# 2024 Regional Career Trends

For Career and Technical Education

RealTime Talent

## Minnesota


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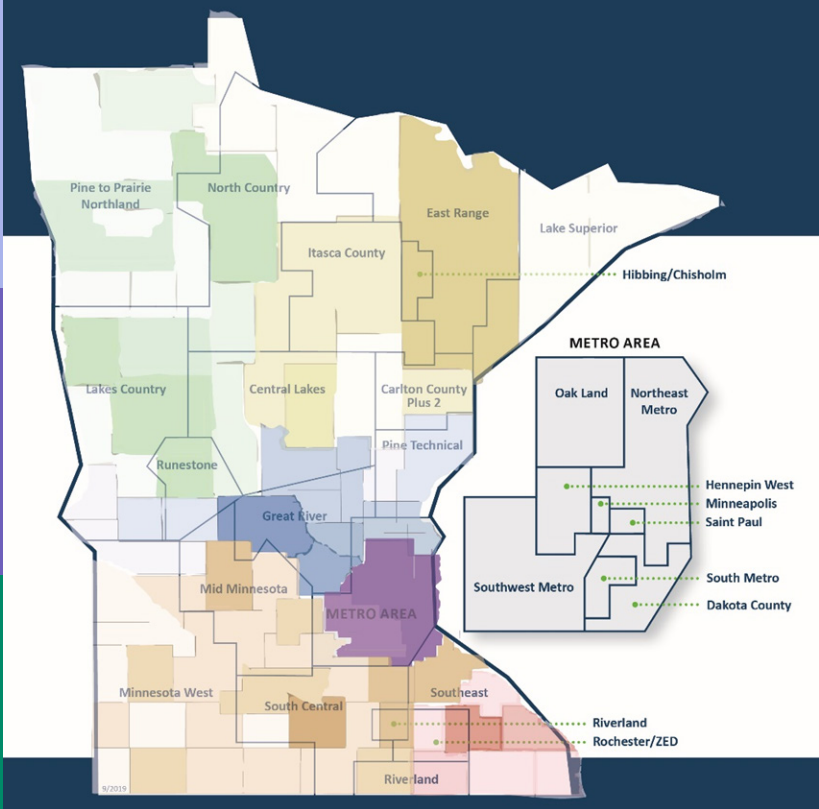



The contents of this series were made possible through the Strengthening Career and Technical Education for the 21st Century Act (Perkins V) Federal grant from the United States Department of Education administered through Minnesota State Colleges and Universities.


December 2024

# Overview

Minnesota's workforce landscape is undergoing a dramatic transformation, shaped by a confluence of demographic shifts, technological advancements, and evolving economic needs. As Baby Boomers retire and younger generations enter the labor market, employers are facing an urgent demand for skilled workers across industries ranging from healthcare and manufacturing to tech and green energy. At the same time, the rise of automation and remote work is redefining traditional job roles, prompting businesses to rethink recruitment strategies and workforce development. In this dynamic environment, Minnesota must navigate the challenges of upskilling its existing workforce, ensuring young people have access to well-paying local careers, and attracting new talent to ensure long-term economic growth and resilience.

The local job market remains strong in Minnesota, with a variety of high-quality career opportunities available in every career field. As of October 2024, Minnesota's unemployment rate remained at 3.4% for the fourth consecutive month, with labor force participation also holding steady at 67.7%. The state continues to have more available jobs than jobseekers—about 75 jobseekers for every 100 jobs. Although the job market has changed dramatically since 2018 or 2020, Minnesota is still experiencing significant talent shortages plaguing every industry and career cluster.

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

- Regional economic and demographic overview
- Career field analysis including regional importance of each sector, key labor market statistics, and forecasting for future demand and talent shortages in the six career fields:
    - Health Science Technology
    - Human Services
    - Arts, Communications, and Information Systems
    - Business, Management, and Administration
    - Engineering, Manufacturing, and Technology
    - Agriculture, Food, and Natural Resources
- An Origin-to-Gateway-to-Target model analysis for how to help move students from entry points into their field of interest into other aligned careers

# *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.

[1] All labor market data in this report comes from Chmura Economics JobsEQ Dataset 2024Q1 unless otherwise noted. www.jobseq.com

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# Minnesota

## Introduction

This report examines the current and future talent needs statewide Minnesota, with highlights of similarities and differences across six regions of the state. Beginning with an analysis of local demographics, unique opportunities, and the key industries driving the regional economy, this macroeconomic overview is designed to help educators and administrators align educational programs with the evolving needs of local businesses. By grouping regional careers by wage, skill requirements, and demand, the report aims to guide the education community in anticipating future workforce demands and ensuring that curricula are tailored to prepare students for relevant career opportunities in the region.

