

# Central Minnesota

## CAREER & TECHNICAL EDUCATION

---

### Workforce Trends & Careers of Tomorrow

#### RealTime Talent

370 Wabasha Street, Suite 900  
St. Paul, MN 55102

Erin Olson, Director of Strategic Research  
[Erin@realtimetalentmn.org](mailto:Erin@realtimetalentmn.org)

#### Minnesota State

30 East 7<sup>th</sup> Street  
St. Paul, MN 55101



**RealTime Talent**

Using data to build the  
world's best workforce

# Workforce Trends & Careers of Tomorrow

## Overview

A year and a half after COVID-19 first appeared, the impacts of shutdowns, business closures, and shifting workforce needs worldwide have been ongoing and cumulative. Approximately 1.5 million Minnesotans have made initial unemployment claims since the beginning of the COVID-19 pandemic—about 47% of the state’s employed workforce just before the pandemic hit.<sup>1</sup> Many of the economic impacts of the COVID-19 pandemic will be felt far into the future, and in ways that may still be yet unknown.

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. 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

## *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@realtimentalentmn.org](mailto:erin@realtimentalentmn.org)

<sup>1</sup> Unemployment Statistics, MN Department of Employment and Economic Development. March 16, 2020 - August 27, 2020. Accessed 9/4/2020 at <https://mn.gov/deed/data/data-tools/unemployment-insurance-statistics/>

## Table of Contents

Workforce Trends & Careers of Tomorrow .....	1
Overview .....	1
About This Report .....	1
Central Minnesota .....	3
Introduction .....	3
Community Profile .....	5
Demographics .....	5
Employment .....	6
Education .....	8
The Workforce of Today and Tomorrow .....	11
Workforce Forecast .....	11
Mid-Term Occupational Impacts .....	12
Career Field Insights .....	19
Conclusion .....	71

# Central Minnesota

## Introduction

This report highlights the current and future talent needs in the 15 counties of Central Minnesota.<sup>2</sup> Starting from the community demographics, unique vulnerabilities and opportunities, and the critical occupations and industries underpinning the regional economy, this macroeconomic overview is intended to support educators and administrators who seek to go beyond compliance to impact both student lives and local businesses most pressing needs. Identifying the skills, certifications, and qualifications for positions today—and how they have been disparately impacted by the pandemic—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

#### Target Occupations

*High wage* (above regional average)  
*High-skill* (require some credential)  
*High-demand* (2/4 indicators: under 3% unempl, higher than average 5-year growth, total 5-year demand >50% of current empl, high job posting volume)  
 \*Often also high occupation gap and award gap

#### Gateway Occupations

*Mid-wage* (\$42,000 – regional average)  
*Low-middle skills* (HS diploma, some OJT)  
*Sufficient demand* (3-5% unemployment and/or high volumes of current opportunities)

#### Origin Occupations

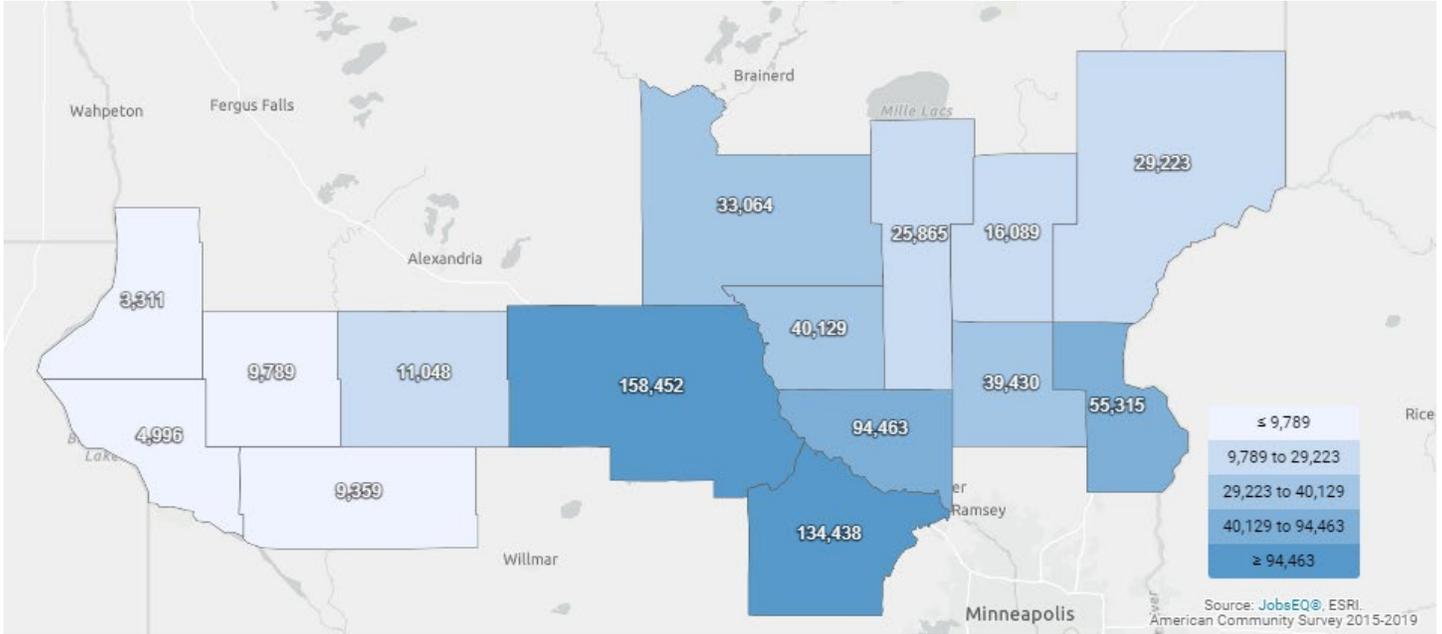
*Low wage* (<\$42,000/year)  
*Low skill* (no credential)  
*Low demand* (over 5% unemployment, low growth, low replacement demand, and/or low job postings)

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 664,971 people live in Central Minnesota, according to 2015-2019 American Community Survey Estimates—an increase of about 6,300 people from the prior year's estimates (658,613 people). Based on year-over-year population growth, about 683,746 people are estimated to live in the region as of 2021. About

24.6% 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).

<sup>2</sup> Benton, Big Stone, Chisago, Isanti, Kanabec, Mille Lacs, Morrison, Pine, Pope, Sherburne, Stearns, Stevens, Swift, Traverse, Wright Counties.

### Resident Population of Central Minnesota

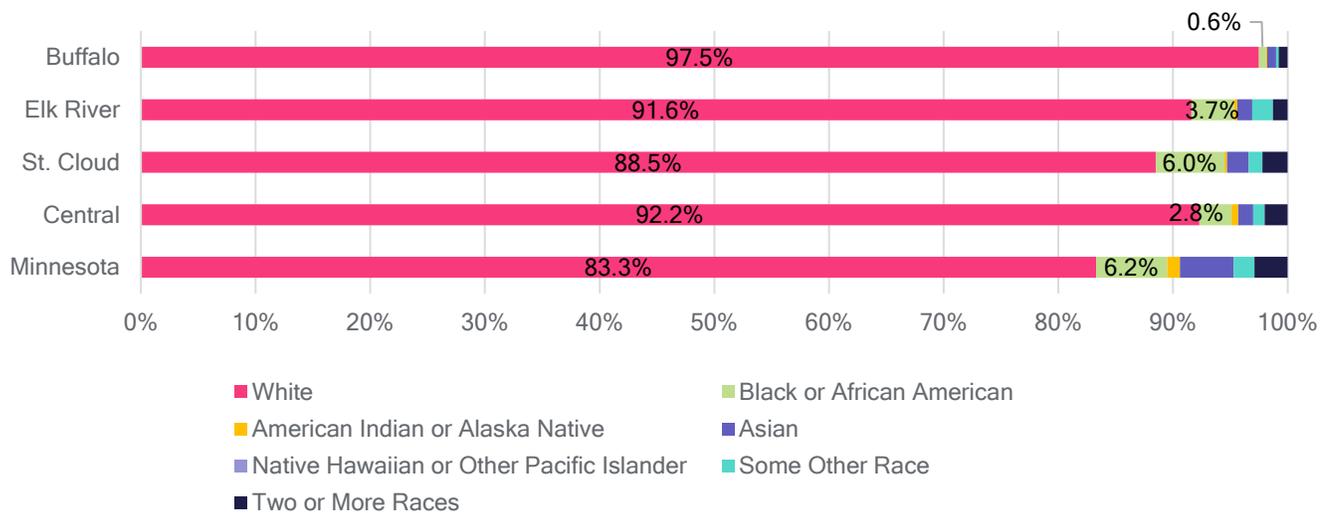


# Community Profile

## Demographics

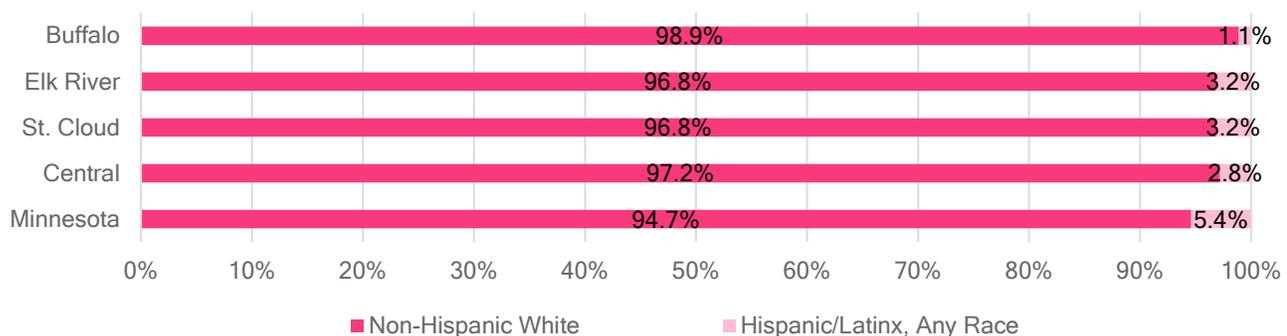
Population diversity increased between the two most recent population estimates statewide by half of a percentage point, and slightly more so in the Central region by 0.6 percentage points. Across the region overall, just 7.8% of the population identify as Black, Asian, American Indian, Native Hawaiian, or some other race. The demographic makeup of communities across the Central look quite different from one another; 6% of people living in St. Cloud identify as Black or African American, compared to just 0.6% in Buffalo. Approximately 2.8% of Central Minnesota's residents are Hispanic or Latinx. This was an increase of 0.1 percentage point from last year's estimates.

Population Race, All Ages



American Community Survey 2015-2019.

Population Ethnicity, All Ages



American Community Survey 2015-2019.

## Community Demographics

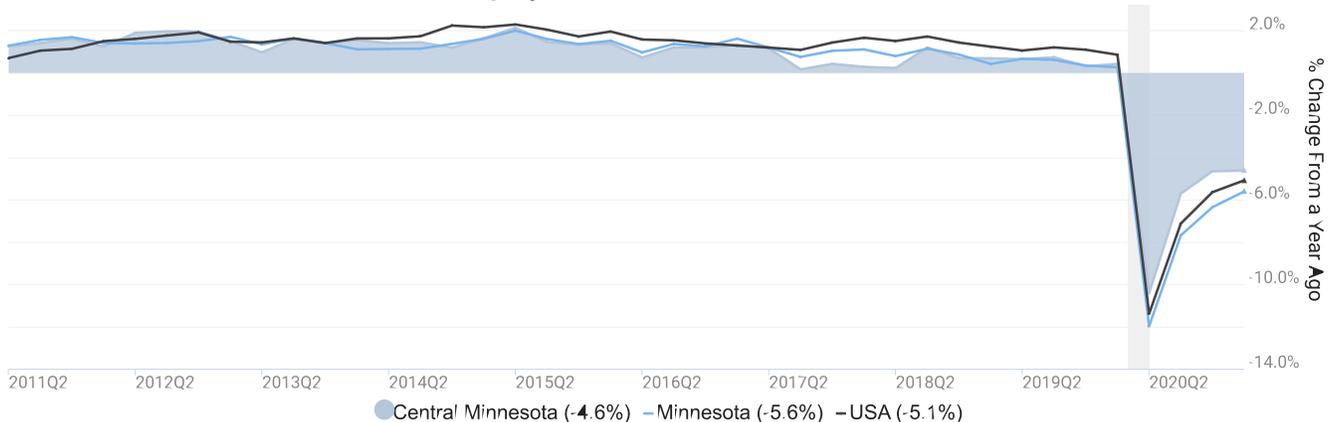
Demographics	Percent			Value		
	Central Minnesota	Minnesota	USA	Central Minnesota	Minnesota	USA
Population (ACS)	—	—	—	664,971	5,563,378	324,697,795
Male	50.8%	49.8%	49.2%	337,505	2,770,873	159,886,919
Female	49.2%	50.2%	50.8%	327,466	2,792,505	164,810,876
Median Age <sup>2</sup>	—	—	—	38.0	38.0	38.1
Under 18 Years	24.6%	23.3%	22.6%	163,320	1,295,848	73,429,392
18 to 24 Years	9.4%	9.0%	9.4%	62,788	500,630	30,646,327
25 to 34 Years	12.3%	13.6%	13.9%	82,056	756,337	45,030,415
35 to 44 Years	12.6%	12.5%	12.6%	83,850	697,077	40,978,831
45 to 54 Years	13.2%	12.7%	13.0%	87,995	708,668	42,072,620
55 to 64 Years	13.1%	13.4%	12.9%	86,860	746,120	41,756,414
65 to 74 Years	8.4%	8.8%	9.1%	55,936	490,739	29,542,266
75 Years, and Over	6.3%	6.6%	6.5%	42,166	367,959	21,241,530
Race: White	92.2%	82.8%	72.5%	613,400	4,609,049	235,377,662
Race: Black or African American	2.8%	6.4%	12.7%	18,444	356,515	41,234,642
Race: American Indian and Alaska Native	0.6%	1.0%	0.8%	4,314	58,011	2,750,143
Race: Asian	1.3%	4.8%	5.5%	8,526	268,181	17,924,209
Race: Native Hawaiian and Other Pacific Islander	0.0%	0.0%	0.2%	156	2,194	599,868
Race: Some Other Race	1.0%	1.9%	4.9%	6,566	104,032	16,047,369
Race: Two or More Races	2.0%	3.0%	3.3%	13,565	165,396	10,763,902
Hispanic or Latino (of any race)	2.8%	5.4%	18.0%	18,524	299,556	58,479,370

American Community Survey 2015-2019 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.

### Employment for Central Minnesota

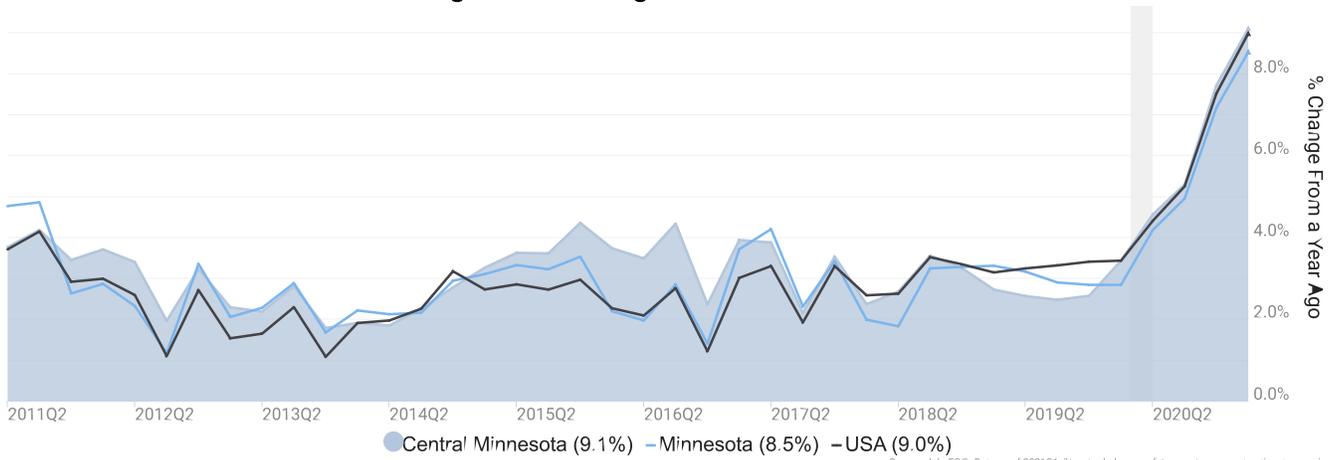


Employment data are derived from the Quarterly Census of Employment and Wages, provided by the Bureau of Labor Statistics and imputed where necessary. Data are updated through 2020Q4 with preliminary estimates updated to 2021Q1.

The average worker in Central Minnesota earned annual wages of \$48,657 as of 2021Q1, an increase of about \$4,400 from one year prior, 2020Q1. Average annual wages per worker increased 9.1% in the region over the

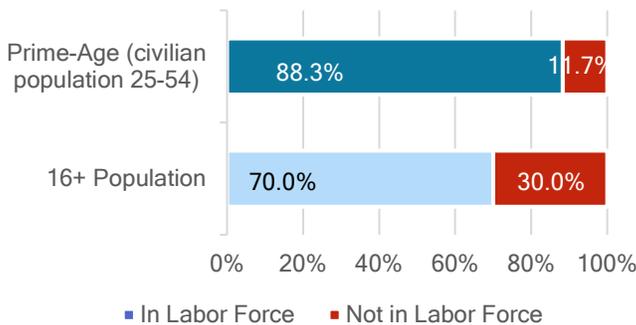
preceding four quarters. Wages rose similarly nationwide, where annual average wages were \$63,393 as of 2021Q1 compared to \$57,624 as of 2020Q1. This is due in part to the loss of low-wage workers during the COVID-19 pandemic and the ongoing challenge of recruiting and hiring talent for entry-level, 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 2020Q4 with preliminary estimates updated to 2021Q1.

### Labor Force Participation Rate



The region has a civilian labor force of 364,225 with a participation rate of 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—88.3% compared to the statewide 88.4%.

The Central area has a higher share of veterans in the region, at 4.7% of the regional population compared to

American Community Survey 2015-2019 unless noted otherwise.

3.8% broadly across the state. Veteran labor force participation is slightly lower in the region than the statewide average, 79.1% compared to 80.4% 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, 55.4% compared to 53% statewide. The Central region has a similar share of disconnected youth (1.8% of youth) compared to the rate statewide (1.7%), both lower than what is observed nationally (2.5%). However, Buffalo has an estimated 40 disconnected youth as of American Community Survey 2014-2019 estimates—a 4.5% disconnected youth rate.

## Economic and Social Characteristics of Central Minnesota

Economic and Social Characteristics	Percent			Values		
	Central Minnesota	Minnesota	USA	Central Minnesota	Minnesota	USA
Labor Force Participation Rate and Size (civilian population 16 years and over)	70.0%	69.6%	63.2%	364,225	3,069,730	163,555,585
Prime-Age Labor Force Participation Rate and Size (civilian population 25-54)	88.3%	88.4%	82.1%	224,123	1,908,936	104,634,905
Armed Forces Labor Force	0.1%	0.1%	0.4%	274	2,514	1,073,907
Veterans, Age 18-64	4.7%	3.8%	4.6%	18,847	130,320	9,143,042
Veterans Labor Force Participation Rate and Size, Age 18-64	79.1%	80.4%	76.6%	14,912	104,731	7,003,778
Median Household Income <sup>2</sup>	–	–	–	\$71,062	\$71,306	\$62,843
Per Capita Income	–	–	–	\$32,764	\$37,625	\$34,103
Poverty Level (of all people)	8.8%	9.7%	13.4%	56,688	526,065	42,510,843
Households Receiving Food Stamps/SNAP	7.3%	7.9%	11.7%	18,243	172,477	14,171,567
Enrolled in Grade 12 (% of total population)	1.4%	1.4%	1.4%	9,301	80,319	4,422,344
Disconnected Youth <sup>3</sup>	1.8%	1.7%	2.5%	683	4,961	423,273
Children in Single Parent Families (% of all children)	25.1%	28.1%	34.1%	39,348	350,236	23,790,005
Uninsured	3.8%	4.5%	8.8%	24,611	246,184	28,248,613
With a Disability, Age 18-64	9.2%	8.7%	10.3%	36,470	293,656	20,187,604
With a Disability, Age 18-64, Labor Force Participation Rate and Size	55.4%	53.0%	42.2%	20,216	155,592	8,509,463
Foreign Born	3.5%	8.5%	13.6%	23,396	472,849	44,011,870

American Community Survey 2015-2019 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



**94.4%** of prime working age adult residents have at least a high school diploma or GED.

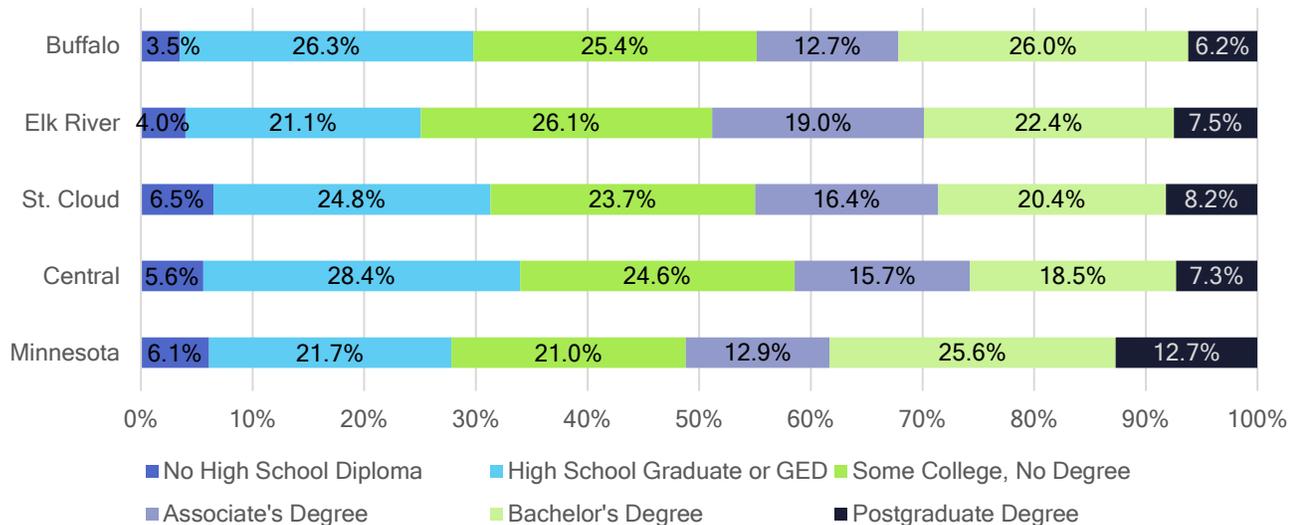
In Central Minnesota, 5.6% of adults between the ages of 25 and 64 do not have a high school diploma or equivalent, and 28.4% have a high school diploma as their highest level of education (compared with 21.7% statewide). Nationwide, 10.9% of U.S. residents between the ages of 25 and 64 never completed high school or obtained an equivalent credential. The prime working age population of St. Cloud has 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 (26.3%).

## Educational Characteristics of Central Minnesota

Educational Characteristics	Percent			Values		
	Central Minnesota	Minnesota	USA	Central Minnesota	Minnesota	USA
No High School Diploma	5.6%	6.1%	10.9%	19,202	178,196	18,550,150
High School Graduate	28.4%	21.7%	25.7%	96,671	632,253	43,627,868
Some College, No Degree	24.6%	21.0%	20.7%	83,728	610,250	35,174,790
Associate's Degree	15.7%	12.9%	9.1%	53,349	374,770	15,526,064
Bachelor's Degree	18.5%	25.6%	21.2%	63,032	744,024	35,997,848
Postgraduate Degree	7.3%	12.7%	12.3%	24,779	368,709	20,961,560

American Community Survey 2015-2019 unless noted otherwise.

## Educational Attainment, Age 25-64



American Community Survey 2015-2019.

## Regional Colleges and Universities

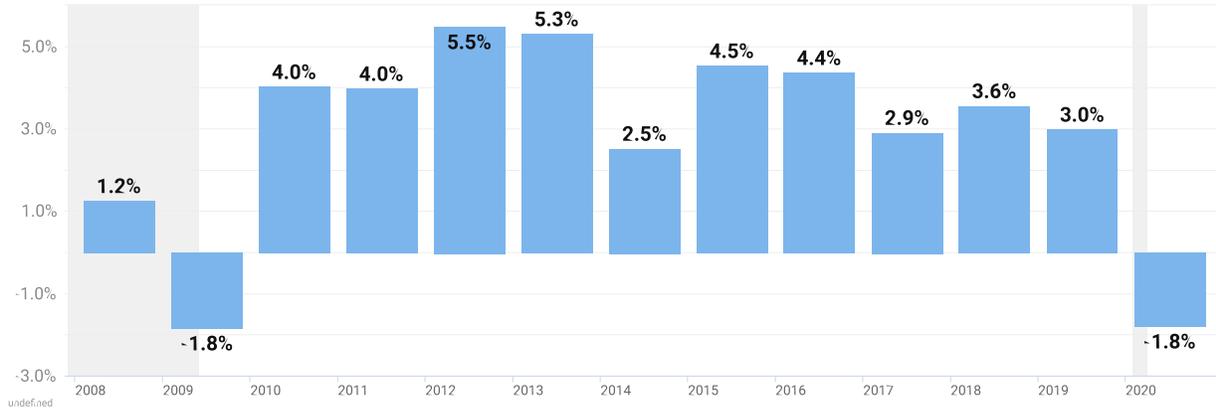
Central Minnesota has nine institutions of higher education that offer non-degree awards, two-year degrees, and four-year degrees. The table below shows these postsecondary institutions sorted by enrollment size in during the 2017-18 school year.

School	Certificates and 2yr Awards	4yr Awards	Total School Enrollment	Avg Net Price
Saint Cloud State University	208	2,170	13,928	\$13,816
St Cloud Technical and Community College	1,088	0	4,325	\$8,941
Rasmussen College-Minnesota	2,039	163	4,124	\$16,788
Pine Technical & Community College	316	0	2,020	\$10,835
College of Saint Benedict	0	419	1,782	\$27,961
Saint Johns University	0	410	1,777	\$27,500
University of Minnesota-Morris	0	385	1,552	\$11,403
Hazelden Betty Ford Graduate School of Addiction Studies	0	0	168	n/a
Model College of Hair Design	62	0	80	\$10,169
<b>Total</b>	<b>3,713</b>	<b>3,547</b>	<b>29,756</b>	<b>n/a</b>

## Economic Indicators

Gross Domestic Product (GDP) is the total value of goods and services produced by a region. In 2020, nominal GDP in the Central region contracted -1.8%. This follows growth of 3.0% in 2019. As of 2020, total GDP in the region was \$24,878,162,000.

