of Employment and Wages, provided by the Bureau of Labor Statistics and imputed where necessary. Data are updated through 2022Q1 with preliminary estimates updated to 2022Q2.

Labor Force Participation Rate



The region has a civilian labor force of 365,919 with a participation rate of nearly 70%, which is just ahead of the statewide participation rate for the population over 16. Age plays a key role in this difference, with the Central region home to a population that is younger than what is found in the Northwest and Northeast. The participation rate of the prime working age population (between the ages of 25 and 64) is also similar to the statewide rate—88.4% compared to the statewide 88.3%.

The Central area has a higher share of veterans in the region, at 4.5% of the regional population compared to

American Community Survey 2016-2020 unless noted otherwise.

3.7% broadly across the state. Veteran labor force participation is slightly lower in the region than the statewide average, 78.4% compared to 80.9% statewide. Similarly, the Central region has a higher share of persons with a disability, 9.2% compared to 8.7% statewide, but a higher labor force participation rate for the population with a disability, 53.3%, a decrease from the prior year's estimates (55.4%) compared to 52.8% statewide, also a slight decrease from the previous year's estimates (53%). The Central region overall has a similar share of disconnected youth (1.8% of youth) compared to statewide (1.8%) but below national rates (2.5%), with variation between communities. However, Buffalo has an estimated 39 (3.9% disconnected youth rate) disconnected youth who are disconnected from school, training, or work as of American Community Survey 2016-2020 estimates, a slight decrease from the previous year's estimates (40 and 4.5%).

Economic and Social Characteristics of Central Minnesota

Economic and Social Characteristics	Percent			Percent			Values		
	City of Buffalo, MN	City of Elk River, MN	St. Cloud MSA, MN	Central Minnesota	Minnesota	USA	Central Minnesota	Minnesota	USA
Labor Force Participation Rate and Size (civilian population 16 years and over)	69.3%	72.1%	71.3%	69.6%	69.2%	63.2%	365,919	3,074,732	164,759,496
Prime-Age Labor Force Participation Rate and Size (civilian population 25-54)	88.8%	86.1%	90.2%	88.4%	88.3%	82.4%	224,044	1,908,423	105,137,520
Armed Forces Labor Force	0.0%	0.0%	0.2%	0.1%	0.1%	0.4%	656	3,607	1,143,342
Veterans, Age 18-64	3.4%	4.0%	4.3%	4.5%	3.7%	4.5%	18,391	125,683	8,920,267
Veterans Labor Force Participation Rate and Size, Age 18-64	77.5%	89.0%	76.6%	78.4%	80.9%	76.8%	14,422	101,620	6,853,673
Median Household Income ²	—	—	—	—	—	—	\$73,112	\$73,382	\$64,994
Per Capita Income	—	—	—	—	—	—	\$33,683	\$38,881	\$35,384
Poverty Level (of all people)	8.6%	3.9%	11.3%	8.4%	9.3%	12.8%	54,693	511,185	40,910,326
Households Receiving Food Stamps/SNAP	4.8%	3.0%	9.0%	6.8%	7.5%	11.4%	17,147	165,078	13,892,407

Enrolled in Grade 12 (% of total population)	1.2%	1.1%	1.2%	1.3%	1.4%	1.3%	8,772	78,075	4,358,865
Disconnected Youth ³	3.9%	1.1%	0.8%	1.8%	1.8%	2.5%	677	5,115	433,164
Children in Single Parent Families (% of all children)	29.5%	34.8%	27.8%	25.9%	28.4%	34.0%	40,981	354,664	23,628,508
Uninsured	5.1%	3.1%	3.8%	4.0%	4.5%	8.7%	26,565	251,900	28,058,903
With a Disability, Age 18-64	10.8%	9.0%	9.1%	9.2%	8.7%	10.3%	36,976	295,441	20,231,217
With a Disability, Age 18-64, Labor Force Participation Rate and Size	45.8%	65.8%	54.9%	53.3%	52.8%	43.2%	19,724	156,039	8,740,236
Foreign Born	2.4%	5.6%	5.9%	3.5%	8.4%	13.5%	23,523	470,687	44,125,628

American Community Survey 2016-2020 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



94.1% of prime working age adult residents have at least a high school diploma or GED.

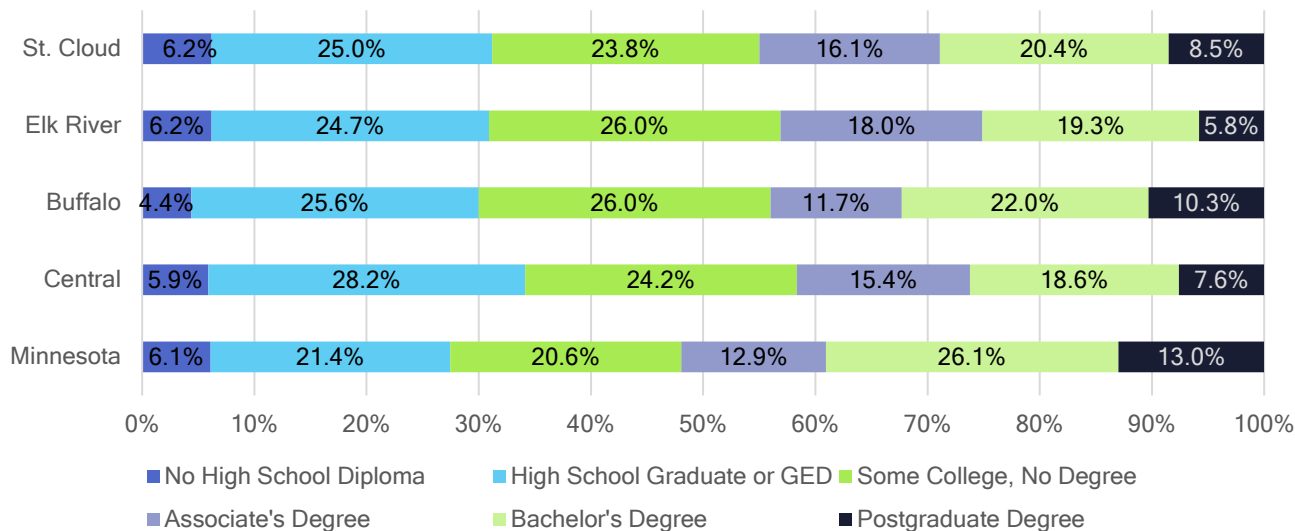
In Central Minnesota, 5.9% (an increase from the previous year's 5.6%) of adults between the ages of 25 and 64 do not have a high school diploma or equivalent, and 28.2% (a slight decrease from the previous year's 28.4%) have a high school diploma as their highest level of education (compared with 21.4% statewide). Nationwide, 10.5% (a slight decrease from the previous year's 10.9%) of U.S. residents between the ages of 25 and 64 never completed high school or obtained an equivalent credential. The prime working age population of St. Cloud MSA and Elk River have a larger share of residents with a high school diploma or less; Buffalo has the smallest share of residents with no high school diploma, but the largest share with a high school diploma as their highest level of educational attainment (25.6%).

Educational Characteristics of Central Minnesota

Educational Characteristics	City of Buffalo, MN	Percent			Percent			Values		
		City of Elk River, MN	St. Cloud MSA, MN	Central Minnesota	Minnesota	USA	Central Minnesota	Minnesota	USA	
No High School Diploma	4.4%	6.2%	6.2%	5.9%	6.1%	10.5%	20,228	176,478	17,929,220	
High School Graduate	25.6%	24.7%	25.0%	28.2%	21.4%	25.4%	96,651	622,379	43,289,555	
Some College, No Degree	26.0%	26.0%	23.8%	24.2%	20.6%	20.5%	83,087	600,346	34,959,338	
Associate's Degree	11.7%	18.0%	16.1%	15.4%	12.9%	9.3%	52,867	376,942	15,776,790	
Bachelor's Degree	22.0%	19.3%	20.4%	18.6%	26.1%	21.6%	63,852	760,576	36,888,244	
Postgraduate Degree	10.3%	5.8%	8.5%	7.6%	13.0%	12.7%	26,176	378,141	21,630,870	

American Community Survey 2016-2020 unless noted otherwise.

Educational Attainment, Age 25-64



American Community Survey 2016-2020.

Regional Colleges and Universities

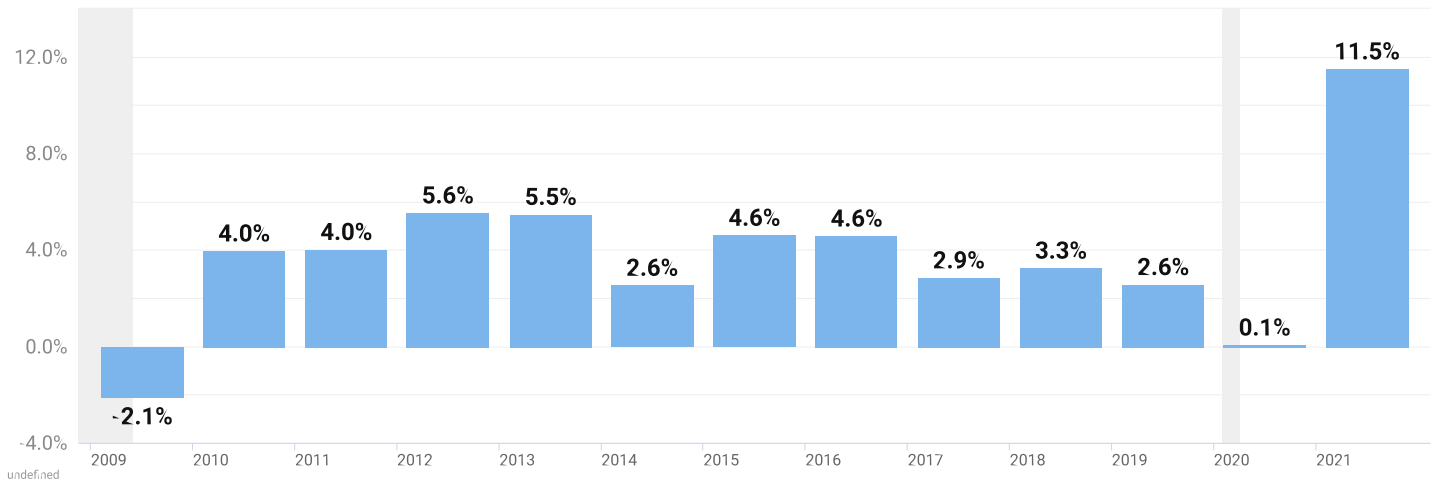
Central Minnesota has nine institutions of higher education that offer non-degree awards, two-year degrees, and four-year degrees. The table below shows these postsecondary institutions sorted by enrollment size in during the 2017-18 school year.

School	Certificate < 1 Yr	Certificate 1+ but < 2 Yr	Associate's	Certificate 2+ but < 4 Yr	Bachelor's	Post-Bacc	Master's	Doctorate	Total Awards	Total School Enrollment	Avg Net Price ¹
Saint Cloud State University	54	0	122	0	1,859	82	515	0	24	2,656	11,841
St Cloud Technical and Community College	4	206	743	68	0	0	0	0	0	1,021	3,931
Rasmussen College-Minnesota	418	227	1,179	0	122	0	20	0	0	1,966	3,927
Pine Technical & Community College	129	109	87	0	0	0	0	0	0	325	1,724
College of Saint Benedict	0	0	0	0	487	0	0	0	0	487	1,668
Saint Johns University	0	0	0	0	393	0	26	0	0	419	1,668
University of Minnesota-Morris	0	0	0	0	304	0	0	0	0	304	1,339
Hazelden Betty Ford Graduate School of Addiction Studies	0	0	0	0	0	0	49	0	0	49	174
Model College of Hair Design	35	54	0	0	0	0	0	0	0	89	75
Total	640	596	2,131	68	3,165	82	610	0	24		

Economic Indicators

Gross Domestic Product (GDP) is the total value of goods and services produced by a region. In 2021, nominal GDP in the Central Minnesota expanded 11.5%. This follows growth of 0.1% in 2020. As of 2021, total GDP in the Central Minnesota was \$28,337,576,000.

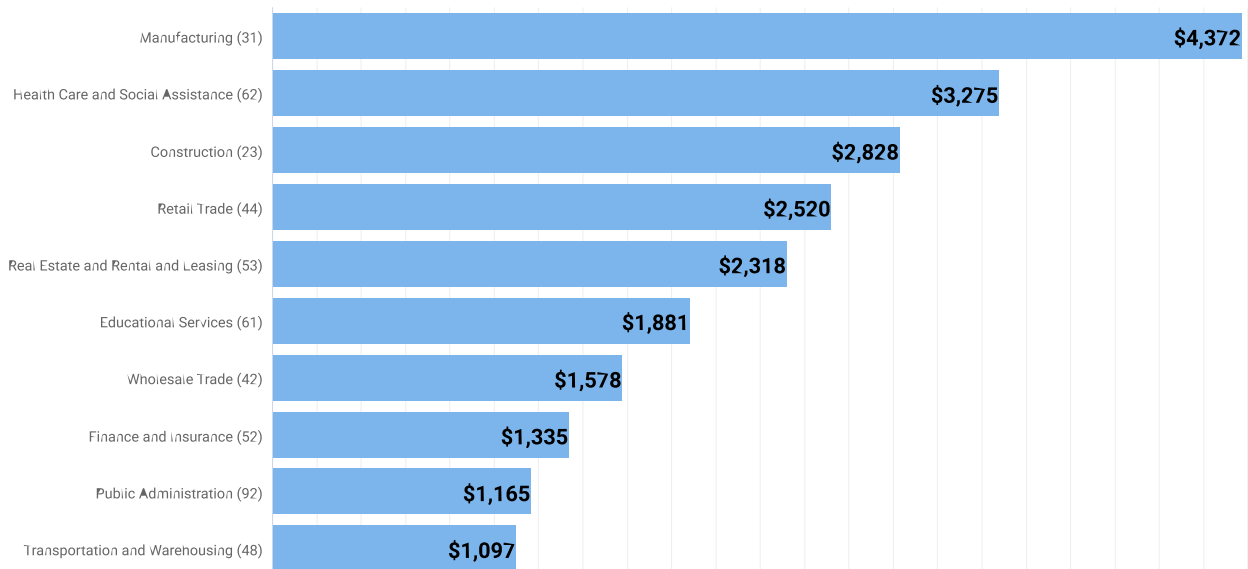
One-Year % Change in GDP, Central Minnesota



Gross Domestic Product data are provided by the Bureau of Economic Analysis, imputed by Chmura where necessary, updated through 2021.⁴

Of the industries represented in the Central, Manufacturing contributed the largest portion of GDP in 2021, \$4,371,788,000. The next-largest contributions came from Health Care and Social Assistance (\$3,275,372,000); Construction (\$2,828,335,000); and Retail Trade (\$2,519,816,000).

GDP (in \$ millions) Central Minnesota, 2021



Gross Domestic Product data are provided by the Bureau of Economic Analysis, imputed by Chmura where necessary, updated through 2021.

⁴ GDP estimates by Chmura Economics. 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.

The Workforce of Today and Tomorrow

Workforce Forecast

Nationwide, unemployment hit an all-time non-wartime low of 3.5% in October 2022, rising only to 3.7% in November amidst a still hot jobs market. US companies added 261,000 new jobs to the economy in October alone, likely constricted by the immensely tight talent market, where there are approximately two jobs for every one person seeking work. There are signs that companies are going through their inventories of product more quickly than prior months, with warehousing employment down from the prior months nationwide and with the retail industry seeing mixed employment trends. Manufacturing, Healthcare, and Professional and Technical services employment had the largest job gains as of the October 2022 jobs report nationally, all trends apparent for Minnesota as well.

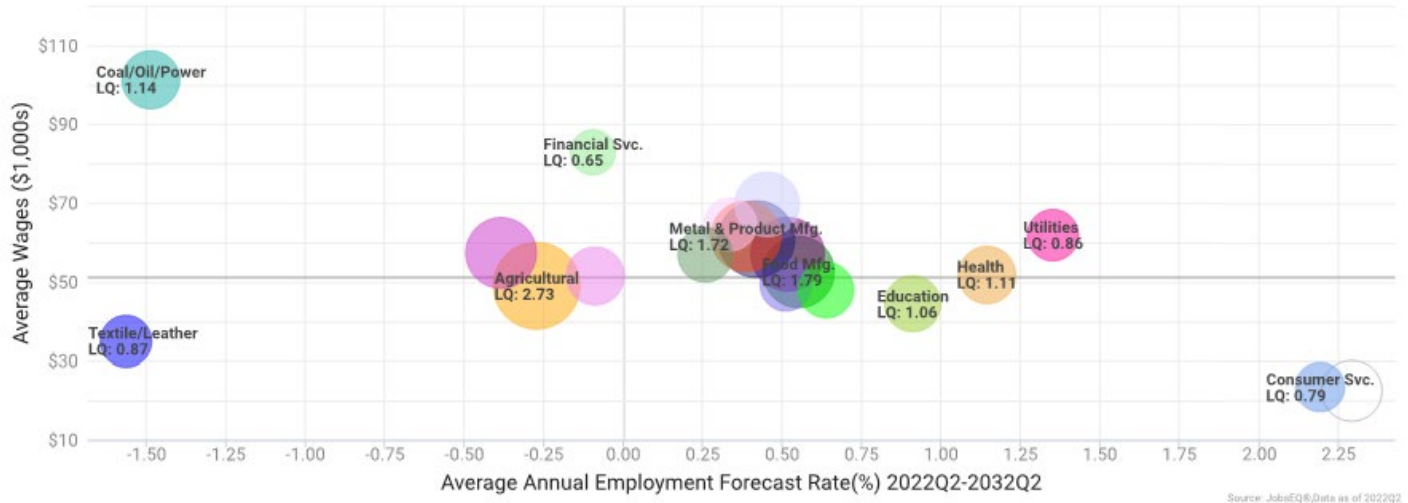
Employment rose by 2.3% in the region between 2021Q1 and 2022Q2, an increase from the previous year's drop in employment of 6.4%. Employment rose higher than the forecasted 1.7% annual growth as well with an estimated 1.8% of the Central Minnesota workforce being unemployed as of September 2022. Unemployment rate in Central Minnesota decreased from the prior year as well (2.6% for September 2021). Future growth in jobs in the region is forecasted to grow 0.7% annually through 2027 in a baseline scenario.

5-Year Forecast Comparison in Central Minnesota



An industry cluster is a geographic concentration of interrelated industries or occupations. The industry cluster in the Central Minnesota region with the highest relative concentration remains Agricultural with a location quotient of 2.73. This sector employs 10,458 workers in the region (an increase of 64 workers from 2021) with an average wage of \$49,101—an increase of almost \$2,300 from 2021 wage estimates (2021Q1 wage estimate of \$46,804). Employment in the Agricultural cluster is projected to contract in the region about 0.6% per year over the next ten years.

Industry Clusters for Central Minnesota as of 2022Q2



Emerging Critical Needs

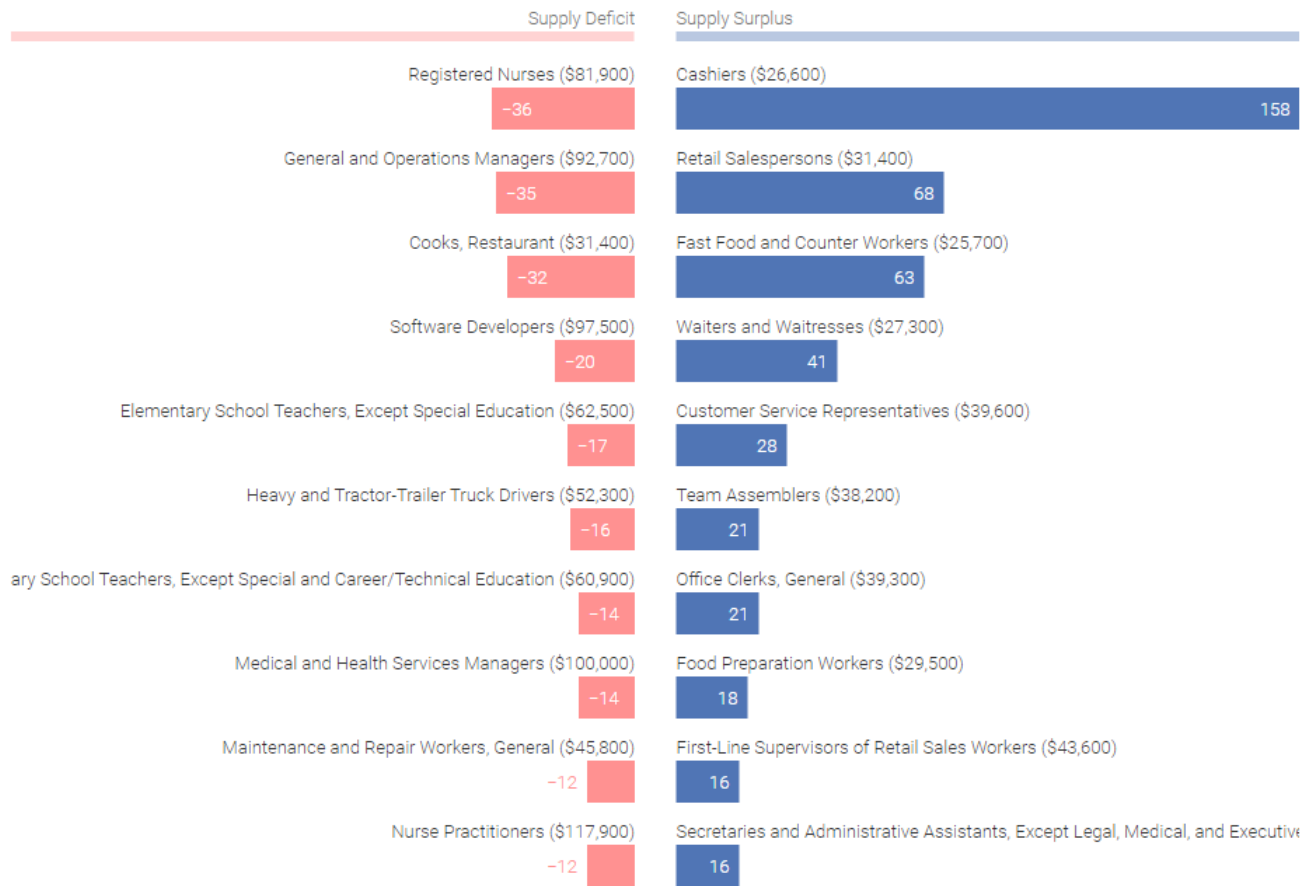
SECTORS AND OCCUPATIONS OF FOCUS

The pandemic's acceleration of critical talent shortages through shifts in demand, supply chains, and resource availability has resulted in dramatic upticks in demand for very specifically-trained talent with some college, an industry credential, a two year degree, or a bachelor's degree amidst a severe constriction of talent availability for these same middle-skill, middle-wage roles. Now over two years after the pandemic started, new and surprising talent shortage twists are emerging. 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.