This series has been developed in partnership with Minnesota State through the Strengthening Career and Technical Education for the 21st Century Act (Perkins V) annually since 2020. The 2024 iteration of this report has shifted from a definition of "high-wage" aligned to average (mean) wages to one which more closely aligns to Minnesota's official definition, "occupations that have an annual median salary higher than the area's composite median salary of all occupations." For more information on this and other Career and Technical Education (CTE) definitions, please refer to Minnesota's Perkins Glossary.[2]

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

[2] Perkins Glossary. Section 14. Accessed November 30, 2024 at https://www.minnstate.edu/system/cte/operational-guide/section-14-glossary.html

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

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

**Gateway Occupations**
*Mid wage* ($45,000 – regional median)
*Low-middle skills* (HS diploma, some OJT)
Sufficient demand (3-5% unemployment and/or high volumes of current opportunities)

**Origin Occupations**
*Low wage* (<$45,000/year)
*Low skill* (no credential)
*Varied demand* (may have over 5% unemployment, low growth, low replacement demand, and/or low job postings)

*Origin Occupations* are roles that are low-wage (<$45,000 median annual wages), typically do not require a postsecondary credential, and may or may not be in high demand.

*Gateway Occupations* are good jobs that can lead to Target Occupations as skills and experience are developed. These typically offer between $45,000 up to the regional median wage ($54,100 in Minnesota). Gateway occupations offer a wage uplift to those previously employed in Origin Occupations and offer longer-term economic mobility and career advancement opportunities. These are most often best suited for adult workforce programming and first postsecondary experiences.

*Target Occupations* refer to high-wage occupations that pay at or above the region's median wage ($54,100 in 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.