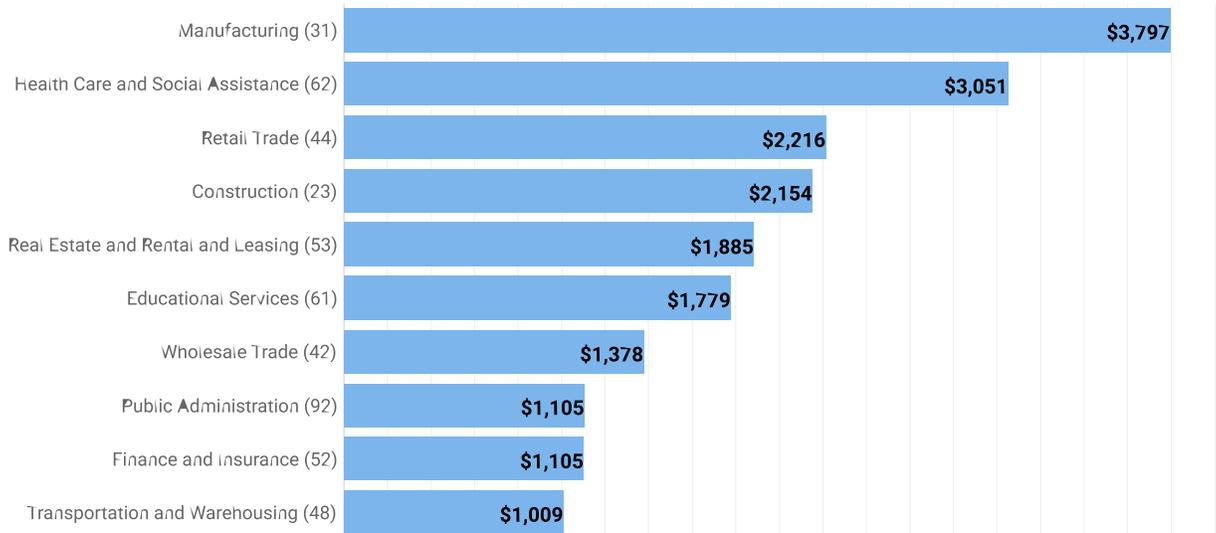
One-Year % Change in GDP, Central Minnesota



Gross Domestic Product data are provided by the Bureau of Economic Analysis, imputed by Chmura where necessary, updated through 2020.

Of the industries represented in the Central, Manufacturing contributed the largest portion of GDP in 2020, \$3,797,074,000. The next-largest contributions came from Health Care and Social Assistance (\$3,050,883,000); Retail Trade (\$2,216,092,000); and Construction (\$2,153,649,000).

GDP (in \$ millions)  
Central Minnesota, 2020



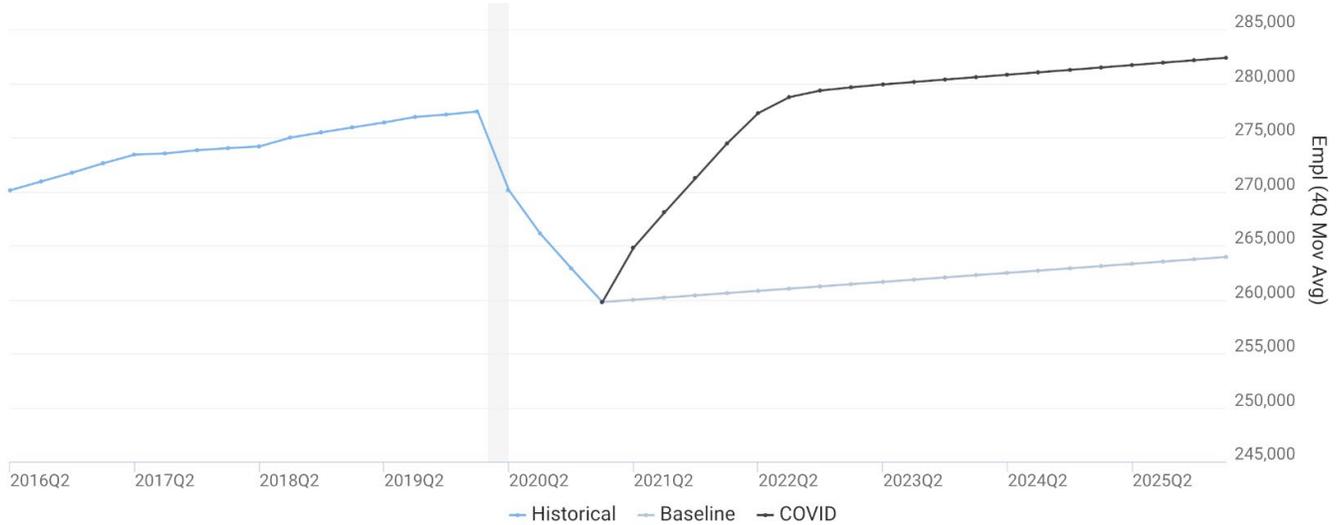
Gross Domestic Product data are provided by the Bureau of Economic Analysis, imputed by Chmura where necessary, updated through 2020.

# The Workforce of Today and Tomorrow

## Workforce Forecast

The pandemic has been anything but “sharp and short.” Instead, many businesses have sustained ongoing impacts which have translated into business closures and reduction in workforce. Additionally, some individuals have chosen to exit the workforce entirely to care for family members or support children who are attending school remotely. Employment dropped by -6.4% between 2020Q1 and 2021Q1, with an estimated 6.3% of the Central region’s workforce being unemployed by 2021Q1. Future growth in jobs in the region is forecasted to grow by about 1.7% averaged annually through 2025 in the most optimistic scenario shown below in black, though lagging behind employment in prior years considerably. A pessimistic forecast based on baseline data from the Bureau of Labor Statistics and the MN Department of Employment and Economic Development, assuming the pandemic’s effects do not worsen nor get better, puts employment rising by an annual average of 0.3%.

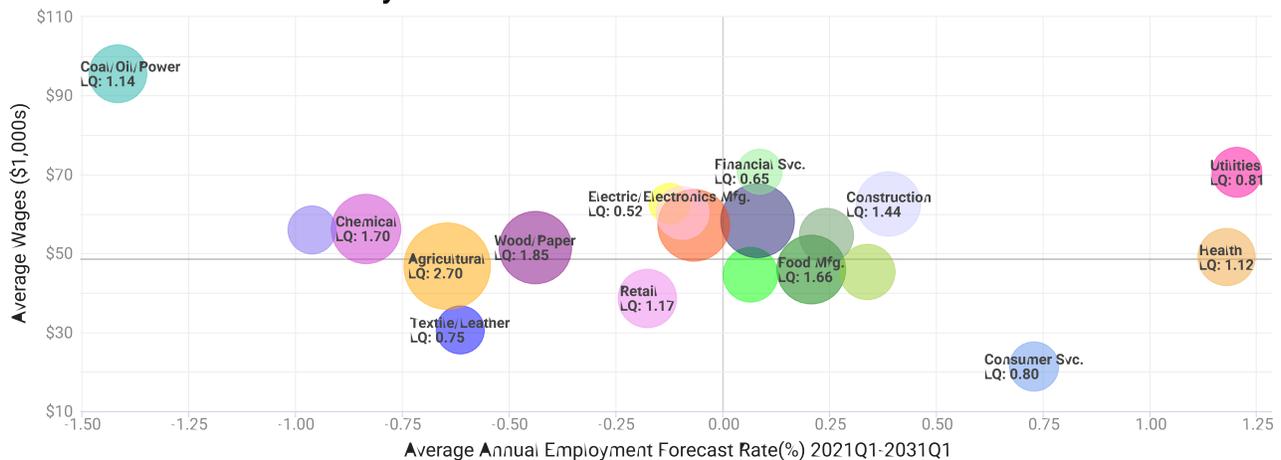
5-Year Forecast Comparison in Central Minnesota



Source: JobsEQ®, Data as of 2021Q1

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 is Agricultural with a location quotient of 2.70. This sector employs 10,458 workers in the region with an average wage 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 2021Q1



Source: JobsEQ®, Data as of 2021Q1

## *Mid-Term Occupational Impacts*

### **HIGH CONTACT-INTENSITY OCCUPATIONS**

The pandemic has had some surprising impacts on talent demand due to changing healthcare, human services, supply chain, and customer service needs. For roles that require close contact with the public, high growth was forecast in the Central just prior to the pandemic, but quickly shifted as businesses temporarily or permanently closed their doors. One year ago, we had estimated that about 6,182 (-8.7%) of the workers employed locally in high contact-intensity roles during 2020Q1 would lose their employment by 2021Q1. The outcome was slightly better; employment in these high contact-intensity roles dropped to 65,879 across the region, about 5,283 workers in losses (-7.4%). About 6,311 people are currently unemployed but skilled in these high contact-intensity positions locally, a combined unemployment rate across these positions of 7.2%.

Roles that saw some of the biggest losses in employment were Bartenders (-546 or -30.1%) and Waiters and Waitresses (-1,114 or -29.1%). These occupations also have the highest estimated unemployment rates. A few high contact-intensity roles aligned to Health Science Technology increased in employment counts between 2020Q1 and 2021Q1, including Personal Care Aides (+3.4%), Medical Assistants (+2.9%), and Physicians (+3.8%).

### Top 15 High Contact-Intensity Occupations by Total Employment with Optimistic COVID-19 Modeled Forecast, 2021Q1

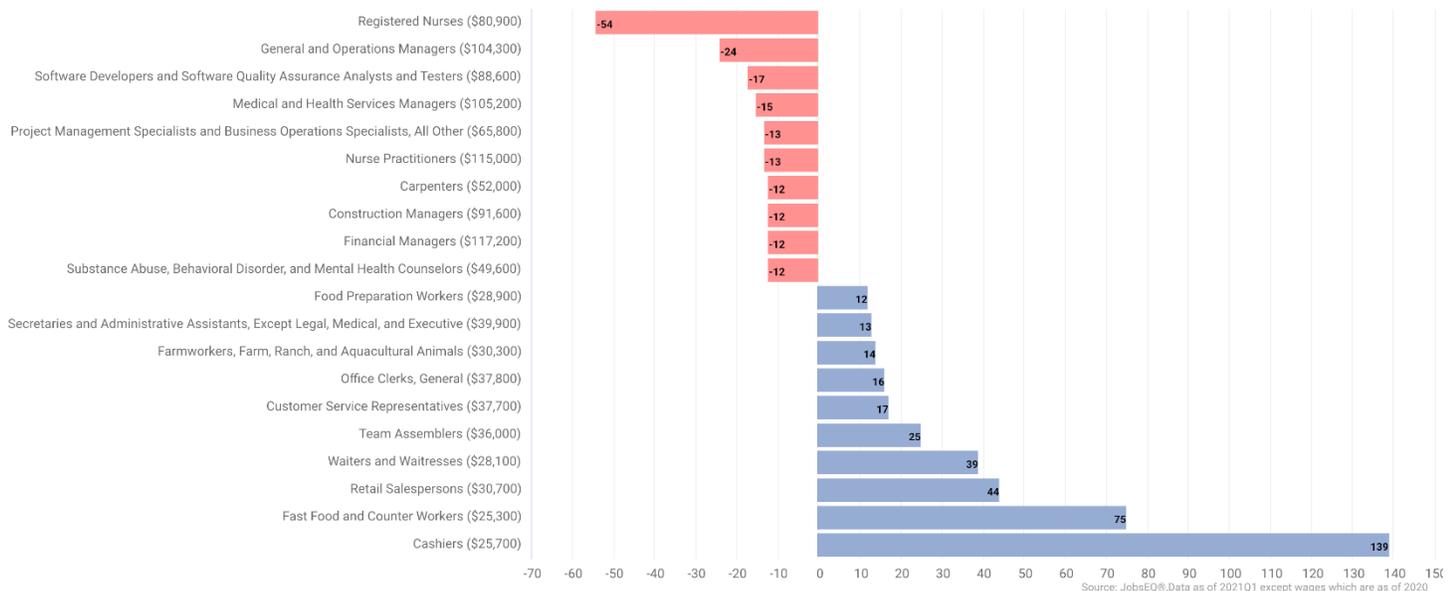
		2021Q1						1-Year History		Optimistic 5-Year Forecast				
SOC	Occupation	Empl	Mean Ann Wages <sup>2</sup>	LQ	Unempl	Unempl Rate	Online Job Ads <sup>3</sup>	Empl Change	Ann %	Total Demand	Exits	Transfers	Empl Growth	Ann % Growth
35-3023	Fast Food and Counter Workers	6,542	\$25,300	1.12	949	10.6%	604	-628	-8.8%	9,090	3,375	3,976	1,740	4.8%
29-1141	Registered Nurses	6,252	\$80,900	1.18	121	1.6%	549	-24	-0.4%	2,028	906	842	280	0.9%
53-3032	Heavy and Tractor-Trailer Truck Drivers	4,742	\$48,400	1.39	300	5.1%	371	-101	-2.1%	2,955	1,003	1,785	167	0.7%
31-1122	Personal Care Aides	4,638	\$26,800	1.05	311	4.7%	318	153	3.4%	4,390	1,948	1,711	731	3.0%
31-1131	Nursing Assistants	3,192	\$33,400	1.32	183	4.3%	503	-134	-4.0%	2,166	917	985	263	1.6%
25-2021	Elementary School Teachers, Except Special Education	2,819	\$58,600	1.26	104	3.6%	22	-270	-8.7%	1,361	469	651	241	1.7%
35-3031	Waiters and Waitresses	2,709	\$28,100	0.87	741	17.9%	37	-1,114	-29.1%	4,126	1,186	2,114	826	5.5%
25-2031	Secondary School Teachers, Except Special and Career/Technical Education	2,146	\$60,700	1.31	55	2.5%	42	-202	-8.6%	991	323	484	184	1.7%
39-9011	Childcare Workers	2,113	\$26,100	1.44	305	10.7%	123	-270	-11.3%	2,252	915	927	410	3.6%
53-3058	Passenger Vehicle Drivers, Except Bus Drivers, Transit and Intercity	1,904	\$36,700	1.52	516	17.7%	70	-309	-14.0%	1,972	842	602	528	5.0%
31-1121	Home Health Aides	1,611	\$26,800	1.04	104	4.3%	106	-133	-7.6%	1,279	494	530	255	3.0%
53-3033	Light Truck Drivers	1,568	\$38,400	0.86	121	5.0%	108	-43	-2.7%	1,036	339	603	94	1.2%
35-1012	First-Line Supervisors of Food Preparation and Serving Workers	1,450	\$37,500	0.96	177	8.4%	513	-246	-14.5%	1,726	390	966	369	4.6%
29-2061	Licensed Practical and Licensed Vocational Nurses	1,372	\$46,000	1.16	50	2.6%	284	-66	-4.6%	673	249	308	116	1.6%
	<b>High Contact-Intensity Occupations</b>	<b>65,879</b>	<b>\$49,400</b>	<b>1.12</b>	<b>6,311</b>	<b>7.2%</b>	<b>5,525</b>	<b>-5,283</b>	<b>-7.4%</b>	<b>51,728</b>	<b>18,405</b>	<b>23,976</b>	<b>9,348</b>	<b>2.7%</b>
	<b>Total - All Occupations</b>	<b>259,782</b>	<b>\$50,800</b>	<b>1.00</b>	<b>22,126</b>	<b>6.3%</b>	<b>15,934</b>	<b>-17,657</b>	<b>-6.4%</b>	<b>183,530</b>	<b>62,387</b>	<b>98,576</b>	<b>22,567</b>	<b>1.7%</b>

## SEVERE OCCUPATION GAPS

Estimation of mid-term and long-term recovery of critical local occupations is based on our most reasonable hypothesis given current conditions. In Central Minnesota, an analysis of local labor market occupational gaps as of the first quarter of 2020 showed that there was a shortage of Nurses, Farmers and Agricultural Managers, Public Safety Officers, various types of Financial, General, Operations and Construction Managers, Teachers, Mental Health Counselors, and a range of talent in construction and carpentry. By the first quarter of 2021, forecasted talent gaps for each of these occupations remained, but with some changes to the volume of anticipated gaps. Among high contact-intensity roles in shortage, Registered Nurses remained ranked as the occupation with highest forecasted shortages, but Software Developers jumped up from eighth-worst shortage to third-worst. Based on forecasted growing demand for health, education, human services, and remote work-friendly management positions, these occupations of shortage are likely to rebound and grow in demand as the pandemic subsides, possibly beyond initial forecasts. All of the top ten positions of highest forecasted talent shortage pay wages over \$49,000 per year on average. Most occupations of shortage require an Associate's degree or higher; just one pays slightly under the area median wage of \$50,800 annually (Substance Abuse and Mental Health Counselors).

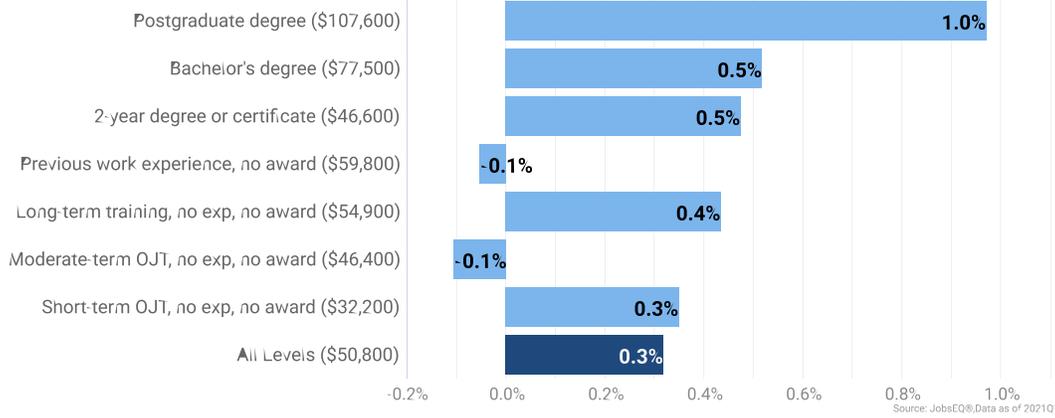
Conversely, none of the ten positions forecast to have the highest surplus of talent in the Central as of the first quarter of 2020 or 2021 typically require an advanced degree, and none of them pay over \$40,000 on average. Seven out of ten of these positions typically cannot be done remotely, and the four positions of greatest talent surplus 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.

**Average Annual Occupation Gaps (i.e. Talent Shortage), 2021Q1 through 2031Q1**



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, 2-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

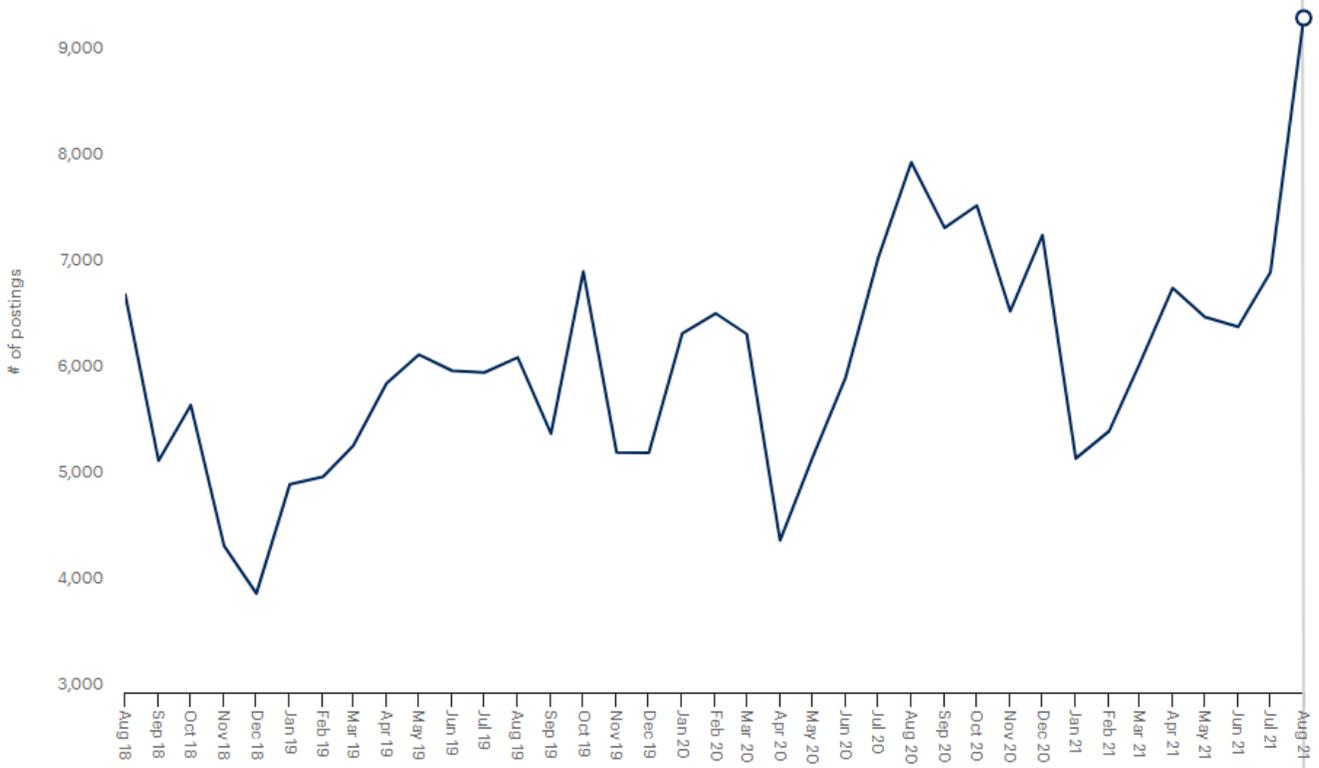


Employment by occupation data are estimates as of 2021Q1. Education levels of occupations are based on BLS assignments. Forecast employment growth uses national projections from the Bureau of Labor Statistics adapted for regional growth patterns.

### EMERGING CAREER PATHS

Online job posting data can tell us a lot about employer demand for certain skills, certifications, qualifications, and occupational competencies. Too often jobseekers limit their search to careers matching prior job titles or formal education. However, taking a non-traditional education path doesn't mean a person doesn't have the skills necessary for in-demand jobs or career paths outside their formal education. And increasingly, employers are more focused on skills than degrees.

### Total Jobs Advertised Monthly in Central Minnesota, September 2019 - 2021



During the first six months of the COVID-19 pandemic,<sup>3</sup> 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.

**Top Emerging Occupations in Central Minnesota, March 1-August 31, 2021  
compared to the same dates in 2020 (high-growth occupations by order of volume of postings)**

1. Supervisors of Retail Sales Workers (+28%)
2. Light Truck or Delivery Services Drivers (+137%)
3. Nursing Assistants (+84%)
4. Licensed Practical and Licensed Vocational Nurses (+213%)
5. Hairdressers, Hairstylists, and Cosmetologists (+40%)
6. Supervisors of Production Workers (+43%)
7. Combined Food Preparation and Serving Workers (+106%)
8. Production Workers, All Other (+37%)
9. Supervisors of Food Preparation Workers (+31%)
10. Supervisors of Office and Administrative Support Workers (+26%)

**Top Sustaining Occupations in Central Minnesota September 2020 - 2021**

1. Heavy and Tractor-Trailer Truck Drivers (+70%)
2. Registered Nurses (+51%)
3. Stock Clerks and Order Fillers (+52%)
4. Laborers and Freight, Stock, and Material Movers (+17%)
5. Customer Service Representatives (+21%)

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.

<sup>3</sup> March 15-June 15, 2020.

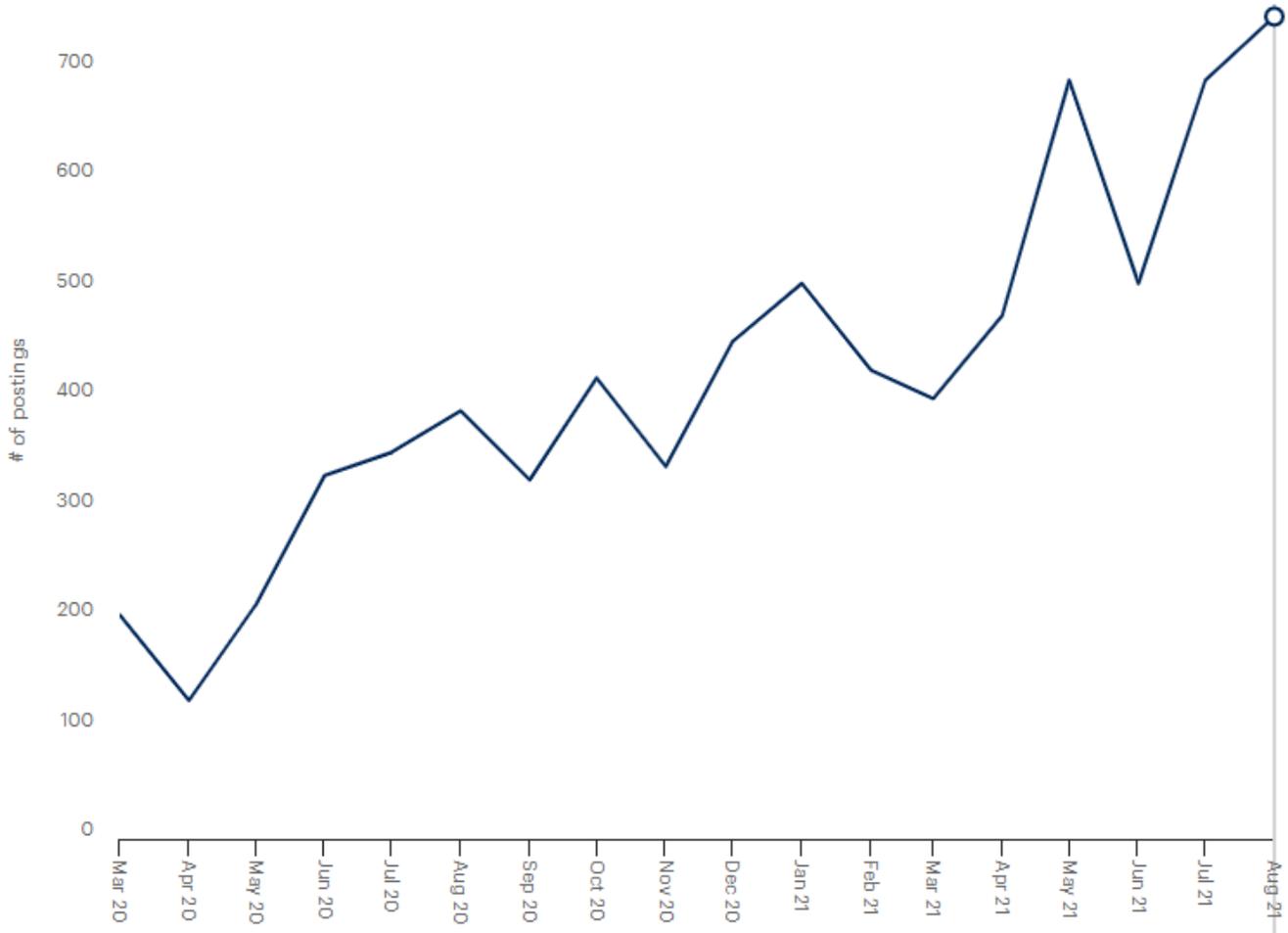
Human skills and other competencies like scheduling, managing a flexible work environment, and handling general healthcare needs were mentioned in job postings as required competencies for candidates in higher volumes from March through August in comparison to early 2020 or any point in 2019, but declined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

### Top Emerging Skills in Central Minnesota in Order of Frequency, with percent change from prior year in Job Postings, September 2020 - 2021

1. Problem Solving (+73%)
2. Basic Computer Usage (+48%)—Typing and Analysis also mentioned
3. Research (+36%)
4. Microsoft Office (+124%)
5. Organizational Skills (+120%)

Telecommuting and work-from-home continues to appear in job posting requirements locally, increasing 83% in the past 12 months (September 2020-2021) compared to the prior year (September 2019-2020).