On the side of talent surplus, Sales and Related occupations forecast the greatest surplus collectively followed by Office and Administrative Support occupations. None of the ten detailed occupations forecast to have the highest surplus of talent in the Central region (shows in blue below) as of the second quarter of 2022 typically require an advanced degree, and only one pays over \$40,000 on average. Six out of ten of these positions typically cannot be done remotely, and the two positions out of ten are considered high contact-intensity. Given the impacts of the COVID-19 pandemic on local industry, these occupations of anticipated high talent excess will likely decline in overall local demand and shift dramatically in how work is done on a daily basis.

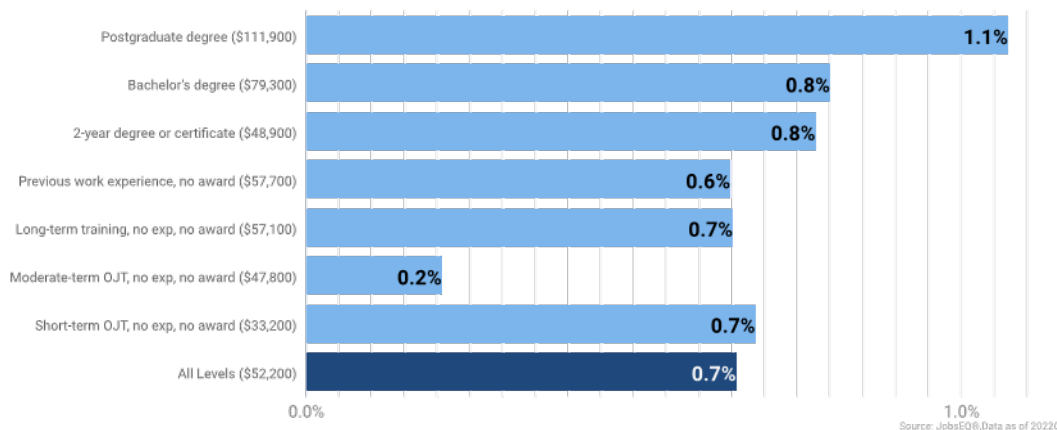
Among roles in talent shortage in the Central region, Restaurant Cooks and Teaching positions rose in severity of shortage. The grouping of occupations in highest forecasted shortage by volume in Central Minnesota in 2022 are Healthcare Practitioners and Technical occupations. Registered Nurses continues to rank first as the top occupation of shortage in the region, consistent for the past three years. All of the top ten positions of highest forecasted talent shortage are Gateway or Target Occupations, except for Restaurant Cooks—which pays \$31,400 on average annually.

Average Annual Occupation Gaps (i.e. Talent Shortage), 2022Q2 through 2032Q2



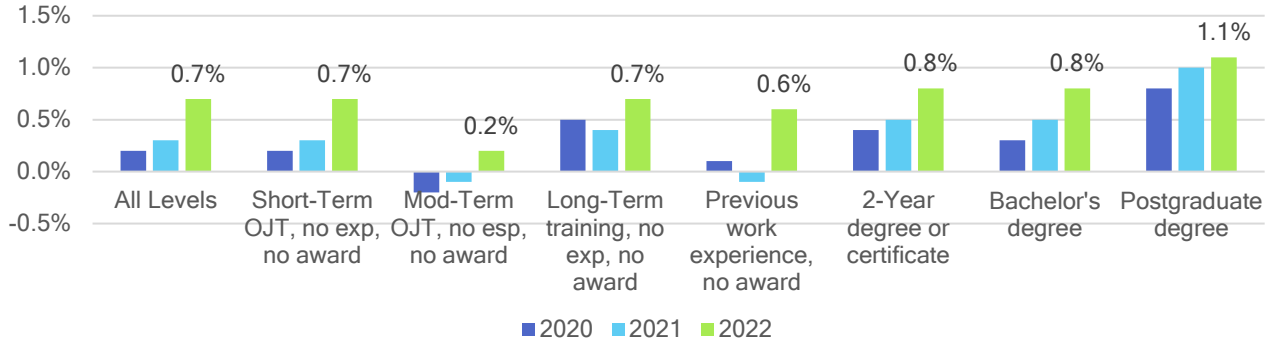
Expected growth rates for occupations vary by the education and training required. While all employment in Central Minnesota is projected to grow minimally by about 0.3% annually over the next ten years under baseline estimates (an improvement compared to last year’s forecast of 0.2% growth), occupations typically requiring a postgraduate degree are expected to grow 1.0% per year, and those requiring a bachelor’s, two-year degree, or certificate are forecast to grow 0.5% per year. Estimated wages have increased across careers at each education level requirement.

Annual Average Projected Job Growth by Training Required for Central Minnesota



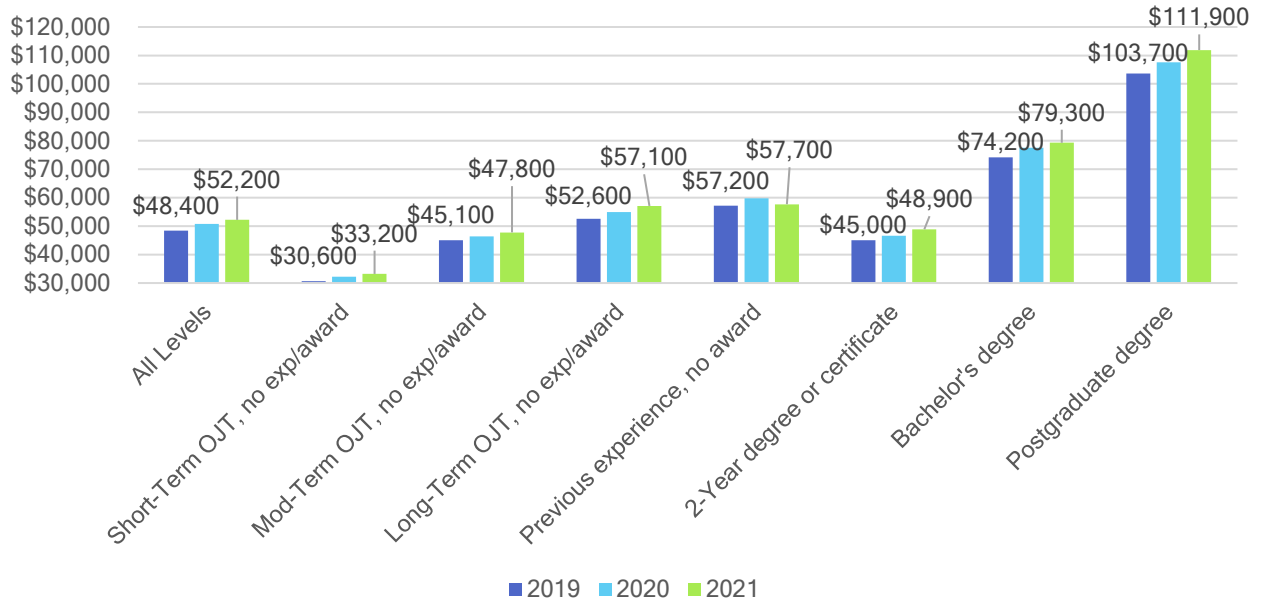
Employment by occupation data are estimates as of 2022Q2. Education levels of occupations are based on BLS assignments. Forecast employment growth uses national projections from the Bureau of Labor Statistics adapted for regional growth patterns.

Average Annual Employment Growth Forecast Estimates in 2020, 2021, and 2022 by Education and Training Requirements, Central Minnesota



SOURCE: Chmura JobsEQ 2022Q2.

Average Wage Estimates Annually by Education and Training Requirements, Central Minnesota



SOURCE: Chmura JobsEQ 2022Q2. Note wage estimates lag by a full calendar year; 2022Q2 estimates represent 2021 average wages.

Central Minnesota has a high concentration of manufacturing industries, specifically cabinet manufacturing, turned product manufacturing, and machine shops. Street and bridge construction is also more highly concentrated in the Central region compared to Minnesota overall or national volumes, which is reflected in the Gateway Occupations of high volume and likely forecasted shortages. Maintenance and Repair Workers are in short supply with a 1.5% unemployment rate in the region.

Regional Summary of Top High-Demand Industries and Gateway Occupations

	Overall Unemployment Rate 2022Q2	Overall Mean Wage	Gateway Occupation Unemployment Rate 2022Q2	Top 4-Digit Sub-Industries of High Local Concentration (LQ) and High Demand (replacement or growth)	Top Gateway Occupations with Occupation Gaps and/or Award Gaps in Order of Total Employment, including Unemployment Rate*
Central	2.8%	\$52,200	2.4%	<ul style="list-style-type: none"> • Household & Institutional Furniture & Kitchen Cabinet Manufacturing (5.01) • Machine Shops; Turned Product; & Screw, Nut, & Bolt Manufacturing (4.58) • Highway, Street, & Bridge Construction (3.45) • Residential Intellectual & Developmental Disability, Mental Health, & Abuse Facilities (3.02) 	<ul style="list-style-type: none"> • Supervisors of Retail Sales Workers (1.3%) • Maintenance & Repair Workers, General (1.5%) • Light Truck Drivers (2.2%) • Welders, Cutters, Solderers, & Brazers (3.0%) • Machinists (2.2%)
Minnesota Statewide	2.5%	\$60,300	2.3%	<ul style="list-style-type: none"> • Hog & Pig Farming (6.05) • Metal Ore Mining (5.13) • Other Residential Care Facilities (3.28) • Farm Product Raw Material Merchant Wholesalers (3.18) 	<ul style="list-style-type: none"> • Heavy Tractor-Trailer & Truck Drivers (OG, AG; 2.2%) • Bookkeeping, Accounting, & Auditing Clerks (AG; 1.8%) • Maintenance & Repair Workers (OG; 1.4%) • Carpenters (OG; 3.2%) • Light Truck Drivers (AG; 2.2%)

*Table includes 4-digit NAICS code industries that have a high Location Quotient (higher than 1.2) in Minnesota, high-demand, and employment over at least 2,300 workers statewide as of 2022Q2. Color coding of industries correspond with the CTE Career Fields. **Table includes high-demand occupations paying average wages between \$42,000-regional mean wage. High-demand is defined as lower than average unemployment rate (by occupations), higher than average regional growth forecast, greater than 50% total replacement demand, high job posting volumes (by occupations), and/or high posting:unemployment ratio (by occupations) as of 2022Q2.

Several occupations have no unemployed talent in the Central region as of 2022Q2 estimates. The occupations listed below have nonexistent unemployed talent at the regional level and currently have over 75 people working in these positions locally. Health Science Technology, Human Services, and Engineering, Manufacturing, and Technology occupations comprise the majority of these roles with no local unemployed talent to leverage into high-demand positions. All of these roles are Target Occupations paying well over the regional average of \$52,200 annually.

Occupations with No Unemployed Workforce and Employing over 75 Workers, Central Minnesota 2022Q2

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 Growth	Ann % Growth
21-2021	Directors, Religious Activities and Education	306	\$56,500	1.08	0	0.0%	1	-8	-0.5%	193	64	116	13	0.9%
29-1021	Dentists, General	194	\$165,300	0.85	0	0.0%	31	11	1.2%	35	18	8	9	0.9%
33-1012	First-Line Supervisors of Police and Detectives	189	\$94,800	0.89	0	0.0%	1	4	0.4%	67	21	40	6	0.6%
29-1131	Veterinarians	188	\$97,800	1.20	0	0.0%	13	32	3.8%	46	16	16	14	1.4%
29-1215	Family Medicine Physicians	175	\$230,600	0.90	0	0.0%	20	-19	-2.0%	28	14	10	4	0.5%
29-1216	General Internal Medicine Physicians	146	\$296,800	1.28	0	0.0%	10	-3	-0.3%	19	12	8	-1	-0.1%
21-1092	Probation Officers and Correctional Treatment Specialists	139	\$69,500	0.91	0	0.0%	2	-3	-0.4%	61	16	43	3	0.5%
49-9043	Maintenance Workers, Machinery	136	\$51,900	1.32	0	0.0%	0	-3	-0.4%	70	24	39	7	1.1%
19-3034	School Psychologists	131	\$74,700	1.26	0	0.0%	14	4	0.6%	49	18	26	5	0.8%
33-3021	Detectives and Criminal Investigators	131	\$77,400	0.72	0	0.0%	3	1	0.2%	50	17	31	3	0.4%
25-2051	Special Education Teachers, Preschool	125	\$60,400	3.37	0	0.0%	1	4	0.6%	55	22	26	7	1.0%
15-1242	Database Administrators	117	\$85,800	0.62	0	0.0%	3	47	10.8%	46	14	29	3	0.5%
33-1021	First-Line Supervisors of Firefighting and Prevention Workers	108	\$66,900	0.82	0	0.0%	0	6	1.2%	40	13	22	4	0.8%
13-1141	Compensation, Benefits, and Job Analysis Specialists	106	\$71,100	0.64	0	0.0%	7	-19	-3.3%	53	16	32	4	0.7%
15-1212	Information Security Analysts	106	\$90,700	0.37	0	0.0%	4	8	1.6%	53	9	32	12	2.2%
29-2031	Cardiovascular Technologists and Technicians	106	\$65,300	1.07	0	0.0%	41	-1	-0.2%	41	15	23	3	0.5%
19-3033	Clinical and Counseling Psychologists	100	\$91,200	0.91	0	0.0%	18	50	14.6%	40	14	21	6	1.2%
53-4031	Railroad Conductors and Yardmasters	95	\$67,400	1.19	0	0.0%	n/a	-16	-3.1%	45	11	32	2	0.5%
29-1041	Optometrists	92	\$125,700	1.13	0	0.0%	13	10	2.4%	19	9	6	4	0.9%

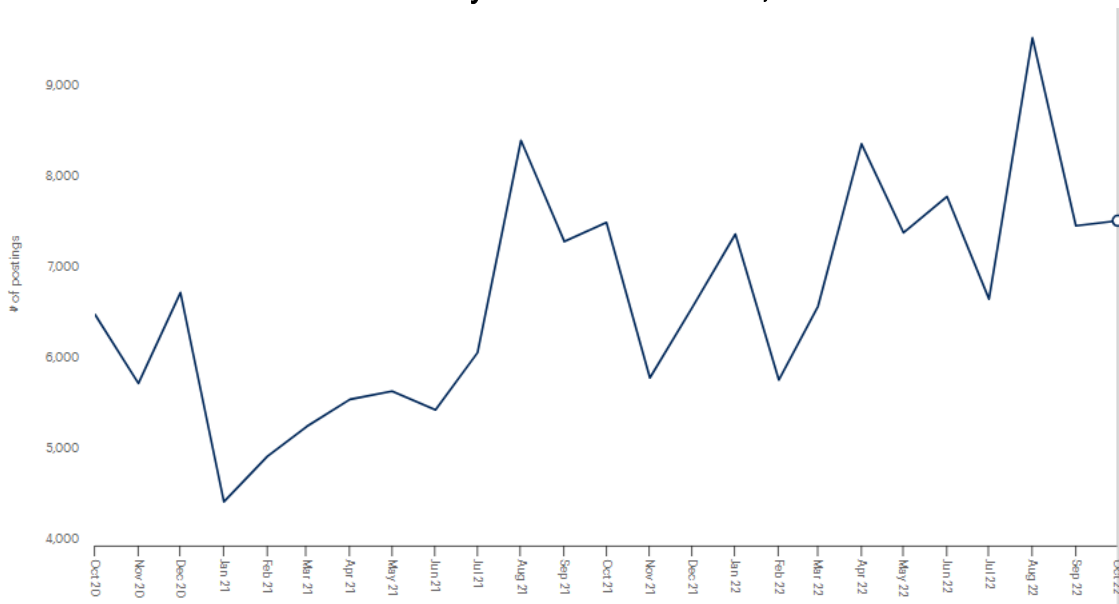
19-2041	Environmental Scientists and Specialists, Including Health	88	\$75,500	0.66	0	0.0%	2	-2	-0.5%	44	8	35	2	0.3%
19-3039	Psychologists, All Other	85	\$71,900	0.88	0	0.0%	1	6	1.4%	30	11	17	2	0.5%
51-8011	Nuclear Power Reactor Operators	79	\$115,300	9.41	0	0.0%	1	1	0.3%	18	9	23	-14	-3.7%
33-1011	First-Line Supervisors of Correctional Officers	76	\$76,400	0.84	0	0.0%	n/a	-4	-0.9%	28	12	17	-1	-0.3%
00-0000	Total - All Occupations	272,364	\$52,200	1.00	9,934	2.8%	14,106	-1,152	-0.1%	163,771	61,440	93,334	8,998	0.7%

EMERGING CAREER PATHS

Online job posting data reveals lot about employer demand for certain skills, certifications, qualifications, and occupational competencies. Skills-based hiring continues to trend up in the current tight labor market, particularly in the tech sector, business, and finance industries. Remote and hybrid work environments have also continued to rise well beyond the initial impacts of the pandemic across multiple sectors. However, October 2022 data indicates that there is a slight cooling in the market for all job types statewide, including some remote roles. The October 2022 US Jobs Report observed a similar trend in overall lower job posting volumes, slight dips in remote work opportunities, and a decline in the share of postings that include a signing bonus.

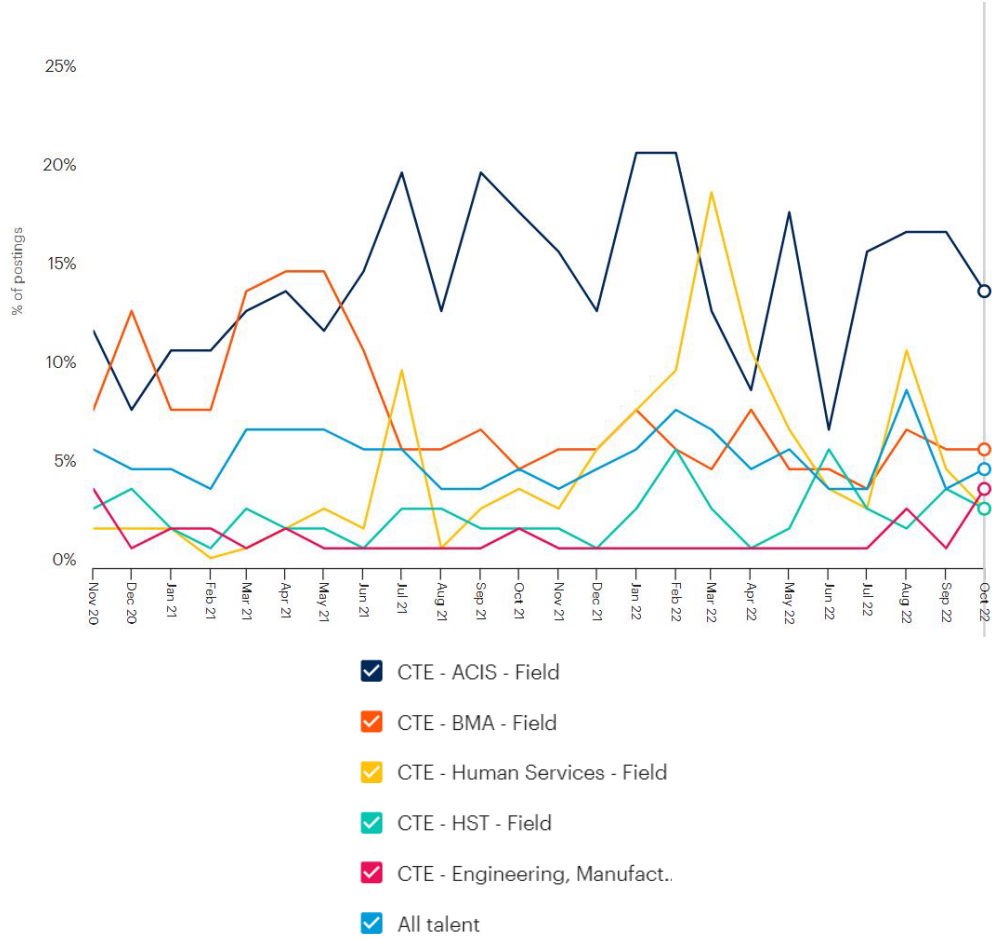
From November 1, 2021 through October 31, 2022 there were 87,738 unique job postings advertised online in Central Minnesota on job boards, according to analysis using Gartner TalentNeuron Plan (compared to 1,119,315 postings statewide). This was 19% higher than the 12 months prior. About 8% of all positions advertised were explicitly listed as remote or telecommute roles—either permanently or temporarily. Remote positions increased in prevalence by 6% from the 12 months prior. Remote work opportunities have continued to increase significantly among Information Technology careers and Business, Management, and Administration roles (such as Business Operations Specialists) during the first year of the pandemic. Specifically, 16% of all Information Technology jobs advertised online in Central Minnesota between November 2021 and October 2022 were remote positions—up 1 percentage points from the prior year (9% fully remote, 6% hybrid remote, and 1% temporarily remote).