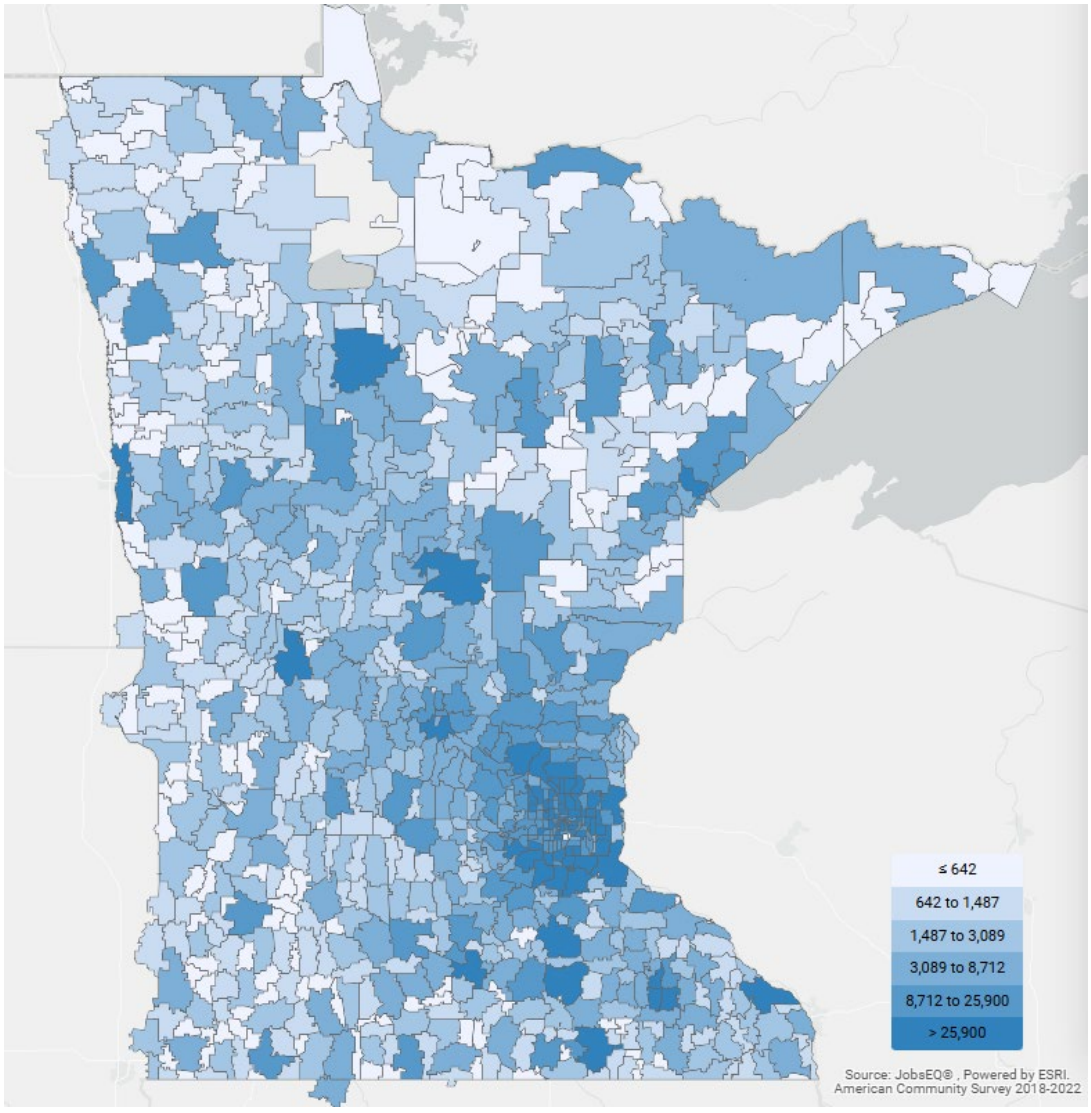
# Community Profile

## *Demographics*

### POPULATION

- Total population in Minnesota: 5,695,292
    - Change from prior year: +24,820 people
    - Smaller increase than seen in the past two years
- Largest local concentration of population: Minneapolis Saint Paul metro area, with about 55% of the state's population
- Most populous county: Hennepin (22% of the state's population)
- Median age: 38.5 years
    - Comparison to nationwide median (38.5 years): identical
    - Minors under 18 years of age are 23% of Minnesota's population

**Resident Population of Minnesota, by Zip Code**




American Community Survey 2018-2022.

## RACE AND ETHNICITY

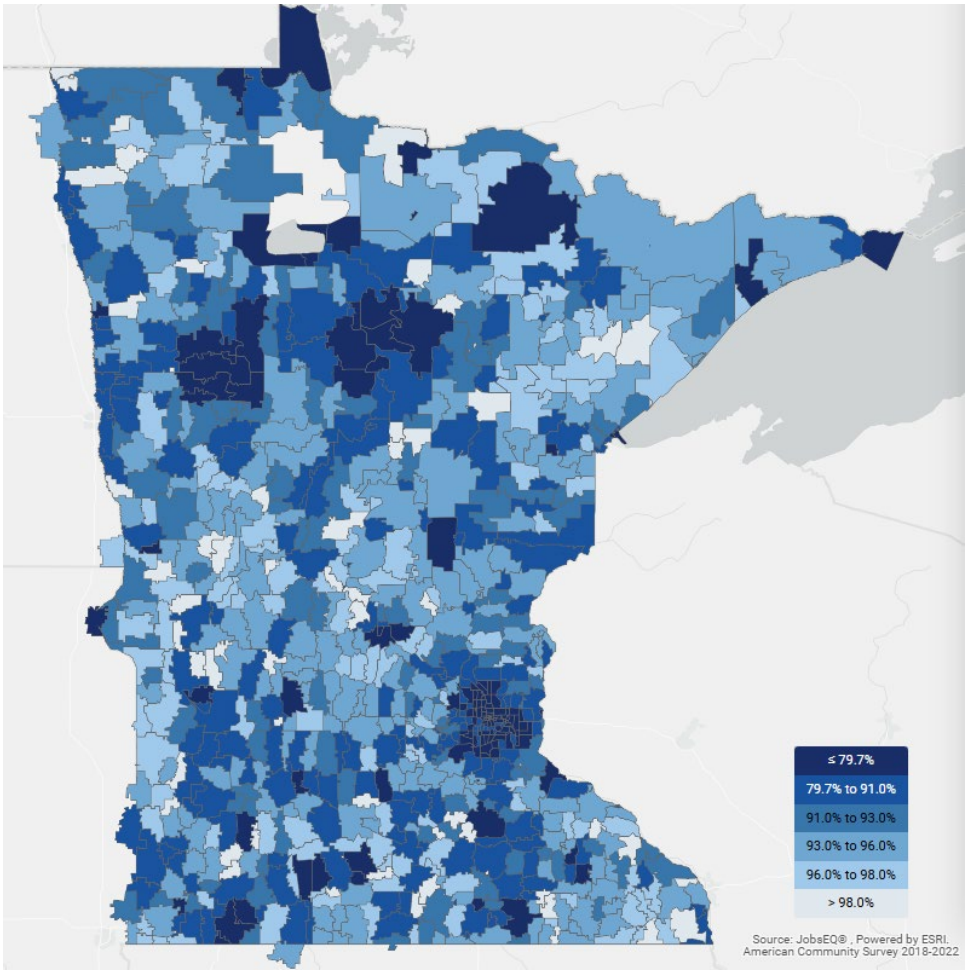
Minnesota is home to residents of many racial and ethnic backgrounds, though 79.7% of residents are white.