### Trends in Remote Work Opportunities Advertised Online, Central Minnesota 2021Q1



Remote work opportunities increased significantly among Business, Management, and Administration and Information Technology roles over the past 12 months compared to the 12 months prior. For example, the volume of remote Secretaries and Administrative Assistants increased by 1,400%.

**Change in Volume of Remote Work Opportunities by Occupation in Central Minnesota, September 2020-2021 Compared to 12 months prior**

1. Customer Service Representatives (+205%)
2. Insurance Sales Agents (+97%)
3. Accountants and Auditors (+649%)
4. Bookkeeping, Accounting, and Auditing Clerks (+3,100%)
5. Software Developers, Applications (+266%)

Currently, the occupations with highest estimated unemployment rates in Central Minnesota are Choreographers (32.9%), Dancers (+32.7%), Food Preparation and Serving Workers (26.7%), and Gambling Dealers (25.8%). Gambling Dealers (25.2% unemployment) may have a moderately high level of alignment in skills and experience for several career pathways and high-skill, high-demand occupations in the region in the Human Services field. Likely transitions for local entry-level Gambling Dealers include Orderlies, and Coatroom Attendants. Other aligned positions that could support movement into entirely different high-shortage career paths with some additional training or education include Pharmacy Technicians, Barbers, Skincare Specialists, and Manicurists or Pedicurists.

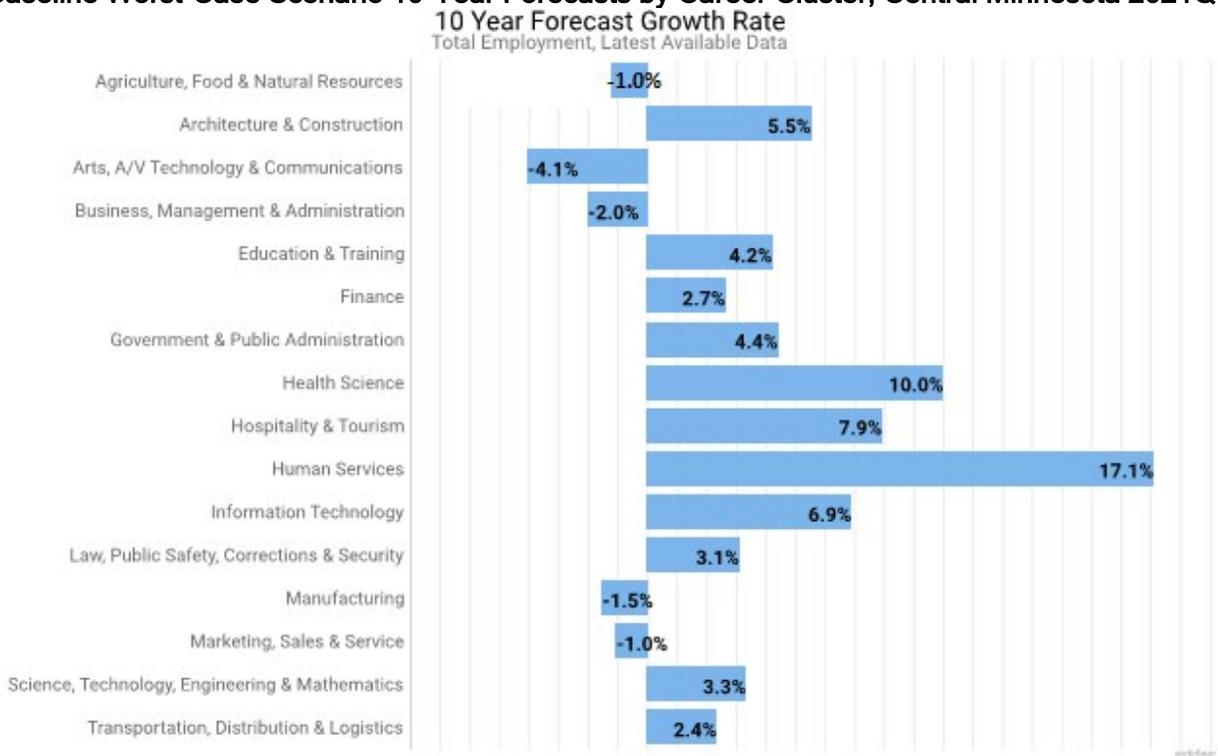
## Career Field Insights

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), eleven are forecast in a worst-case scenario model to grow in overall employment over the next ten years. The clusters forecasting highest growth are Human Services (17.1%) and Health Science (10.0%) in a worst-case scenario. Five of these growing career clusters have average wages above the average occupation wage in the region (\$50,800 in 2020).<sup>4</sup>

Comparing current baseline forecasts to the same forecasts modeled one year ago, all but Agriculture, Food, and Natural Resources and the Architecture and Construction Cluster 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 2021Q1



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, 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.

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

<sup>4</sup> 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.

Career Cluster	Employment	Avg Ann Wages	Job Ads	Baseline 10-Year Forecasted Empl Change	Ann Empl Growth	Ann Total Demand
Science, Technology, Engineering & Mathematics	2,685	\$88,700	220	3.3% (+)	9	211
Information Technology	3,855	\$77,900	259	6.9% (+)	25	317
Finance	6,970	\$71,000	459	2.7% (+)	18	674
Health Science	25,455	\$70,100	2,927	10.0% (+)	241	2,238
Agriculture, Food & Natural Resources*	21,027	\$57,300	462	-1.0%	-22	2,454
Government & Public Administration	2,246	\$58,100	89	4.4% (+)	10	211
Architecture & Construction	22,212	\$57,400	526	5.5%	118	2,544
Law, Public Safety, Corrections & Security	6,193	\$57,000	185	3.1% (+)	18	604
Business, Management & Administration	37,746	\$56,200	1,922	-2.0% (+)	-80	4,016
Education & Training	17,558	\$52,300	629	4.2% (+)	72	1,678
Arts, A/V Technology & Communications	3,344	\$50,900	80	-4.1% (+)	-14	345
Manufacturing	27,042	\$44,200	1,399	-1.5% (+)	-44	2,923
Transportation, Distribution & Logistics	20,873	\$42,800	1,035	2.4% (+)	46	2,526
Marketing, Sales & Service	30,084	\$42,000	2,192	-1.0% (+)	-35	4,145
Human Services	15,549	\$38,200	1,251	17.1% (+)	246	2,309
Hospitality & Tourism	27,315	\$29,500	2,385	7.9% (+)	207	4,772
<b>Total - All Occupations</b>	<b>259,782</b>	<b>\$50,800</b>	<b>15,703</b>	<b>3.0%</b>	<b>808</b>	<b>30,745</b>

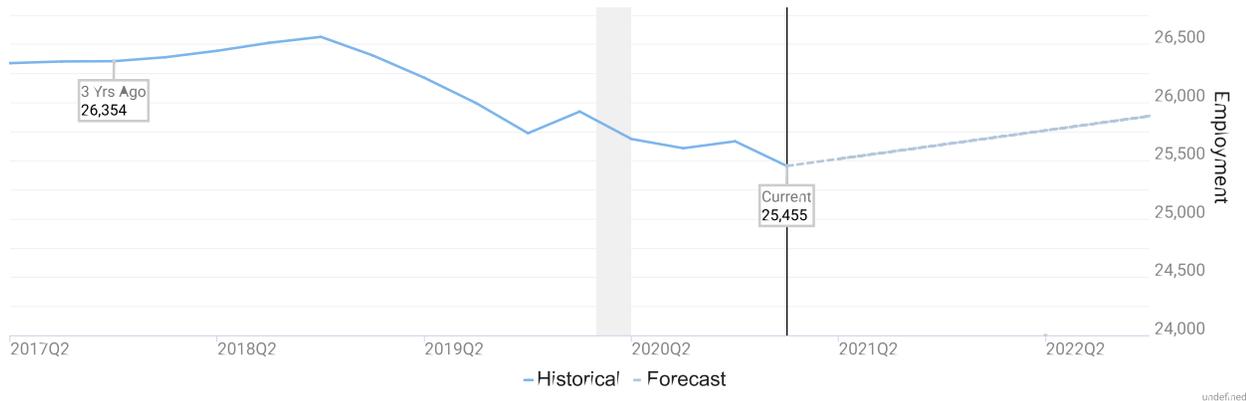
\*Cluster forecasts estimated using Chmura, JobsEQ, based on 2021Q1 employment data. All clusters are distinct occupations except for Agriculture, Food, and Natural Resources, which overlaps with other clusters. (+) indicates an improved forecast from 2020Q1 estimates.

## 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.

Over the next three years, under a pessimistic baseline forecast, Health Science Technology employment is forecast to grow by about 0.9% on average annually. In the most optimistic scenario feasible based on employer demand, and given the existing talent shortage and talent pipelines in place, employment growth of 1.5% annually in this field could be possible.

### Baseline Worst-Case Scenario 3-Year Forecast for Health Science Technology Careers, Central Minnesota 2021Q1



### Top Ten Health Science Technology Occupations by Employment Volume in Central Minnesota, 2021Q1

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year		Baseline Forecast
				Empl Change	Annual Demand	Ann Growth
Registered Nurses	6,252	\$80,900	1.18	109	374	0.5%
Nursing Assistants	3,192	\$33,400	1.32	-127	380	0.5%
Home Health Aides	1,611	\$26,800	1.04	-354	240	2.7%
Licensed Practical and Licensed Vocational Nurses	1,372	\$46,000	1.16	-118	116	0.7%
Medical Secretaries and Administrative Assistants	1,079	\$39,900	1.01	5	132	0.7%
Medical Assistants	1,011	\$39,100	0.80	75	134	1.6%
Pharmacy Technicians	709	\$37,200	0.97	28	60	0.3%
Physicians, All Other; and Ophthalmologists, Except Pediatric	697	\$218,200	0.99	36	24	0.6%
Medical and Health Services Managers	690	\$105,200	0.95	7	79	2.6%
Pharmacists	581	\$124,500	1.02	17	24	-0.3%
Remaining Component Occupations	8,259	\$79,900	0.97	-608	669	1.0%
<b>Health Science (CTE Cluster)</b>	<b>25,455</b>	<b>\$70,100</b>	<b>1.05</b>	<b>-933</b>	<b>2,238</b>	<b>0.9%</b>

"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 (38.1%). The other industry employing large

numbers of Health Science Technology talent is Offices of Physicians (13.5%), followed by Nursing Care Facilities (12.5%).

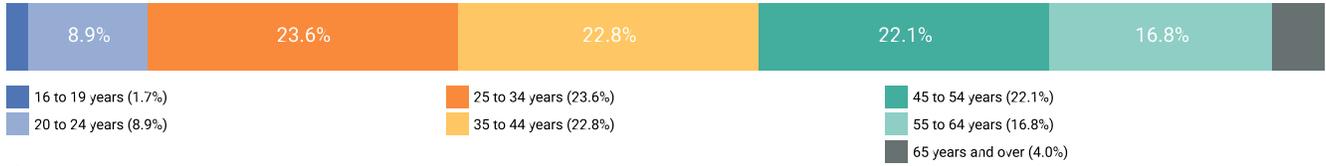
### Health Science Technology Field Employment by Industry, 2021Q1, Central Minnesota

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	38.1%	9,688	6,551	445	6,996
Offices of Physicians	13.5%	3,427	2,550	506	3,056
Nursing Care Facilities (Skilled Nursing Facilities)	12.5%	3,180	2,903	6	2,910
Offices of Dentists	4.6%	1,166	1,020	85	1,105
Offices of Other Health Practitioners	4.0%	1,013	767	187	954
Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities	3.6%	920	963	189	1,153
Home Health Care Services	3.2%	807	793	270	1,063
Individual and Family Services	2.9%	737	914	337	1,252
Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	2.8%	718	789	210	999
Health and Personal Care Stores	2.5%	640	434	-33	401
Other Professional, Scientific, and Technical Services	2.3%	580	552	101	653
Elementary and Secondary Schools	1.5%	387	240	25	265
Outpatient Care Centers	0.8%	195	153	52	204
Executive, Legislative, and Other General Government Support	0.7%	188	148	14	162
Other Residential Care Facilities	0.7%	182	169	3	172
Colleges, Universities, and Professional Schools	0.6%	158	113	9	122
Grocery Stores	0.6%	141	101	10	111
All Others	5.2%	1,327	1,031	126	1,157
General Medical and Surgical Hospitals	38.1%	9,688	6,551	445	6,996
Offices of Physicians	13.5%	3,427	2,550	506	3,056
Nursing Care Facilities (Skilled Nursing Facilities)	12.5%	3,180	2,903	6	2,910

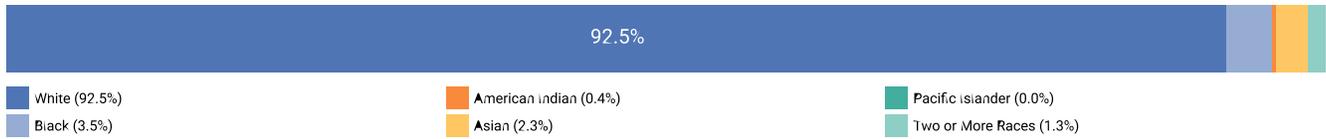
### Career Field Demographics

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).

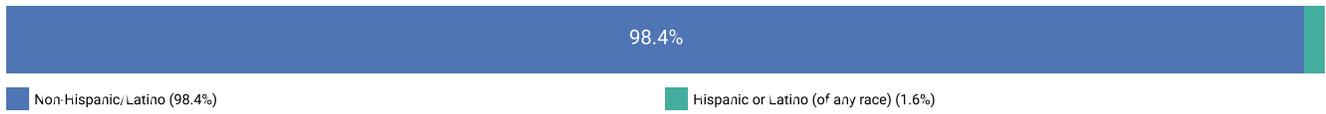
#### Age



#### Race



#### Ethnicity



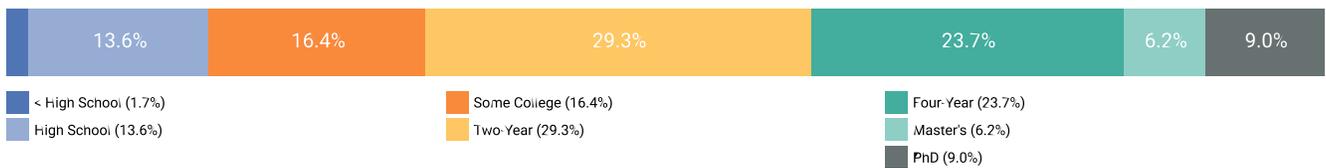
#### Gender



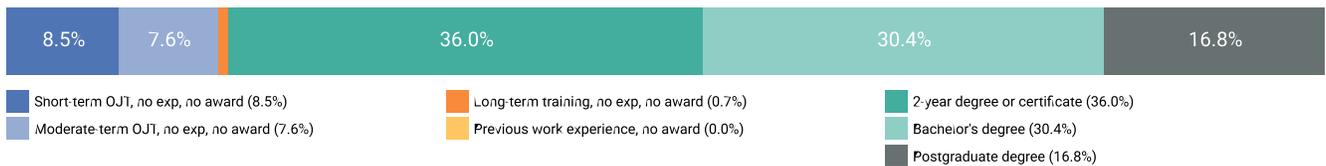
### Educational Attainment and Requirements

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 16.8% of Health Science Technology positions require no educational award, and about 15.3% of the workforce holds only a high school diploma or less. About 29.3% of the Health Science Technology workforce hold a two-year degree and 16.4% completed some college (such as a certificate), or 45.7% in all, compared to about 36.0% 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



#### Education and Training Requirements



## Typical Education Requirements for Top Occupations by Volume, 2021Q1

Occupation	Typical Entry-Level Education	Previous Work Experience	Typical On-the-Job Training
Registered Nurses	Bachelor's degree	None	None
Nursing Assistants	Postsecondary non-degree award	None	None
Home Health Aides	High school diploma or equivalent	None	Short-term on-the-job training
Licensed Practical and Licensed Vocational Nurses	Postsecondary non-degree award	None	None
Medical Secretaries and Administrative Assistants	High school diploma or equivalent	None	Moderate-term on-the-job training
Medical Assistants	Postsecondary non-degree award	None	None
Pharmacy Technicians	High school diploma or equivalent	None	Moderate-term on-the-job training
Physicians, All Other; and Ophthalmologists, Except Pediatric	Doctoral or professional degree	None	Internship/residency
Medical and Health Services Managers	Bachelor's degree	Less than 5 years	None
Pharmacists	Doctoral or professional degree	None	None

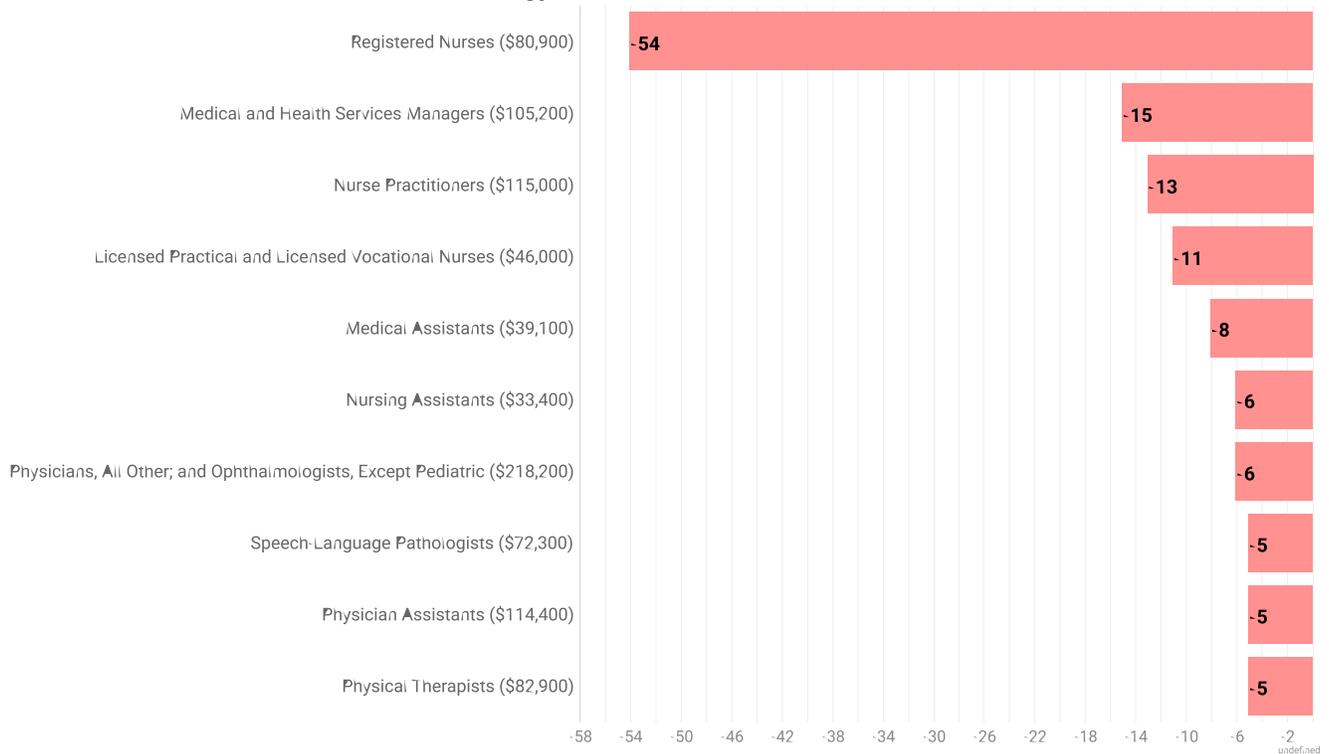
### Occupation Gaps

The chart below shows the potential average annual gaps over ten years. Many variables go into this analysis, but at its core it is based on a forecast comparing occupation demand growth to the local population growth and the projected educational attainment of those residents, then matched to specific related programs offered locally. When an area, for example, has an occupation expected to grow quickly but the educational requirement for the occupation does not match well with the educational attainment of its residents, there is a high potential for an occupation shortfall in the region. Alternatively, slow-growing or contracting occupations often represent potential supply surpluses.

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 Nurses are the occupation with the greatest annual shortages in the Central region and #1 statewide. This critical talent shortage is due in large part to forecasted employment growth and replacement demand needs due to retirements combined with insufficient talent coming through Registered Nursing programs at both the 2-year and 4-year levels.

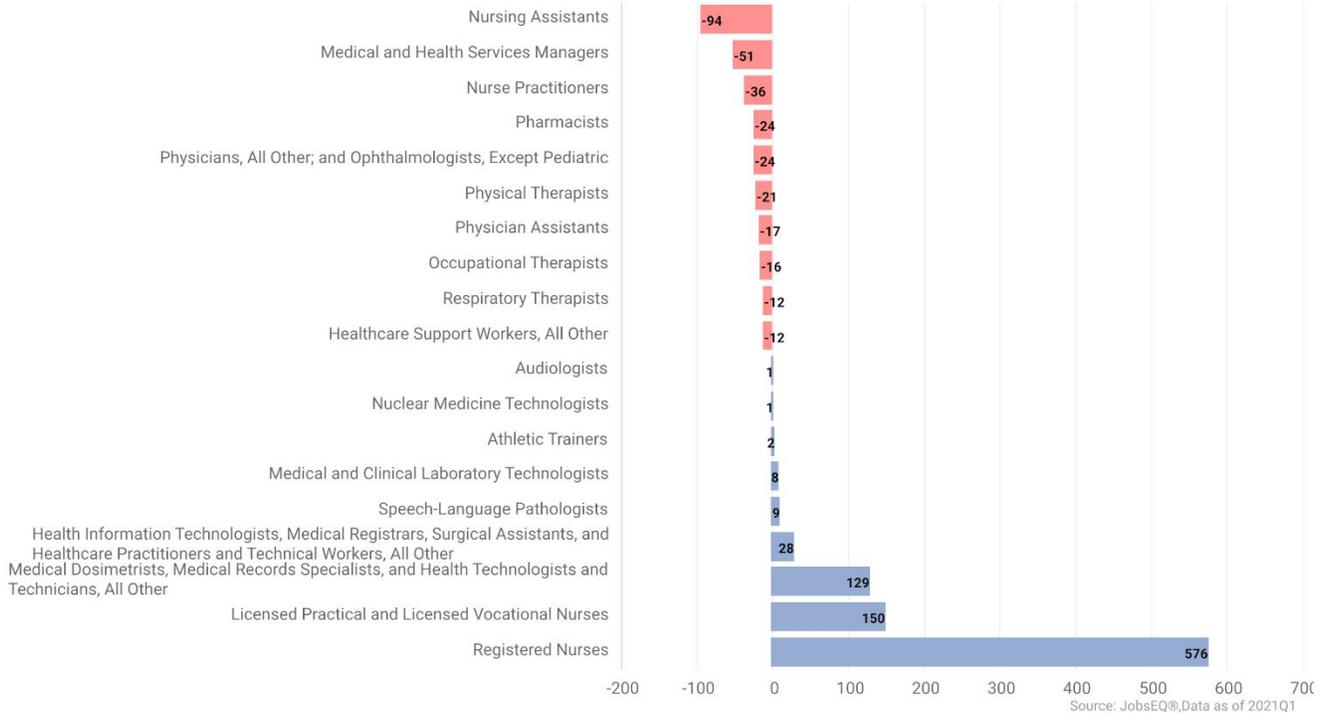
## Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Health Science Technology, Central Minnesota 2021Q1



### 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. 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 94 graduates annually that are needed to fill Nursing Assistant positions open with employers in the region. Several important occupations that require advanced education, including doctorates also have local award gaps, such as Medical Managers, Nurse Practitioners, Pharmacists, and Physical Therapists. Occupations that show higher awards given than what is currently needed in the local talent market are examples of programs that serve other parts of the state where talent demand is high but relevant programs may not exist, such as Registered Nurses. The oversupply of graduates in the Central region is likely helping to meet award gaps found in the 7-county MSP Metro and elsewhere.

## Award Gaps in Health Science Technology, Central Minnesota 2021Q1



### Certification Gaps

Similar to award gaps, an analysis of certification gaps identify where the existing talent pool lacks particular credentials in comparison to current openings. However, this analysis uses real-time labor market data in the form of online candidate profiles and job postings to analyze the alignment between the available workforce and local opportunities. In the table below, it is apparent that the programs aligned to the occupations above as well as shorter training programs are both needed to connect local talent with opportunities.

#### Top 10 Certification Gaps in the Central Region, September 2021

Name	Candidates	Openings	Gap
Licensed Practical Nurse (LPN)	116	140	-23
Basic Cardiac Life Support Certification (BCLS Certification)	2	12	-10
Pediatric Advanced Life Support (PALS)	14	23	-9
Registered Medical Assistant	2	9	-7
Medical Technologist (Medical Technologists)	4	9	-6
Registered Respiratory Therapist (RRT)	2	7	-5
Emergency Nursing Pediatric Course (ENPC)	3	8	-5
Trauma Nursing Core Course (TNCC)	8	12	-4
Registered Veterinary Technician (RVT)	1	4	-4
Vascular Surgery	0	3	-3

### Skill Gaps

Likewise, there is a degree of misalignment between the skills of the available workforce and the skills advertised by local employers. The ten skills listed below are examples of the skills in most high demand among Central region employers hiring Health Science Technology talent that potential candidates have not indicated in their professional networking platforms as a strength.

### Top 10 Skill Gaps in the Central Region, September 2021

Name	Candidates	Openings	Gap
Unity	5	37	-32
Teaching/Training, Job	53	73	-20
Caregiving	18	35	-17
Word Processing	14	23	-9
Laboratory	11	17	-7
Patient Scheduling	4	11	-7
Mental Health	2	8	-6
Accounts Receivable	1	7	-6
Typing 31-40 wpm	1	7	-6
Microsoft Word	34	39	-5

### 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-to-Gateway-to-Target Occupations for Health Science Technology, Central Minnesota 2021Q1

#### Target Occupations (all HW, HD, HS)

Registered Nurses (OG)  
 Medical and Health Services Managers (OG, AG)  
 Dental Hygienists (OG)  
 Nurse Practitioners (OG, AG)  
 Speech-Language Pathologists (OG)

#### Gateway Occupations

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

#### Origin Occupations

##### Likely

Nursing Assistants (HS, OG, AG)  
 Home Health Aides (HD)  
 Medical Secretaries (OG, AG)  
 Medical Assistants (HS, HD, OG)  
 Pharmacy Technicians (OG)

##### Aligned

Personal Care Aides  
 Childcare Workers  
 Secretaries  
 Cashiers  
 Cooks

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

*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 4-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.

Likely Origins	Aligned Origins
Nursing Assistants	Customer Service Representatives
Home Health Aides	Childcare Workers
Medical Secretaries	Secretaries or Executive Assistants
Medical Assistants	Cashiers
Pharmacy Technicians	Cooks

*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 (\$50,800 in the Central region). 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.