Total Jobs Advertised Monthly in Central Minnesota, October 2021-2022



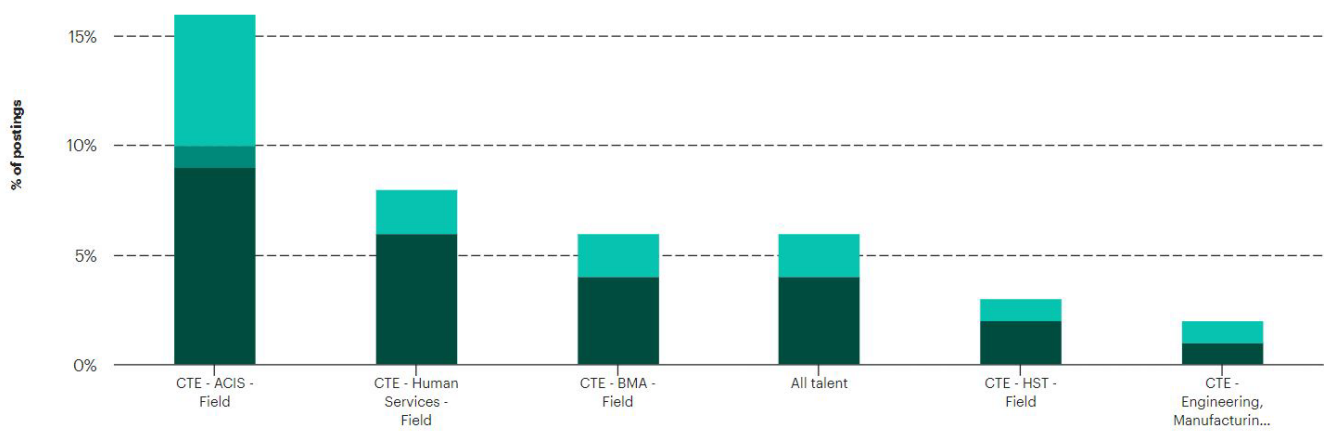
SOURCE: Gartner TalentNeuron Plan accessed 11/9/2022

Total Remote Job Postings Advertised Monthly in Central Minnesota, October 2021-2022



SOURCE: Gartner TalentNeuron Plan accessed 11/3/2022

Remote Job Postings by Career Field Advertised in Central Minnesota October 2021-2022



Talent Profile ▾	% of postings				
	Unspecified /Onsite ▾	Total remote ▾	Fully remote ▾	Temporary remote ▾	Hybrid remote ▾
CTE - ACIS - Field	84% ▼ -1 pp	16% ▲ 1 pp	9% ▼ -1 pp	1% ▲ 0 pp	6% ▲ 2 pp
CTE - Human Services - Field	92% ▼ -6 pp	8% ▲ 6 pp	6% ▲ 4 pp	0% ▲ 0 pp	2% ▲ 2 pp
CTE - BMA - Field	94% ▲ 3 pp	6% ▼ -3 pp	4% ▼ -3 pp	0% ▲ 0 pp	2% ▲ 0 pp
All talent	94% ▼ -1 pp	6% ▲ 1 pp	4% ▲ 0 pp	0% ▲ 0 pp	2% ▲ 1 pp
CTE - HST - Field	97% ▲ 0 pp	3% ▲ 0 pp	2% ▲ 0 pp	0% ▲ 0 pp	1% ▲ 0 pp
CTE - Engineering, Manufacturing, and Technology - Field	98% ▲ 0 pp	2% ▲ 0 pp	1% ▲ 0 pp	0% ▲ 0 pp	1% ▲ 0 pp

SOURCE: Gartner TalentNeuron Plan accessed 11/3/2022

Remote work opportunities continued to increase among Human Services, Health Science, and Information Technology roles over the past 12 months compared to the 12 months prior. Last year, the volume of remote Secretaries and Administrative Assistants increased by 1,400%; this year's estimates saw the demand for remote Secretaries and Administrative Assistants cool substantially (an increase of 6%).

Change in Volume of Remote Work Opportunities by Occupation in Central Minnesota, October 2021-2022 Compared to 12 months prior

1. Customer Service Representative, 973 (+72%)
2. Gig Economy Careers, 557 (+66%)
3. Heavy and Tractor-Trailer Truck Drivers, 335 (+66%)
4. Registered Nurses, 199 (+176%)
5. Software Developers, Applications, 158 (+15%)

During the first six months of the COVID-19 pandemic,⁵ there were 37,086 new jobs advertised in the region—an increase of 4% from the same six months in 2019. The top three positions advertised by volume were for Heavy Truck Drivers, Stockroom Laborers, and Personal Care Aides. The most significant increases in demand were among Stockroom Laborers, Personal Care Aides, Insurance Sales Agents, and Sales Drivers. This reflects the sudden and growing local demand for goods distribution and personal care services in response to the pandemic.

Over the past 12 months, several of these occupations have continued to see growth in postings, including Heavy Truck Drivers, Registered Nurses, and Laborers. Overall, healthcare and shipping/logistics roles have continued to spike in volume considerably, showing much higher demand since March 2021 compared to early months of the pandemic. Supervisory roles across food service, hospitality, manufacturing, production, and healthcare have all been rising in demand.

⁵ March 15-June 15, 2020.

Top Emerging Occupations in Central Minnesota, October 2021-2022 (by increase in total postings)

1. Roofers (+2,567%)
2. First-Line Supervisors of Landscaping (+733)
3. Dentists (+617%)
4. Diagnostic Medical Sonographers (+446%)
5. Police and Sheriff Patrol Officers (+380%)

Top Occupations in Growing Demand in Central Minnesota, October 2021-2022 (by volume of total job postings)

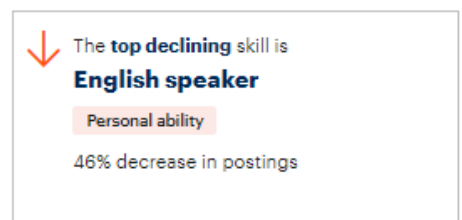
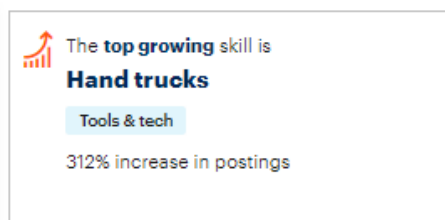
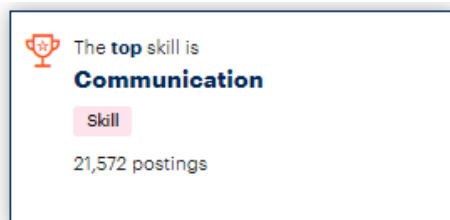
1. Heavy and Tractor-Trailer Truck Drivers (+49%)
2. Registered Nurses (+8%)
3. Gig Economy Careers (-4%)
4. Stock Clerks and Order Fillers (+53%)
5. First-Line Supervisors of Retail Sales Workers (+36%)

Talent accumulates valuable skills in many different ways beyond just work and education, from self-study to apprenticeships/internships, as well as workforce training programs and general life experience 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 don't know they have.

For example, servers trying to move beyond a likely transition (bartending, retail sales, and other hospitality jobs) to an aligned transition like public relations specialist, skills tell us where their current qualifications align and where there are gaps. This kind of gap analysis is possible at the occupation level and supports with postsecondary planning, workforce development, and employer talent strategy.

Human skills and other competencies like scheduling, managing a flexible work environment, and handling general healthcare needs were mentioned in job postings as required competencies for candidates in higher volumes from March through August in comparison to early 2020 or any point in 2019, but declined moderately from September 2020 through August 2021. The majority of rising skills are focused in Business, Management, and Administration capacities.

Top Evolving Skills in Central Minnesota, October 2021-2022



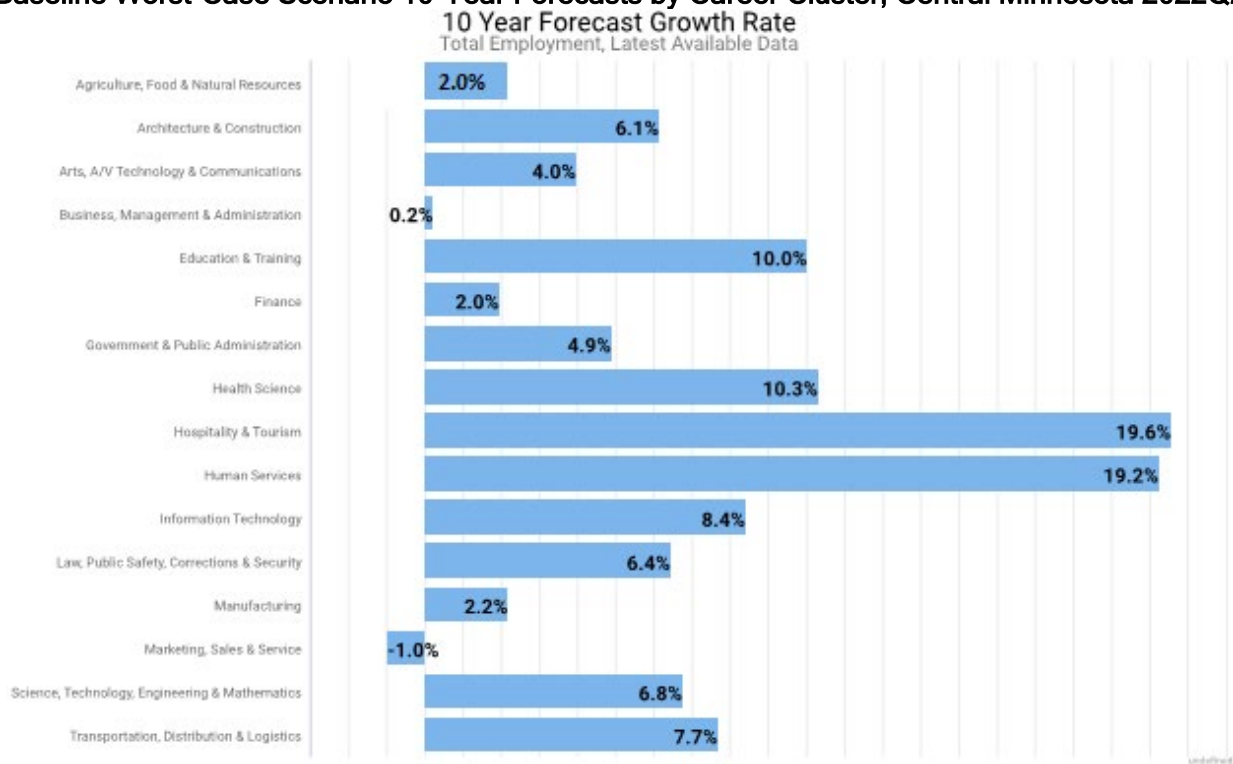
Career Field Insights

Analysis of the sixteen CTE Clusters provides an entryway into career pathways, summarizing where opportunities are greatest among hundreds of occupations.

Of sixteen career clusters used by Career and Technical Education (CTE), fifteen are forecast in a worst-case scenario model to grow in overall employment over the next ten years. The clusters forecasting highest growth in the region are Hospitality and Tourism (19.6%) and Human Services (19.2%) in a worst-case scenario. Eleven of these growing career clusters have average wages above the average occupation wage in the region (\$52,200 in 2022).⁶

Comparing current baseline forecasts to the same forecasts modeled one year ago, all but Marketing, Sales, and Service are forecasting higher baseline employment growth over ten years than what was estimated last year.

Baseline Worst-Case Scenario 10-Year Forecasts by Career Cluster, Central Minnesota 2022Q2



Cluster forecasts estimated using Chmura, JobsEQ, based on 2020Q1 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 both future growth and the number of people retiring be taken into account. In the Central region, Hospitality & Tourism, Business, Management, and Administration, and Marketing, Sales, and Service clusters are expected to have the highest annual job demand by volume of opportunities—due to retirements and job changes.

⁶ Clusters paying an average salary higher than the regional average occupation wage include Science, Technology, Engineering, and Mathematics, Information Technology, Finance, Health Science, Government and Public Administration, Law, Public Safety, Corrections, and Security, Business, Management, and Administration, and Architecture and Construction.

Science, Technology, Engineering & Mathematics has the highest wages of the Career Clusters followed by the Information Technology and Finance clusters.

Career Cluster	Employment	Avg Ann Wages	Job Ads	Baseline 10-Year Forecasted Empl Change	Ann Empl Growth	Ann Total Demand
Science, Technology, Engineering & Mathematics	2,901	\$91,000	448	6.8% (+)	19	220
Information Technology	4,795	\$83,300	319	8.4% (+)	39	386
Finance	7,044	\$76,100	394	2.0%	13	611
Health Science	25,166	\$73,300	2,887	10.3% (+)	245	2,213
Agriculture, Food & Natural Resources*	21,027	\$57,300	462	2.0% (+)	-22	2,454
Government & Public Administration	2,093	\$62,000	67	4.9% (+)	10	198
Architecture & Construction	23,387	\$58,400	390	6.1% (+)	138	2,482
Law, Public Safety, Corrections & Security	6,296	\$60,200	232	6.4%	39	652
Business, Management & Administration	40,752	\$58,600	1,806	0.2% (+)	5	4,254
Education & Training	18,188	\$53,900	359	10.0% (+)	173	1,790
Arts, A/V Technology & Communications	3,431	\$52,400	180	4.0% (+)	12	365
Manufacturing	28,098	\$45,900	1,200	2.2% (+)	59	3,032
Transportation, Distribution & Logistics	21,843	\$45,100	1,112	7.7% (+)	160	2,689
Marketing, Sales & Service	30,337	\$43,600	1,866	-1.0%	-33	3,934
Human Services	15,871	\$39,000	828	19.2% (+)	280	2,297
Hospitality & Tourism	31,656	\$30,200	1,725	19.6% (+)	568	6,103
Total - All Occupations	272,364	\$52,200	13,945	7.0% (+)	1,765	32,506

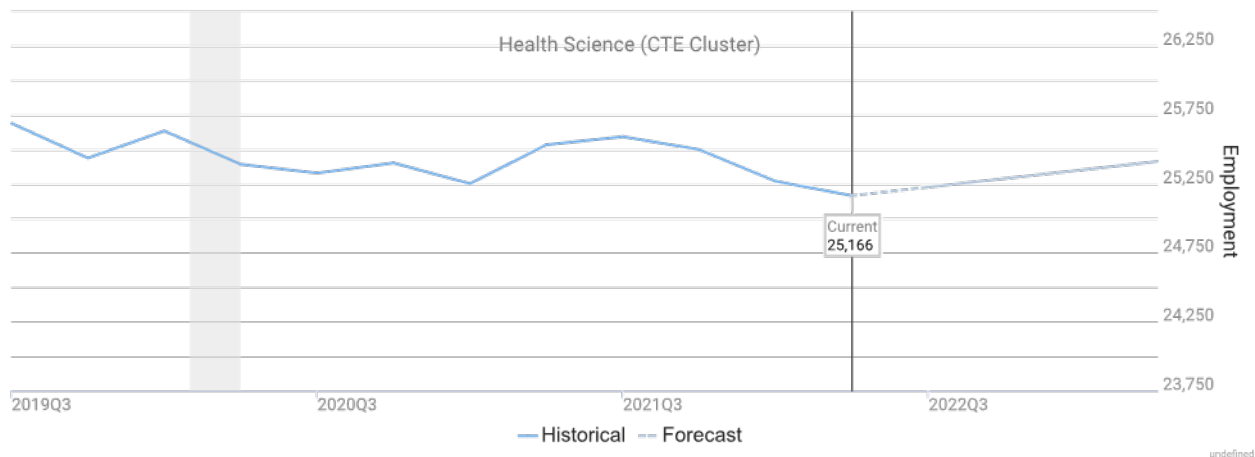
*Cluster forecasts estimated using Chmura, JobsEQ, based on 2022Q2 employment data. All clusters are distinct occupations except for Agriculture, Food, and Natural Resources, which overlaps with other clusters. (+) indicates an improved forecast from 2021Q1 estimates.

HEALTH SCIENCE TECHNOLOGY

Health Science Technology is a critical Career Field to secure the public health of the entire state. The COVID-19 pandemic has made this reality even more clear, and further strained the workforce challenges faced in this sector.

Following average annual employment growth of 0.4% over the past five years, Health Science Technology employment is forecast to grow by about 1.0% on average annually over the coming five years (an increase from last year's estimated 0.9%). The 25,166 Health Science Technology careers statewide pay about \$73,300 annually on average, and are slightly more concentrated in Minnesota than other states (LQ 1.02). Health Science Technology roles employ about 9.8% of Minnesota's workforce. As of 2022Q2, there are about 456 unemployed Health Science Technology professionals in Central Minnesota, giving an unemployment rate of 1.4%. Total five-year demand for Health Science Technology talent is 11,198 new professionals needed to meet replacement and growth demand.

Baseline 3-Year Forecast for Health Science Technology Careers, Central Minnesota 2022Q2



Top Ten Health Science Technology Occupations by Employment Volume in Central Minnesota, 2022Q2

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Growth
Registered Nurses	6,176	\$81,900	1.16	-79	361	0.6%
Nursing Assistants	2,743	\$34,100	1.22	-249	351	0.5%
Home Health Aides	1,675	\$28,000	1.03	-340	244	2.4%
Licensed Practical and Licensed Vocational Nurses	1,292	\$47,500	1.17	-182	108	0.6%
Medical Secretaries and Administrative Assistants	1,211	\$40,600	1.06	21	142	0.7%
Medical Assistants	886	\$40,200	0.69	54	121	1.5%
Pharmacy Technicians	753	\$100,000	0.96	3	82	2.6%
Physicians, All Other; and Ophthalmologists, Except Pediatric	669	\$39,600	0.89	10	49	0.3%
Medical and Health Services Managers	543	\$123,900	0.98	-4	18	-0.3%
Pharmacists	535	\$49,100	0.87	20	70	1.0%
Remaining Component Occupations	8,682	\$98,800	0.99	10	659	1.1%
Health Science (CTE Cluster)	25,166	\$73,300	1.02	-735	2,213	1.0%

“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).

Just over one-third of talent in Central Minnesota that is working in Health Science Technology roles are employed by General Medical and Surgical Hospitals (37.8% compared to last year’s 38.1%). The other industry employing large numbers of Health Science Technology talent is Offices of Physicians (13.4%), followed by Nursing Care Facilities (11.3%).

Health Science Technology Field Employment by Industry, 2022Q2, Central Minnesota

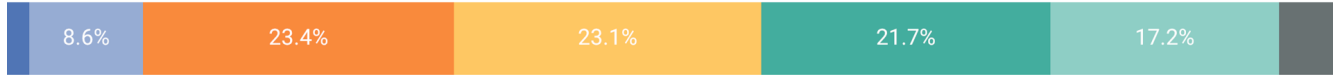
Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Growth	10-Year Total Demand
General Medical and Surgical Hospitals	37.8%	9,517	6,464	555	7,019
Offices of Physicians	13.4%	3,372	2,472	388	2,860
Nursing Care Facilities (Skilled Nursing Facilities)	11.3%	2,845	2,687	19	2,706
Offices of Dentists	5.1%	1,288	1,128	143	1,272
Offices of Other Health Practitioners	4.5%	1,138	844	249	1,093
Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities	3.5%	870	883	156	1,039
Individual and Family Services	3.3%	819	1,018	345	1,363
Home Health Care Services	3.0%	765	728	203	931
Other Professional, Scientific, and Technical Services	2.6%	666	575	93	668
Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	2.6%	651	734	174	908
Health and Personal Care Retailers	2.2%	552	329	-6	324
Elementary and Secondary Schools	1.8%	452	302	54	357
Outpatient Care Centers	1.0%	261	204	57	260
Executive, Legislative, and Other General Government Support	0.8%	190	149	17	166
Other Residential Care Facilities	0.6%	161	154	-3	151
Warehouse Clubs, Supercenters, and Other General Merchandise Retailers	0.6%	154	95	-10	86
Colleges, Universities, and Professional Schools	0.6%	143	102	13	115
All Others	5.2%	1,321	1,035	145	1,180

Career Field Demographics

The Health Science Technology field is heavily female (80.9%) and white (92.5%). The age distribution of talent in Health Science Technology skews slightly young, with the largest proportion of talent between the ages of 25 and 34 years (23.6% of talent).

Age

Central Minnesota



Minnesota



- 16 to 19 years (1.7%)
- 20 to 24 years (8.6%)
- 25 to 34 years (23.4%)
- 35 to 44 years (23.1%)
- 45 to 54 years (21.7%)
- 55 to 64 years (17.2%)
- 65 years and over (4.3%)

Data for Health Science (CTE Cluster)
Source: JobsEQ®. Data as of 2022Q2.

Race

Central Minnesota



Minnesota

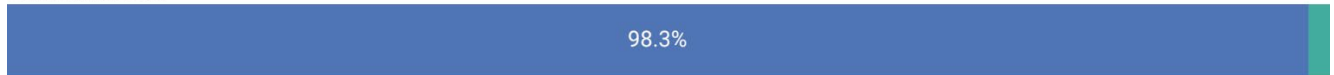


- White (91.9%)
- Black (3.7%)
- American Indian (0.3%)
- Asian (2.4%)
- Pacific Islander (0.0%)
- Two or More Races (1.7%)

Data for Health Science (CTE Cluster)
Source: JobsEQ®. Data as of 2022Q2.

Ethnicity

Central Minnesota



Minnesota



- Non-Hispanic/Latino (98.3%)
- Hispanic or Latino (of any race) (1.7%)

Data for Health Science (CTE Cluster)
Source: JobsEQ®. Data as of 2022Q2.

Gender

Central Minnesota



Minnesota



- Male (18.7%)
- Female (81.3%)

Data for Health Science (CTE Cluster)
Source: JobsEQ®. Data as of 2022Q2.

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 Central Minnesota Health Science Technology workforce has a close match to the education and training required for existing roles. For example, just 17.7% of Health Science Technology positions require no educational award, and about 14.9% of the workforce holds only a high school diploma or less. About 28.5% of the Health Science Technology workforce hold a two-year degree and 15.9% completed some college (such as a certificate), or 44.4% in all, compared to about 34.3% of local jobs in Health Science Technology that typically require a certificate

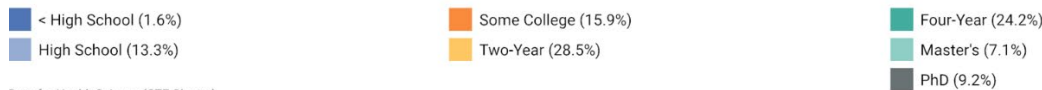
two-year degree. The table below indicates typical education and training requirements rather than the mix of attainment of workers in such positions.

Educational Attainment

Central Minnesota



Minnesota



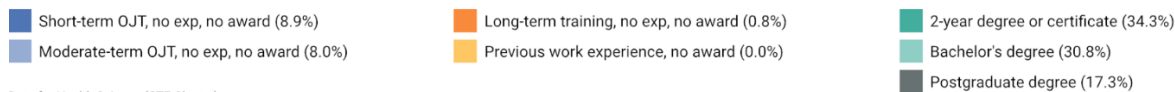
Data for Health Science (CTE Cluster)
Source: JobsEQ®. Data as of 2022Q2.

Education and Training Requirements

Central Minnesota



Minnesota



Data for Health Science (CTE Cluster)
Source: JobsEQ®. Data as of 2022Q2.