- 20.3% of residents are Black, Asian, American Indian, Native Hawaiian, two or more race(s), or some other race other than white (BIPOC), while 5.7% are of Hispanic/Latine ethnicity
- Minnesota has higher share of white residents than the United States as a whole (79.7% in MN compared to 65.9% in the US)
- Minnesota has a slightly higher share of American Indian residents than the US, with 0.9% American Indian residents, vs. 0.8% nationwide
- All other races besides white and American Indian/Alaska Native make up smaller shares of the Minnesota population than they do nationally
- Racial and ethnic diversity in Minnesota continues to increase, trending steadily upward

Diversity varies by region of Minnesota, with diverse populations found all over the state:

- The MSP Metro is the most diverse region by race, with 27.5% BIPOC residents
- Southwest Minnesota has the largest share of Hispanic/Latine residents, at 7.9%
- Several small communities, Minnesota's local American Indian tribal nations, and the very tip of Minnesota's Arrowhead region have higher than the state average share of BIPOC residents (>20.3%, shown in dark blue in the map below)

**Share of Population that is White by Race, Minnesota Zip Codes**




American Community Survey 2018-2022.

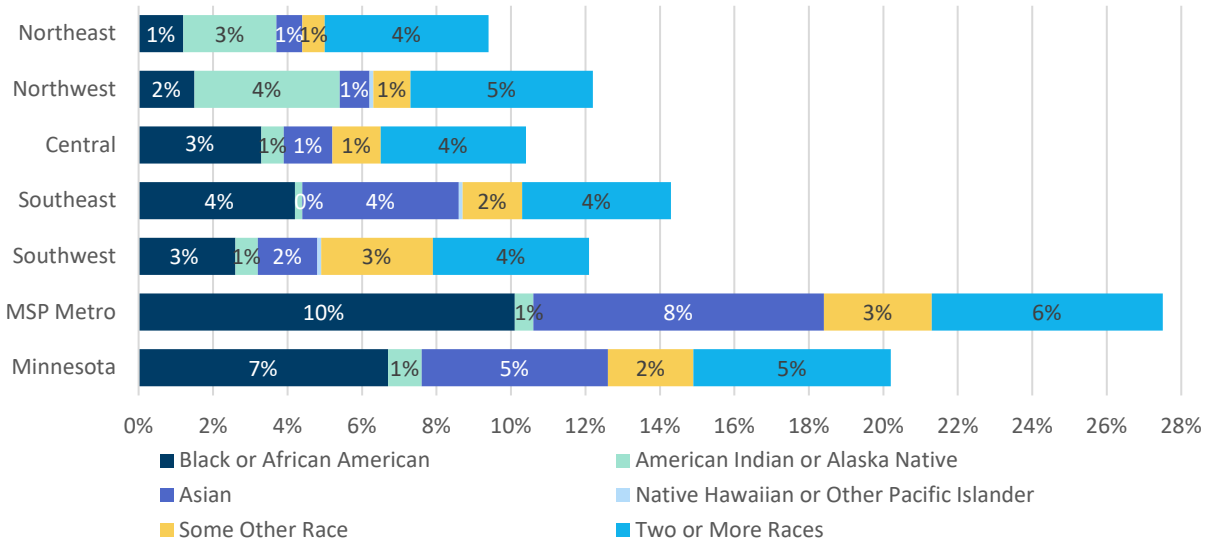
## Race and Ethnicity Summary Info

| Geography | % BIPOC by Race | % white by Race | % Hispanic/ Latine Ethnicity |
|---|---|---|---|
| **Northeast** | 9.3% | 90.7% | 1.8% |
| **Northwest** | 12.2% | 87.8% | 3.8% |
| **Central** | 10.4% | 89.6% | 3.2% |
| **Southeast** | 14.3% | 85.7% | 5.3% |
| **Southwest** | 12.1% | 87.9% | 7.9% |
| **MSP Metro** | 27.5% | 72.5% | 6.7% |
| **Minnesota** | **20.3%** | **79.7%** | **5.7%** |

American Community Survey 2018-2022.