Likely Gateways	Aligned Gateways
Licensed Practical and Licensed Vocational Nurses	Postsecondary Teachers
Dental Assistants	Social and Human Services Assistants
Medical Dosimetrists, Medical Records Specialists, and Health Technologists	Supervisors of Office and Administrative Support Workers
Occupational Therapy Assistants	Eligibility Interviewers
Recreational Therapists	Residential Advisors

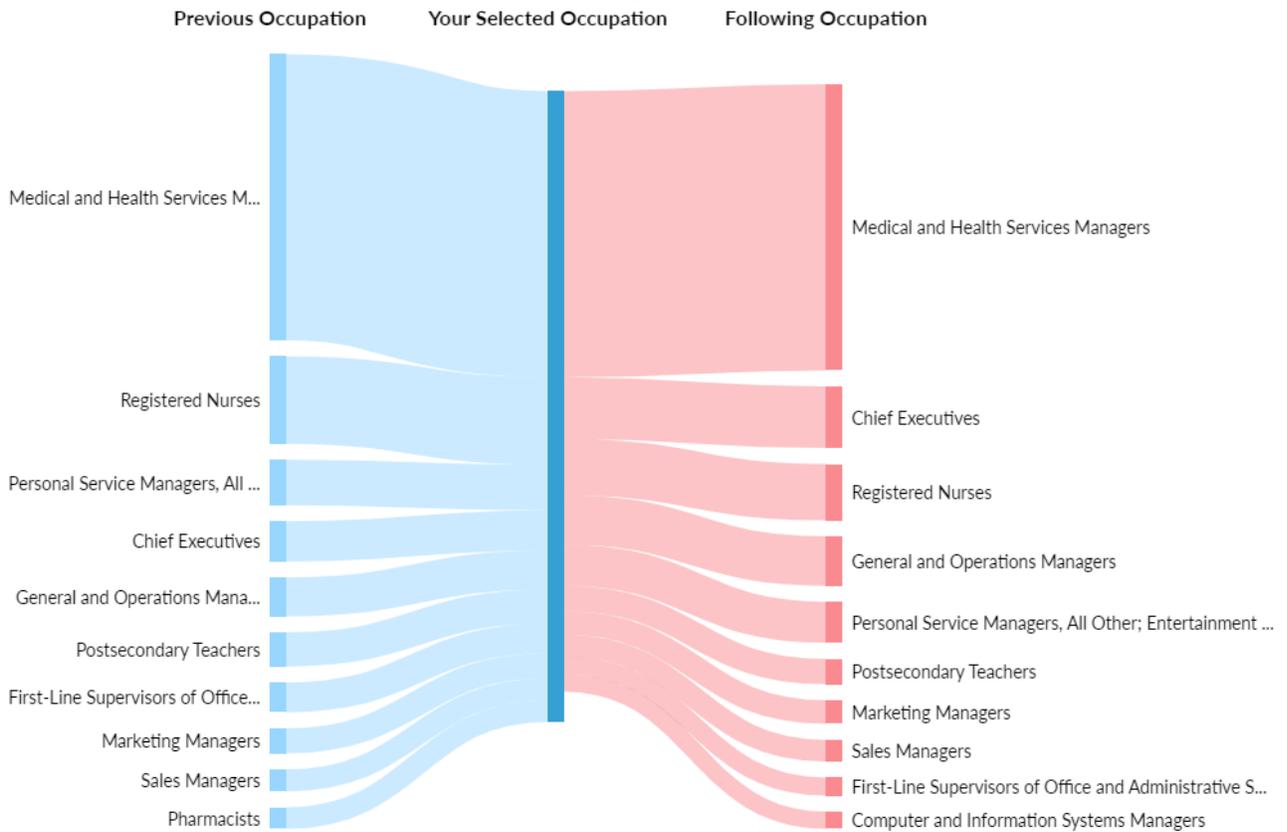
*Target Occupations* refer to high-wage occupations that pay at or above the region’s average wage (\$50,800 in the Central region). These positions are also high-skill—meaning that they require an industry credential, certification, or higher education—and high-demand. Many of these Target Occupations are also facing Opportunity Gaps and Award Gaps locally, labeled below as “OG” and “AG” respectively. Only occupations that hit the designated high-wage, high-skill, and high-demand thresholds have been included in this chart, thus putting extra weight and emphasis on current demand rather than future shortage. Some critical occupations for the region that forecast high gaps, but perhaps not currently high-demand should also be included in Career and Technical Education programs of study.

#### Top Target Occupations in Health Science Technology, Central Minnesota 2021Q1

SOC	Occupation	2021Q1 Empl	Mean Ann Wages <sup>2</sup>	High-Wage	High-Skill	High-Demand	OG	AG
29-1141	Registered Nurses	6,252	\$80,900	HW	HS	HD	OG	
11-9111	Medical and Health Services Managers	690	\$105,200	HW	HS	HD	OG	AG
29-1292	Dental Hygienists	378	\$70,700	HW	HS	HD	OG	
29-1171	Nurse Practitioners	338	\$115,000	HW	HS	HD	OG	AG
29-1127	Speech-Language Pathologists	275	\$72,300	HW	HS	HD	OG	
29-1122	Occupational Therapists	242	\$75,700	HW	HS	HD	OG	AG
29-1126	Respiratory Therapists	236	\$67,400	HW	HS	HD	OG	AG
29-1131	Veterinarians	208	\$83,200	HW	HS	HD	OG	AG
29-1071	Physician Assistants	203	\$114,400	HW	HS	HD	OG	AG
31-2021	Physical Therapist Assistants	138	\$53,800	HW	HS	HD	OG	

The Medical and Health Services Managers occupation is analyzed below in more detail for better understanding of occupation “gain and drain.” The chart below illustrates the national profiles of current and past people in this occupation. The left column shows job transitions from other occupations to Medical Management. The right column shows job transitions from Medical Managers to other occupations.

## Medical and Health Services Manager Talent Gain and Drain, 2021Q3 Candidate Profile Analysis



Candidate profile analysis from Emsi 2021Q3 national dataset.

## Graduate Pipeline for Medical and Health Services Managers, Central Minnesota 2021



**7 Programs**

41 programs can train for this job, while only 7 programs have produced completers in this region.



**1,096 Completions (2020)**

The completions from all regional institutions for all degree types.



**79 Openings (2020)**

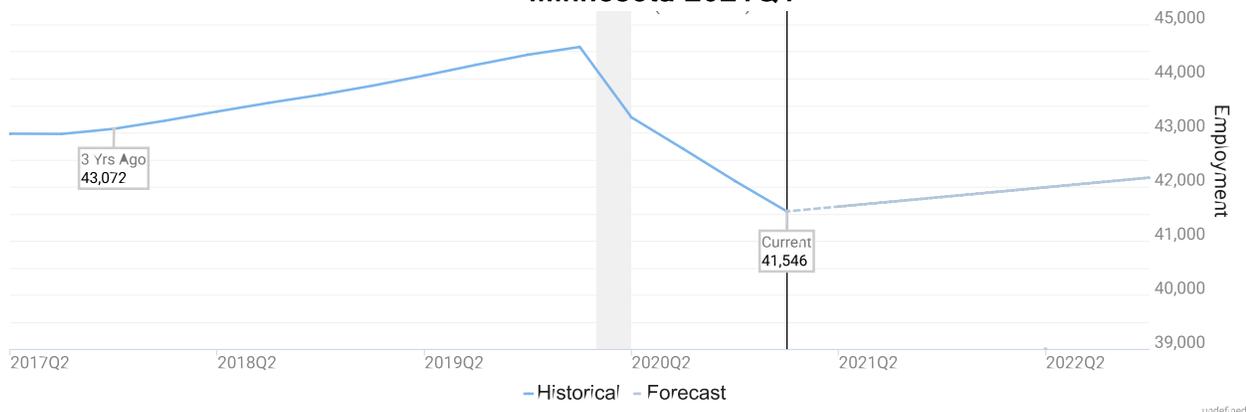
The average number of openings for an occupation in the region is 44.

2020 IPEDS Completions Data; Visualizations from Emsi 2021Q3 dataset.

## HUMAN SERVICES

Human Services is the career field forecast to grow the most over the next ten years. Over the next three years, under a pessimistic baseline forecast, Human Services employment is forecast to grow by 0.8% annually. In the most optimistic scenario feasible based on employer demand, and given the existing talent shortage and talent pipelines in place, employment growth of 1.5% annually in this field could be possible.

### Baseline Worst-Case Scenario 3-Year Forecast for Human Services Careers, Central Minnesota 2021Q1



### Top Ten Human Services Occupations by Employment Volume in Central Minnesota, 2021Q1

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Growth
Personal Care Aides	4,638	\$26,800	1.05	604	829	2.7%
Teaching Assistants, Except Postsecondary	3,672	\$31,900	1.73	-347	402	0.3%
Elementary School Teachers, Except Special Education	2,819	\$58,600	1.26	-238	218	0.3%
Secondary School Teachers, Except Special and Career/Technical Education	2,146	\$60,700	1.31	-173	158	0.3%
Childcare Workers	2,113	\$26,100	1.44	-170	328	0.4%
Middle School Teachers, Except Special and Career/Technical Education	1,138	\$60,400	1.17	-97	88	0.3%
Police and Sheriff's Patrol Officers	1,055	\$67,900	0.96	12	82	0.6%
Social and Human Service Assistants	968	\$37,800	1.36	-48	141	1.8%
Preschool Teachers, Except Special Education	881	\$36,600	1.19	-122	94	0.5%
Security Guards	800	\$35,600	0.44	-75	104	0.0%
Remaining Component Occupations	21,320	\$54,700	0.81	-1,020	2,350	0.7%
<b>Human Services (CTE Field)</b>	<b>41,546</b>	<b>\$48,000</b>	<b>1.00</b>	<b>-1,677</b>	<b>4,792</b>	<b>0.8%</b>

"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.

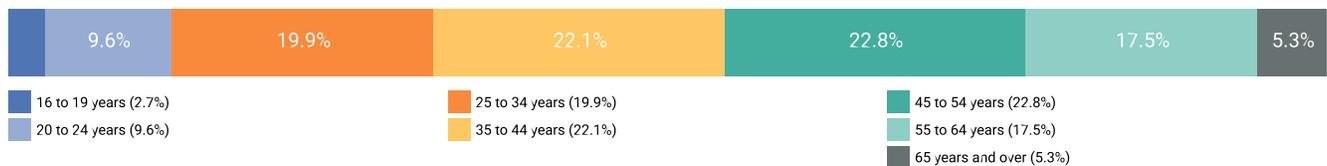
### Human Services Field Employment by Industry, 2021Q1, Central Minnesota

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

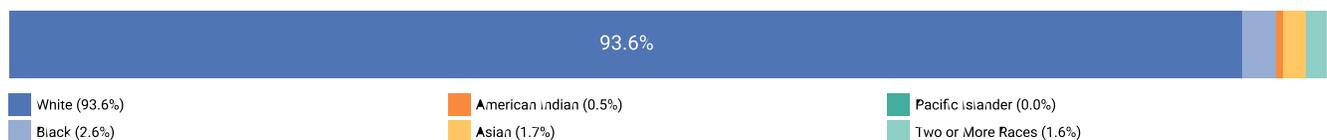
### Career Field Demographics

The Human Services field is predominantly female (68.7%) and white (93.6%). Nearly 45% of the workforce falls between the ages of 35 and 54 years of age.

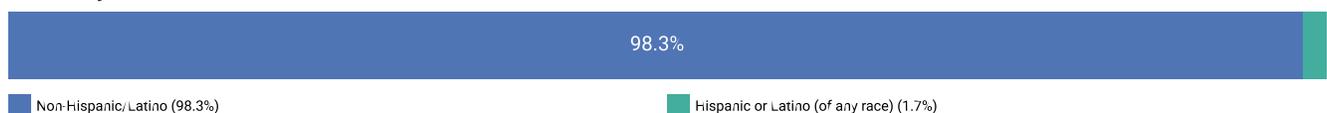
#### Age



#### Race



#### Ethnicity



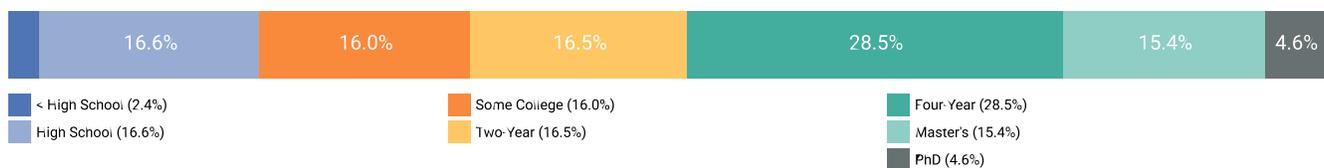
## Gender



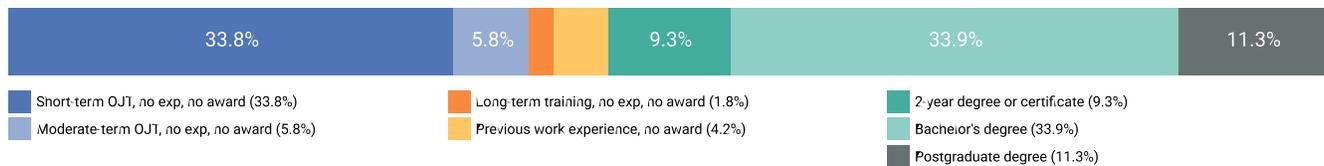
## Educational Attainment and Requirements

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 overskilled for the typical credentials of entry-level positions. For example, 2.4% of the Human Services workforce has no diploma at all, and 16.6% hold a high school diploma as their highest credential. In contrast, about 45.6% 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



### Education and Training Requirements



## Typical Education Requirements for Top Occupations by Volume, 2021Q1

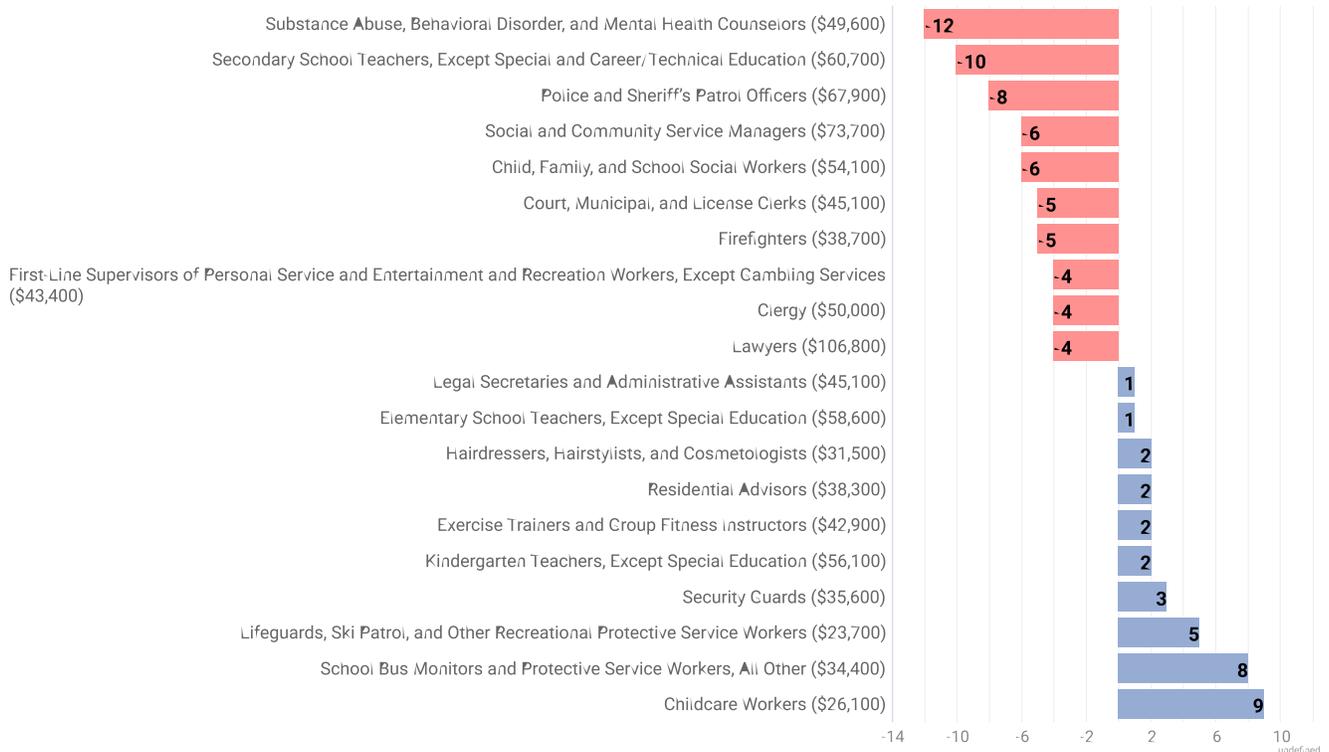
Occupation	Typical Entry-Level Education	Previous Work Experience	Typical On-the-Job Training
Personal Care Aides	High school diploma or equivalent	None	Short-term on-the-job training
Teaching Assistants, Except Postsecondary	Some college, no degree	None	None
Elementary School Teachers, Except Special Education	Bachelor's degree	None	None
Secondary School Teachers, Except Special and Career/Technical Education	Bachelor's degree	None	None
Childcare Workers	High school diploma or equivalent	None	Short-term on-the-job training
Middle School Teachers, Except Special and Career/Technical Education	Bachelor's degree	None	None
Police and Sheriff's Patrol Officers	High school diploma or equivalent	None	Moderate-term on-the-job training
Social and Human Service Assistants	High school diploma or equivalent	None	Short-term on-the-job training
Preschool Teachers, Except Special Education	Associate's degree	None	None
Security Guards	High school diploma or equivalent	None	Short-term on-the-job training

## Occupation Gaps

The chart below shows the potential average annual gaps over ten years. In Human Services, Mental Health Counselors and Secondary School Teachers are the top occupations of shortage in the region.

These critical talent shortages due in large part to forecasted employment growth and replacement demand needs due to retirements combined with insufficient talent coming into these careers.

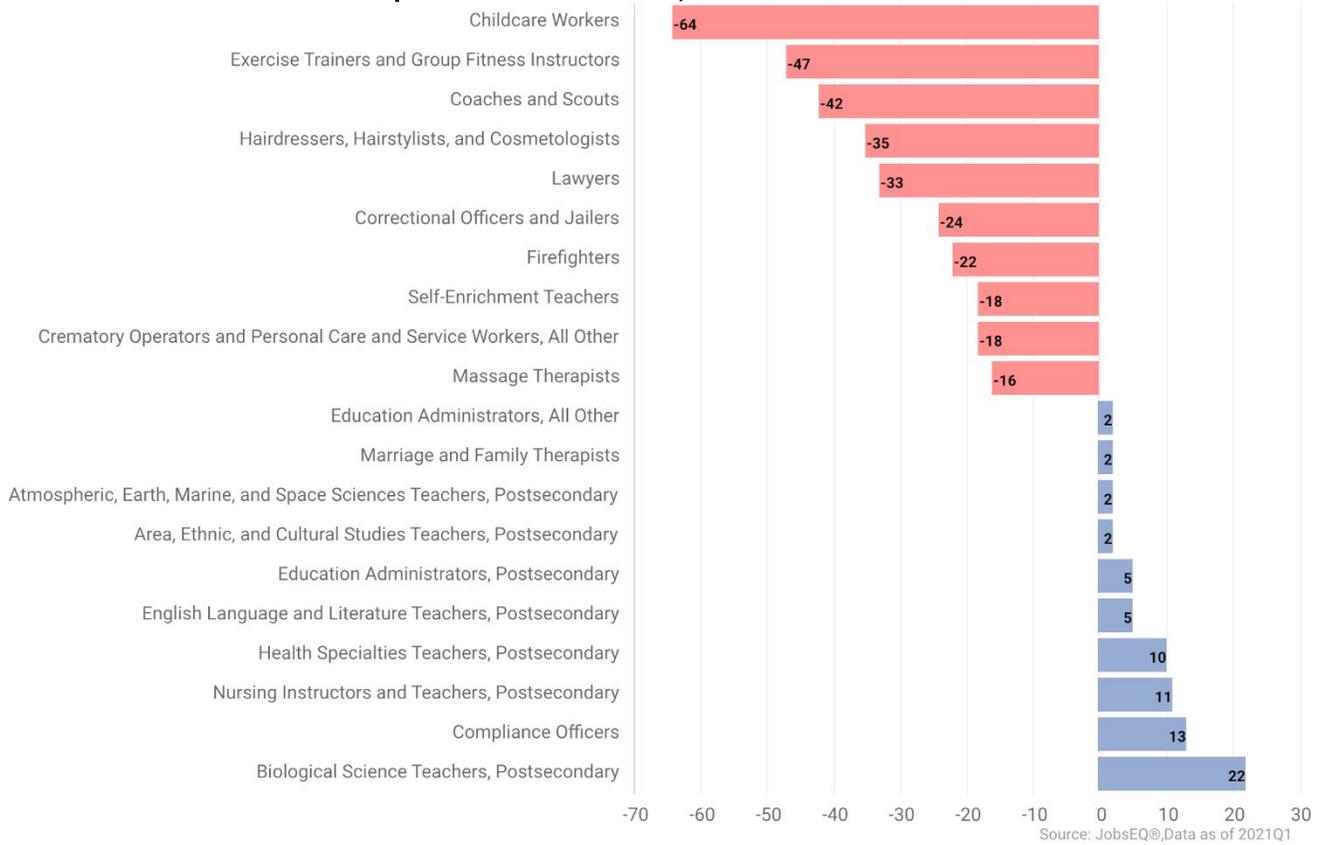
### Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Human Services, Central Minnesota 2021Q1



### 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, meaning that the region is underproducing local talent in relation to employer demand. Central Minnesota colleges and universities are underproducing about 64 graduates annually that are needed to fill Childcare Worker positions open with employers based in the region. Several occupations that typically require a certificate or industry credential also have local award gaps, including Exercise Trainers, Coaches, Hairdressers, Hairstylists, and Cosmetologists. Occupations that show higher awards given than what is currently needed in the local talent market are examples of programs that serve other parts of the state where talent demand is high but relevant programs may not exist.

### Award Gaps in Human Services, Central Minnesota 2021Q1



### Certification Gaps

Similar to award gaps, an analysis of certification gaps identify where the existing talent pool lacks particular credentials in comparison to current openings. However, this analysis uses real-time labor market data in the form of online candidate profiles and job postings to analyze the alignment between the available workforce and local opportunities. In the table below, it is apparent that the programs aligned to the occupations above as well as shorter training programs are both needed to connect local talent with opportunities.

#### Top 10 Certification Gaps in the Central September 2021

Name	Candidates	Openings	Gap
Secret Clearance	4	9	-6
Basic Life Support (BLS)	18	24	-5
AFAA Personal Fitness Trainer	1	6	-4
Certified Alcohol and Drug Counselor (ADC)	1	5	-4
First Responder Certification	2	4	-2
Certified Protection Professional (CPP)	0	2	-2
Advanced Cardiac Life Support Certification (ACLS)	4	6	-1
Certified Diabetes Educator (CDE)	1	2	-1
Registered Professional Reporter (RPR)	0	2	-1
Certified Addictions Counselor (CAC)	0	1	-1

## Skill Gaps

Likewise, there is a degree of misalignment between the skills of the available workforce and the skills advertised by local employers. The ten skills listed below are examples of the skills in most high demand among Central Minnesota employers hiring Human Services talent that potential candidates have not indicated in their professional networking platforms as a strength.

Top 10 Skill Gaps in the Central, September 2021

Name	Candidates	Openings	Gap
Medication Administration	170	252	-82
Caregiving	54	92	-37
Budgeting	11	42	-31
Patient Scheduling	1	29	-28
Teaching/Training, School	886	914	-28
Unity	7	34	-28
Sports Coaching	26	50	-24
Lesson Planning	14	30	-16
Mental Health	5	21	-16
Legal Terminology	6	19	-12

## 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-to-Gateway-to-Target Occupations for Human Services, Central Minnesota 2021Q1

#### Target Occupations (all HW, HD, HS)

Child, Family, & School Social Workers (OG, AG)  
 K-12 Education Administrators (OG)  
 Educational, Guidance, & Career Counselors (OG, AG)  
 Social & Community Service Managers (OG, AG)  
 Compliance Officers (OG)

#### Gateway Occupations

Substance Abuse and Mental Health Counselors (HS, HD, OG, AG)  
 Court, Municipal, and License Clerks (HD, OG)  
 Correctional Officers and Jailers (AG)  
 Clergy (HS, HD, OG, AG)  
 Self-Enrichment Teachers (HD, AG)  
 Supervisors of Personal Service and Recreation Workers (HD, OG, AG)

#### Origin Occupations

##### Likely

Personal Care Aides (HD, AG)  
 Teaching Assistants (HS, HD)  
 Childcare Workers (HD, AG)  
 Social and Human Service Assistants (HD)  
 Preschool Teachers (HS, HD, OG)

##### Aligned

Home Health Aides  
 Medical Assistants  
 Waiters and Waitresses  
 Cashiers  
 Cooks

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

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 4-year degrees. Below are a few Origin Occupations that are likely entrypoints into Human Services locally, or aligned opportunities that share a large number of skillsets in-demand in Human Services.

Likely Origins	Aligned Origins
Personal Care Aides	Home Health Aides
Teaching Assistants	Medical Assistants
Childcare Workers	Waiters and Waitresses
Social and Human Service Assistants	Cashiers
Preschool Teachers	Cooks

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 (\$50,800 in the Central region). Below are a few Gateway Occupations in Human Services 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.