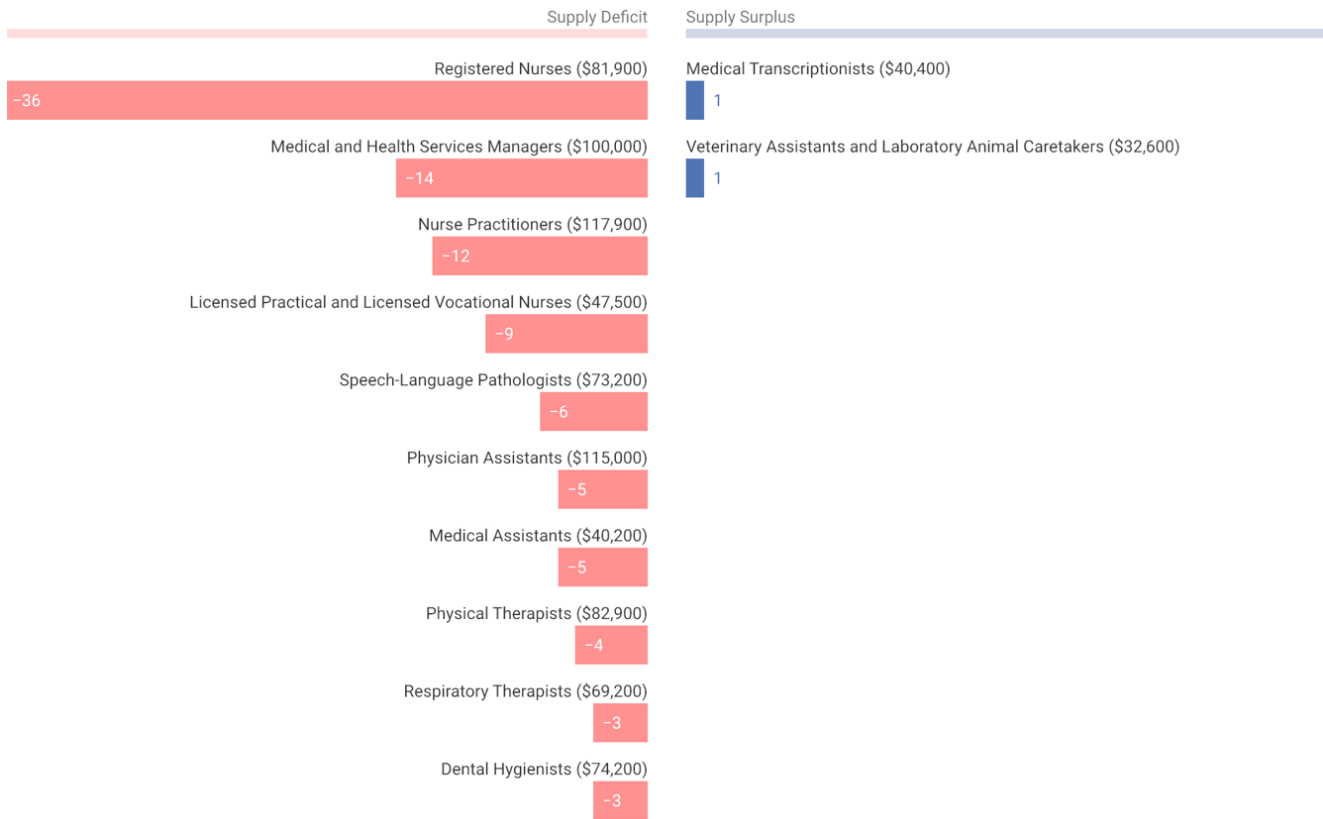
Occupation Gaps

The chart below shows the potential average annual gaps over 10 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.

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.

In Health Science Technology, Registered Nursing remains the occupation with the greatest annual shortages in the Central region and #2 statewide. This critical talent shortage is due in large part to forecasted employment growth and replacement demand needs due to retirements and turnover, as well as misalignment between where talent is being developed and where demand is geographically.

Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Health Science Technology, Central Minnesota 2022Q2

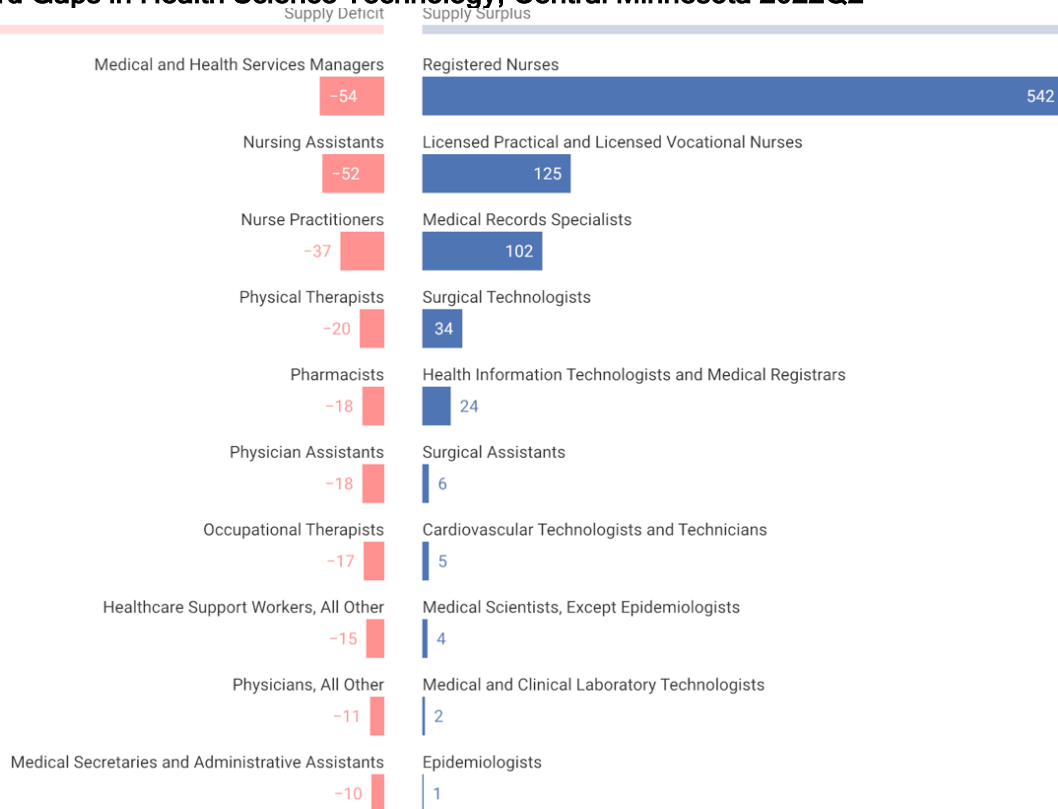


Award Gaps

A comparison of the graduate talent pipeline through certificate and other postsecondary degree programs to the current estimated openings by occupation illuminate a few moderate shortages and some general misalignments. Central Minnesota has several Health Science Technology award gaps, with statewide talent pipelines not meeting local employer demand. Occupations that show higher awards given than what is currently needed in the local talent market are examples of programs that serve neighboring state workforces where talent demand is high but relevant programs may not exist.

The Central region has several Health Science Technology award gaps, meaning that the region is underproducing local talent in relation to employer demand. For instance, Central colleges and universities are underproducing about 54 Medical and Health Service Managers, 52 Nursing Assistants, and 37 Nurse Practitioners. The award gap for Nursing Assistants decreased substantially (annual deficit of 94 graduates last year), indicating that the supply of Nursing Assistant graduates produced in the region is now improving in alignment to local demand. Several important occupations that require advanced education, including doctorates also have local award gaps, such as Nurse Practitioners, Pharmacists, and Physical Therapists. The Central region continues to produce more Registered Nurses than in demand locally and is likely an important supplier of this critical talent for employers elsewhere in the state such as the 7-county MSP Metro or other states as well.

Award Gaps in Health Science Technology, Central Minnesota 2022Q2



Promising Pathways

This section offers an origin-to-gateway-to-target model analysis for how to help move students from entrypoints into their field of interest into both likely and other aligned careers, taking into account automation, remote work, and the changing work environment.

Origin Occupations are roles that are low-wage (<\$37,000 per year) or mid-wage (\$37,000-\$42,000) that have high unemployment locally among workers without four-year degrees. Below are a few Origin Occupations that are likely entrypoints into Health Science Technology locally, or aligned opportunities that share a large number of skillsets in-demand in Health Science Technology.

Gateway Occupations are good jobs that can lead to Target Occupations as skills and experience are developed. These typically offer between \$42,000 up to the average wage statewide. Below are a few Gateway Occupations in Health Science Technology locally. 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 Minnesota average wage. 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 below as “OG” and “AG” respectively.

Origin-to-Gateway-to-Target Occupations for Health Science Technology, Central Minnesota 2022Q2

Target Occupations(all HW, HD, HS, OG)
 Registered Nurses
 Medical and Health Services Managers (AG)
 Dental Hygienists (AG)
 Nurse Practitioners (AG)
 Speech-Language Pathologists

Gateway Occupations(all HS)
 Licensed Practical Nurses (HD, OG)
 Dental Assistants (HD, OG, AG)
 Medical Dosimetrists (OG)
 Occupational Therapy Assistants (HD, OG, AG)
 Recreational Therapists (AG)

Origin Occupations	Likely	Aligned
	Nursing Assistants (HS, HD, OG, AG)	Personal Care Aides
	Home Health Aides (HD)	Childcare Workers
	Medical Secretaries (HD, OG, AG)	Secretaries
	Medical Assistants (HS, HD, OG)	Cashiers
	Pharmacy Technicians (OG)	Cooks

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

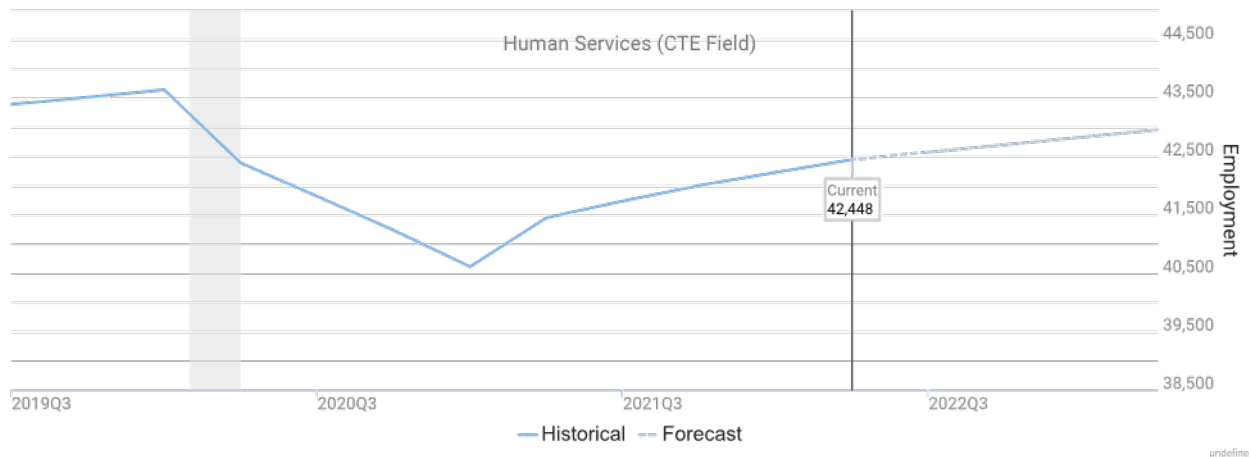
High Location Quotient (LQ) Occupations for Health Science Technology, Central Minnesota 2022Q2

- 1) Genetic Counselors (2.26)
- 2) Chiropractors (1.98)
- 3) Nurse Anesthetists (1.97)
- 4) Pediatric Surgeons (1.85)
- 5) Dermatologists (1.80)

HUMAN SERVICES

Human Services is the career field forecast to grow the most over the next ten years. Following average annual employment growth of 0.5% over the past five years in Central Minnesota, Human Services employment is forecast to grow by 1.2% annually through 2027. The 42,448 Human Services careers in the Central region pay about \$49,700 annually on average, and are about as concentrated in Minnesota than other states (LQ 1.0). Human Services roles employ about 15.7% of Minnesota's workforce. As of 2022Q2, there are about 1,052 unemployed Human Services professionals in Central Minnesota, giving an unemployment rate of 2.1%. Total five-year demand for Human Services talent in Central Minnesota is 25,034 new professionals needed to meet replacement and growth demand.

Baseline 3-Year Forecast for Human Services Careers, Central Minnesota 2022Q2



Top Ten Human Services Occupations by Employment Volume in Central Minnesota, 2022Q2

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Growth
Personal Care Aides	4,749	\$28,000	1.03	615	832	2.4%
Teaching Assistants, Except Postsecondary	3,671	\$34,200	1.78	-202	377	0.8%
Elementary School Teachers, Except Special Education	2,956	\$62,500	1.28	-126	236	0.7%
Secondary School Teachers, Except Special and Career/Technical Education	2,189	\$60,900	1.24	-88	169	0.7%
Childcare Workers	2,152	\$27,100	1.52	-249	311	0.5%
Middle School Teachers, Except Special and Career/Technical Education	1,203	\$61,400	1.18	-50	96	0.7%
Police and Sheriff's Patrol Officers	1,055	\$71,400	0.95	-20	89	0.6%
Preschool Teachers, Except Special Education	955	\$34,500	1.19	-61	118	1.8%
Social and Human Service Assistants	904	\$39,800	1.26	-40	126	1.7%
Hairdressers, Hairstylists, and Cosmetologists	807	\$33,600	0.82	-112	112	2.1%
Remaining Component Occupations	21,807	\$56,400	0.81	-481	2,462	1.1%
Human Services (CTE Field)	42,448	\$49,700	1.00	-817	4,929	1.2%

"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).

Most talent in the Central region that is working in Human Services roles are employed by Elementary and Secondary Schools (32.7%) or Executive, Legislative, and Other General Government Support (9.4%) However, Individual and Family Services is forecasted to grow at a higher rate and have more replacement demand needs.

Human Services Field Employment by Industry, 2022Q2, Central Minnesota

Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Growth	10-Year Total Demand
Elementary and Secondary Schools	32.7%	13,582	12,170	355	12,525
Executive, Legislative, and Other General Government Support	9.4%	3,923	3,498	213	3,712
Individual and Family Services	6.8%	2,826	4,217	1,238	5,455
Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities	5.7%	2,386	3,249	475	3,725
Child Day Care Services	4.8%	1,987	2,589	44	2,633
Religious Organizations	4.1%	1,714	2,020	129	2,149
Colleges, Universities, and Professional Schools	3.2%	1,316	1,209	103	1,312
Justice, Public Order, and Safety Activities	3.0%	1,250	1,091	4	1,096
Personal Care Services	2.7%	1,137	1,414	82	1,496
Other Residential Care Facilities	2.2%	914	1,121	3	1,124
Home Health Care Services	2.0%	810	1,279	297	1,576
General Medical and Surgical Hospitals	1.7%	707	714	23	737
Other Schools and Instruction	1.5%	617	791	98	889
Legal Services	1.4%	582	435	5	440
Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	1.1%	477	741	160	901
Other Amusement and Recreation Industries	0.9%	391	656	64	720
Offices of Other Health Practitioners	0.9%	388	426	88	514
Civic and Social Organizations	0.9%	384	583	24	607
Nursing Care Facilities (Skilled Nursing Facilities)	0.9%	367	468	16	484
Administration of Human Resource Programs	0.9%	359	321	14	335
All Others	13.1%	5,429	6,022	256	6,278

Career Field Demographics

The Human Services field is predominantly female (68.3%, down from last year's 68.7%) and white (93.0%, down from last year's 93.6%), becoming more diverse year over year (a change of 0.4 percentage points by race and 0.6 percentage points by gender). The share of Hispanic talent in this field increased by 0.1 percentage point from the prior year. As was the case last year, 45% of the workforce falls between the ages of 35 and 54 years of age.

Age

Central Minnesota



Minnesota



16 to 19 years (2.7%)

25 to 34 years (19.6%)

45 to 54 years (22.6%)

20 to 24 years (9.3%)

35 to 44 years (22.4%)

55 to 64 years (17.8%)

65 years and over (5.6%)

Data for Human Services (CTE Field)
Source: JobsEQ®. Data as of 2022Q2.

Race

Central Minnesota



Minnesota



Data for Human Services (CTE Field)
Source: JobsEQ®. Data as of 2022Q2.

Ethnicity

Central Minnesota



Minnesota



Data for Human Services (CTE Field)
Source: JobsEQ®. Data as of 2022Q2.

Gender

Central Minnesota



Minnesota



Data for Human Services (CTE Field)
Source: JobsEQ®. Data as of 2022Q2.

Educational Attainment and Requirements

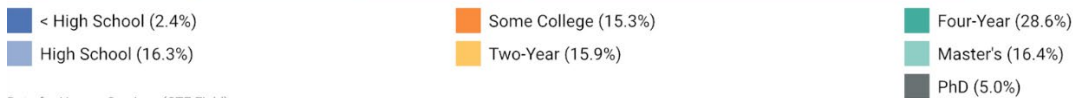
The stacked bar chart here illustrates the estimated mix of educational attainment of the workers in this career field in aggregate. In general, the Central region Human Services workforce is over skilled for the typical credentials of entry-level positions. For example, 2.4% of the Human Services workforce has no diploma at all, and 16.3% hold a high school diploma as their highest credential. In contrast, about 44.2% of positions in this field do not require any kind of postsecondary award. The table below indicates typical education and training requirements rather than the mix of attainment of workers in some key positions in this field.

Educational Attainment

Central Minnesota



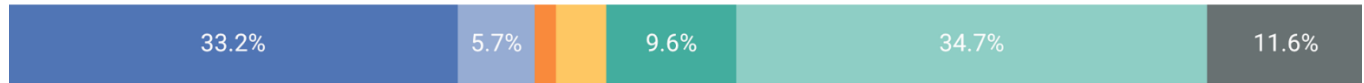
Minnesota



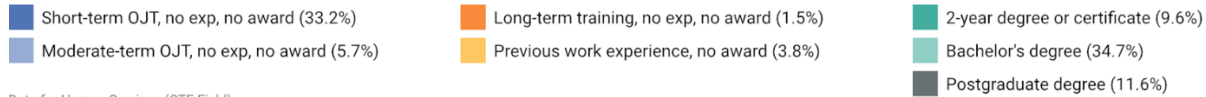
Data for Human Services (CTE Field)
Source: JobsEQ®. Data as of 2022Q2.

Education and Training Requirements

Central Minnesota



Minnesota



Data for Human Services (CTE Field)
Source: JobsEQ®. Data as of 2022Q2.

Occupation Gaps

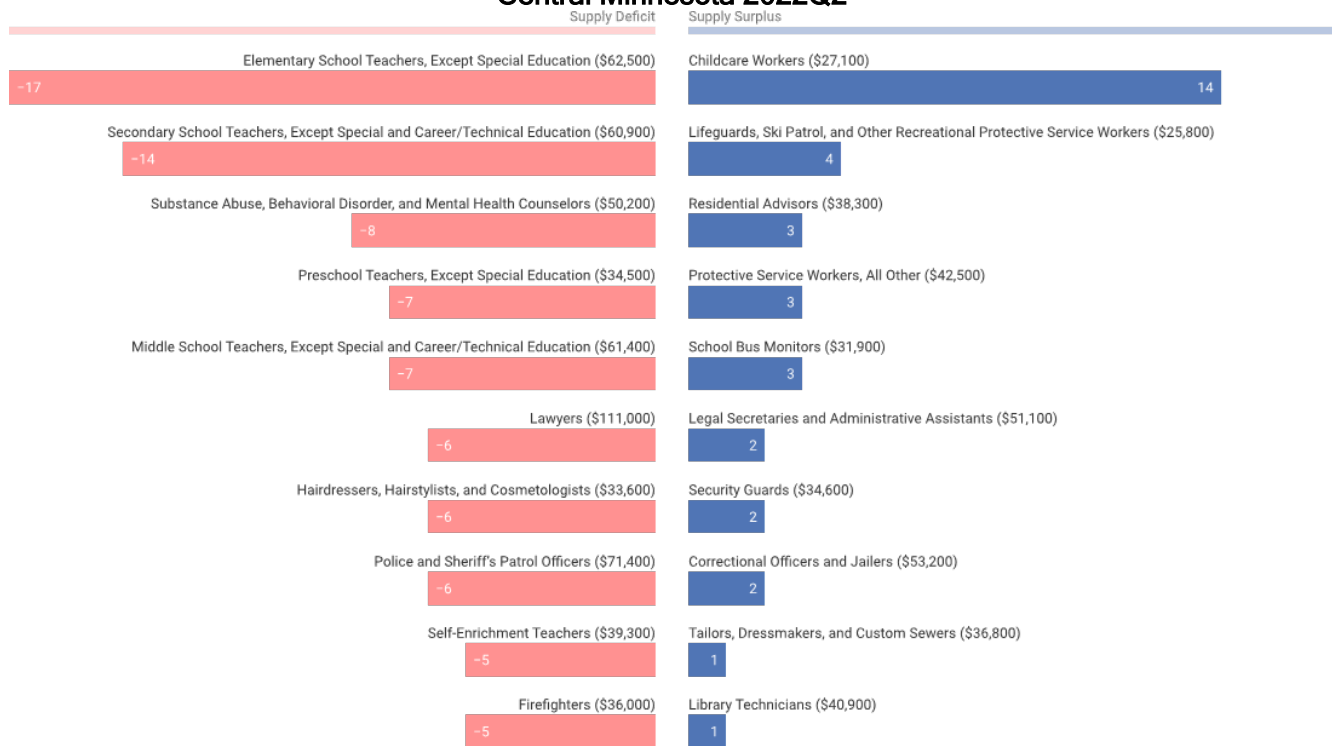
The chart below shows the potential average annual gaps over 10 years. Many variables go into this analysis, but at its core it is based on a forecast comparing occupation demand growth to the local population growth and the projected educational attainment of those residents, then matched to specific 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.

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.

In Human Services, Elementary School Teachers leapt up in the rankings of talent shortage, knocking out Mental Health Counselors which were the occupation of highest shortage. Elementary School Teachers were previously in slight surplus. Now, Elementary and Secondary School Teachers are forecasting the most severe talent shortages in large part due to the exodus of talent from these occupations due to the challenges brought on by the pandemic. Preschool and Middle School Teachers are now also experiencing talent shortages. Substance Abuse, Behavioral Disorder, and Mental Health Counselors, Lawyers, and Police and Sheriff's Patrol Officers all continue to rank in high shortage, but also joined by high contact-intensity roles that experienced significant workforce exits over the past two years: Hairstylists and Cosmetologists are now forecasting possible shortages as market dynamics shift.

Talent surplus indicated in blue columns to the right should be considered with caution, as several surplus scenarios are indications of broken systems (i.e. Childcare workforce and Correctional Officers) rather than true labor surplus.