Likely Gateways	Aligned Gateways
Substance Abuse, Behavioral Disorder, and Mental Health Counselors	Licensed Practical Nurses
Court, Municipal, and License Clerks	Medical Secretaries
Correctional Officers and Jailers	Human Resources Assistants
Clergy	Financial Advisors
Supervisors of Personal Service and Entertainment and Recreation Workers	
Coaches and Scouts	

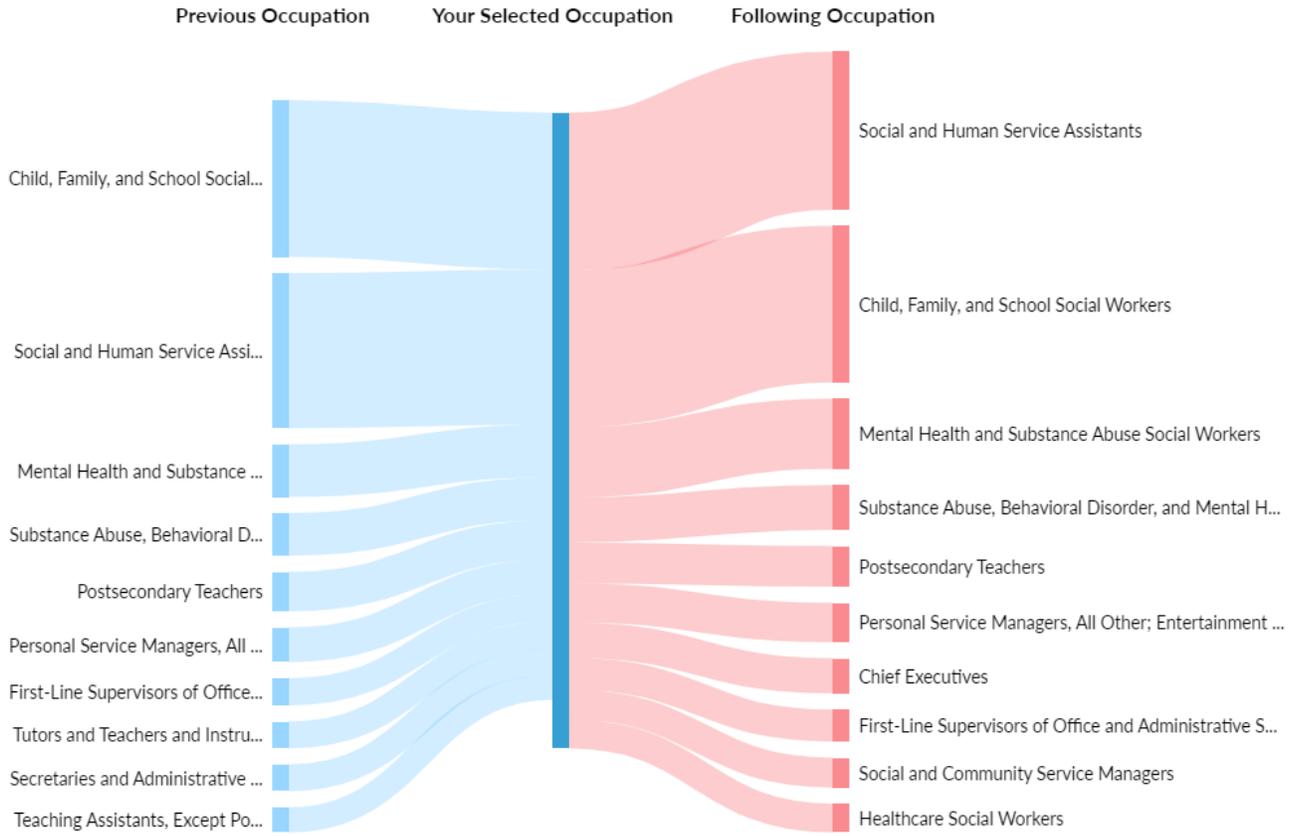
Target Occupations refer to high-wage occupations that pay at or above the region's average wage (\$50,800 in the Central region). These positions are also high-skill—meaning that they require an industry credential, certification, or higher education—and high-demand. Many of these Target Occupations are also facing Opportunity Gaps and Award Gaps locally, labeled below as “OG” and “AG” respectively. The majority of target occupations in this career field are in the education career cluster. Only occupations that hit the designated high-wage, high-skill, and high-demand thresholds have been included in this chart, thus putting extra weight and emphasis on current demand rather than future shortage. Some critical occupations for the region that forecast high gaps, but perhaps not currently high-demand should also be included in Career and Technical Education programs of study.

### Top Target Occupations in Human Services, Central Minnesota 2021Q1

SOC	Occupation	2021Q1 Empl	Mean Ann Wages <sup>2</sup>	High-Wage	High-Skill	High-Demand	OG	AG
21-1021	Child, Family, and School Social Workers	613	\$54,100	HW	HS	HD	OG	AG
11-9032	Education Administrators, Kindergarten through Secondary	429	\$105,000	HW	HS	HD	OG	
21-1012	Educational, Guidance, and Career Counselors and Advisors	425	\$57,700	HW	HS	HD	OG	AG
11-9151	Social and Community Service Managers	363	\$73,700	HW	HS	HD	OG	AG
13-1041	Compliance Officers	353	\$73,100	HW	HS	HD	OG	
21-1022	Healthcare Social Workers	341	\$51,800	HW	HS	HD	OG	AG
25-9031	Instructional Coordinators	307	\$68,300	HW	HS	HD	OG	AG
21-2021	Directors, Religious Activities and Education	274	\$64,500	HW	HS	HD	OG	AG
21-1023	Mental Health and Substance Abuse Social Workers	252	\$59,600	HW	HS	HD	OG	AG
25-4022	Librarians and Media Collections Specialists	221	\$57,300	HW	HS	HD	OG	

Child, Family, and School Social Worker is a high-skill, high-demand, high-wage occupation forecasting shortages in the Central region. This role is analyzed below in more detail for better understanding of occupation “gain and drain.” The chart below illustrates the national profiles of current and past people in this occupation. The left column shows job transitions from other occupations to School Social Work. The right column shows job transitions from this role to other occupations.

## Child, Family, and School Social Worker Talent Gain and Drain, 2021Q3 Candidate Profile Analysis



Candidate profile analysis from Emsi 2021Q3 national dataset.

## Graduate Pipeline for Child, Family, and School Social Workers, Central Minnesota 2021

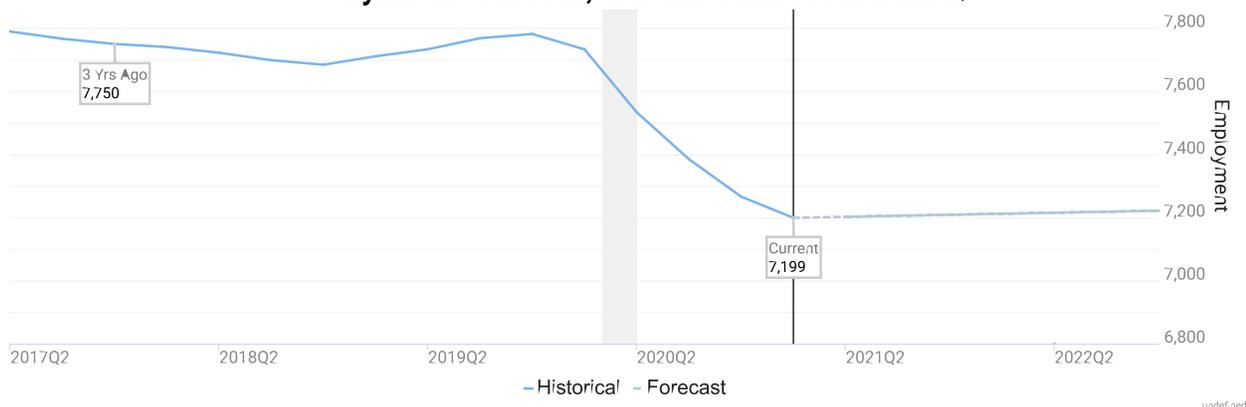


2020 IPEDS Completions Data; Visualizations from Emsi 2021Q3 dataset.

## 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 thus far. Over the next three years, under a pessimistic baseline forecast, Arts, Communications, and Information Systems Field employment is forecast to grow by just 0.1% annually. In the most optimistic scenario feasible based on employer demand, and given the existing talent shortage and talent pipelines in place, employment growth of 1.4% annually in this field could be possible.

### Baseline Worst-Case Scenario 3-Year Forecast for Arts, Communications, and Information Systems Careers, Central Minnesota 2021Q1



### Top Ten Arts, Communications, and Information Systems Occupations by Employment Volume in Central, 2021Q1

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Growth
Software Developers and Software Quality Assurance Analysts and Testers	1,068	\$88,600	0.40	16	99	1.7%
Computer Systems Analysts	707	\$83,700	0.68	-16	52	0.2%
Computer User Support Specialists	622	\$52,900	0.55	-25	53	0.3%
Graphic Designers	434	\$47,100	0.96	-41	38	-0.8%
Printing Press Operators	434	\$43,200	1.53	-108	37	-1.6%
Network and Computer Systems Administrators	336	\$76,200	0.56	-23	24	0.0%
Musicians and Singers	247	\$59,300	0.87	-13	31	0.4%
Computer Occupations, All Other	241	\$78,000	0.35	-6	19	0.2%
Computer Network Support Specialists	233	\$63,100	0.72	-7	20	0.3%
Telecommunications Equipment Installers and Repairers, Except Line Installers	215	\$52,400	0.63	11	23	-0.1%
Remaining Component Occupations	2,661	\$59,900	0.71	-332	261	-0.2%
<b>Arts, Communications, &amp; Information Systems (CTE Field)</b>	<b>7,199</b>	<b>\$65,400</b>	<b>0.60</b>	<b>-541</b>	<b>659</b>	<b>0.1%</b>

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

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

The largest share of talent in the Central that is working in Arts, Communications, and Information Systems roles are employed by the Printing Industry (8.1%) or the Computer Systems Design Industry (5.9%). Overall, employment is relatively spread out across many different industries.

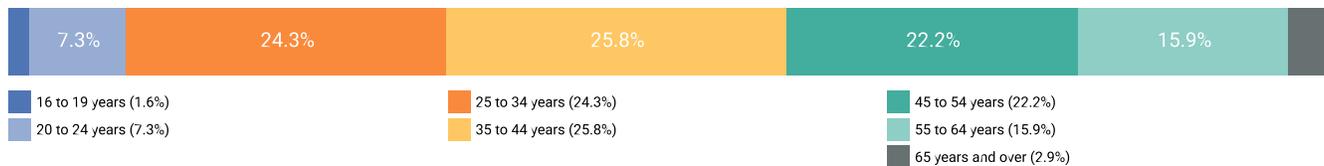
### Arts, Communications, and Information Systems Field Employment by Industry, 2021Q1, Central Minnesota

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	8.1%	586	604	-109	495
Computer Systems Design and Related Services	5.9%	422	341	88	430
Software Publishers	4.8%	347	286	74	360
Independent Artists, Writers, and Performers	4.8%	345	374	4	378
Religious Organizations	4.3%	313	360	23	383
Depository Credit Intermediation	4.1%	295	221	14	235
Wired and Wireless Telecommunications Carriers	3.5%	251	232	-28	204
Management of Companies and Enterprises	3.3%	237	187	21	209
General Medical and Surgical Hospitals	3.0%	218	163	1	164
Newspaper, Periodical, Book, and Directory Publishers	3.0%	217	191	-81	110
Other Professional, Scientific, and Technical Services	2.4%	176	174	12	187
Elementary and Secondary Schools	2.4%	176	142	0	142
Executive, Legislative, and Other General Government Support	2.1%	150	120	6	126
Advertising, Public Relations, and Related Services	2.0%	146	142	-2	139
Colleges, Universities, and Professional Schools	1.9%	136	113	3	116
Other Miscellaneous Manufacturing	1.8%	132	125	-7	119
Building Equipment Contractors	1.8%	130	140	7	147
Radio and Television Broadcasting	1.7%	121	129	-6	122
Utility System Construction	1.5%	108	123	14	138
Specialized Design Services	1.3%	93	90	-10	80
All Others	36.1%	2,600	2,249	105	2,354

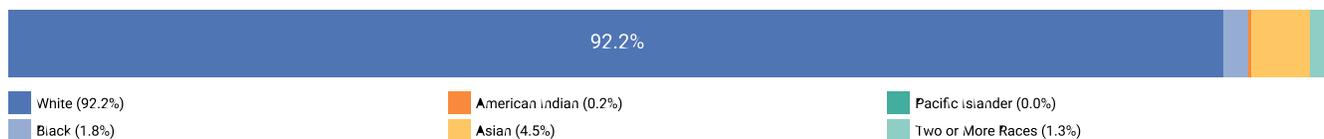
### Career Field Demographics

The Arts, Communications, and Information Systems field is predominantly male (70.8%) and white (92.2%). About half of the Arts, Communications, and Information Systems workforce in the region is between the ages of 25 and 44 (50.1%).

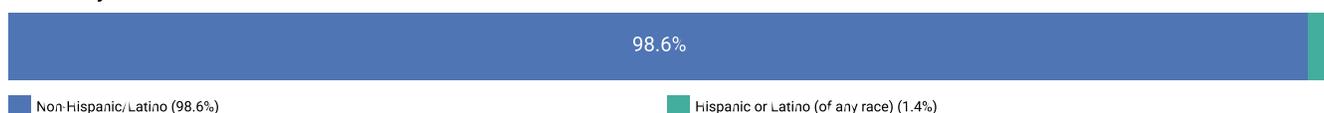
#### Age



#### Race



#### Ethnicity



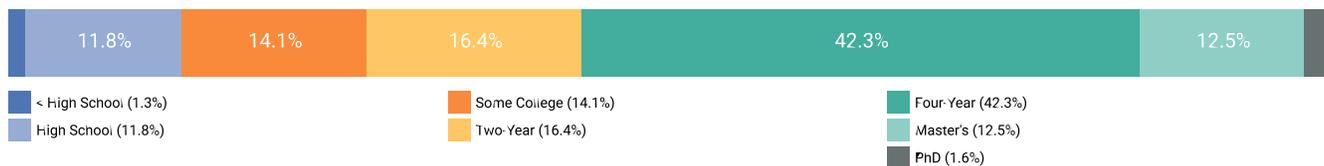
## Gender



## 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 (59.5%) of all occupations in this field require a Bachelor's degree, while 42.3% of the workforce hold a four-year degree as their highest credential. Another 12.5% hold a Master's or PhD.

### Educational Attainment



### Education and Training Requirements



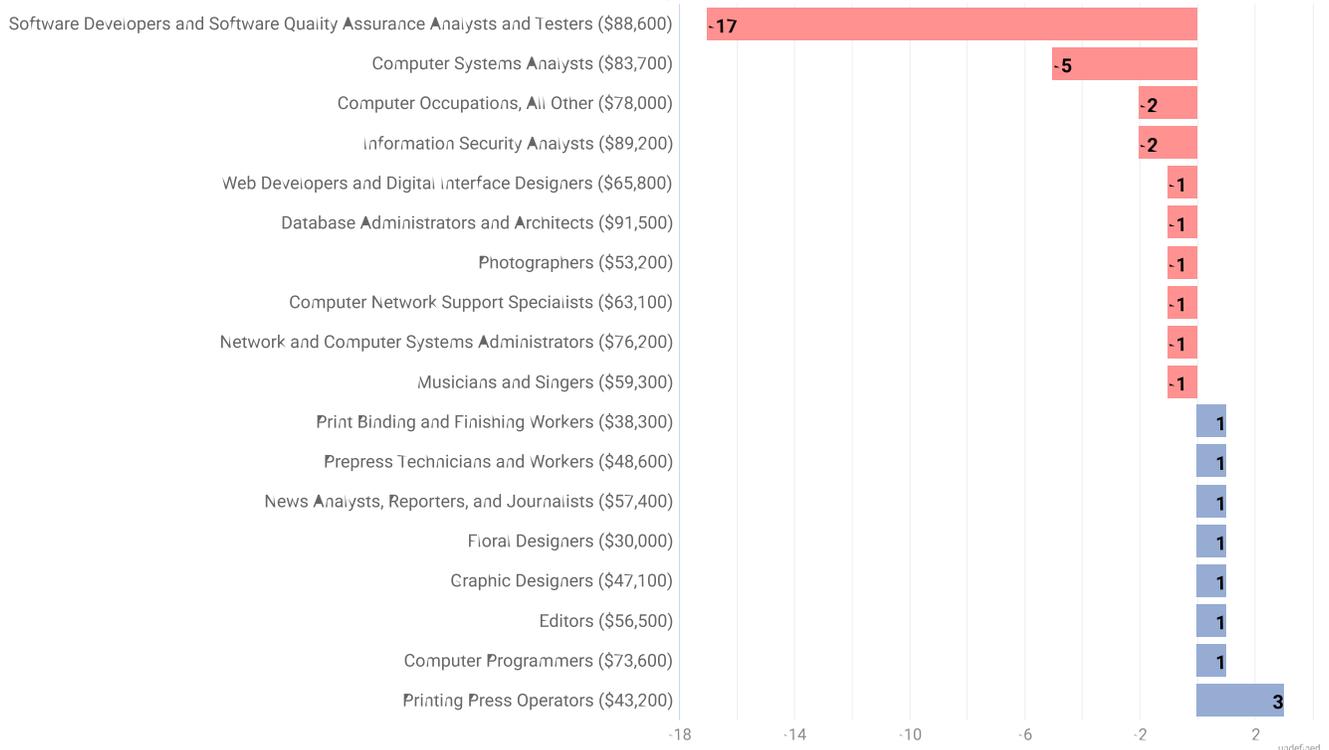
## Typical Education Requirements for Top Occupations by Volume, 2021Q1

Occupation	Typical Entry-Level Education	Previous Work Experience	Typical On-the-Job Training
Software Developers and Software Quality Assurance Analysts and Testers	Bachelor's degree	None	None
Computer Systems Analysts	Bachelor's degree	None	None
Computer User Support Specialists	Some college, no degree	None	None
Graphic Designers	Bachelor's degree	None	None
Printing Press Operators	High school diploma or equivalent	None	Moderate-term on-the-job training
Network and Computer Systems Administrators	Bachelor's degree	None	None
Musicians and Singers	None	None	Long-term on-the-job training
Computer Occupations, All Other	Bachelor's degree	None	None
Computer Network Support Specialists	Associate's degree	None	None
Telecommunications Equipment Installers and Repairers, Except Line Installers	Postsecondary non-degree award	None	Moderate-term on-the-job training

## Occupation Gaps

The chart below shows the potential average annual gaps over ten years. Software Developers are the top occupation of shortage in this field, falling short at least 17 skilled workers needed annually (averaged over the next ten years) to meet employer demand. This moderate talent shortage is primarily due to employment growth which is outpacing the growth in supply of trained software professionals in this region.

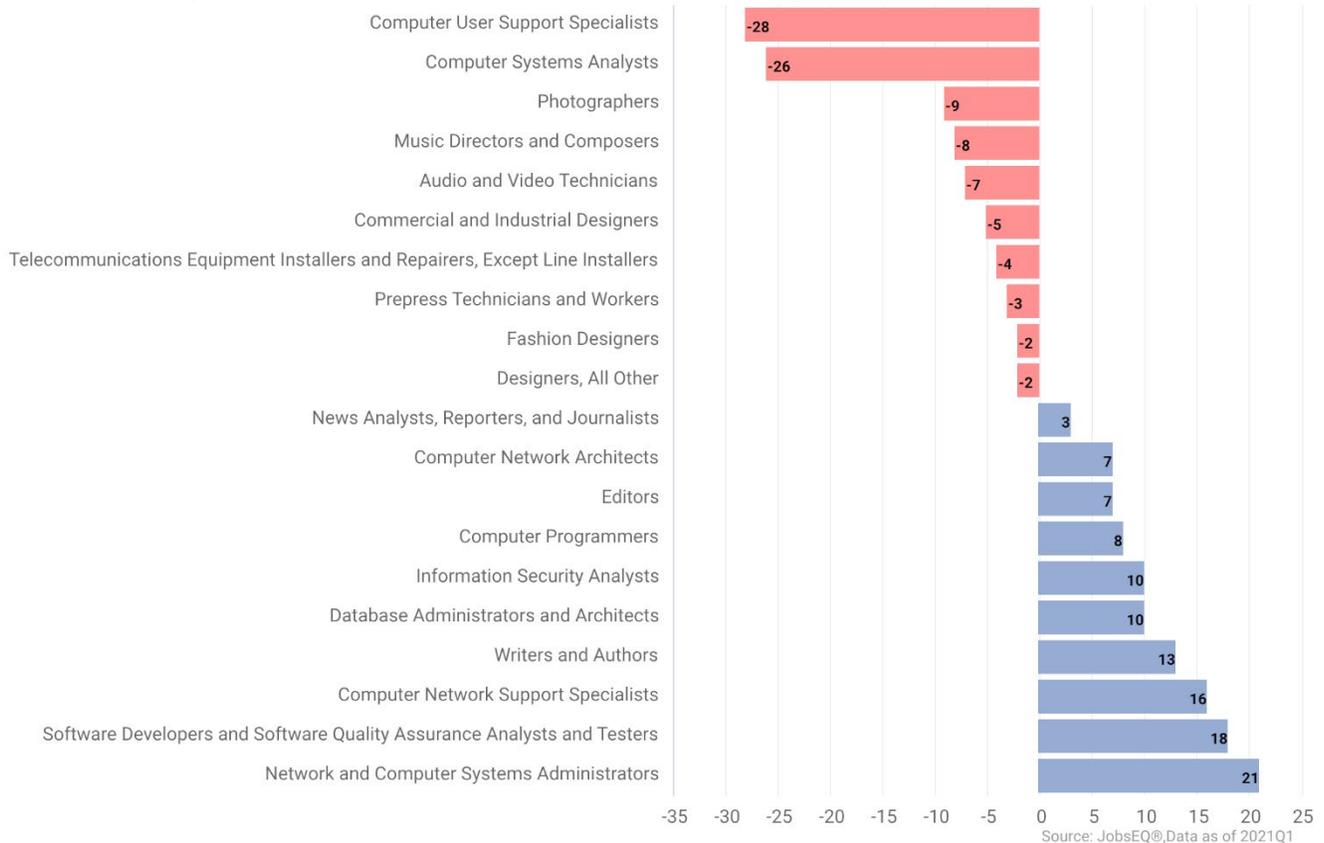
## Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Arts, Communications, and Information Systems, Central Minnesota 2021Q1



### Award Gaps

A comparison of the graduate talent pipeline obtaining a certificate or postsecondary degree to the current estimated openings by occupation illuminate a number of regional shortages. The Central region is underproducing graduates in several Arts, Communications, and Information Systems programs in comparison to national benchmarks, meaning that the region is underproducing local talent in relation to what a typical community with a similar local mix of job opportunities would have. Central Minnesota colleges and universities are underproducing trained Computer User Support Specialists (certifications), Computer Systems Analysts, and Photographers against national benchmarks. Occupations that show higher awards given than what is currently needed in the local talent market are examples of programs that serve other parts of the state where talent demand is high but relevant programs may not exist.

## Award Gaps in Arts, Communications, and Information Systems, Central Minnesota 2021Q1



### Certification Gaps

Similar to award gaps, an analysis of certification gaps identify where the existing talent pool lacks particular credentials in comparison to current openings. However, this analysis uses real-time labor market data in the form of online candidate profiles and job postings to analyze the alignment between the available workforce and local opportunities. In the table below, it is apparent that the programs aligned to the occupations above as well as shorter training programs are both needed to connect local talent with opportunities.

#### Top 10 Certification Gaps in the Central, September 2021

Name	Candidates	Openings	Gap
Project Management Professional (PMP)	2	3	-1
Certified Associate in Project Management (CAPM)	0	1	-1
Cisco Certified Networking Technician (CCENT)	0	1	-1
Microsoft Certified Solutions Expert (MCSE)	1	2	-1
GIAC Certified Forensics Analyst (GCFA)	0	1	-1
Certified Security Software Lifecycle Professional (CSSLP)	0	1	-1
Microsoft Certified IT Professional (MCITP)	0	1	0
Cisco Certified Internetwork Expert (CCIE)	1	1	0
Certified Cloud Security Professional (CCSP)	1	1	0
Certified Information Security Manager (CISM)	1	1	0

### Skill Gaps

Likewise, there is a degree of misalignment between the skills of the available workforce and the skills advertised by local employers. The ten skills listed below are examples of the skills in most high demand among Central Minnesota employers hiring Arts, Communications, and Information Systems talent that potential candidates have not indicated in their professional networking platforms as a strength.

**Top 10 Skill Gaps in the Central, September 2021**

Name	Candidates	Openings	Gap
Information Security	12	31	-19
Application Development	14	28	-14
Microsoft Outlook	11	19	-8
Agile	57	66	-8
Systems Development Life Cycle (SDLC)	12	20	-8
Docker	8	15	-7
Photography	31	38	-6
Computer Networking	31	37	-6
Java	40	45	-6
Microsoft Excel	34	39	-5

### 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-to-Gateway-to-Target Occupations for Arts, Communications, and Information Systems, Central Minnesota 2021Q1

**Target Occupations** (all HW, HD, HS)  
 Software Developers (OG, AG)  
 Writers and Authors  
 Art Directors  
 Information Security Analysts (OG, AG)  
 Producers and Directors (OG, AG)

#### Gateway Occupations

Graphic Designers (HS)  
 Printing Press Operators  
 Music Directors and Composers (HS, HD, OG, AG)  
 Audio and Video Technicians (HS, HD, OG, AG)  
 Prepress Technicians and Workers (HS)

#### Origin Occupations

##### Likely

Print Binding and Finishing Workers  
 Floral Designers  
 Broadcast Announcers & Radio Disc Jockeys (HS)  
 Actors (HS, HD)  
 Entertainers and Performers (HD)

##### Aligned

Library Technicians  
 Recreation Attendants  
 Hosts and Hostesses  
 Customer Service Reps  
 Photo Process Machine Ops

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

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 4-year degrees. Below are a few Origin Occupations that are likely entrypoints into Arts, Communications, and Information Systems careers locally, or aligned opportunities that share a large number of skillsets in-demand in the field.

Likely Origins	Aligned Origins
Print Binding and Finishing Workers	Library Technicians
Floral Designers	Amusement and Recreation Attendants
Broadcast Announcers and Radio Disc Jockeys	Hosts and Hostesses
Actors	Customer Service Representatives
Entertainers and Performers, Sports-Related Workers	Photo Process Machine Operators

**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 (\$50,800 in the Central region). Below are a few Gateway Occupations in Arts, Communications, and Information Systems 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.

Likely Gateways	Aligned Gateways
Graphic Designers	Supervisors of Office and Administrative Support Workers
Printing Press Operators	Painting, Coating, and Decorating Workers
Music Directors and Composers	Window Trimmers
Audio and Video Technicians	Machinists
Prepress Technicians and Workers	

**Target Occupations** refer to high-wage occupations that pay at or above the region's average wage (\$50,800 in the Central region). 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. Only occupations that hit the designated high-wage, high-skill, and high-demand thresholds have been included in this chart, thus putting extra weight and emphasis on current demand rather than future shortage. Some critical occupations for the region that forecast high gaps, but perhaps not currently high-demand should also be included in Career and Technical Education programs of study.

It is important to recognize in this sector, in particular, that many important Information Technology careers may not hit the specified high-demand threshold in the Central region, but are likely to see higher demand in the years ahead. For example, there are about 707 Computer Systems Analysts employed in the Central region—a high-wage, high-skill occupation with both occupation shortages and award gaps forecast. Unemployment in this role is currently well below 3% in the region. However, since forecasted 5-year growth in an optimistic forecast lags the overall regional average, replacement demand is less than 50% of current employment, and volumes of online job postings are still below 500, Computer Systems Analyst did not fulfill two out of the four traits of high-demand for this report and does not appear on the table below. A full list of occupations in the career field is available upon request.

### Top Target Occupations in Arts, Communications, and Information Systems, Central Minnesota 2021Q1

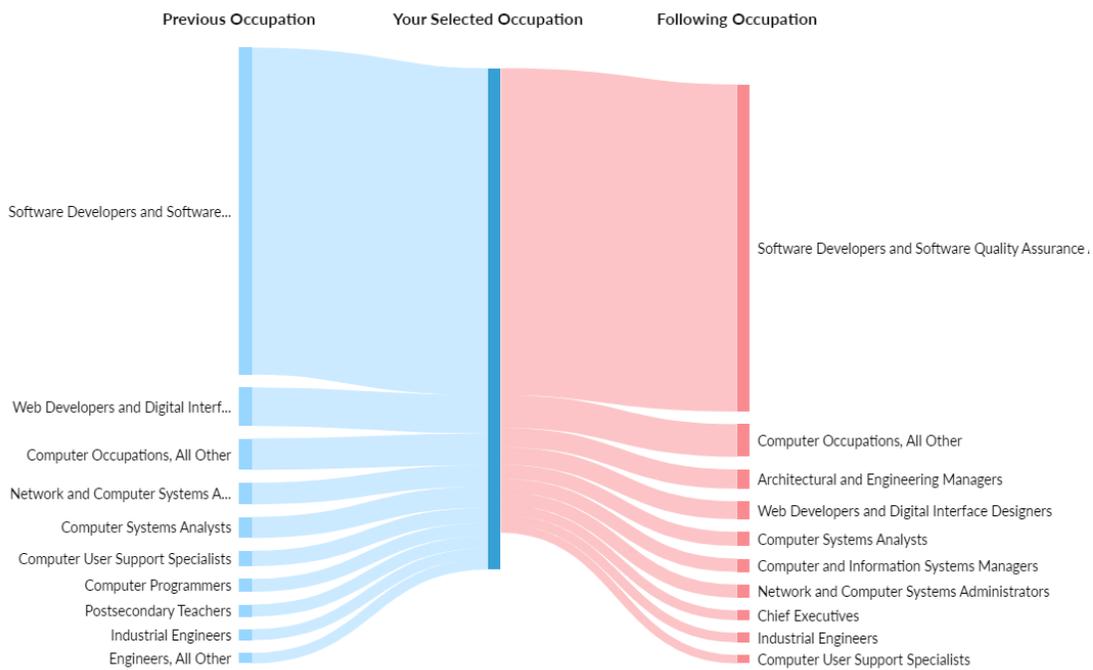
SOC	Occupation	2021Q1 Empl	Mean Ann Wages <sup>2</sup>	High-Wage	High-Skill	High-Demand	OG	AG
15-1256	Software Developers and Software Quality Assurance Analysts and Testers	1,068	\$88,600	HW	HS	HD	OG	AG
27-3043	Writers and Authors	145	\$56,700	HW	HS	HD		
27-1011	Art Directors	114	\$97,600	HW	HS	HD		
15-1212	Information Security Analysts	103	\$89,200	HW	HS	HD	OG	AG
27-2012	Producers and Directors	93	\$60,000	HW	HS	HD	OG	AG
27-1021	Commercial and Industrial Designers	76	\$64,800	HW	HS	HD		
27-1014	Special Effects Artists and Animators	59	\$58,300	HW	HS	HD		

27-1013	Fine Artists, Including Painters, Sculptors, and Illustrators	25	\$60,300	HW	HS	HD		
27-1029	Designers, All Other	21	\$62,100	HW	HS	HD		
27-1022	Fashion Designers	20	\$64,300	HW	HS	HD		

Software Developers is both the number-one occupation of shortage in the career field and and the high-wage, high-skill, high-demand occupation in highest volume in the region. In Central Minnesota, the Software Developer occupation’s forecasted growth exceeds the average in the region, will require replacement of over half of all positions currently employing talent within 5 years, and currently has a low unemployment rate of just 2.1%.

Below, this occupation is analyzed in more detail for better understanding of occupation “gain and drain.” The chart below illustrates the national profiles of current and past people in this occupation. The left column shows job transitions from other occupations to Software Developer. The right column shows job transitions from Software Developer to other occupations.

### Software Developer Talent Gain and Drain, 2021Q3 Candidate Profile Analysis



Candidate profile analysis from Emsi 2021Q3 national dataset.

### Graduate Pipeline for Software Developers, Central Minnesota 2021

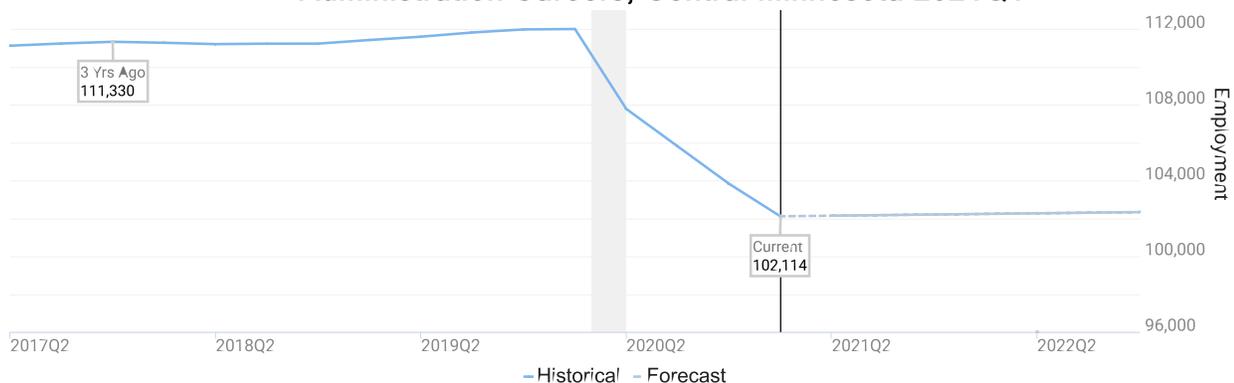


2020 IPEDS Completions Data; Visualizations from Emsi 2021Q3 dataset.

## BUSINESS, MANAGEMENT, AND ADMINISTRATION

Business, Management, and Administration is a diverse career field with Hospitality and Tourism, Finance, Administration, Human Resources, and Marketing careers, which all experienced somewhat diverging trends during over the course of the COVID-19 pandemic thus far. Over the next three years, under a pessimistic baseline forecast, Business, Management, and Administration Field employment is forecast to rise by 0.1% on average annually. In the most optimistic scenario feasible based on employer demand, and given the existing talent shortage and talent pipelines in place, employment growth of 2.0% annually in this field could be possible. Most of the growth is attributable to retail and food service occupations in this career field.

**Baseline Worst-Case Scenario 3-Year Forecast for Business, Management, and Administration Careers, Central Minnesota 2021Q1**



undef.ned

### Top Ten Business, Management, and Administration Systems Occupations by Employment Volume in Central Minnesota, 2021Q1

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year		Baseline Forecast
				Empl Change	Annual Demand	Ann Growth
Cashiers	8,220	\$25,700	1.40	-136	1,468	-0.6%
Retail Salespersons	7,719	\$30,700	1.17	-870	1,141	0.1%
Fast Food and Counter Workers	6,542	\$25,300	1.12	-860	1,308	1.1%
Office Clerks, General	4,396	\$37,800	0.88	-151	497	-0.5%
Stockers and Order Fillers	4,053	\$30,300	1.03	-32	550	0.2%
Customer Service Representatives	3,698	\$37,700	0.75	-116	471	-0.4%
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	3,666	\$32,500	0.99	-300	512	0.5%
General and Operations Managers	3,387	\$104,300	0.82	78	317	0.5%
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	3,019	\$39,900	0.89	-172	295	-1.0%
First-Line Supervisors of Retail Sales Workers	2,901	\$45,100	1.21	-171	299	-0.5%
Remaining Component Occupations	54,517	\$53,500	0.84	-6,432	6,727	0.2%
<b>Business, Management, &amp; Administration (CTE Field)</b>	<b>102,114</b>	<b>\$45,800</b>	<b>0.91</b>	<b>-9,163</b>	<b>13,587</b>	<b>0.1%</b>

"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 (12.9%) and General Merchandise Stores (4.5%), reflecting the importance of the Hospitality and Tourism career cluster in this region. 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.

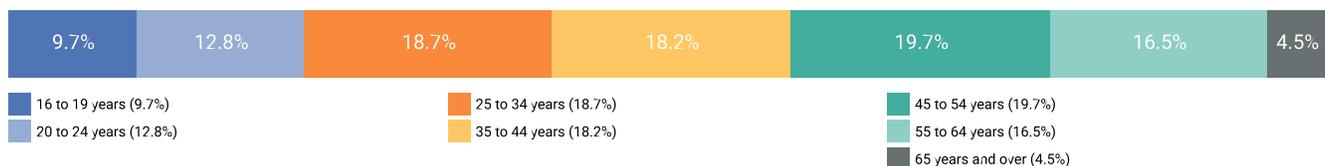
### Business, Management, and Administration Field Employment by Industry, 2021Q1, Central Minnesota

Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Growth	10-Year Total Demand
Restaurants and Other Eating Places	12.9%	13,222	23,498	1,233	24,731
General Merchandise Stores, including Warehouse Clubs and Supercenters	4.5%	4,631	6,806	-89	6,717
Grocery Stores	4.4%	4,535	6,995	-42	6,953
Gasoline Stations	4.2%	4,241	7,233	-103	7,130
Depository Credit Intermediation	3.3%	3,417	3,445	-106	3,339
Elementary and Secondary Schools	2.8%	2,842	3,672	-97	3,576
Building Material and Supplies Dealers	2.3%	2,381	3,330	21	3,352
General Medical and Surgical Hospitals	2.2%	2,289	2,770	-37	2,732
Executive, Legislative, and Other General Government Support	1.9%	1,943	2,361	-1	2,359
Services to Buildings and Dwellings	1.8%	1,833	2,437	158	2,595
Automobile Dealers	1.6%	1,610	2,051	27	2,078
Traveler Accommodation	1.6%	1,594	2,437	57	2,494
Accounting, Tax Preparation, Bookkeeping, and Payroll Services	1.4%	1,379	1,392	-7	1,384
Religious Organizations	1.3%	1,308	1,568	11	1,579
Direct Selling Establishments	1.3%	1,290	1,435	-187	1,248
Other Amusement and Recreation Industries	1.3%	1,287	2,333	179	2,513
Nursing Care Facilities (Skilled Nursing Facilities)	1.2%	1,273	1,774	-46	1,728
Department Stores	1.2%	1,271	1,867	-29	1,838
Agencies, Brokerages, and Other Insurance Related Activities	1.2%	1,264	1,301	45	1,346
Grocery and Related Product Merchant Wholesalers	1.1%	1,174	1,324	29	1,353
All Others	46.3%	47,327	55,125	261	55,387

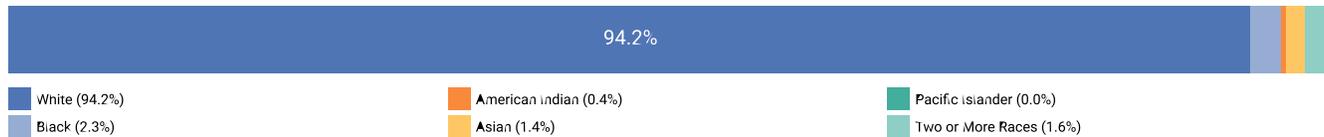
### Career Field Demographics

The Business, Management, and Administration field has a slightly higher concentration of female workers (57.8%) than male, and is 94.2% White. About 2.4% of the workforce is Hispanic or Latinx. The age of the workforce is fairly evenly dispersed, with about 22.5% of the field's workforce 24 years old or younger, and 21.0% 55 or older.

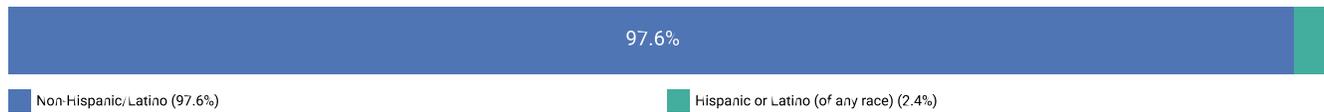
#### Age



## Race



## Ethnicity



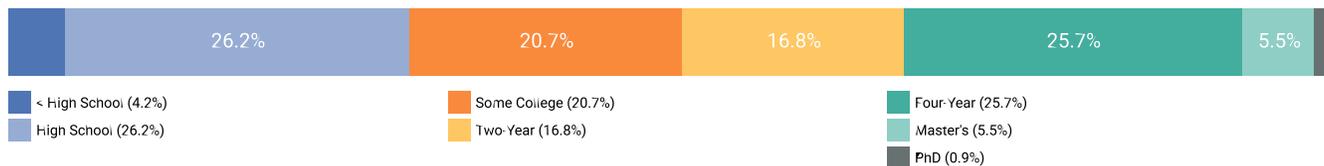
## Gender



## 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 2-year degree than what is in demand. While 16.8% of the workforce holds a 2-year degree, just 0.2% of the occupations in this field require a 2-year degree. Nearly two-thirds of all positions in this field (60.6%) require no degree, no experience, and only short-term on-the-job training. Another 20.4% require experience or some on-the-job training, but still no degree. In contrast, only 4.2% of the workforce in this field has no degree at all, and 26.2% 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



## Typical Education Requirements for Top Occupations by Volume, 2021Q1

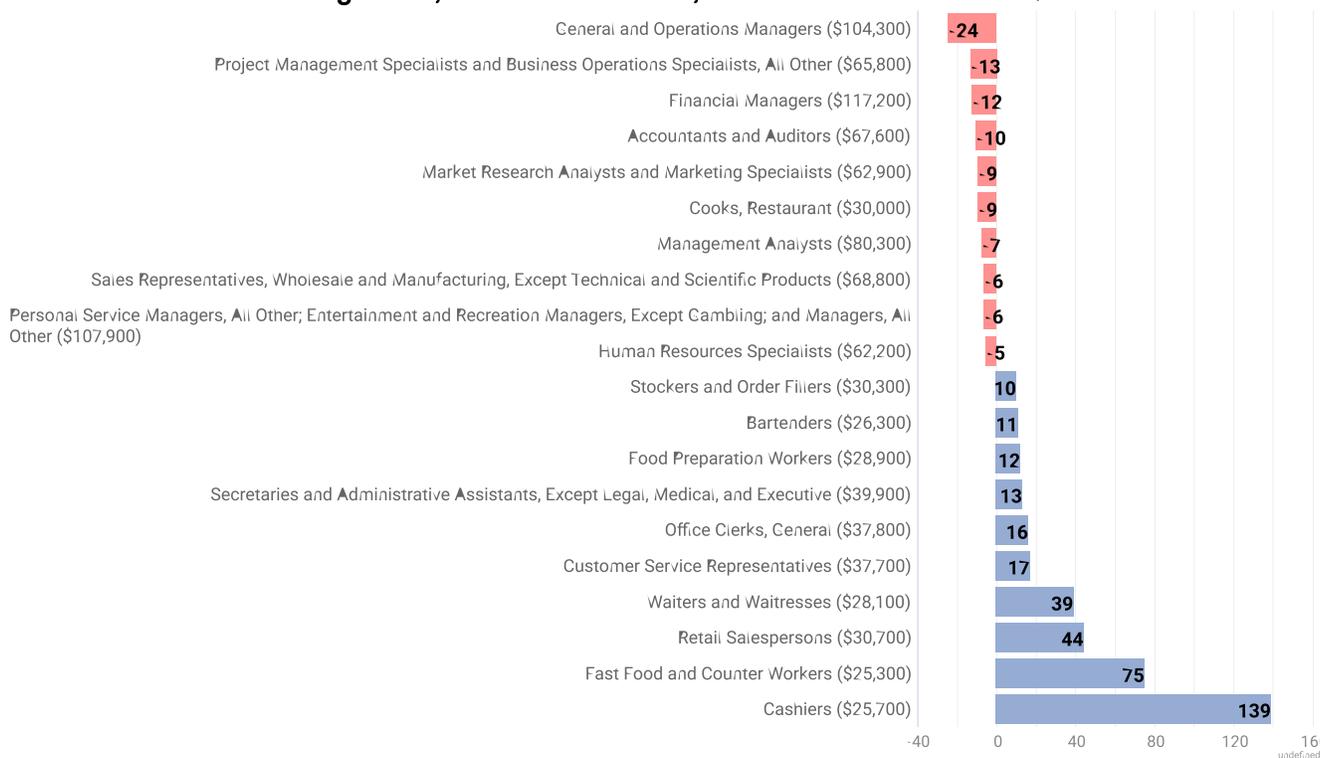
Occupation	Typical Entry-Level Education	Previous Work Experience	Typical On-the-Job Training
Cashiers	None	None	Short-term on-the-job training
Retail Salespersons	None	None	Short-term on-the-job training
Fast Food and Counter Workers	None	None	Short-term on-the-job training
Office Clerks, General	High school diploma or equivalent	None	Short-term on-the-job training
Stockers and Order Fillers	High school diploma or equivalent	None	Short-term on-the-job training
Customer Service Representatives	High school diploma or equivalent	None	Short-term on-the-job training

Occupation	Typical Entry-Level Education	Previous Work Experience	Typical On-the-Job Training
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	None	None	Short-term on-the-job training
General and Operations Managers	Bachelor's degree	5 years or more	None
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	High school diploma or equivalent	None	Short-term on-the-job training
First-Line Supervisors of Retail Sales Workers	High school diploma or equivalent	Less than 5 years	None

### 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.

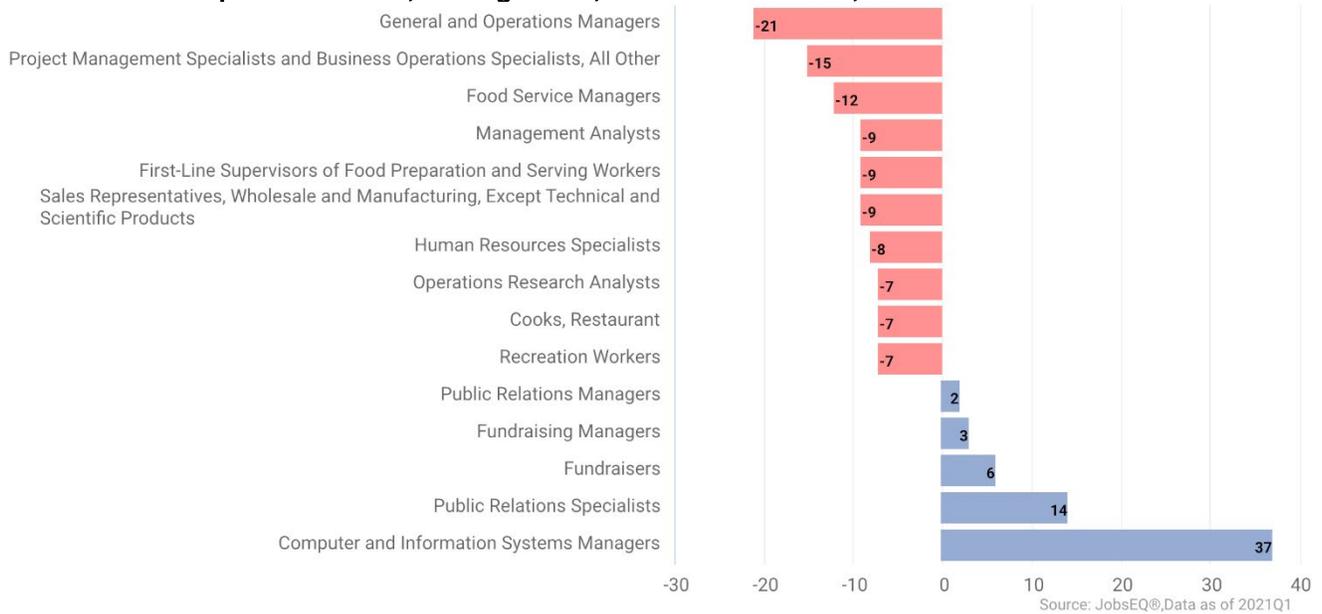
### Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Business, Management, and Administration, Central Minnesota 2021Q1



### 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 2021Q1



### Certification Gaps

Similar to award gaps, an analysis of certification gaps identify where the existing talent pool lacks particular credentials in comparison to current openings. However, this analysis uses real-time labor market data in the form of online candidate profiles and job postings to analyze the alignment between the available workforce and local opportunities. In the table below, it is apparent that the programs aligned to the occupations above as well as shorter training programs are both needed to connect local talent with opportunities.

#### Top 10 Certification Gaps in the Central, September 2021

Name	Candidates	Openings	Gap
Certified Internal Auditor (CIA)	1	8	-6
Certified Public Accountant (CPA)	63	69	-6
Certified Professional Dog Trainer (CPDT)	0	2	-2
Basic Life Support (BLS)	3	6	-2
Class A Commercial Driver's License (CDL-A)	8	10	-2
Texas Alcoholic Beverage Commission Certification (TABC)	1	3	-2
Certified Facility Manager (CFM)	0	2	-2
Loss Prevention Qualified (LPQ)	0	2	-2
Class B Commercial Driver's License (CDL-B)	2	4	-2
Professional Certified Investigator (PCI)	0	2	-2

### Skill Gaps

Likewise, there is a degree of misalignment between the skills of the available workforce and the skills advertised by local employers. The ten skills listed below are examples of the skills in most high demand among Central Minnesota employers hiring Business, Management, and Administration talent that potential candidates have not indicated in their professional networking platforms as a strength.

### Top 10 Skill Gaps in the Central, September 2021

Name	Candidates	Openings	Gap
Cash Registers	384	604	-220
People Skills	168	380	-212
Point of Sale Systems (POS Systems)	152	337	-185
Merchandising	351	410	-59
Culinary Arts	53	96	-43
Faxing	20	61	-40
Bilingual	57	86	-29
Spanish	117	145	-28
Microsoft Office	1,039	1,065	-27
Unity	11	35	-24

### 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-to-Gateway-to-Target Occupations for Business, Management, and Administration, Central Minnesota 2021Q1

#### Target Occupations (all HW, HD, HS)

General and Operations Managers (OG, AG)  
 Project Management Specialists (OG, AG)  
 Accountants and Auditors (OG)  
 Financial Managers (OG)  
 Market Research Analysts & Marketing Specialists (OG)

#### Gateway Occupations

Supervisors of Retail Sales Workers (AG)  
 Postal Service Mail Carriers  
 Real Estate Sales Agents (OG)  
 Loan Interviewers and Clerks (HD)  
 Supervisors of Housekeepers and Janitorial Workers (HD, OG)

#### Origin Occupations

##### Likely

Cashiers  
 Retail Salespersons (HD)  
 Fast Food and Counter Workers (HD)  
 Office Clerks, General (AG)  
 Stockers and Order Fillers (HD)

##### 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

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 4-year degrees. Below are a few Origin Occupations that are likely entrypoints into Business, Management, and Administration roles locally, or aligned opportunities that share a large number of skillsets in-demand in the field.

Likely Origins	Aligned Origins
Cashiers	Personal Care Aides
Retail Salespersons	Eligibility Interviewers
Fast Food and Counter Workers	Childcare Workers
Office Clerks, General	Library Technicians
Stockers and Order Fillers	

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 (\$50,800 in the Central region). Below are a few Gateway Occupations in Business, Management, and Administration 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. None of the gateway occupations in this career field are considered high-skill, meaning that the majority of roles listed here would be accessible to an individual without formal education or training.

Likely Gateways	Aligned Gateways
Supervisors of Retail Sales Workers	Graphic Designers
Postal Service Mail Carriers	Editors
Real Estate Agents	Writers
Loan Interviewers and Clerks	Computer User Support Specialists
Supervisors of Housekeeping and Janitorial Workers	
Postal Service Mail Sorters, Processors, and Processing Machine Operators	

Target Occupations refer to high-wage occupations that pay at or above the region's average wage (\$50,800 in the Central region). 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. Only occupations that hit the designated high-wage, high-skill, and high-demand thresholds have been included in this chart, thus putting extra weight and emphasis on current demand rather than future shortage. Some critical occupations for the region that forecast high gaps, but perhaps not currently high-demand should also be included in Career and Technical Education programs of study.

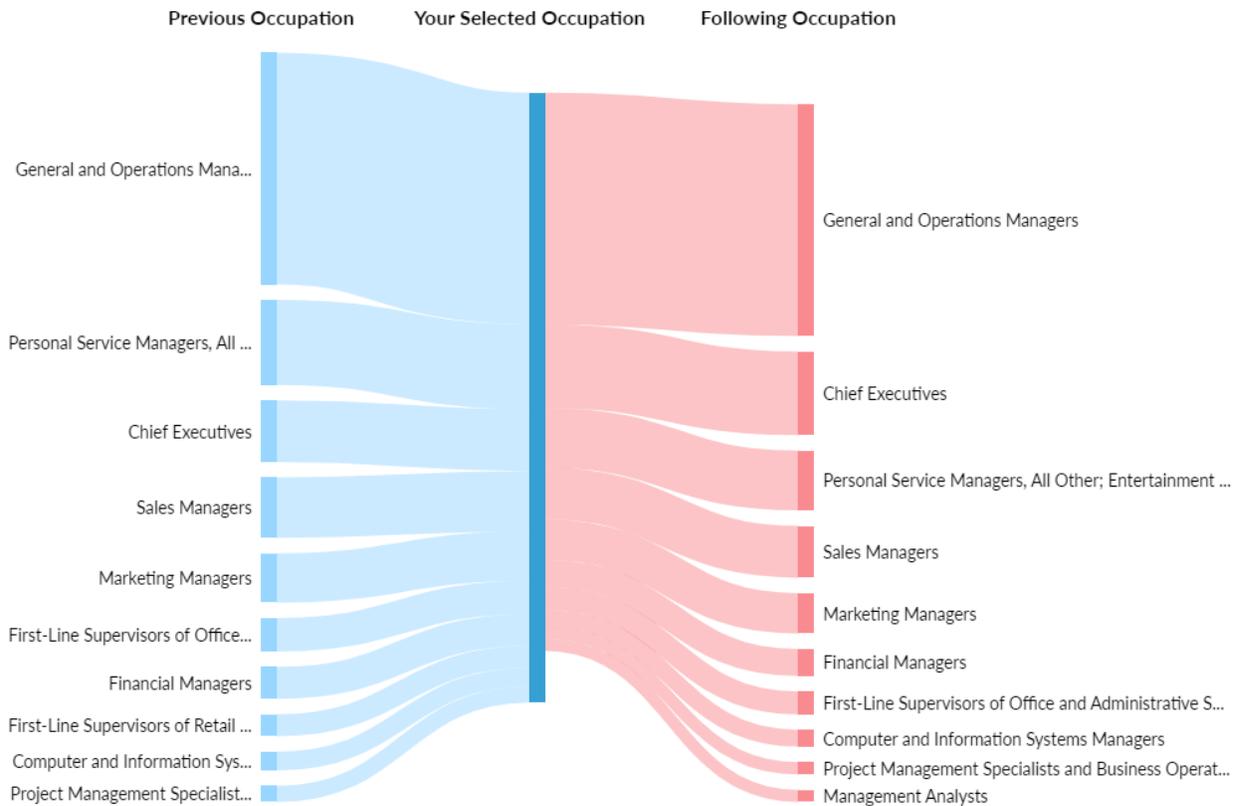
### Top Target Occupations in Business, Management, and Administration, Central Minnesota 2021Q1

SOC	Occupation	2021Q1 Empl	Mean Ann Wages <sup>2</sup>	High-Wage	High-Skill	High-Demand	OG	AG
11-1021	General and Operations Managers	3,387	\$104,300	HW	HS	HD	OG	AG
13-1198	Project Management Specialists and Business Operations Specialists, All Other	1,787	\$65,800	HW	HS	HD	OG	AG
13-2011	Accountants and Auditors	1,762	\$67,600	HW	HS	HD	OG	
11-3031	Financial Managers	881	\$117,200	HW	HS	HD	OG	
13-1161	Market Research Analysts and Marketing Specialists	825	\$62,900	HW	HS	HD	OG	
11-2022	Sales Managers	664	\$119,000	HW	HS	HD	OG	AG
41-3031	Securities, Commodities, and Financial Services Sales Agents	568	\$79,800	HW	HS	HD	OG	AG
27-3031	Public Relations Specialists	334	\$54,600	HW	HS	HD	OG	
13-2052	Personal Financial Advisors	271	\$131,200	HW	HS	HD	OG	
11-3121	Human Resources Managers	246	\$110,300	HW	HS	HD	OG	AG

General and Operations Management roles are in-demand, high-wage, and high-skill opportunities in the Central that are forecast to be in shortage. In addition, regional colleges and universities underproduce General and Operations Management-aligned program

graduates in comparison to national benchmarks. Below, this occupation is analyzed in more detail for better understanding of occupation “gain and drain.” The chart below illustrates the national profiles of current and past people in this occupation. The left column shows job transitions from other occupations to General and Operations Manager. The right column shows job transitions from this role to other occupations. Clearly, there are a number of likely entrypoints, such as Marketing Manager or Sales Manager, but there are also a few aligned occupations that may not be initially associated with Operations Management: Personal Service Managers, Financial Managers, and Computer and Information Systems Managers.