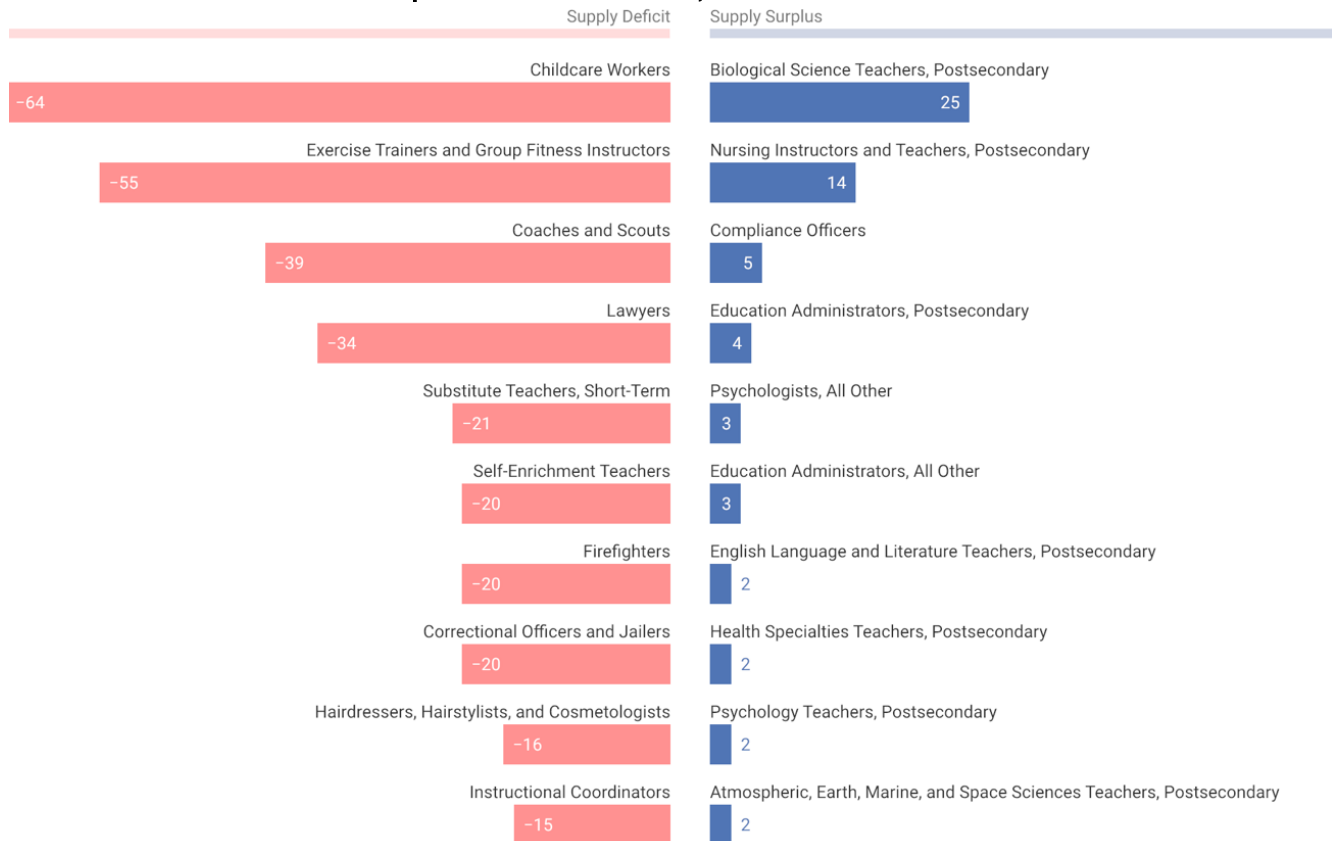
Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Human Services, Central Minnesota 2022Q2



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 shortages. Central Minnesota faces several moderate Human Services award gaps, with regional talent pipelines not meeting local employer demand. Central Minnesota colleges and universities continue to underproduce about 64 graduates annually that are needed to fill Childcare Worker positions and about 34 graduates that are needed to fill Lawyer positions open with employers based in the region. Several occupations that typically require a certificate or industry credential also have local award gaps, including Coaches and short-term Substitute Teachers. Occupations that show higher awards given than what is currently needed (shown in blue) 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, Central Minnesota 2022Q2



Promising Pathways

This section offers an origin-to-gateway-to-target model analysis for how to help move students from entrypoints into their field of interest into both likely and other aligned careers, taking into account automation, remote work, and the changing work environment.

Origin Occupations are roles that are low-wage (<\$37,000 per year) or mid-wage (\$37,000-\$42,000) that have high unemployment locally among workers without four-year degrees. Below are a few Origin Occupations that are likely entrypoints into Health Science Technology locally, or aligned opportunities that share a large number of skillsets in-demand in Health Science Technology.

Gateway Occupations are good jobs that can lead to Target Occupations as skills and experience are developed. These typically offer between \$42,000 up to the average wage statewide. Below are a few Gateway Occupations in Health Science Technology locally. 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 Minnesota average wage. 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 below as “OG” and “AG” respectively.

Origin-to-Gateway-to-Target Occupations for Human Services, Central Minnesota 2022Q2

Target Occupations(all HW, HD, HS, OG)
 Child, Family, & School Social Workers (AG)
 Educational, Guidance, & Career Counselors (AG)
 Social & Community Service Managers (AG)
 Kindergarten Teachers
 Instructional Coordinators (AG)

Gateway Occupations(all HD)
 Substance Abuse & Mental Health Counselors (HS, OG, AG)
 Court, Municipal, & License Clerks (OG)
 Clergy (HS, OG)
 Coaches and Scouts (HS, OG, AG)
 Rehabilitation Counselors (HS, OG, AG)

Origin Occupations	<i>Likely</i>	<i>Aligned</i>
	Personal Care Aides (HD, AG)	Home Health Aides
	Teaching Assistants (HS, HD)	Medical Assistants
	Childcare Workers (AG)	Waiters and Waitresses
	Preschool Teachers (HS, HD, OG)	Cashiers
	Social & Human Service Assistants (HD)	Cooks

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

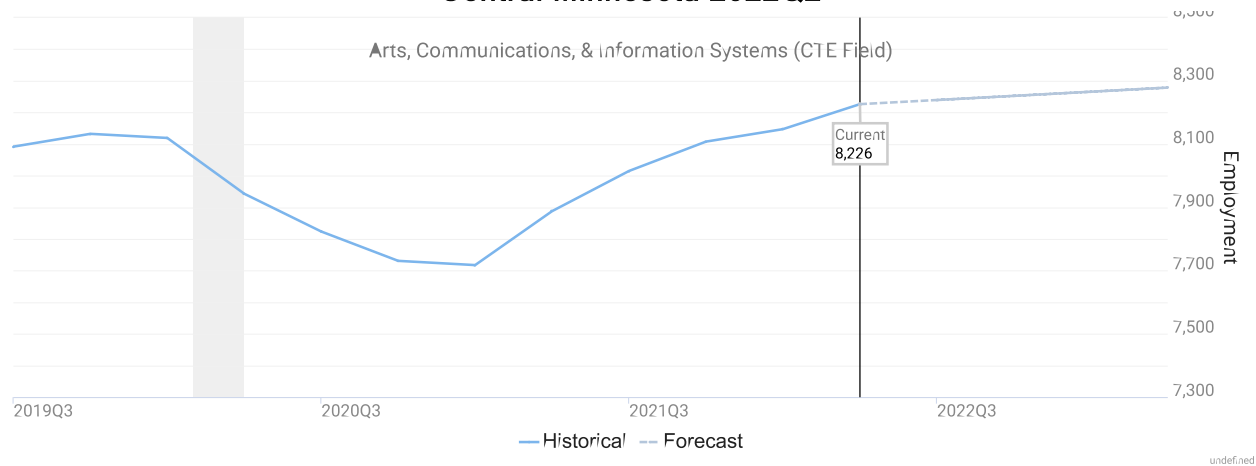
High Location Quotient (LQ) Occupations for Human Services, Central Minnesota 2022Q2

- 1) Special Education Teachers, Preschool (3.37)
- 2) Court Municipal and License Clerks (2.55)
- 3) Special Education Teachers, Secondary (1.85)
- 4) Residential Advisors (1.82)
- 5) Teaching Assistant, Except Postsecondary (1.78)

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, which experienced somewhat diverging trends during over the course of the COVID-19 pandemic. Following average annual employment growth of 1.0% over the past five years in this region, Arts, Communications, and Information Systems employment is forecast to grow by 0.6% annually over the coming five years. This is a significant increase from last year's estimated 0.1% average annual forecasted growth. The 8,226 Arts, Communications, and Information Systems careers in the Central region pay about \$70,400 annually on average, and are slightly less concentrated (LQ 0.63) in the Central region than nationally on average. This field's roles comprise about 5.1% of Minnesota's workforce, and 3.0% of the Central region's workforce. As of 2022Q2, there are about 227 unemployed Arts, Communications, and Information Systems professionals in Minnesota, giving an unemployment rate of 2.1%. Total five-year demand for this talent is 3,771 new professionals needed to meet replacement and growth demand.

Baseline 3-Year Forecast for Arts, Communications, and Information Systems Careers, Central Minnesota 2022Q2



Top Ten Arts, Communications, and Information Systems Occupations by Employment Volume in Central, 2022Q2

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Growth
Software Developers	1,703	\$97,500	0.56	461	156	1.6%
Computer User Support Specialists	636	\$53,800	0.54	-16	48	0.3%
Computer Systems Analysts	596	\$87,700	0.64	-50	41	0.1%
Printing Press Operators	438	\$40,600	1.67	-77	38	-1.5%
Graphic Designers	413	\$52,100	0.88	-21	37	-0.1%
Computer Network Support Specialists	386	\$66,900	1.22	-8	29	0.4%
Computer Occupations, All Other	330	\$76,800	0.42	1	25	0.3%
Network and Computer Systems Administrators	289	\$74,600	0.51	-27	19	0.1%
Musicians and Singers	239	\$65,500	0.92	-19	33	1.5%
Photographers	210	\$44,500	1.06	-1	25	2.1%
Remaining Component Occupations	2,986	\$63,500	0.70	-52	295	0.5%
Arts, Communications, & Information Systems (CTE Field)	8,226	\$70,400	0.63	193	747	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).

About 7.3% of Arts, Communications, and Information Systems talent is employed in the Printing and Related Support Activities industry, followed by Computer Systems Design and Related Services (6.1%).

Arts, Communications, and Information Systems Field Employment by Industry, 2022Q2, Central Minnesota

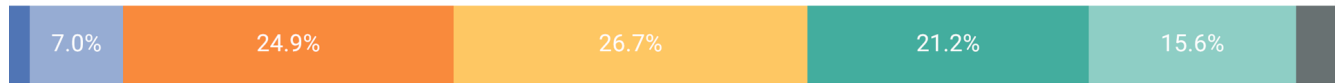
Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Growth	10-Year Total Demand
Printing and Related Support Activities	7.3%	604	575	-123	452
Computer Systems Design and Related Services	6.1%	501	392	109	501
Independent Artists, Writers, and Performers	5.4%	445	462	51	513
Other Professional, Scientific, and Technical Services	5.2%	428	362	52	415
Depository Credit Intermediation	4.0%	331	237	14	252
Religious Organizations	4.0%	325	360	32	391
Software Publishers	3.9%	320	249	54	303
Wired and Wireless Telecommunications (except Satellite)	3.6%	293	258	-30	228
Management of Companies and Enterprises	3.0%	246	181	12	194
Newspaper, Periodical, Book, and Directory Publishers	2.7%	223	204	-22	182
General Medical and Surgical Hospitals	2.4%	197	140	4	144
Elementary and Secondary Schools	2.4%	195	147	11	158
Executive, Legislative, and Other General Government Support	1.9%	158	118	9	127
Advertising, Public Relations, and Related Services	1.9%	157	148	11	160
Management, Scientific, and Technical Consulting Services	1.7%	141	107	14	122
Other Miscellaneous Manufacturing	1.7%	138	125	12	137
Colleges, Universities, and Professional Schools	1.6%	133	103	6	109
Employment Services	1.5%	122	98	20	118
Building Equipment Contractors	1.3%	111	113	3	116
Radio and Television Broadcasting Stations	1.3%	104	100	6	106
All Others	37.1%	3,055	2,562	293	2,855

Career Field Demographics

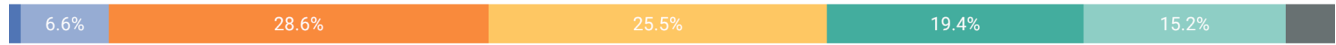
The Arts, Communications, and Information Systems field is predominantly male (71.4%)(70.8%) and white (90.5%). While 7.8% of Arts, Communications, and Information Systems talent was BIPOC by race as of last year’s estimates, now 9.4% is—a full 1.6 percentage point increase. The share of Hispanic and Latinx talent in Arts, Communications, and Information Systems roles increased slightly by 0.2 percentage points. The age of the workforce in this field skews young, and has been getting younger over the past three years. About half of the Arts, Communications, and Information Systems workforce in the region is between the ages of 25 and 44 (51.6%).

Age

Central Minnesota



Minnesota



16 to 19 years (1.6%)

25 to 34 years (24.9%)

45 to 54 years (21.2%)

20 to 24 years (7.0%)

35 to 44 years (26.7%)

55 to 64 years (15.6%)

65 years and over (2.9%)

Data for Arts, Communications, & Information Systems (CTE Field)
Source: JobsEQ®. Data as of 2022Q2.

Race

Central Minnesota



Minnesota



White (90.5%)

American Indian (0.2%)

Pacific Islander (0.0%)

Black (2.1%)

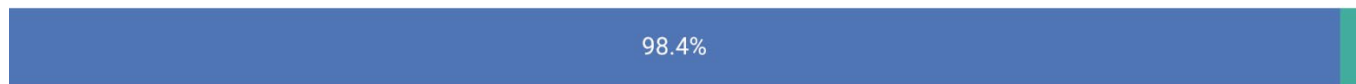
Asian (5.2%)

Two or More Races (1.9%)

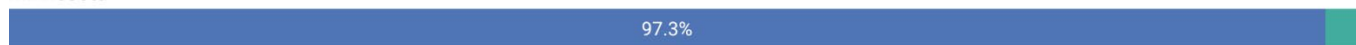
Data for Arts, Communications, & Information Systems (CTE Field)
Source: JobsEQ®. Data as of 2022Q2.

Ethnicity

Central Minnesota



Minnesota



Non-Hispanic/Latino (98.4%)

Hispanic or Latino (of any race) (1.6%)

Data for Arts, Communications, & Information Systems (CTE Field)
Source: JobsEQ®. Data as of 2022Q2.

Gender

Central Minnesota



Minnesota



Male (71.4%)

Female (28.6%)

Data for Arts, Communications, & Information Systems (CTE Field)
Source: JobsEQ®. Data as of 2022Q2.

Educational Attainment and Requirements

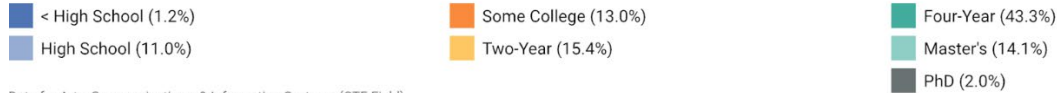
The stacked bar chart here illustrates the estimated mix of educational attainment of the workers in this career field in aggregate. Over half 62.4% (up from last year's 59.5%) of all occupations in this field require a Bachelor's degree, while 43.3% of the workforce hold a four-year degree as their highest credential. Another 16.1% hold a Master's or PhD.

Educational Attainment

Central Minnesota



Minnesota



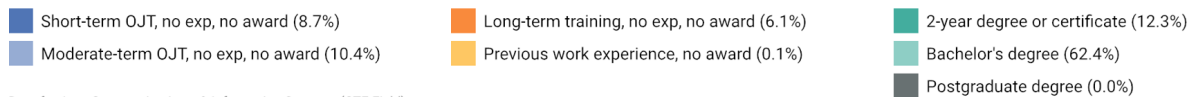
Data for Arts, Communications, & Information Systems (CTE Field)
Source: JobsEQ®. Data as of 2022Q2.

Education and Training Requirements

Central Minnesota



Minnesota



Data for Arts, Communications, & Information Systems (CTE Field)
Source: JobsEQ®. Data as of 2022Q2.

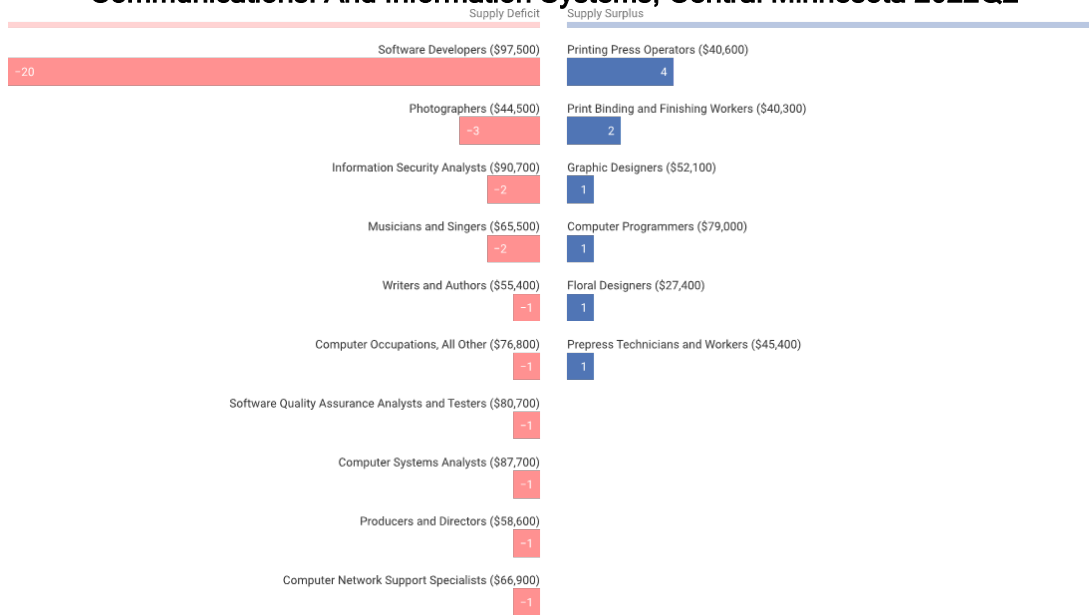
Occupation Gaps

The chart below shows the potential average annual gaps over 10 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.

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.

In this field, Software Developers continues to rank as the occupation of highest shortage, falling short at least 20 workers needed annually (averaged over the next 10 years) to meet employer demand. This is one of the top occupation of shortage across all career fields. This critical talent shortage is due in large part to forecasted employment growth and expansion of the IT cluster talent needs; IT cluster careers dominate occupations of shortage broadly.

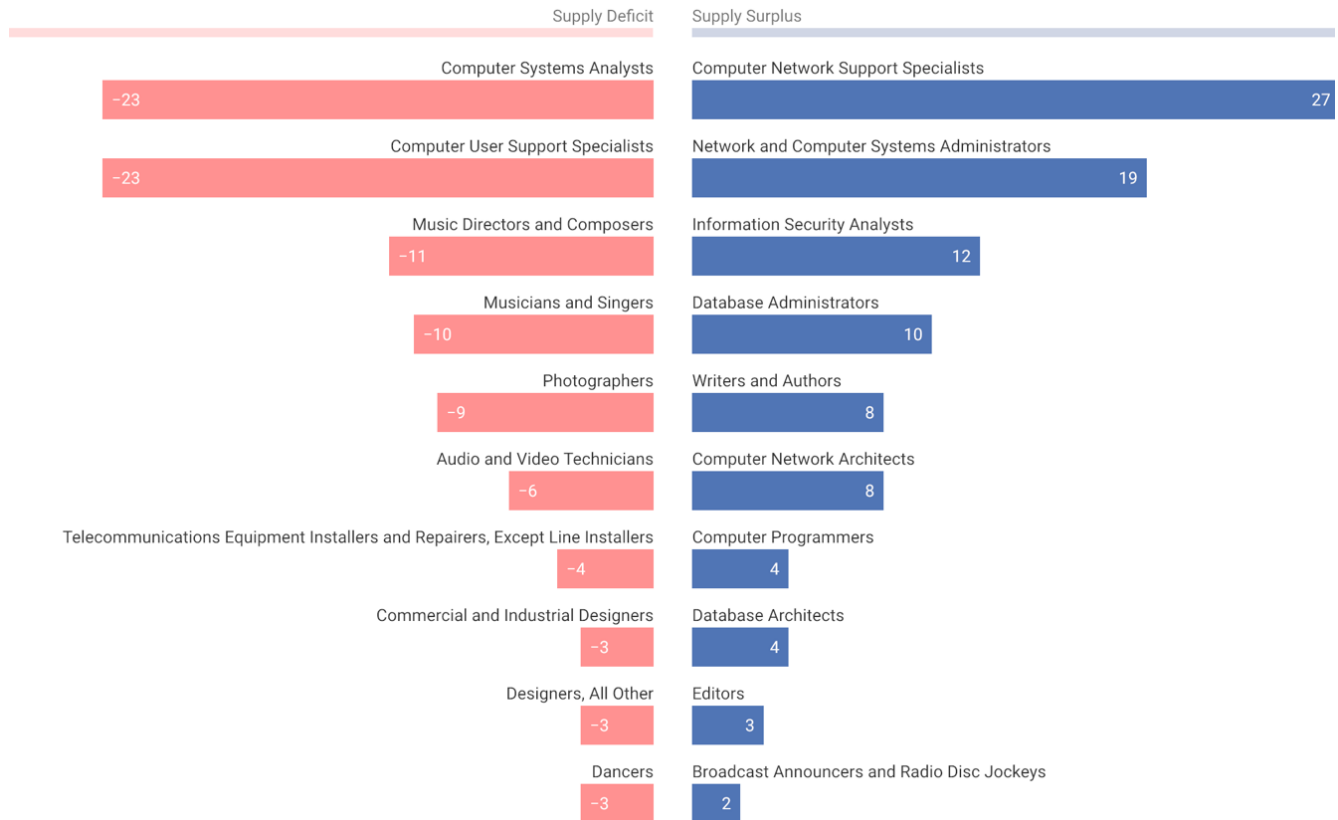
Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Arts, Communications, And Information Systems, Central Minnesota 2022Q2



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 shortages. Central Minnesota has several Arts, Communications, and Information Systems award gaps, with regional talent pipelines not meeting local employer demand. Occupations that show higher awards given than what is currently needed in the local talent market are examples of programs that serve neighboring state workforces where talent demand is high but relevant programs may not exist. The award gaps identified as of 2022Q2 are consistent with what was observed in prior years, further emphasizing the importance of addressing these longstanding shortages in graduate talent pipelines. Central Minnesota colleges and universities are still underproducing trained Computer Systems Analysts and Computer User Support Specialists. Information Technology in particular is the career cluster with the largest number and volumes of postsecondary award gaps in comparison to national benchmarks.