### General and Operations Manager Talent Gain and Drain, Central Minnesota 2021Q3 Candidate Profile Analysis



Candidate profile analysis from Emsi 2021Q3 national dataset.

### Graduate Pipeline for General and Operations Managers, Central Minnesota 2021

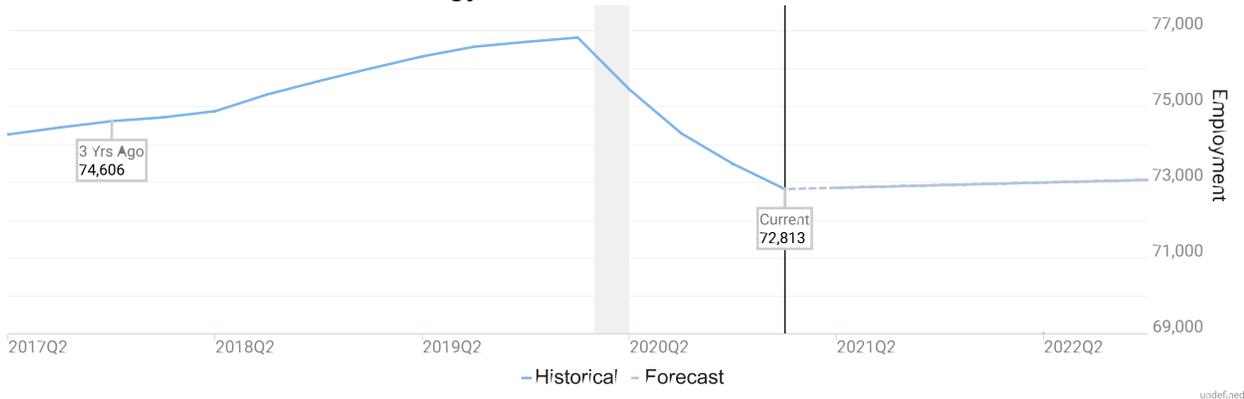


2020 IPEDS Completions Data; Visualizations from Emsi 2021Q3 dataset.

## 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 over the course of the COVID-19 pandemic thus far. Over the next three years, under a pessimistic baseline forecast, this career field's employment is forecast to rise moderately (0.2% annually). In the most optimistic scenario feasible based on employer demand, and given the existing talent shortage and talent pipelines in place, employment growth of 1.3% annually in this field could be possible. 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 2021Q1



### Top Ten Engineering, Manufacturing, and Technology Occupations by Employment Volume in the Central, 2021Q1

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year		Baseline Forecast
				Empl Change	Annual Demand	Ann Growth
Heavy and Tractor-Trailer Truck Drivers	4,742	\$48,400	1.39	-24	547	0.1%
Laborers and Freight, Stock, and Material Movers, Hand	3,554	\$34,600	0.71	-53	512	0.4%
Construction Laborers	2,789	\$48,900	1.19	163	333	0.6%
Team Assemblers	2,726	\$36,000	1.46	-316	257	-1.6%
Carpenters	2,570	\$52,000	1.52	15	271	0.2%
Maintenance and Repair Workers, General	1,985	\$44,000	0.83	-167	205	0.5%
Landscaping and Groundskeeping Workers	1,939	\$35,600	0.99	64	287	1.2%
Passenger Vehicle Drivers, Except Bus Drivers, Transit and Intercity	1,904	\$36,700	1.52	-313	250	0.7%
Light Truck Drivers	1,568	\$38,400	0.86	-5	185	0.3%
Automotive Service Technicians and Mechanics	1,492	\$44,400	1.20	-48	139	-0.3%
Remaining Component Occupations	47,545	\$53,200	1.12	-1,212	5,195	0.2%
<b>Engineering, Manufacturing, &amp; Technology (CTE Field)</b>	<b>72,813</b>	<b>\$49,500</b>	<b>1.13</b>	<b>-1,894</b>	<b>8,189</b>	<b>0.2%</b>

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

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

Many different industries employ Engineering, Manufacturing, and Technology talent in the Central region. Locally, the industries with the greatest share of this field's talent are Building Equipment

Contractors (5.3%) and General Freight Trucking (3.8%). Most industries employing talent in this field only touch less than 2% of total talent skilled in this field, suggesting that education and training programs will need broad strategies that cross each of these sectors.

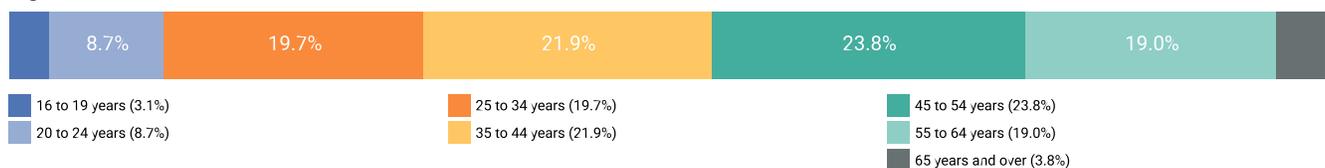
### Engineering, Manufacturing, and Technology Field Employment by Industry, 2021Q1, Central Minnesota

Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Growth	10-Year Total Demand
Building Equipment Contractors	5.3%	3,862	4,334	298	4,632
General Freight Trucking	3.8%	2,756	3,127	-3	3,124
Building Finishing Contractors	3.5%	2,545	2,649	68	2,717
Highway, Street, and Bridge Construction	3.3%	2,404	2,672	151	2,823
Other Specialty Trade Contractors	3.3%	2,397	2,697	122	2,819
Foundation, Structure, and Building Exterior Contractors	3.3%	2,385	2,589	115	2,704
Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	2.9%	2,101	2,298	193	2,491
Plastics Product Manufacturing	2.7%	1,937	2,093	-130	1,963
Residential Building Construction	2.5%	1,807	1,814	83	1,897
Animal Slaughtering and Processing	2.5%	1,794	2,252	56	2,308
Household and Institutional Furniture and Kitchen Cabinet Manufacturing	2.3%	1,699	1,850	-69	1,781
Executive, Legislative, and Other General Government Support	2.1%	1,521	1,684	100	1,784
Automotive Repair and Maintenance	2.0%	1,482	1,589	24	1,613
Services to Buildings and Dwellings	2.0%	1,457	1,924	183	2,107
Utility System Construction	1.9%	1,390	1,512	111	1,623
Electric Power Generation, Transmission and Distribution	1.8%	1,298	1,073	-222	851
School and Employee Bus Transportation	1.7%	1,251	1,526	61	1,586
Other General Purpose Machinery Manufacturing	1.6%	1,172	1,211	-19	1,192
Automobile Dealers	1.5%	1,128	1,286	22	1,308
Architectural and Structural Metals Manufacturing	1.5%	1,118	1,234	30	1,264
All Others	48.5%	35,309	39,478	225	39,703

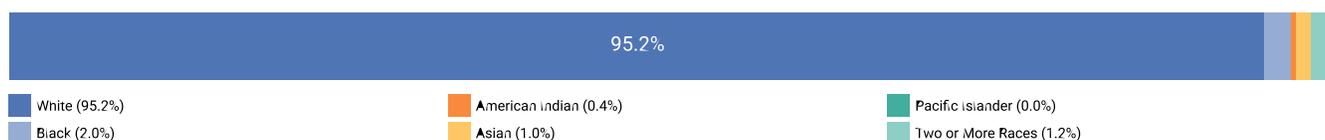
### Career Field Demographics

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.

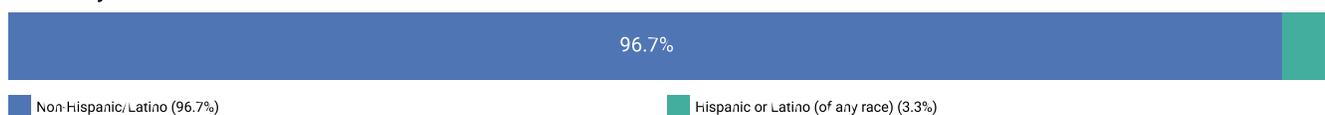
#### Age



#### Race



#### Ethnicity



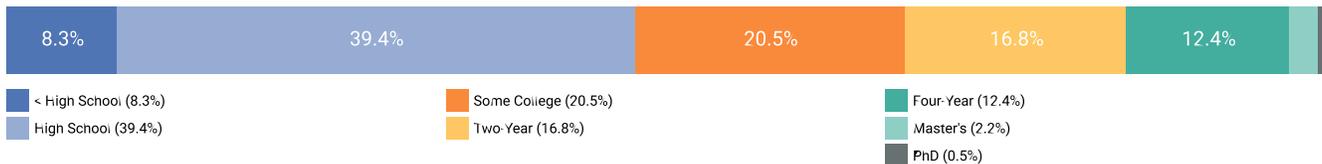
## Gender



## 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 (25.4%) require no degree, no experience, and only short-term on-the-job training. About 54.8% 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 (8.1%), and almost 2 in 5 (39.4%) hold a high school diploma as their highest credential. In all, 68.2% 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



## Education and Training Requirements



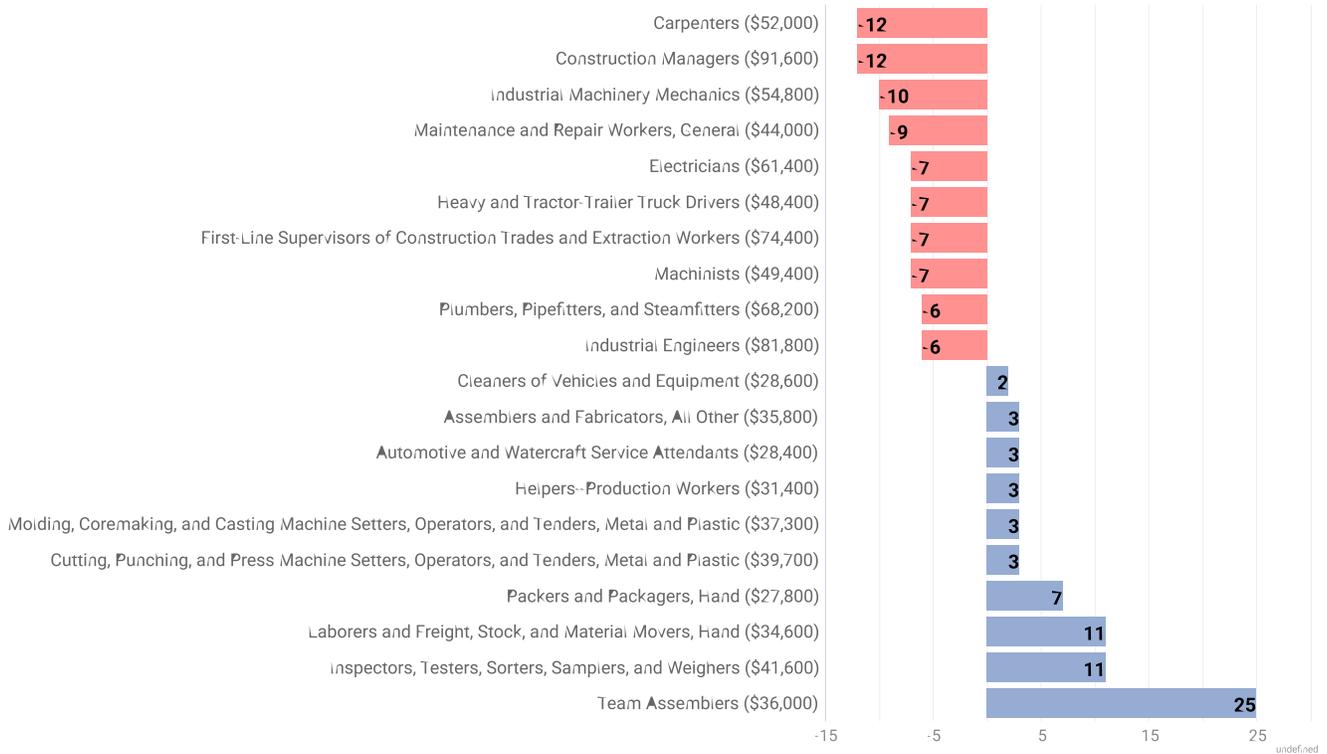
## Typical Education Requirements for Top Occupations by Volume, 2021Q1

Occupation	Typical Entry-Level Education	Previous Work Experience	Typical On-the-Job Training
Heavy and Tractor-Trailer Truck Drivers	Postsecondary non-degree award	None	Short-term on-the-job training
Laborers and Freight, Stock, and Material Movers, Hand	None	None	Short-term on-the-job training
Construction Laborers	None	None	Short-term on-the-job training
Team Assemblers	High school diploma or equivalent	None	Moderate-term on-the-job training
Carpenters	High school diploma or equivalent	None	Apprenticeship
Maintenance and Repair Workers, General	High school diploma or equivalent	None	Moderate-term on-the-job training
Landscaping and Groundskeeping Workers	None	None	Short-term on-the-job training
Passenger Vehicle Drivers, Except Bus Drivers, Transit and Intercity	None	None	Short-term on-the-job training
Light Truck Drivers	High school diploma or equivalent	None	Short-term on-the-job training
Automotive Service Technicians and Mechanics	Postsecondary non-degree award	None	Short-term on-the-job training

## 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 Construction Manager and Carpenter talent pools likely falling short at least 12 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.

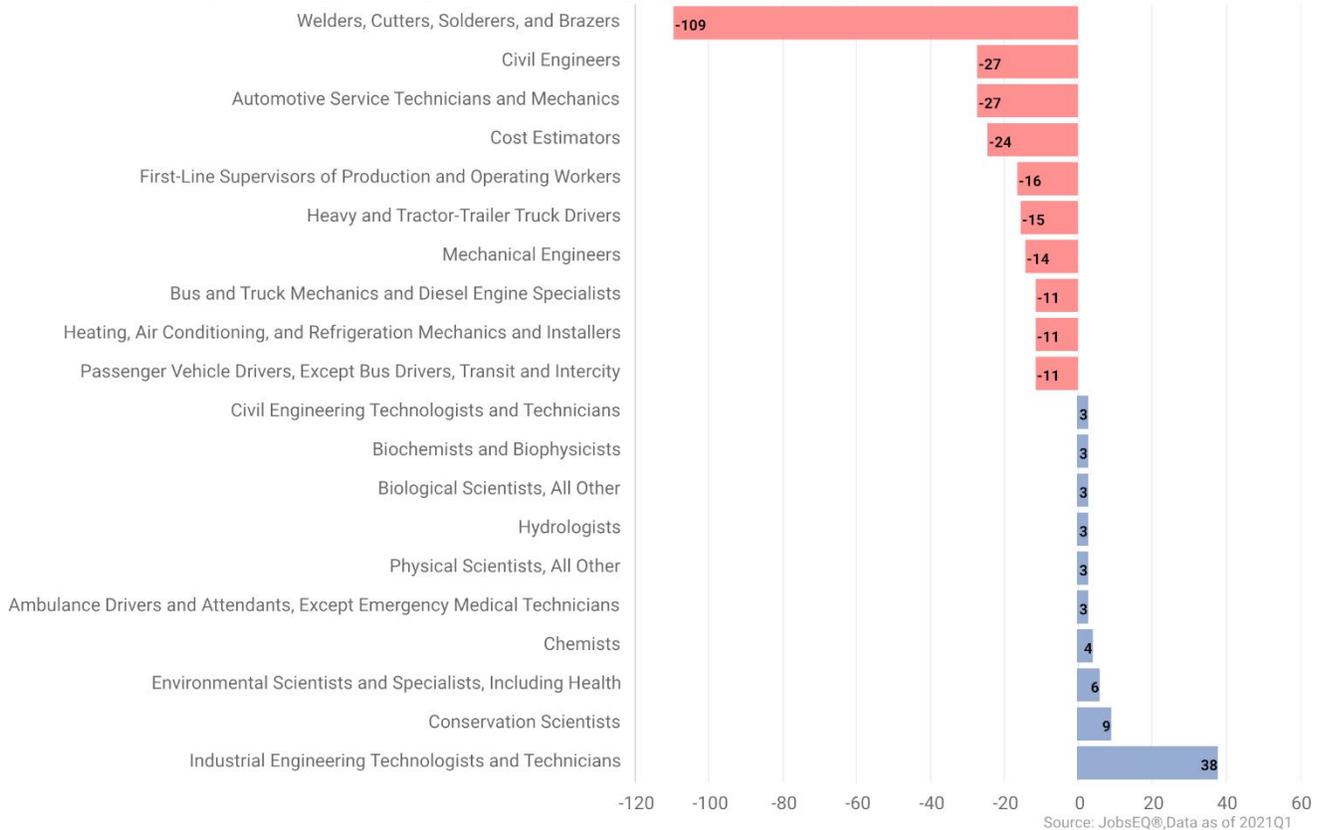
### Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Engineering, Manufacturing, and Technology, Central Minnesota 2021Q1



## 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 109 graduates annually that are needed to fill welding and soldering positions open with employers based in this region alone. Second, there are at least 27 fewer Civil Engineers and 27 fewer 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 2021Q1



### Certification Gaps

Similar to award gaps, an analysis of certification gaps identify where the existing talent pool lacks particular credentials in comparison to current openings. However, this analysis uses real-time labor market data in the form of online candidate profiles and job postings to analyze the alignment between the available workforce and local opportunities. In the table below, it is apparent that the programs aligned to the occupations above as well as shorter training programs are both needed to connect local talent with opportunities. The certification gaps listed below reiterate the award gaps above.

#### Top 10 Certification Gaps in the Central, September 2021

Name	Candidates	Openings	Gap
Certified Welder	6	11	-5
Certified Flight Instructor (CFI)	0	1	-1
40 hour HAZWOPER	0	1	-1
Transportation Worker Identification Credential (TWIC)	2	3	-1
Certified Purchasing Professional (CPP)	0	1	-1
Certified Quality Auditor (CQA)	1	1	0
EPA Section 608 Certification (EPA 608)	6	7	0
Certified Pesticide Applicator	1	2	0
Six Sigma Green Belt Certification (SSGB)	1	2	0
Certified Construction Manager (CCM)	0	1	0

## Skill Gaps

Likewise, there is a degree of misalignment between the skills of the available workforce and the skills advertised by local employers. The ten skills listed below are examples of the skills in most high demand among Central Minnesota employers hiring Engineering, Manufacturing, and Technology talent that potential candidates have not indicated in their professional networking platforms as a strength.

**Top 10 Skill Gaps in the Central, September 2021**

Name	Candidates	Openings	Gap
Assembly	91	115	-24
Telecommunications	13	37	-24
Microsoft Word	93	114	-21
Microsoft Excel	313	334	-20
Lean Six Sigma	29	47	-18
Hand Trucks	28	46	-18
Motor Coaches	17	31	-14
Pallet Jacks	73	87	-14
iOS	1	15	-14
Personal Computers (PC)	58	70	-12

## 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-to-Gateway-to-Target Occupations for Engineering, Manufacturing, and Technology, Central Minnesota Metro 2021Q1

#### Target Occupations (all HW, HD, HS)

Construction Managers (OG, AG)  
 Industrial Engineers (OG, AG)  
 Cost Estimators (OG, AG)  
 Logisticians (OG, AG)  
 CNC Tool Programmers (OG)

#### Gateway Occupations

Heavy and Tractor-Trailer Truck Drivers (HS, OG, AG)  
 Construction Laborers  
 Maintenance and Repair Workers, General (HD, OG, AG)  
 Automotive Service Technicians and Mechanics (HS, AG)  
 Welders, Cutters, Solderers, and Brazers (HD, OG, AG)

#### Origin Occupations

##### Likely

Laborers and Freight, Stock Movers  
 Team Assemblers  
 Landscaping and Groundskeeping Workers (HD, AG)  
 Passenger Vehicle Drivers (HD, AG)  
 Light Truck Drivers (AG)

##### Aligned

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

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

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 4-year degrees. Below are a few Origin

Occupations that are likely entrypoints into Engineering, Manufacturing, and Technology roles locally, or aligned opportunities that share a large number of skillsets in-demand in the field.

Likely Origins	Aligned Origins
Laborers and Freight, Stock, and Material Movers, Hand	Parking Lot Attendants
Team Assemblers	Retail Sales Workers
Landscapers and Groundskeeping Workers	Stockers and Order Fillers
Passenger Vehicle Drivers	Janitors and Cleaners
Light Truck Drivers	Customer Service Representatives

**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 (\$49,500 in the Central). Below are a few Gateway Occupations in Engineering, Manufacturing, and 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.

Likely Gateways	Aligned Gateways
Heavy and Tractor-Trailer Drivers	Parking Lot Attendants
Construction Laborers	Product Demonstrators
Maintenance and Repair Workers, General	General Managers
Automotive Service Technicians and Mechanics	Computer User Support Specialists
Welders, Cutters, Solderers, and Brazers	Software Developers

**Target Occupations** refer to high-wage occupations that pay at or above the region's average wage (\$50,800 in the Central region). 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. Only occupations that hit the designated high-wage, high-skill, and high-demand thresholds have been included in this chart, thus putting extra weight and emphasis on current demand rather than future shortage. Some critical occupations for the region that forecast high gaps, but perhaps not currently high-demand should also be included in Career and Technical Education programs of study.

All of the occupations listed below currently have unemployment rates under 3% except for CNC Tool Programmers and Interior Designers. All but Construction Managers and Industrial Engineers will need to replace more than half of their current workforce over the next five years.

### Top Target Occupations in Engineering, Manufacturing, and Technology, Central Minnesota 2021Q1

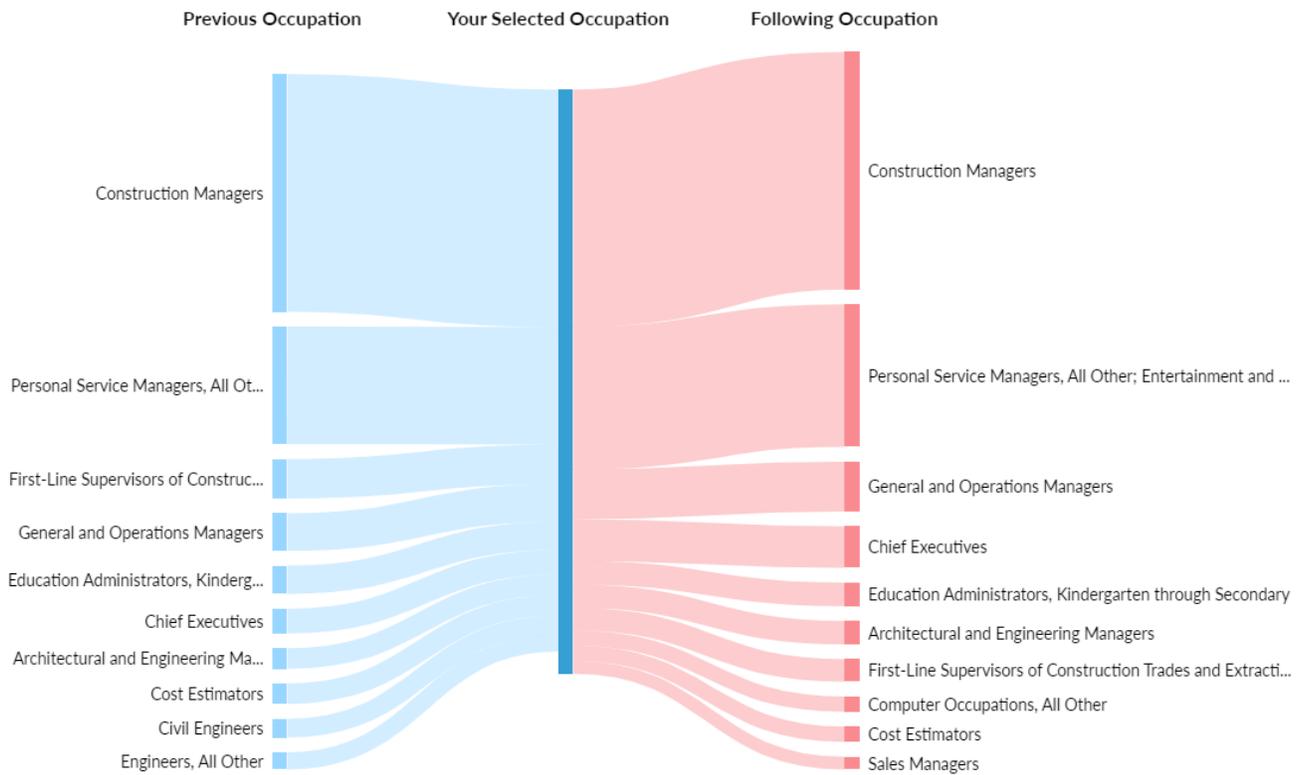
SOC	Occupation	2021Q1 Empl	Mean Ann Wages <sup>2</sup>	High-Wage	High-Skill	High-Demand	OG	AG
11-9021	Construction Managers	1,071	\$91,600	HW	HS	HD	OG	AG
17-2112	Industrial Engineers	660	\$81,800	HW	HS	HD	OG	AG
13-1051	Cost Estimators	474	\$64,400	HW	HS	HD	OG	AG
13-1081	Logisticians	192	\$69,400	HW	HS	HD	OG	AG
51-9162	Computer Numerically Controlled Tool Programmers	131	\$58,700	HW	HS	HD	OG	
27-1025	Interior Designers	99	\$54,200	HW	HS	HD		AG
19-2041	Environmental Scientists and Specialists, Including Health	91	\$72,700	HW	HS	HD	OG	
49-9062	Medical Equipment Repairers	71	\$57,400	HW	HS	HD		

Construction Managers are more highly concentrated in Central Minnesota than in most communities of its size (location quotient of 1.34 for this occupation). Central Minnesota will need more of this talent in the years ahead than what is likely to be available in the local

talent pool. Wages for Construction Managers are some of the highest in this career field locally.

Below, this occupation is analyzed in more detail for better understanding of occupation “gain and drain.” The chart below illustrates the national profiles of current and past people in this occupation. The left column shows job transitions from other occupations to Construction Manager. The right column shows job transitions from Construction Management to other occupations—including both likely transitions and aligned transitions.

### Construction Manager Talent Gain and Drain, Central Minnesota 2021Q3 Candidate Profile Analysis



Candidate profile analysis from Emsi 2021Q3 national dataset.

### Graduate Pipeline for Construction Managers, Central Minnesota 2021

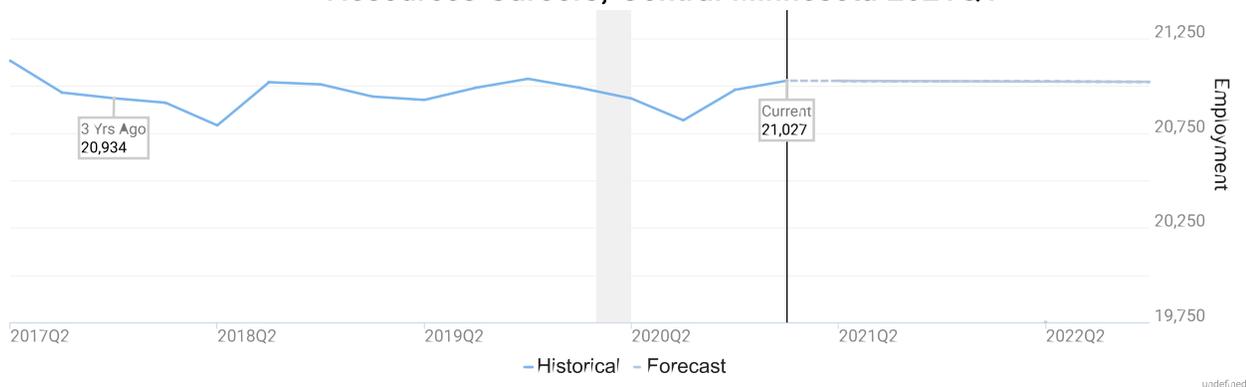


2020 IPEDS Completions Data; Visualizations from Emsi 2021Q3 dataset.

## 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, under a pessimistic baseline forecast, this career field's employment is forecast to decline by about -0.1% in Central Minnesota. In the most optimistic scenario likely based on employer demand, and given the existing talent shortage and talent pipelines in place, moderate growth of about 0.5% in this field could be possible. Most of the growth is attributable to Environmental Services Systems, Animal Systems, and careers in the trades.

**Baseline Worst-Case Scenario 3-Year Forecast for Agriculture, Food, and Natural Resources Careers, Central Minnesota 2021Q1**



### Top Ten Agriculture, Food, and Natural Resources Occupations by Employment Volume in the Central, 2021Q1

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	5,854	\$80,800	3.89	-215	485	-1.2%
Landscaping and Groundskeeping Workers	1,939	\$35,600	0.99	64	287	1.2%
Farmworkers, Farm, Ranch, and Aquacultural Animals	1,462	\$30,300	5.02	62	217	-1.0%
Plumbers, Pipefitters, and Steamfitters	1,329	\$68,200	1.65	68	158	0.6%
Farmworkers and Laborers, Crop, Nursery, and Greenhouse	817	\$35,200	0.81	77	138	0.3%
First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	714	\$56,800	0.85	2	80	0.4%
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	672	\$61,100	1.03	70	70	0.5%
Meat, Poultry, and Fish Cutters and Trimmers	605	\$32,300	2.30	-2	74	-0.1%
Food Batchmakers	413	\$34,400	1.52	13	65	0.5%
Animal Caretakers	378	\$30,000	0.81	-10	73	2.0%
Remaining Component Occupations	6,838	\$54,300	1.14	-12	789	0.3%
<b>AFNR - Agriculture, Food, and Natural Resources (CTE Field - Updated 2021)</b>	<b>21,027</b>	<b>\$57,300</b>	<b>1.39</b>	<b>116</b>	<b>2,439</b>	<b>-0.1%</b>

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

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

Many different industries employ Agriculture, Food, and Natural Resources talent in Central Minnesota. Locally, the industries with the greatest share of this field's talent are Animal Production (19.7%) and Building Equipment Contractors (8.4%). Most industries employing talent in this field only touch less than 2% of total talent skilled in this field, and span from grocery to ranching to electric power generation.

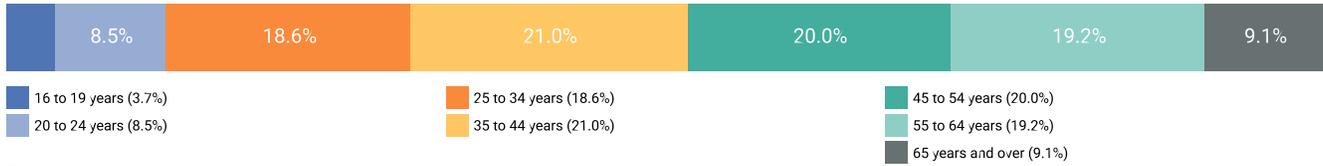
#### Agriculture, Food, and Natural Resources Field Employment by Industry, 2021Q1, Central Minnesota

Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Growth	10-Year Total Demand
Animal Production (Proprietors)	19.7%	4,148	3,831	-535	3,295
Building Equipment Contractors	8.4%	1,765	1,942	128	2,070
Cattle Ranching and Farming	7.7%	1,629	2,199	-149	2,050
Services to Buildings and Dwellings	6.7%	1,415	1,898	181	2,079
Crop Production (Proprietors)	4.4%	919	921	-75	846
Electric Power Generation, Transmission and Distribution	3.2%	669	548	-134	413
Other Professional, Scientific, and Technical Services	3.0%	629	644	109	753
Executive, Legislative, and Other General Government Support	2.8%	588	658	35	693
Animal Slaughtering and Processing	2.6%	540	693	18	711
Grocery Stores	2.1%	441	562	13	576
Poultry and Egg Production	2.1%	436	604	-19	585
Utility System Construction	1.9%	398	428	46	473
Hog and Pig Farming	1.5%	311	417	-32	386
Support Activities for Crop Production	1.5%	309	456	4	460
Greenhouse, Nursery, and Floriculture Production	1.3%	279	429	33	462
Vegetable and Melon Farming	1.3%	277	425	32	457
Other Amusement and Recreation Industries	1.2%	262	355	40	395
Other Personal Services	1.2%	243	427	74	500
Waste Collection	1.1%	227	336	44	381
Bakeries and Tortilla Manufacturing	1.1%	221	315	9	324
All Others	25.3%	5,321	6,486	143	6,629

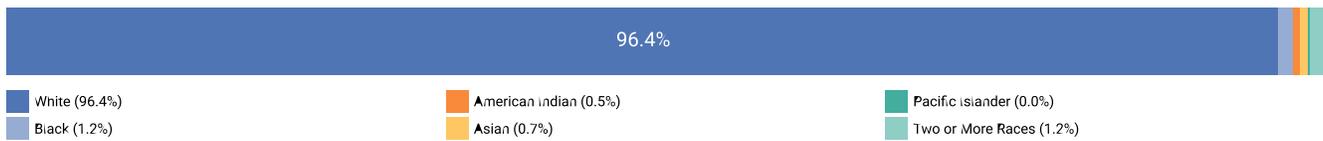
### Career Field Demographics

The Agriculture, Food, and Natural Resources field is predominantly male (74.9%) and White (96.4%), but with variation by career pathway. The largest share of talent employed in this field are between the ages of 35 and 44 (21%), but key career have a rapidly aging workforce with limited new talent entering: in Animal Systems, 38.5% of the workforce is 55 or older, and in Plant Systems, 37.4%.

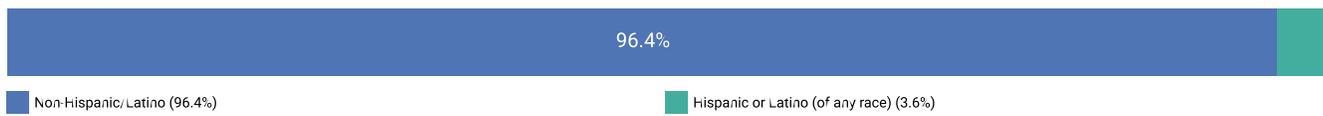
#### Age



#### Race



#### Ethnicity



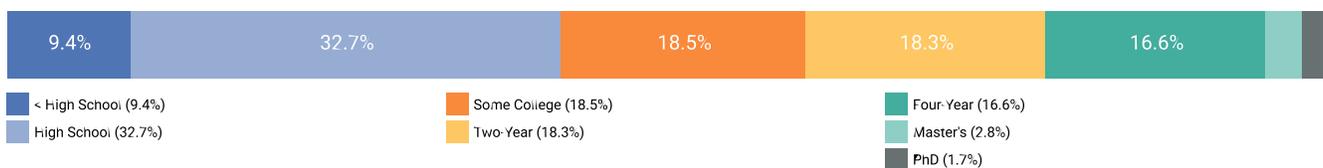
#### Gender



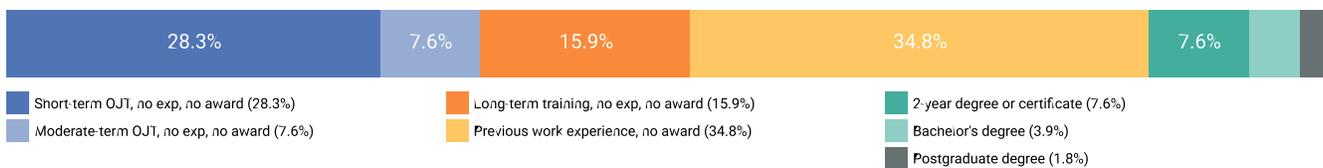
### Educational Attainment and Requirements

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 three in ten of all positions in this field regionally (28.3%) require no degree, no experience, and only short-term on-the-job training. Over half (58.3%) require experience or some on-the-job training, but still no degree; in all, 86.6% of positions in this field require no formal education. About 9.4% 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



#### Education and Training Requirements



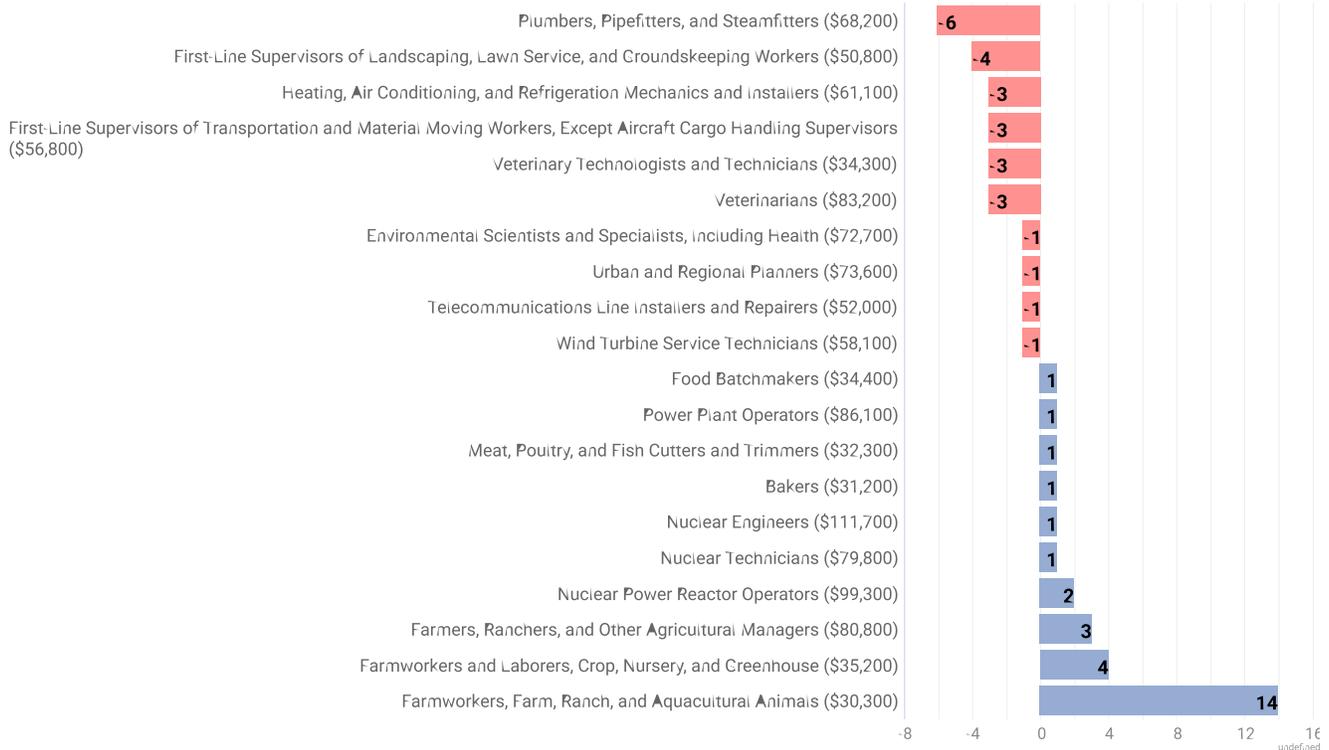
## Typical Education Requirements for Top Occupations by Volume, 2021Q1

Occupation	Typical Entry-Level Education	Previous Work Experience	Typical On-the-Job Training
Farmers, Ranchers, and Other Agricultural Managers	High school diploma or equivalent	5 years or more	None
Landscaping and Groundskeeping Workers	None	None	Short-term on-the-job training
Farmworkers, Farm, Ranch, and Aquacultural Animals	None	None	Short-term on-the-job training
Plumbers, Pipefitters, and Steamfitters	High school diploma or equivalent	None	Apprenticeship
Farmworkers and Laborers, Crop, Nursery, and Greenhouse	None	None	Short-term on-the-job training
First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	High school diploma or equivalent	Less than 5 years	None
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	Postsecondary non-degree award	None	Long-term on-the-job training
Meat, Poultry, and Fish Cutters and Trimmers	None	None	Short-term on-the-job training
Food Batchmakers	High school diploma or equivalent	None	Moderate-term on-the-job training
Animal Caretakers	High school diploma or equivalent	None	Short-term on-the-job training

### 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 Plumbers, Landscaping Supervisors, HVAC Mechanics, and Transportation Workers likely falling behind the most. Retirements and growing demand unmet by the local talent supply chain are both contributing factors.

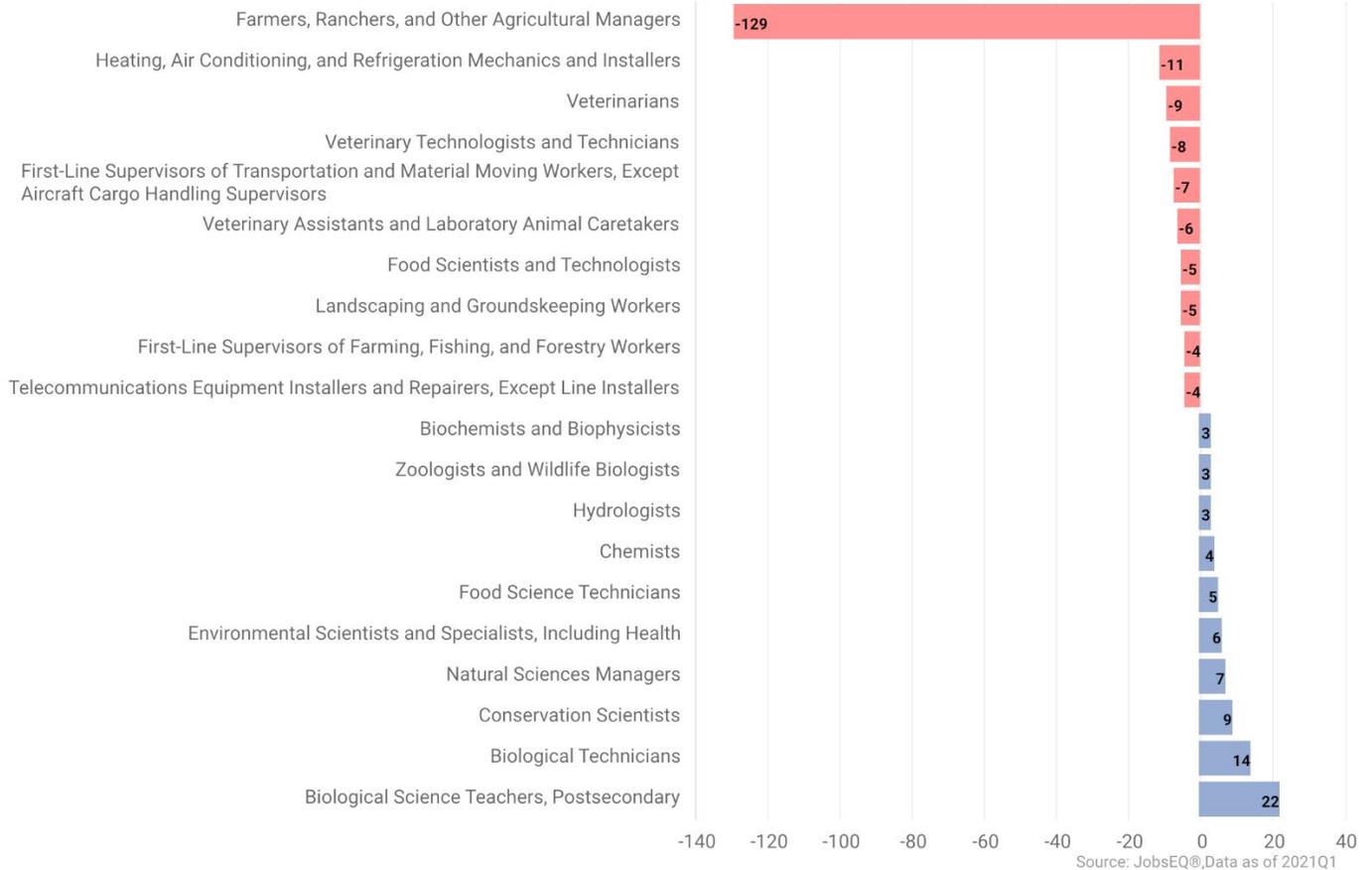
### Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Agriculture, Food, and Natural Resources, Central Minnesota 2021Q1



## 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 129 graduates annually that are needed to fill farming and agricultural management positions open with employers based in the Central region. HVAC Mechanics, 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 2021Q1



## Certification Gaps

Similar to award gaps, an analysis of certification gaps identify where the existing talent pool lacks particular credentials in comparison to current openings. However, this analysis uses real-time labor market data in the form of online candidate profiles and job postings to analyze the alignment between the available workforce and local opportunities. In the table below, it is apparent that the programs aligned to the occupations above as well as shorter training programs are both needed to connect local talent with opportunities.

### Top 10 Certification Gaps in Central Minnesota, September 2021

Name	Candidates	Openings	Gap
Registered Veterinary Technician (RVT)	1	4	-4
Certified Professional Dog Trainer (CPDT)	0	2	-2
EPA Section 608 Certification (EPA 608)	3	4	-1
Laboratory Animal Technician (LAT)	1	2	-1
Secret Clearance	1	2	-1
Six Sigma Green Belt Certification (SSGB)	0	1	-1
OSHA 10	3	3	-1
Cisco Certified Networking Technician (CCENT)	0	1	0
Certified Welder	0	1	0
Assistant Laboratory Animal Technician (ALAT)	0	1	0

### Skill Gaps

Likewise, there is a degree of misalignment between the skills of the available workforce and the skills advertised by local employers. The ten skills listed below are examples of the skills in most high demand among Central Minnesota employers hiring Agriculture, Food, and Natural Resources talent that potential candidates have not indicated in their professional networking platforms as a strength.

### Top 10 Skill Gaps in Central Minnesota, September 2021

Name	Candidates	Openings	Gap
Production Management	17	37	-20
Heavy Equipment Operation	13	29	-16
Merchandising	8	21	-12
Plumbing	143	154	-11
Landscaping	126	136	-10
Microsoft Outlook	35	42	-8
Lean Manufacturing	6	13	-7
Telecommunications	8	15	-6
Direct Sales	0	7	-6
Routers	4	10	-6

### 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-to-Gateway-to-Target Occupations for Agriculture, Food, and Natural Resources, Central Minnesota 2021Q1

### Target Occupations (all HW, HD, HS)

Veterinarians (OG, AG)  
 Environmental Scientists and Specialists (OG)  
 Postsecondary Biological Science Teachers (OG)  
 Wind Turbine Service Technicians (OG, AG)  
 Food Scientists and Technologists (AG)

### Gateway Occupations

Farm Equipment Mechanics and Service Technicians (AG)  
 Chefs and Head Cooks (HD, AG)  
 Tree Trimmers and Pruners  
 Chemical Technicians (HS)  
 Logging Equipment Operators (HD)  
 Chemical and Plant System Operators (HD, AG)

Origin Occupations	Likely	Aligned
	Landscaping and Groundskeeping Workers (HD, AG)	Compliance Officers
	Farmworkers, Farm, Ranch, and Aquacultural Animals	Laborers and Freight Movers
	Farmworkers and Crop Laborers (HD)	Stockers and Order Fillers
	Meat, Poultry, and Fish Cutters and Trimmers	Cooks
	Food Batchmakers	Customer Service Reps

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

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 4-year degrees. Below are a few Origin Occupations that are likely entrypoints into Agriculture, Food, and Natural Resources roles locally, or aligned opportunities that share a large number of skillsets in-demand in the field.

Likely Origins	Aligned Origins
Landscaping and Groundskeeping Workers	Compliance Officers
Farmworkers, Farm, Ranch, and Aquacultural Animals	Laborers and Freight, Stock Movers
Farmworkers and Laborers, Crop, Nursery, and Greenhouse	Stockers and Order Fillers
Meat, Poultry, and Fish Cutters and Trimmers	Cooks
Food Batchmakers	Customer Service Representatives

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 (\$50,800 in Central Minnesota). Below are a few Gateway Occupations in Agriculture, Food, and Natural Resources 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.

Likely Gateways	Aligned Gateways
Farm Equipment Mechanics and Service Technicians	Heavy and Trailer-Truck Mechanics
Chefs and Head Cooks	Automobile Service Technicians
Tree Trimmers and Pruners	General Managers
Chemical Technicians	Computer User Support Specialists
Logging Equipment Operators	Machinists
Chemical Plan and System Operators	Engineering Managers

*Target Occupations* refer to high-wage occupations that pay at or above the region’s average wage (\$50,800 in Central Minnesota). 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.

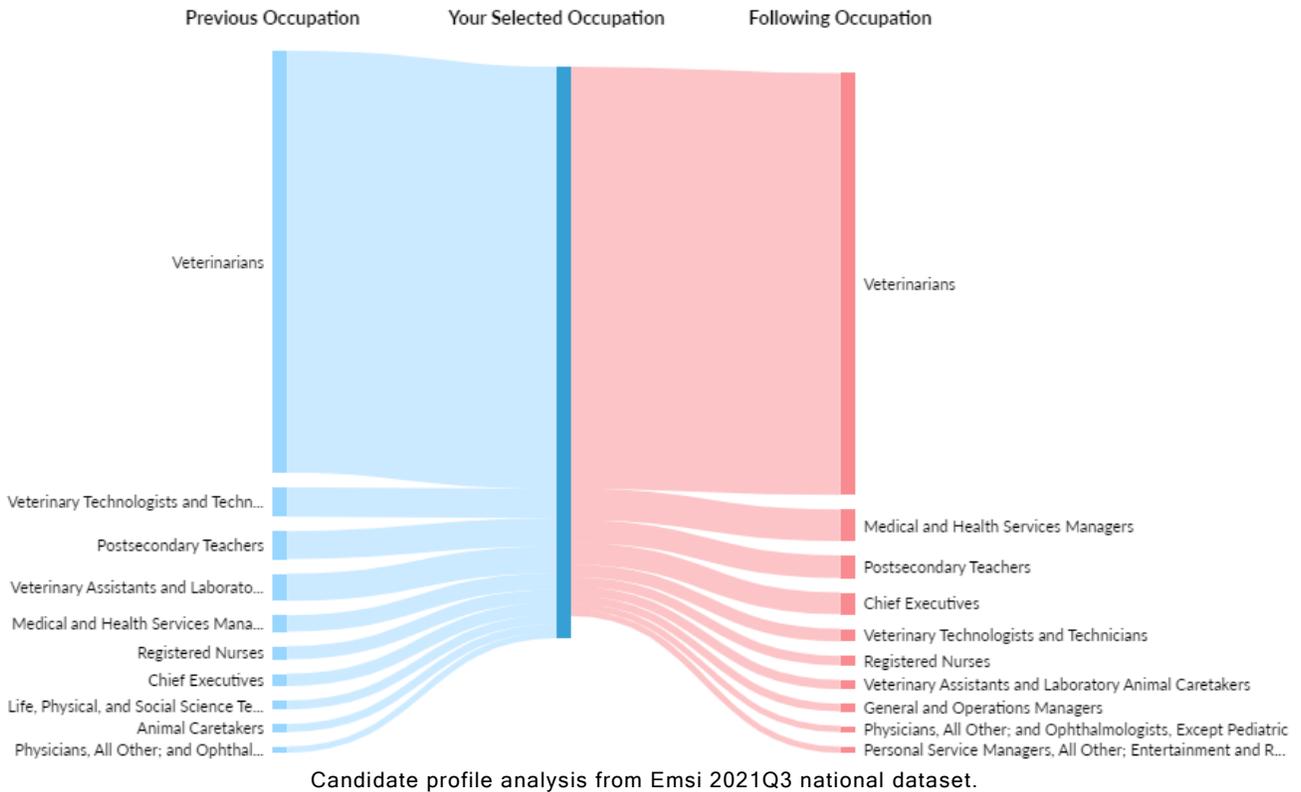
#### Top Target Occupations in Agriculture, Food, and Natural Resources, Central Minnesota 2021Q1

SOC	Occupation	2021Q1 Empl	Mean Ann Wages <sup>2</sup>	High-Wage	High-Skill	High-Demand	OG	AG
29-1131	Veterinarians	208	\$83,200	HW	HS	HD	OG	AG
19-2041	Environmental Scientists and Specialists, Including Health	91	\$72,700	HW	HS	HD	OG	
25-1042	Biological Science Teachers, Postsecondary	50	\$79,100	HW	HS	HD	OG	
49-9081	Wind Turbine Service Technicians	41	\$58,100	HW	HS	HD	OG	AG
19-1012	Food Scientists and Technologists	38	\$79,000	HW	HS	HD		AG
19-1032	Foresters	31	\$58,400	HW	HS	HD		AG
19-4042	Environmental Science and Protection Technicians, Including Health	30	\$61,700	HW	HS	HD		
13-1021	Buyers and Purchasing Agents, Farm Products	20	\$59,900	HW	HS	HD		
19-2043	Hydrologists	15	\$76,100	HW	HS	HD		
19-2042	Geoscientists, Except Hydrologists and Geographers	10	\$77,100	HW	HS	HD		

Animal Systems are a specialization of Central Minnesota. Veterinarians are more highly concentrated in Central Minnesota than in a typical community of its size (location quotient of 1.32). To meet replacement demand and growth needs, Central Minnesota requires a stronger pipeline of Veterinarians in the years ahead. The only program in Minnesota in Veterinary Sciences or Veterinary Medicine is through the University of Minnesota-Twin Cities, which delivered 98 postgraduate awards and 22 Bachelor degrees in the 2019-20 school year.

Below, this occupation is analyzed in more detail for better understanding of occupation “gain and drain.” The chart below illustrates the national profiles of current and past people in this occupation. The left column shows job transitions from other occupations to Veterinarians—which includes a variety of educational fields. The right column shows job transitions from Veterinarians to other occupations—including both likely transitions and aligned transitions.

## Veterinarian Talent Gain and Drain, Central Minnesota 2021Q3 Candidate Profile Analysis



## Graduate Pipeline for Veterinarians, Central Minnesota 2021



2020 IPEDS Completions Data; Visualizations from Emsi 2021Q3 dataset.

# Conclusion

The region's most in-demand occupations of the future require a 2-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 2-year degree or higher, offer high average wages, and will likely experience talent shortages by 2025 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.