Award Gaps in Arts, Communications, and Information Systems, Central Minnesota 2022Q2



Promising Pathways

This section offers an origin-to-gateway-to-target model analysis for how to help move students from entrypoints into their field of interest into both likely and other aligned careers, taking into account automation, remote work, and the changing work environment.

Origin Occupations are roles that are low-wage (<\$37,000 per year) or mid-wage (\$37,000-\$42,000) that have high unemployment locally among workers without four-year degrees. Below are a few Origin Occupations that are likely entrypoints into Health Science Technology locally, or aligned opportunities that share a large number of skillsets in-demand in Health Science Technology.

Gateway Occupations are good jobs that can lead to Target Occupations as skills and experience are developed. These typically offer between \$42,000 up to the regional average wage. Below are a few Gateway Occupations in Health Science Technology locally. 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. 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 below as “OG” and “AG” respectively.

Origin-to-Gateway-to-Target Occupations for Arts, Communications, and Information Systems, Central Minnesota 2022Q2

Target Occupations(all HW, HD, HS)
 Software Developers (OG)
 Computer Network Support Specialists (OG)
 Writers & Authors (OG)
 Telecommunications Equipment Installers (AG)
 Software Quality Assurance Analysts (OG)

Gateway Occupations

Graphic Designers (HS, AG)
 Photographers (HD, OG, AG)
 Telecommunications Line Installers (HD, OG)
 Prepress Technicians & Workers (HS, AG)
 News Analysts, Reporters, & Journalists (HS)

Origin Occupations	<i>Likely</i>	<i>Aligned</i>
	Printing Press Operators (AG)	
	Print Binding & Finishing Workers	Library Technicians
	Floral Designers	Recreation Attendants
	Broadcast Announcers & Radio Disc Jockeys(HS)	Hosts and Hostesses
	Disc Jockeys, Except Radio (AG)	Customer Service Reps
		Photo Process Machine Ops

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

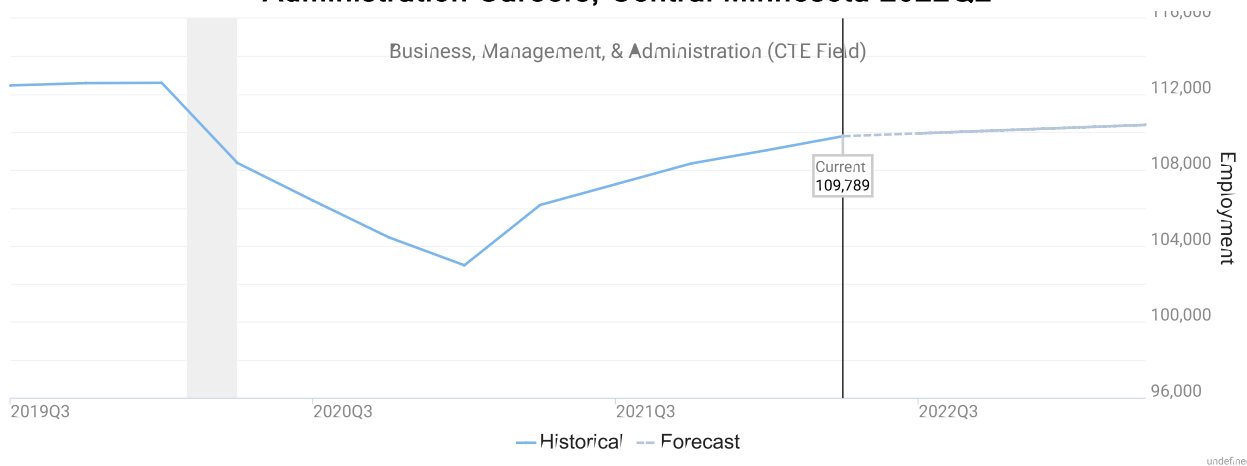
High Location Quotient (LQ) Occupations for Arts, Communications, and Information Systems, Central Minnesota 2022Q2

- 1) Printing Press Operators (1.67)
- 2) Print Binding and Finishing Workers (1.64)
- 3) Prepress Technicians and Workers (1.58)
- 4) Commercial and Industrial Designers (1.33)
- 5) Broadcast Announcers (1.29)

BUSINESS, MANAGEMENT, AND ADMINISTRATION

Business, Management, and Administration includes a wide variety of career paths, which experienced somewhat diverging trends during over the course of the COVID-19 pandemic. Following average annual employment decline of -0.4% over the past five years, this field's employment is forecast to grow by 0.5% annually over the coming five years—a marked improvement from the forecast one year prior set at 0.1% annually. The 109,789 Business, Management, and Administration careers in the Central region pay about \$47,400 annually on average, and are slightly less concentrated in the Central region in comparison to national averages (LQ 0.91). This is the most significant career field by total volume of employment, with Business, Management, and Administration roles employing about 40.3% of the Central region's workforce. As of 2022Q2, there are about 4,734 unemployed Business, Management, and Administration professionals in Minnesota, giving an unemployment rate of 3.3%. Total five-year demand for Business, Management, and Administration talent is 74,996 new professionals needed to meet replacement and growth demand. Most of the growth is attributable to potential recovery of career clusters like Hospitality and Tourism, which were hit hard during the COVID-19 pandemic.

Baseline Worst-Case Scenario 3-Year Forecast for Business, Management, and Administration Careers, Central Minnesota 2022Q2



Top Ten Business, Management, and Administration Systems Occupations by Employment Volume in Central Minnesota, 2022Q2

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Growth
Cashiers	7,932	\$26,600	1.35	-189	1,317	-0.9%
Retail Salespersons	7,719	\$31,400	1.15	-428	1,064	-0.1%
Fast Food and Counter Workers	5,729	\$25,700	1.01	-366	1,336	1.7%
General and Operations Managers	5,160	\$92,700	0.95	380	479	0.8%
Office Clerks, General	4,710	\$39,300	0.99	-141	521	-0.2%
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	4,096	\$32,600	1.03	-84	581	0.7%

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-	Annual Demand	Baseline Forecast
				Year Empl Change		Ann Growth
Stockers and Order Fillers	3,947	\$32,200	0.91	158	635	0.4%
Customer Service Representatives	3,670	\$39,600	0.74	-10	433	-0.5%
Waiters and Waitresses	3,633	\$27,300	1.02	-248	815	1.9%
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	3,042	\$41,300	0.86	-102	293	-0.8%
Remaining Component Occupations	60,151	\$55,000	0.89	-1,458	7,391	0.7%
Business, Management, & Administration (CTE Field)	109,789	\$47,400	0.91	-2,486	14,866	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).

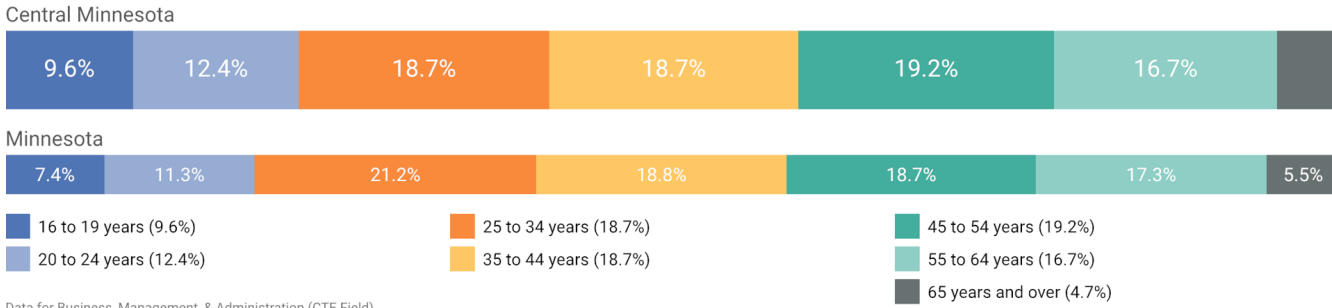
Employment in Business, Management, and Administration careers is spread out across a number of different industries. In the Central region, the industries with the greatest share of Business, Management, and Administration talent are Restaurants (14.5%) and Warehouse Clubs and General Merchandise Retailers (4.7%). These two industries account for a substantial amount of talent demand over the next ten years (restaurants alone accounts for nearly half of future positions needing to be filled in this field), but overall both current employment and future growth are relatively spread out over many different industries.

Industry Title	% of Occ Empl	Empl	10-Year Separations	10-Year Empl Growth	10-Year Total Demand
Restaurants and Other Eating Places	14.5%	15,960	30,644	3,909	34,553
Warehouse Clubs, Supercenters, and Other General Merchandise Retailers	4.7%	5,127	7,187	-333	6,855
Grocery and Convenience Retailers	4.1%	4,522	6,835	-336	6,499
Gasoline Stations	3.8%	4,175	6,797	-204	6,592
Depository Credit Intermediation	3.0%	3,259	2,872	-242	2,630
Elementary and Secondary Schools	2.7%	2,978	3,854	37	3,891
Building Material and Supplies Dealers	2.1%	2,345	3,111	-96	3,016
General Medical and Surgical Hospitals	2.1%	2,291	2,689	-40	2,649
Services to Buildings and Dwellings	2.0%	2,220	2,819	66	2,885
Traveler Accommodation	1.8%	1,940	3,035	422	3,457
Executive, Legislative, and Other General Government Support	1.8%	1,933	2,179	5	2,184
Automobile Dealers	1.5%	1,649	1,992	55	2,047
Other Amusement and Recreation Industries	1.3%	1,452	2,677	513	3,191
Drinking Places (Alcoholic Beverages)	1.3%	1,433	2,731	584	3,315
Accounting, Tax Preparation, Bookkeeping, and Payroll Services	1.3%	1,406	1,336	3	1,339
Department Stores	1.2%	1,341	1,882	-100	1,782
Nursing Care Facilities (Skilled Nursing Facilities)	1.2%	1,339	1,810	-49	1,761
Agencies, Brokerages, and Other Insurance Related Activities	1.2%	1,324	1,260	61	1,321
Religious Organizations	1.2%	1,322	1,466	31	1,497
Grocery and Related Product Merchant Wholesalers	1.1%	1,250	1,378	52	1,430
All Others	46.0%	50,523	55,903	1,779	57,682

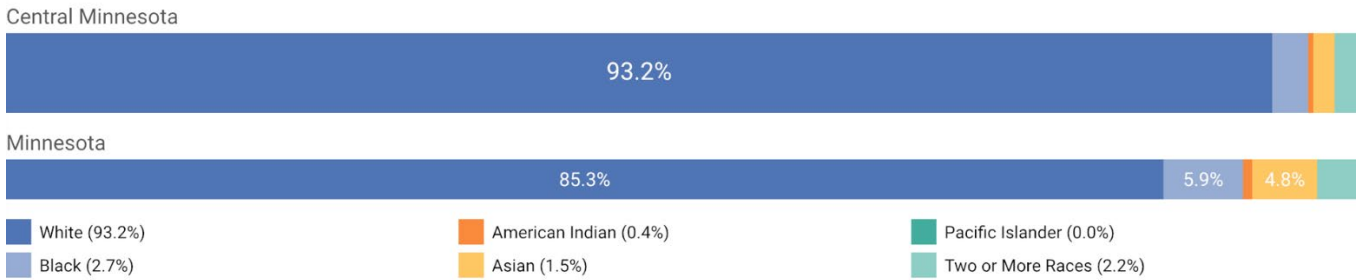
Career Field Demographics

The Business, Management, and Administration field has a slightly higher concentration of female workers (58.5%) than male, and is 93.2% (94.2% last year) White. About 2.6% of the workforce is Hispanic or Latinx. The age of the workforce is fairly evenly dispersed, with about 22% of the field’s workforce 24 years old or younger, and 21.4% 55 or older.

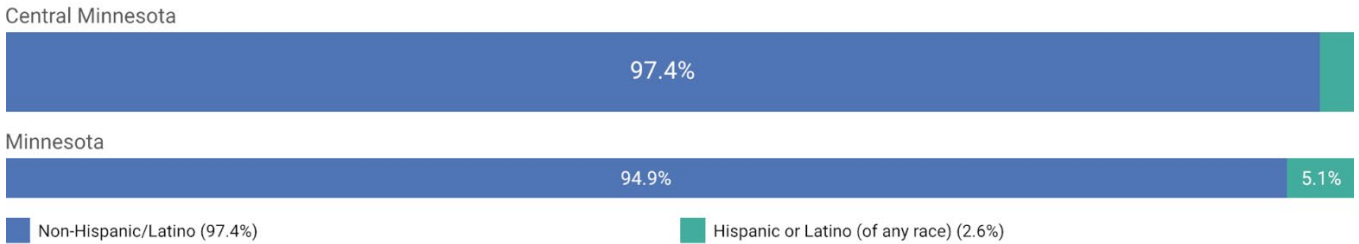
Age



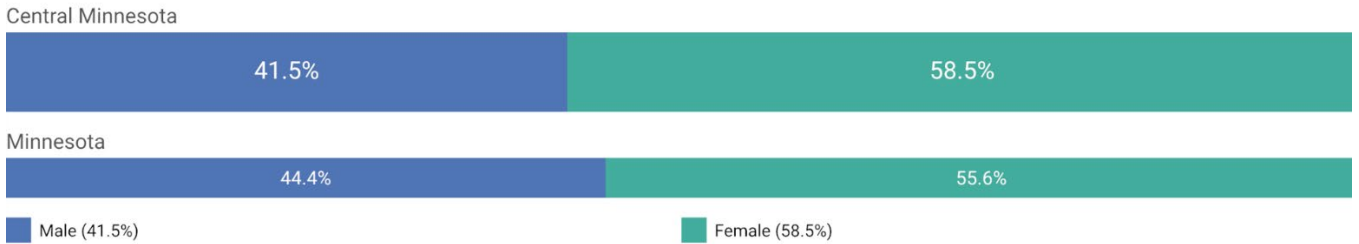
Race



Ethnicity



Gender

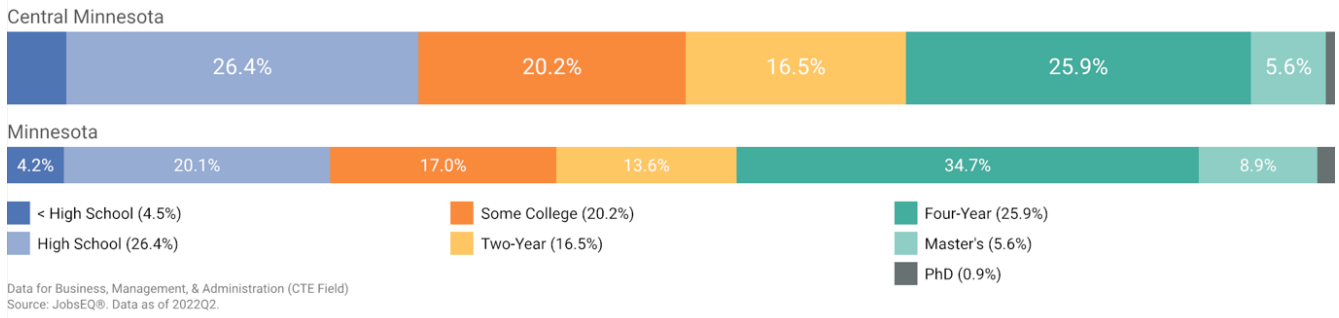


Educational Attainment and Requirements

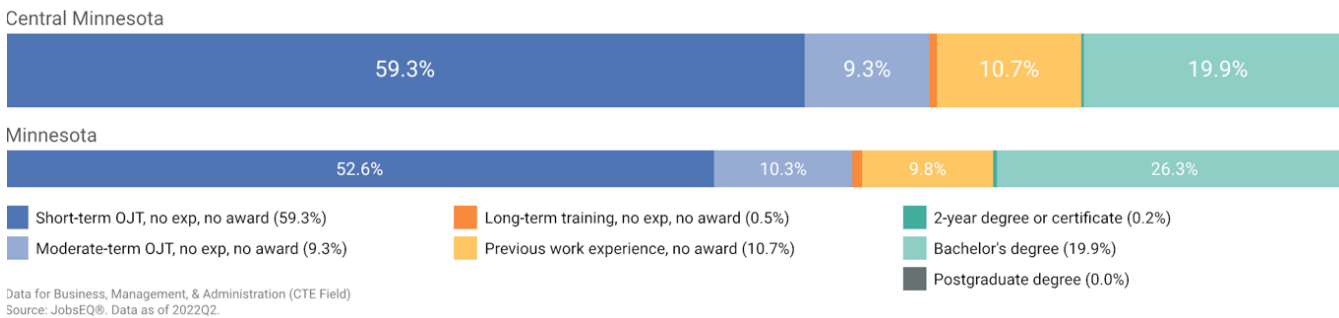
The stacked bar charts here illustrate the estimated mix of educational attainment of the workers in this career field in aggregate, next to the typical education and training requirements in the field overall. In general, the Central Minnesota Business, Management, and Administration workforce is

more likely to have a two-year degree than what is in demand. While 16.5% of the workforce holds a two-year degree, just 0.2% of the occupations in this field require a two-year degree. Nearly two-thirds of all positions in this field (59.3%) require no degree, no experience, and only short-term on-the-job training. Another 20.5% require experience or some on-the-job training, but still no degree. In contrast, only 4.5% of the workforce in this field has no degree at all, and 26.4% hold a high school diploma as their highest credential. The table below indicates typical education and training requirements rather than the mix of attainment of workers in some key positions in this field.

Educational Attainment



Education and Training Requirements



Occupation Gaps

The chart below shows the potential average annual gaps over ten years. A number of management and finance roles indicate significant shortages in the years ahead, with the General and Operations Manager talent pool likely falling short at least 24 skilled workers needed annually (averaged over the next ten years) to meet employer demand. Project Management Specialists, Financial Managers, and Accountants are other likely regional shortages. These critical talent shortages are primarily due to moderate growth and retirements which outpace demand.

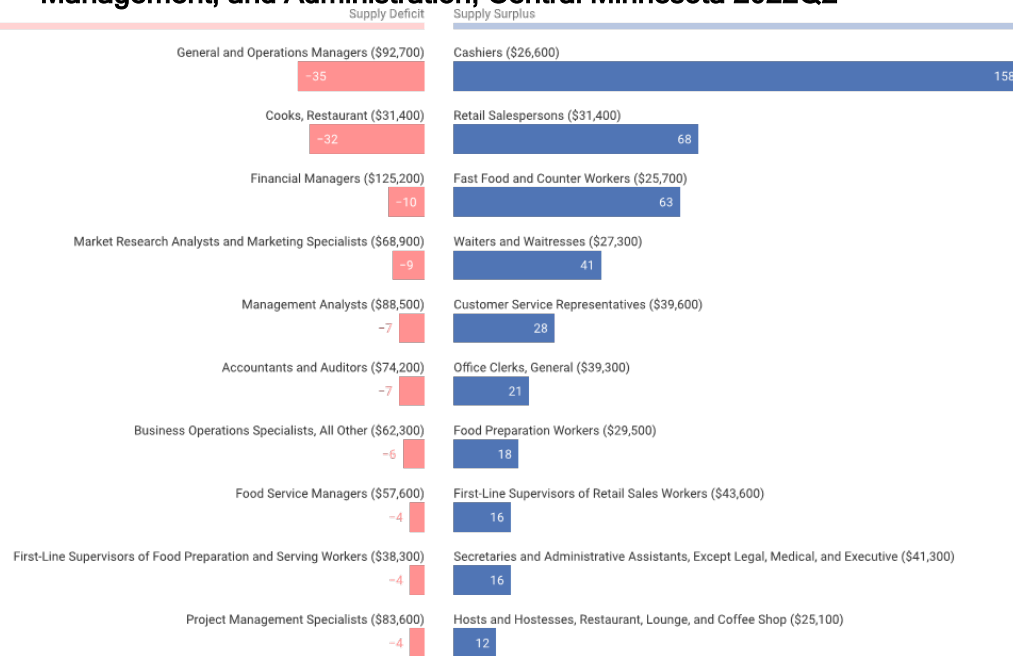
The chart below shows the potential average annual gaps over 10 years. Many variables go into this analysis, but at its core it is based on a forecast comparing occupation demand growth to the local population growth and the projected educational attainment of those residents, then matched to specific 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.

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.

In this field, General and Operations Managers and Financial Managers continue to have some of the highest anticipated shortages. However, this year, Cooks have jumped to the second highest project shortage. These shortages vary by region due to retirements, projected growth, and turnover rates.

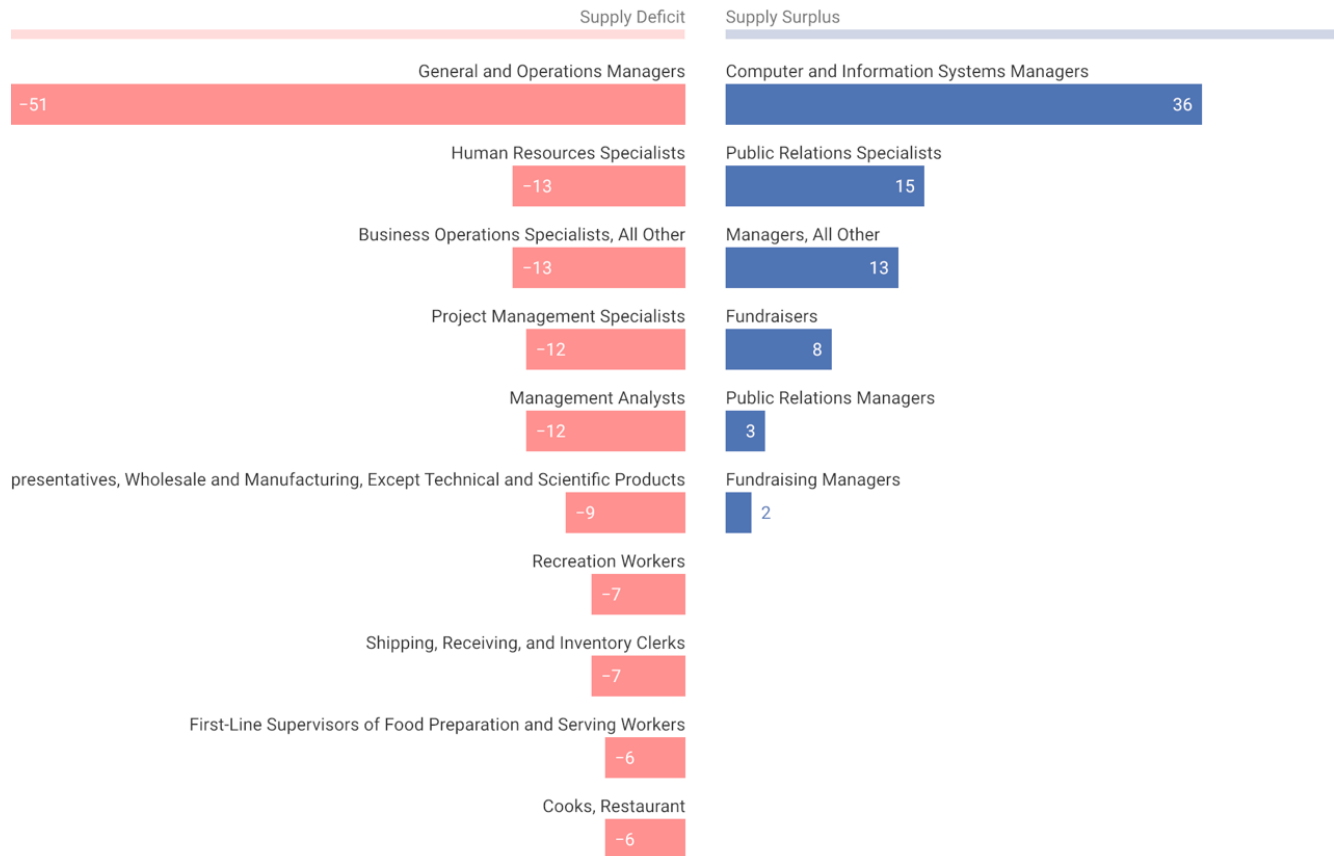
Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Business, Management, and Administration, Central Minnesota 2022Q2



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 few shortfalls in graduate awards needed to meet local demand for credentialed talent. Colleges and universities in the Central region currently under-train talent in some important Business, Management, and Administration roles when compared to national benchmarks. Most of the roles with shortages of awards require industry credentials in management, food service, and hospitality. The greatest award gaps regionally are also some of the largest occupation gaps, indicating an opportunity for postsecondary institutions to play a critical role in boosting the local talent pipeline in key occupations.

Award Gaps in Business, Management, and Administration, Central Minnesota 2022Q2



Promising Pathways

This section offers an origin-to-gateway-to-target model analysis for how to help move students from entrypoints into their field of interest into both likely and other aligned careers, taking into account automation, remote work, and the changing work environment.

Origin Occupations are roles that are low-wage (<\$37,000 per year) or mid-wage (\$37,000-\$42,000) that have high unemployment locally among workers without four-year degrees. Below are a few Origin Occupations that are likely entrypoints into Health Science Technology locally, or aligned opportunities that share a large number of skillsets in-demand in Health Science Technology.

Gateway Occupations are good jobs that can lead to Target Occupations as skills and experience are developed. These typically offer between \$42,000 up to the regional average wage. Below are a few Gateway Occupations in Health Science Technology locally. 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. 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 below as “OG” and “AG” respectively.

Origin-to-Gateway-to-Target Occupations for Business, Management, and Administration, Central Minnesota 2022Q2

Target Occupations(all HW, HD, HS, OG)
 General & Operations Managers (AG)
 Project Management Specialists (AG)
 Market Research Analysts & Marketing Specialists
 Human Resource Specialists (AG)
 Management Analysts (AG)

Gateway Occupations

Supervisors of Retail Sales Workers (HD, AG)
 Bookkeeping, Accounting, & Auditing Clerks (HS, HD)
 Real Estate Sales Agents (OG)
 Supervisors of Housekeepers & Janitorial Workers (HD)
 Loan Interviewers & Clerks

Origin Occupations

Likely

Cashiers
 Retail Salespersons (HD)
 Fast Food & Counter Workers (HD)
 Office Clerks, General (HD, AG)
 Janitors & Cleaners, Except Maids

Aligned

Personal Care Aides
 Eligibility Interviewers
 Childcare Workers
 Library Technicians

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

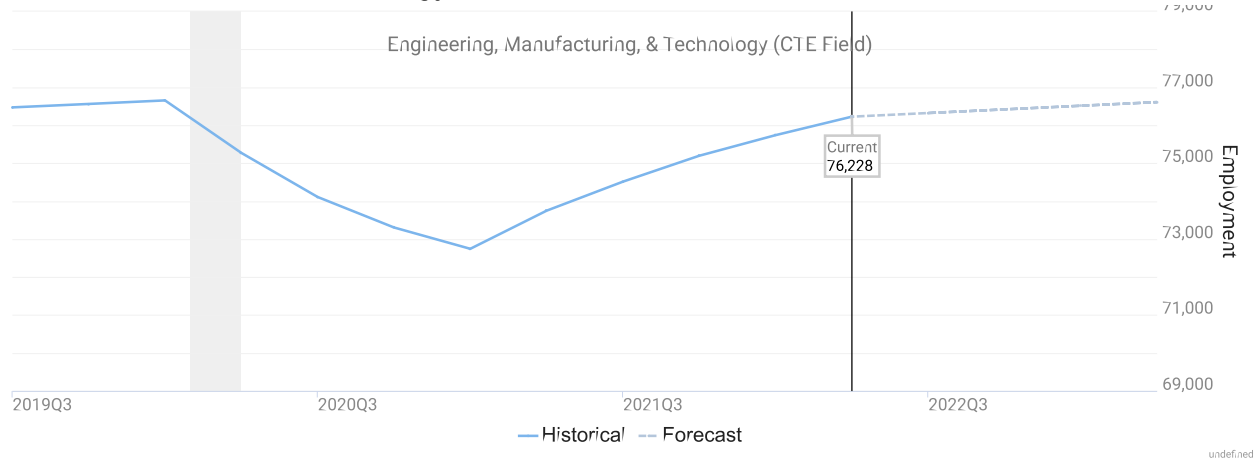
High Location Quotient (LQ) Occupations for Business, Management, and Administration, Central Minnesota 2022Q2

- 1) Gambling Service Workers, All Other (5.69)
- 2) Gambling and Sports Book Writers and Runners (4.87)
- 3) First-Line Supervisors of Gambling Services Workers (2.37)
- 4) Bartenders (1.96)
- 5) Food Servers, Nonrestaurant (1.94)

ENGINEERING, MANUFACTURING, AND TECHNOLOGY

Engineering, Manufacturing, and Technology is a wide career field with transportation, logistics, STEM, architecture, construction, manufacturing, and machining careers, which all experienced somewhat diverging trends during early days of the COVID-19 pandemic. Employment growth is now forecast to grow 0.5% annually over the coming five years, up from 0.2% forecast in 2021Q1. The 76,228 Engineering, Manufacturing, and Technology careers statewide pay about \$51,200 annually on average, and are slightly more concentrated in Central Minnesota than other areas (LQ 1.14). As of 2022Q2, there are about 3,225 unemployed Engineering, Manufacturing, and Technology professionals in Central Minnesota, giving an unemployment rate of 2.9%. Total five-year demand for Engineering, Manufacturing, and Technology talent is 42,304 new professionals needed to meet replacement and growth demand. Most of the growth is attributable to transportation, automotive, construction, and trades careers.

Baseline Worst-Case Scenario 3-Year Forecast for Engineering, Manufacturing, and Technology Careers, Central Minnesota 2022Q2



Top Ten Engineering, Manufacturing, and Technology Occupations by Employment Volume in the Central, 2022Q2

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Growth
Heavy and Tractor-Trailer Truck Drivers	5,010	\$52,300	1.35	65	578	0.5%
Laborers and Freight, Stock, and Material Movers, Hand	3,848	\$36,300	0.77	1	538	0.6%
Construction Laborers	3,464	\$47,600	1.48	274	375	0.8%
Team Assemblers	3,024	\$38,200	1.50	-137	317	-0.9%
Carpenters	2,626	\$53,700	1.62	54	253	0.4%
Maintenance and Repair Workers, General	2,376	\$45,800	0.89	-105	247	0.8%
Landscaping and Groundskeeping Workers	2,179	\$35,800	1.08	249	312	1.0%
Light Truck Drivers	1,760	\$42,100	0.91	4	210	0.7%
Automotive Service Technicians and Mechanics	1,644	\$48,600	1.31	-7	161	0.0%
First-Line Supervisors of Construction Trades and Extraction Workers	1,552	\$80,100	1.17	122	156	0.6%
Remaining Component Occupations	48,740	\$53,700	1.10	-543	5,257	0.5%
Engineering, Manufacturing, & Technology (CTE Field)	76,228	\$51,200	1.14	-24	8,406	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).

Employment of Engineering, Manufacturing, and Technology is spread across multiple career fields in the trades and manufacturing, with Building Equipment Contractors employing 5.5% of all this fields’ talent.

Industry Title	% of Occ Empl	Empl	10-Year Separations	10-Year Empl Growth	10-Year Total Demand
Building Equipment Contractors	5.5%	4,171	4,237	257	4,494
General Freight Trucking	3.5%	2,637	2,918	113	3,031
Building Finishing Contractors	3.4%	2,558	2,363	178	2,541
Highway, Street, and Bridge Construction	3.2%	2,462	2,466	104	2,570
Foundation, Structure, and Building Exterior Contractors	3.2%	2,443	2,386	141	2,527
Other Specialty Trade Contractors	3.2%	2,426	2,481	143	2,624
Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	2.9%	2,230	2,370	158	2,528
Plastics Product Manufacturing	2.8%	2,151	2,188	-107	2,081
Residential Building Construction	2.5%	1,904	1,761	120	1,881
Animal Slaughtering and Processing	2.5%	1,871	2,179	35	2,214
Household and Institutional Furniture and Kitchen Cabinet Manufacturing	2.3%	1,760	1,861	128	1,989
Services to Buildings and Dwellings	2.2%	1,647	2,091	126	2,216
Executive, Legislative, and Other General Government Support	2.1%	1,628	1,694	98	1,792
Automotive Repair and Maintenance	2.1%	1,611	1,705	63	1,768
Utility System Construction	1.8%	1,384	1,376	80	1,456
Electric Power Generation, Transmission and Distribution	1.8%	1,341	1,084	-216	868
School and Employee Bus Transportation	1.7%	1,264	1,678	487	2,164
Other General Purpose Machinery Manufacturing	1.6%	1,255	1,257	26	1,283
Automobile Dealers	1.6%	1,194	1,336	49	1,385
Architectural and Structural Metals Manufacturing	1.5%	1,179	1,250	70	1,320
All Others	48.7%	37,113	40,218	1,871	42,089

Career Field Demographics

Engineering, Manufacturing, and Technology field is heavily male (82.9%) and White (95.2%). Just under half of workers in this field are 45 years or older (46.6%), but overall this sector’s workforce age is less of a concern than in neighboring Northwest and Northeast Minnesota communities.

Age

Central Minnesota



Minnesota



16 to 19 years (3.2%)

25 to 34 years (19.4%)

45 to 54 years (23.3%)

20 to 24 years (8.6%)

35 to 44 years (22.2%)

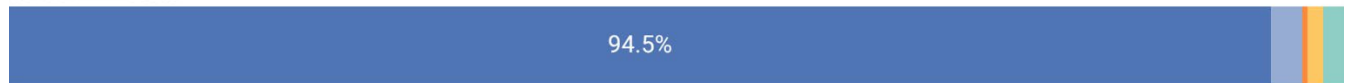
55 to 64 years (19.3%)

65 years and over (4.1%)

Data for Engineering, Manufacturing, & Technology (CTE Field)
Source: JobsEQ®. Data as of 2022Q2.

Race

Central Minnesota



Minnesota



White (94.5%)

American Indian (0.4%)

Pacific Islander (0.0%)

Black (2.3%)

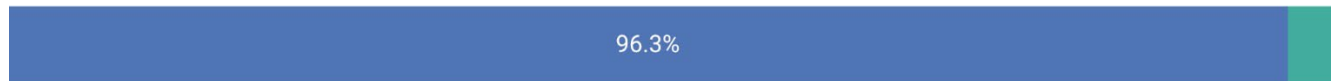
Asian (1.1%)

Two or More Races (1.6%)

Data for Engineering, Manufacturing, & Technology (CTE Field)
Source: JobsEQ®. Data as of 2022Q2.

Ethnicity

Central Minnesota



Minnesota



Non-Hispanic/Latino (96.3%)

Hispanic or Latino (of any race) (3.7%)

Data for Engineering, Manufacturing, & Technology (CTE Field)
Source: JobsEQ®. Data as of 2022Q2.

Gender

Central Minnesota



Minnesota



Male (82.6%)

Female (17.4%)

Data for Engineering, Manufacturing, & Technology (CTE Field)
Source: JobsEQ®. Data as of 2022Q2.

Educational Attainment and Requirements

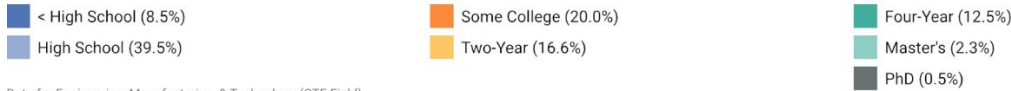
The stacked bar chart here illustrates the estimated mix of educational attainment of the workers in this career field in aggregate. In general, the Central Minnesota Engineering, Manufacturing, and Technology workforce is well-aligned for the typical credentials of entry-level positions. About 1 in 4 of all positions in this field (26.0%) require no degree, no experience, and only short-term on-the-job training. About 54.4% require experience or some on-the-job training, but still no degree. Almost 1 in 10 of the workforce in this field has no degree at all (8.5%), and almost 2 in 5 (39.5%) hold a high school diploma as their highest credential. In all, 68% of the Engineering, Manufacturing, and Technology workforce have not completed a postsecondary credential. The table below indicates typical education and training requirements rather than the mix of attainment of workers in some key positions in this field.

Educational Attainment

Central Minnesota



Minnesota



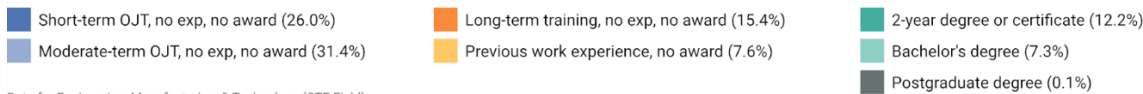
Data for Engineering, Manufacturing, & Technology (CTE Field)
Source: JobsEQ®, Data as of 2022Q2.

Education and Training Requirements

Central Minnesota



Minnesota

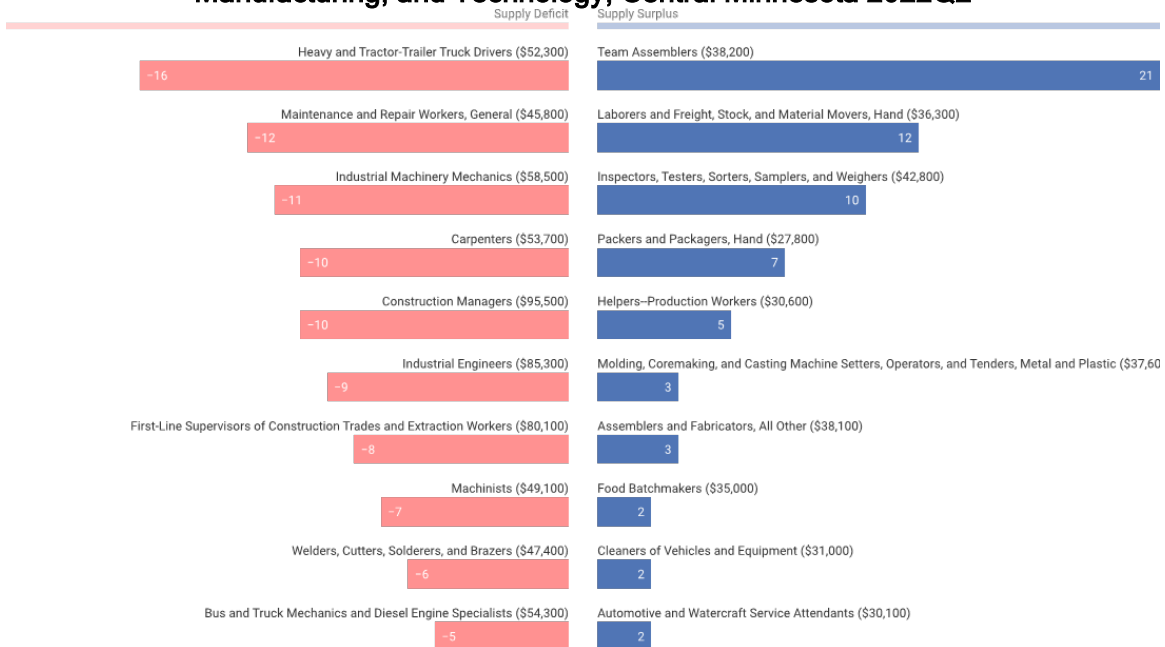


Data for Engineering, Manufacturing, & Technology (CTE Field)
Source: JobsEQ®, Data as of 2022Q2.

Occupation Gaps

The chart below shows the potential average annual gaps over ten years. A number of management, maintenance, construction, and automotive roles indicate shortages in the years ahead, with the Heavy and Tractor-Trailer Truck Driver talent pools likely falling short at least 16 skilled workers each needed annually (averaged over the next ten years) to meet employer demand. These talent shortages are primarily due to growth in demand and retirements which far outpace the local talent pipeline.

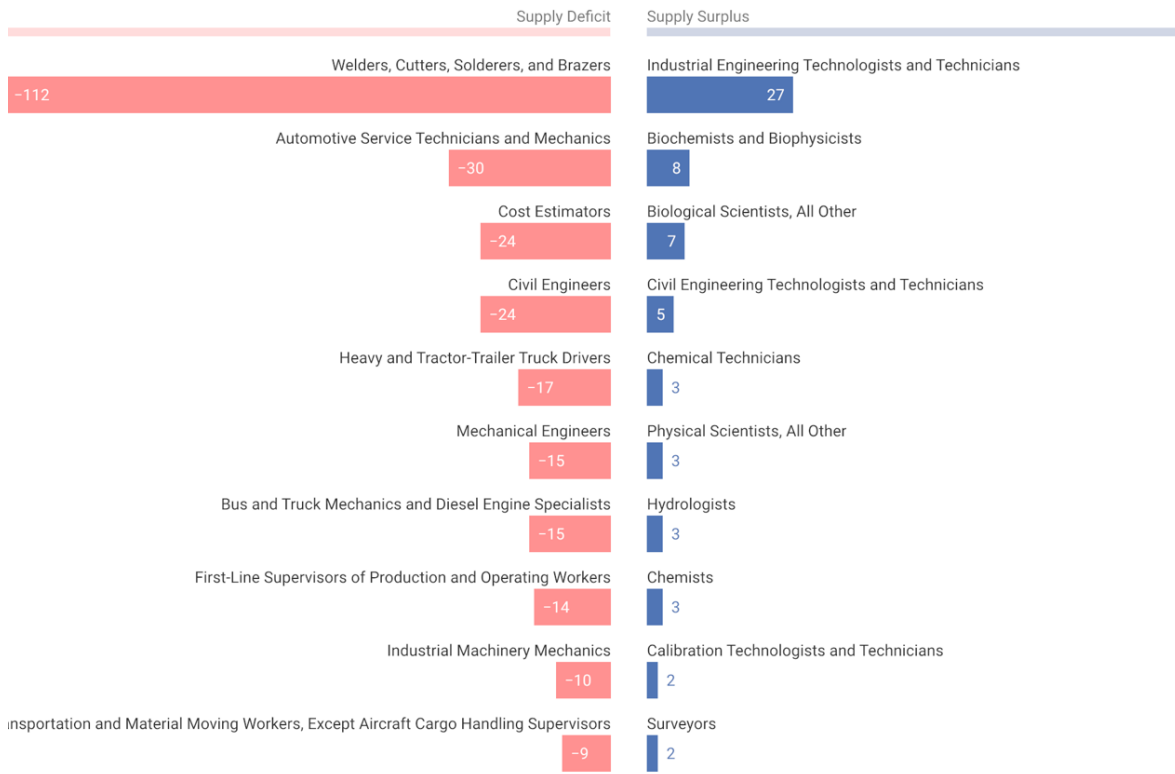
Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Engineering, Manufacturing, and Technology, Central Minnesota 2022Q2



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 Central currently under-trains some talent in Engineering, Manufacturing, and Technology when compared to national benchmarks. Central Minnesota colleges and universities are underproducing around 112 graduates annually that are needed to fill welding and soldering positions open with employers based in this region alone. Second, there are at least 30 Automotive Service Technicians and Mechanics graduating locally annually than what employers currently need to support demand.

Award Gaps in Engineering, Manufacturing, and Technology, Central Minnesota 2022Q2



Promising Pathways

This section offers an origin-to-gateway-to-target model analysis for how to help move students from entrypoints into their field of interest into both likely and other aligned careers, taking into account automation, remote work, and the changing work environment.

Origin Occupations are roles that are low-wage (<\$37,000 per year) or mid-wage (\$37,000-\$42,000) that have high unemployment locally among workers without four-year degrees. Below are a few Origin Occupations that are likely entrypoints into Health Science Technology locally, or aligned opportunities that share a large number of skillsets in-demand in Health Science Technology.

Gateway Occupations are good jobs that can lead to Target Occupations as skills and experience are developed. These typically offer between \$42,000 up to the regional average wage. Below are a few Gateway Occupations in Health Science Technology locally. 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. 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 below as “OG” and “AG” respectively.

Origin-to-Gateway-to-Target Occupations for Engineering, Manufacturing, and Technology, Central Minnesota Metro 2022Q2

Target Occupations(all HW, HD, HS, OG, AG)
 Heavy & Tractor-Trailer Truck Drivers
 Construction Managers
 Industrial Engineers
 Heating, AC, & Refrigeration Mechanics
 Mechanical Engineers

Gateway Occupations

Construction Laborers (HD)
 Maintenance & Repair Workers, General (HD, OG, AG)
 Light Truck Drivers (HD, AG)
 Automotive Service Technicians & Mechanics (HS, OG, AG)
 Welders, Cutters, Solderers, & Brazers (HD, OG, AG)

Origin Occupations

Likely

Laborers & Freight, Stock Movers (HD)
 Team Assemblers
 Landscaping & Groundskeeping Workers (HD, AG)
 Bus Drivers, School (HD, AG)
 Packaging & Filler Machine Operators (OG)

Aligned

Parking Lot Attendants
 Retail Sales Workers
 Stockers and Order Fillers
 Janitors and Cleaners

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

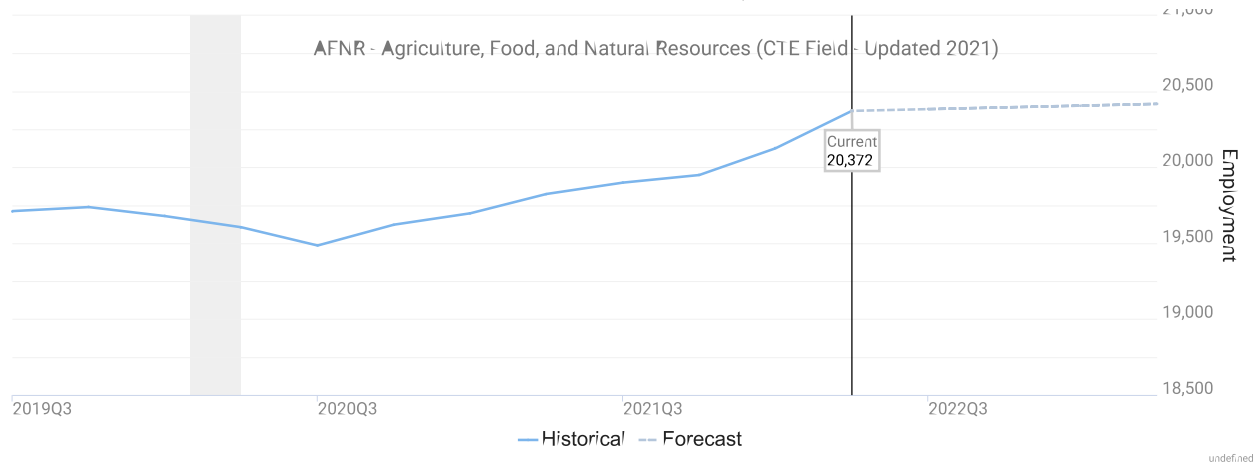
High Location Quotient (LQ) Occupations for Engineering, Manufacturing, and Technology, Central Minnesota 2022Q2

- 1) Nuclear Power Reactor Operators (9.41)
- 2) Nuclear Technicians (6.58)
- 3) Slaughterers and Meat Packers (5.44)
- 4) Nuclear Engineers (4.26)
- 5) Motorcycle Mechanics (3.84)

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. Over the next three years this career field's employment is forecast to grow by 0.2% on average annually in Central Minnesota. As of 2022Q2, 20,372 people are employed in focused roles in Agriculture, Food, and Natural Resources function areas, and there are substantially more workers in the industry and occupations that fall under other career fields but require significant industry knowledge. Unemployment in these focused career field roles sits at about 2.3% as of 2022Q2, and roles are uniquely concentrated in the Central region (LQ 1.41).

Baseline 3-Year Forecast for Agriculture, Food, and Natural Resources Careers, Central Minnesota 2022Q2



Top Ten Agriculture, Food, and Natural Resources Occupations by Employment Volume in the Central, 2022Q2

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Growth
Farmers, Ranchers, and Other Agricultural Managers	5,344	\$69,900	3.96	-112	478	-0.6%
Landscaping and Groundskeeping Workers	2,179	\$35,800	1.08	249	312	1.0%
Farmworkers, Farm, Ranch, and Aquacultural Animals	1,476	\$31,600	5.22	37	206	-1.1%
Plumbers, Pipefitters, and Steamfitters	1,195	\$71,100	1.43	90	130	0.6%
Farmworkers and Laborers, Crop, Nursery, and Greenhouse	1,002	\$34,400	0.96	120	164	0.5%
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	746	\$60,500	1.07	96	75	0.5%
Animal Caretakers	468	\$28,800	0.81	26	87	2.6%
Food Batchmakers	443	\$35,000	1.54	39	58	0.7%
Meat, Poultry, and Fish Cutters and Trimmers	430	\$34,700	1.85	-26	50	0.1%
First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	376	\$51,200	1.08	38	42	0.6%

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-	Annual Demand	Baseline Forecast
				Year Empl Change		Ann Growth
Remaining Component Occupations	6,717	\$55,800	1.20	146	767	0.4%
Agriculture, Food, and Natural Resources	20,372	\$54,000	1.41	701	2,373	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).

The largest share of Agriculture, Food, and Natural Resources talent is employed in Animal Production (18.4%), followed by the Building Equipment Contractors industry (8.6%).

Industry Title	% of Occ	Empl	10-Year Separations	10-Year Empl Growth	10-Year Total Demand
	Empl				
Animal Production (Proprietors)	18.4%	3,743	3,568	-213	3,355
Building Equipment Contractors	8.6%	1,759	1,797	110	1,907
Services to Buildings and Dwellings	7.7%	1,569	2,029	122	2,151
Cattle Ranching and Farming	7.7%	1,567	2,010	-183	1,827
Crop Production (Proprietors)	4.5%	926	962	-42	920
Other Professional, Scientific, and Technical Services	3.5%	721	666	100	766
Electric Power Generation, Transmission and Distribution	3.4%	683	557	-134	423
Executive, Legislative, and Other General Government Support	2.9%	584	635	34	669
Poultry and Egg Production	2.2%	456	602	-28	574
Animal Slaughtering and Processing	2.0%	413	497	7	504
Grocery and Convenience Retailers	1.8%	365	422	-26	397
Support Activities for Crop Production	1.6%	326	535	55	590
Other Amusement and Recreation Industries	1.6%	325	464	96	560
Utility System Construction	1.6%	321	324	32	356
Other Personal Services	1.5%	315	498	114	613
Hog and Pig Farming	1.5%	310	396	-39	357
Greenhouse, Nursery, and Floriculture Production	1.3%	263	386	33	420
Vegetable and Melon Farming	1.2%	251	368	31	399
Bakeries and Tortilla Manufacturing	1.2%	244	332	29	360
Machinery, Equipment, and Supplies Merchant Wholesalers	1.0%	214	215	10	226
All Others	24.6%	5,017	6,177	357	6,534

Career Field Demographics

The Agriculture, Food, and Natural Resources field is predominantly male (73.9%) and White (95.9%), but with variation by career pathway. The largest share of talent employed in this field are between the ages of 35 and 44 (20.9%), but key career have a rapidly aging workforce with limited new talent entering: in Animal Systems, 39.4% of the workforce is 55 or older (up 0.9 percentage points), and in Plant Systems, 36.4% (down 1.0 percentage point).

Age

Central Minnesota



Minnesota



16 to 19 years (4.1%)

25 to 34 years (18.3%)

45 to 54 years (19.4%)

20 to 24 years (8.7%)

35 to 44 years (20.9%)

55 to 64 years (19.4%)

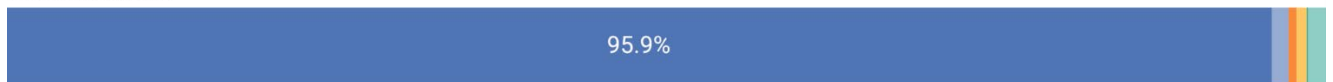
65 years and over (9.2%)

Data for AFNR - Agriculture, Food, and Natural Resources (CTE Field - Updated 2021)

Source: JobsEQ®. Data as of 2022Q2.

Race

Central Minnesota



Minnesota



White (95.9%)

American Indian (0.6%)

Pacific Islander (0.1%)

Black (1.3%)

Asian (0.8%)

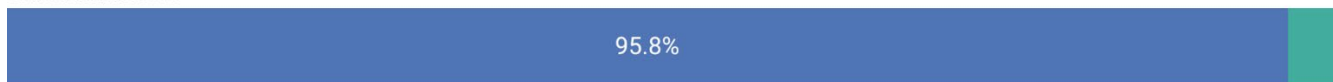
Two or More Races (1.4%)

Data for AFNR - Agriculture, Food, and Natural Resources (CTE Field - Updated 2021)

Source: JobsEQ®. Data as of 2022Q2.

Ethnicity

Central Minnesota



Minnesota



Non-Hispanic/Latino (95.8%)

Hispanic or Latino (of any race) (4.2%)

Data for AFNR - Agriculture, Food, and Natural Resources (CTE Field - Updated 2021)

Source: JobsEQ®. Data as of 2022Q2.

Gender

Central Minnesota



Minnesota



Male (73.9%)

Female (26.1%)

Data for AFNR - Agriculture, Food, and Natural Resources (CTE Field - Updated 2021)

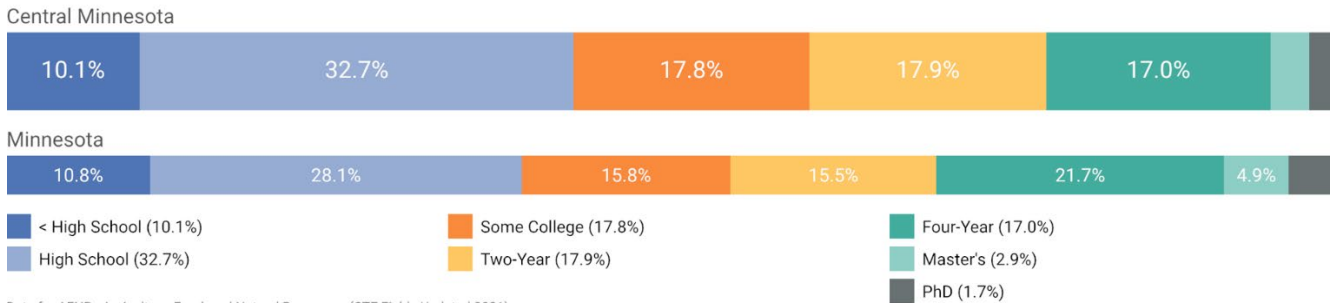
Source: JobsEQ®. Data as of 2022Q2.

Educational Attainment and Requirements

The stacked bar charts here illustrate the estimated mix of educational attainment of workers in the career field in aggregate, and the typically-required education of positions in the field. Nearly one-third of all positions in this field regionally (31.3%) require no degree, no experience, only short-term on-the-job training. Over half (54.2%) require experience or some on-the-job training, but still no degree; in all, 85.5% of positions in this field require no formal education. About 10.1% of the workforce in this field has no degree at all, and about one in three (32.7%) hold a high school diploma as their highest

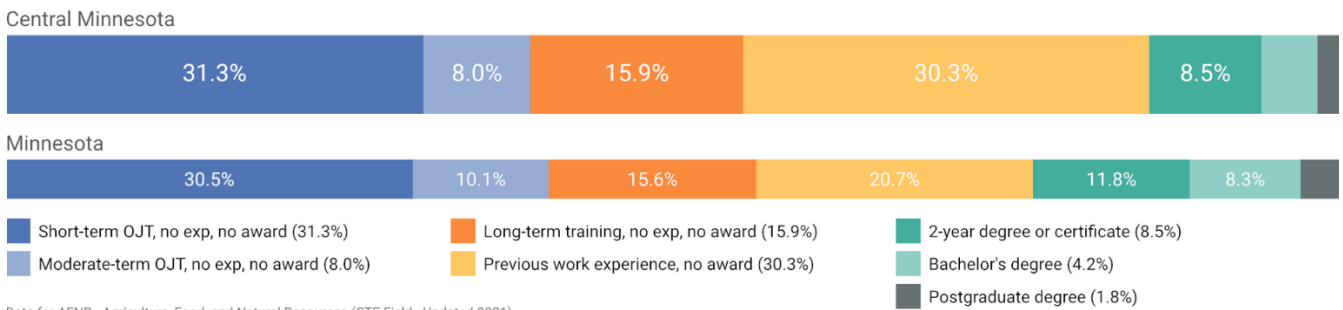
credential. In all, 60.6% of the Agriculture, Food, and Natural Resources workforce have not completed a postsecondary credential. The table below indicates typical education and training requirements rather than the mix of attainment of workers in some key positions in this field.

Educational Attainment



Data for AFNR - Agriculture, Food, and Natural Resources (CTE Field - Updated 2021)
Source: JobsEQ®. Data as of 2022Q2.

Education and Training Requirements

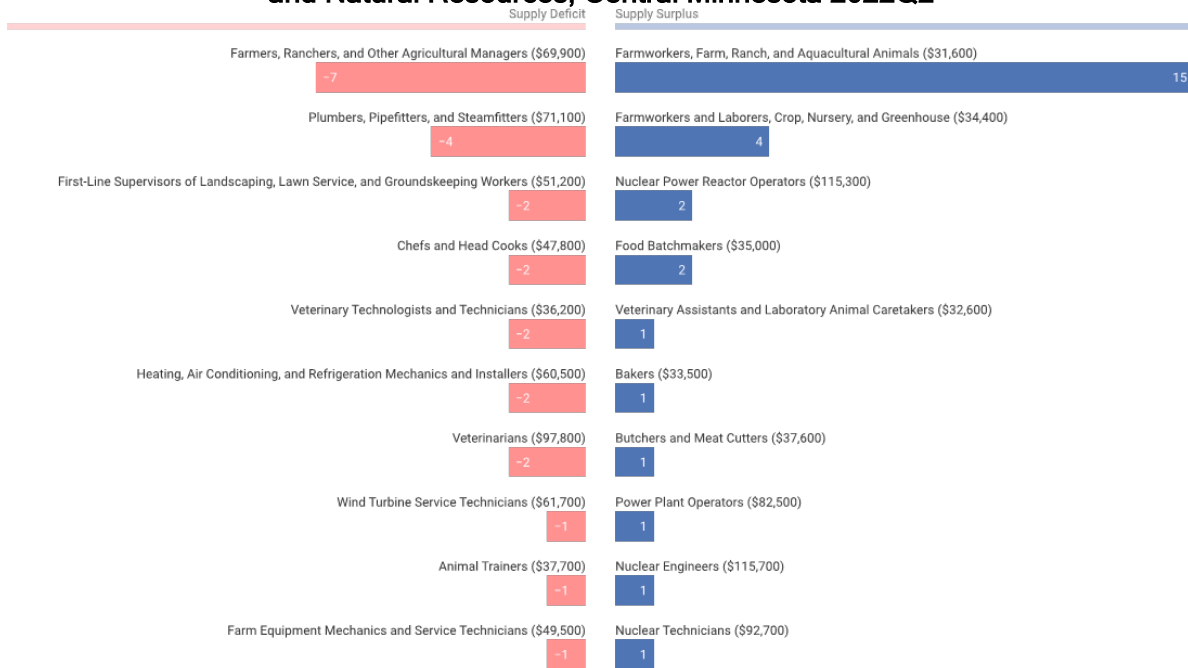


Data for AFNR - Agriculture, Food, and Natural Resources (CTE Field - Updated 2021)
Source: JobsEQ®. Data as of 2022Q2.

Occupation Gaps

The chart below shows the potential average annual gaps over ten years. A number of crucial trades, animal science, environmental services, and natural science roles indicate shortages in the years ahead, with talent pools of Farmers, Ranchers, and other Agricultural Managers (previously in surplus, now ranked top gap), Plumbers, and Landscaping Supervisors likely falling behind the most. Retirements and growing demand unmet by the local talent supply chain are both contributing factors.

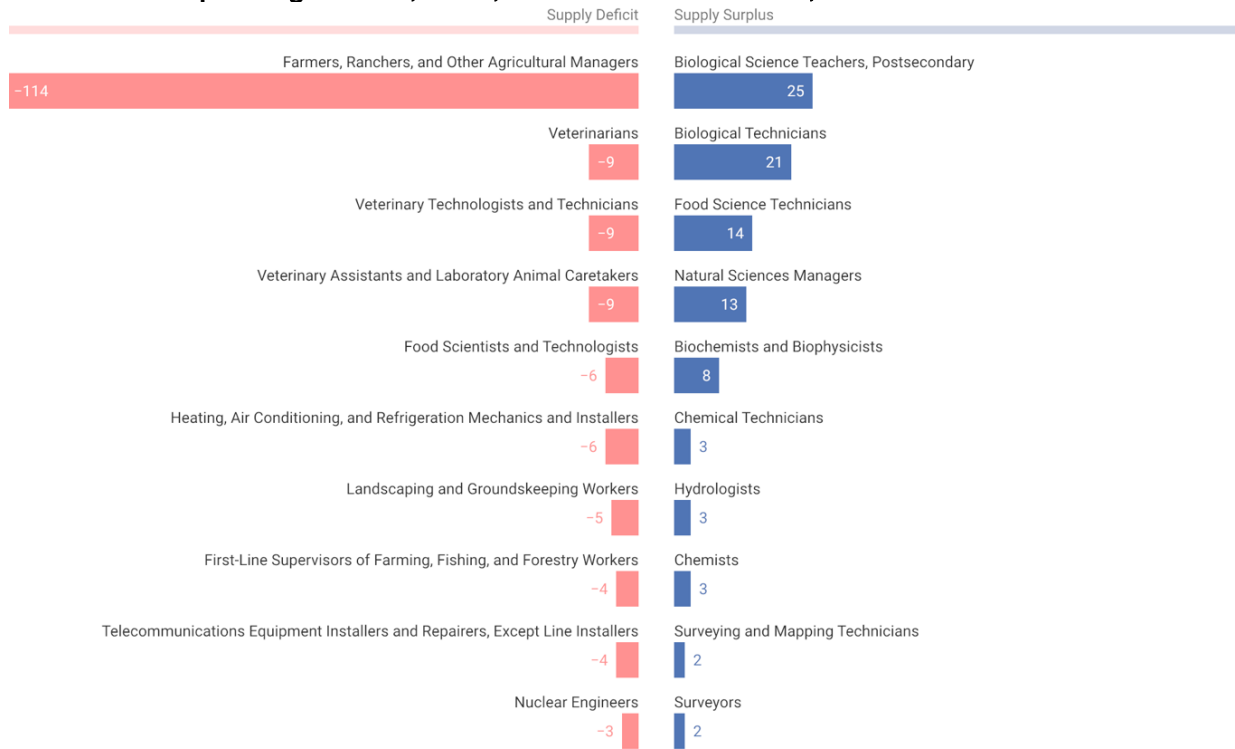
Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Agriculture, Food, and Natural Resources, Central Minnesota 2022Q2



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 notable shortages. Schools in Central Minnesota currently under-train talent in Agriculture, Food, and Natural Resources when compared to national benchmarks. Central Minnesota colleges and universities are underproducing at least 114 (an improvement from last year's estimated 129) graduates annually that are needed to fill farming and agricultural management positions open with employers based in the Central region. Veterinarian and Vet Tech roles are also lagging in local graduate awards, as the majority of Animal Systems and Plant Systems completions are made in the MSP Metro.

Award Gaps in Agriculture, Food, and Natural Resources, Central Minnesota 2022Q2



Promising Pathways

This section offers an origin-to-gateway-to-target model analysis for how to help move students from entrypoints into their field of interest into both likely and other aligned careers, taking into account automation, remote work, and the changing work environment.

Origin Occupations are roles that are low-wage (<\$37,000 per year) or mid-wage (\$37,000-\$42,000) that have high unemployment locally among workers without four-year degrees. Below are a few Origin Occupations that are likely entrypoints into Health Science Technology locally, or aligned opportunities that share a large number of skillsets in-demand in Health Science Technology.

Gateway Occupations are good jobs that can lead to Target Occupations as skills and experience are developed. These typically offer between \$42,000 up to the regional average wage. Below are a few Gateway Occupations in Health Science Technology locally. 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. 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 below as “OG” and “AG” respectively.

Origin-to-Gateway-to-Target Occupations for Agriculture, Food, and Natural Resources, Central Minnesota 2022Q2

Target Occupations(all HW, HD, HS)
 HVAC Mechanics (OG, AG)
 Veterinarians (OG, AG)
 Telecomms Equipment Installers & Repairers (AG)
 Conservation Scientists
 Food Scientists a& Technologists (AG)
 Wind Turbine Service Technicians (OG, AG)

Gateway Occupations

Supervisors of Landscaping, Lawn Service (HD, OG, AG)
 Refuse & Recyclable Material Collectors (HD)
 Farm Equipment Mechanics & Service Technicians (HD, OG, AG)
 Chefs & Head Cooks (HD, OG, AG)
 Tree Trimmers & Pruners

Origin Occupations	<i>Likely</i>	<i>Aligned</i>
	Landscaping & Groundskeeping Workers (HD, AG)	Compliance Officers
	Farmworkers, Farm, Ranch, & Aquacultural Animals	Laborers and Freight Movers
	Farmworkers & Crop Laborers	Stockers and Order Fillers
	Animal Caretakers (HD)	Cooks
	Food Batchmakers	Customer Service Reps

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

High Location Quotient (LQ) Occupations for Agriculture, Food, and Natural Resources, Central Minnesota 2022Q2

- 1) Nuclear Power Reactor Operators (9.41)
- 2) Nuclear Technicians (6.58)
- 3) Animal Breeders (5.60)
- 4) Farmworkers, Farm, Ranch, and Aquacultural Animals (5.22)
- 5) Nuclear Engineers (4.26)

Conclusion

The region's most in-demand occupations of the future require a two-year degree or higher, offer high average wages, and will likely experience talent shortages within the next three years and beyond due to low qualified talent pool located within the region. All six career and technical education Career Fields are likely to experience talent shortages and oversupply in certain occupations and skill areas in the current anticipated trajectory of workforce demand and overall economic recovery, though much remains uncertain. Overall, digital skills, human skills, and business enablers will be the foundational skills of the future in Central Minnesota. Remote work and digital skills have grown in importance during the first year and a half of the COVID-19 pandemic and all signs indicate that these features of the workplace are here to stay.

The region's most in-demand occupations of the future require a two-year degree or higher, offer high average wages, and will likely experience talent shortages by 2027 due to low qualified talent pool located within the region. All six career and technical education Career Field areas will experience talent shortages and oversupply in certain occupations and skill areas. It is likely that Central Minnesota careers that require a Bachelor's degree or higher have some of the largest anticipated shortages and highest wages.

The region is poised to see changes in demand for talent over the next five years and beyond as the region responds to the impacts of COVID-19 on the local population, economy, and business infrastructure. The disruptions of COVID-19, social unrest, and heightened inequalities have exacerbated concerns over the economy, business viability, and workforce opportunities. The region faces an immediate and short-term challenge of high unemployment among high contact-intensity roles and rapidly changing job requirements. However, many of the occupation shortages initially identified prior to the pandemic and early on in the first months of the pandemic's impact continue to be relevant to the current and future needs of Central Minnesota businesses. There is greater urgency to address these talent shortages now the pandemic accelerates some businesses to automate, modernize, and reskill the workforce in a changing market.