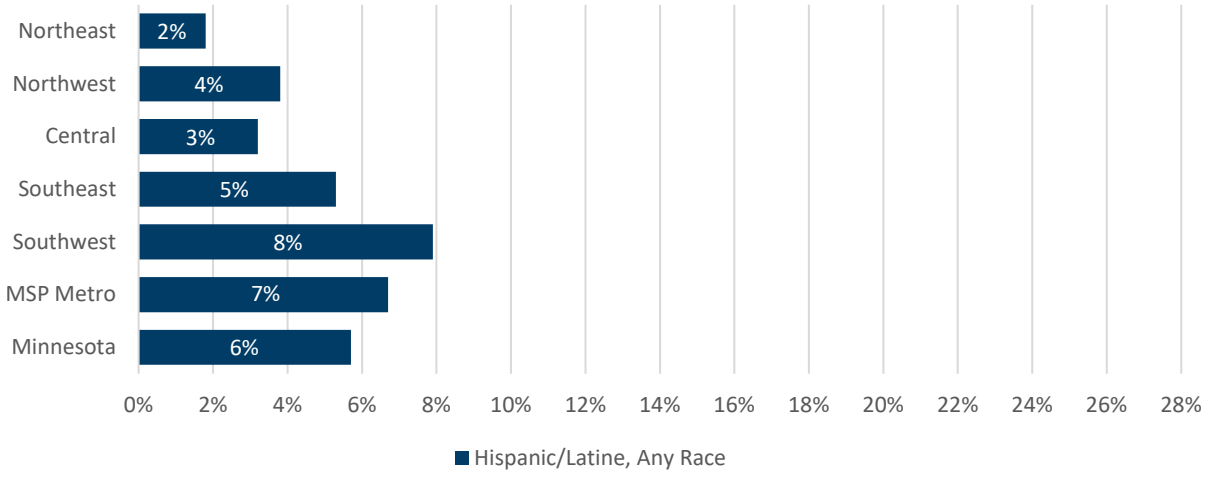
BIPOC residents are those who identify as Black, Asian, American Indian, Native Hawaiian, two or more races, or some other race other than white Hispanic/Latine ethnicity is reported separately from race in the American Community Survey.

## Population Race of BIPOC Residents, All Ages




American Community Survey 2018-2022.

## Population Hispanic/Latine Ethnicity, All Ages




American Community Survey 2018-2022.

## Detailed Community Demographics

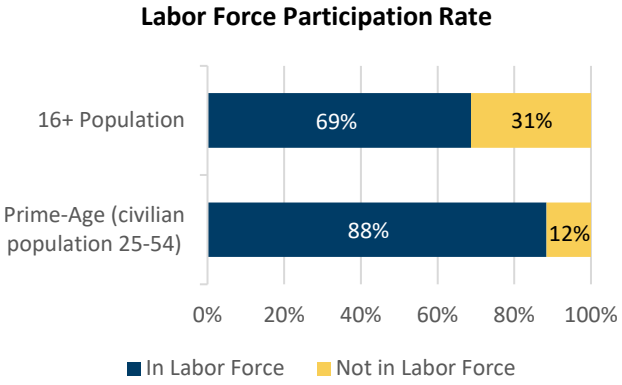
| Demographics | Region | | | Region | | | Region (Value) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Rural Greater MN | Urban Greater MN | Suburban Twin Cities Metro | MSP Metro | Minnesota | USA | MSP Metro | Minnesota | USA |
| Population (ACS) | — | — | — | — | — | — | 3,148,367 | 5,695,292 | 331,097,593 |
| Male | 50.8% | 50.4% | 49.6% | 49.8% | 50.2% | 49.6% | 1,567,647 | 2,857,964 | 164,200,298 |
| Female | 49.2% | 49.6% | 50.4% | 50.2% | 49.8% | 50.4% | 1,580,720 | 2,837,328 | 166,897,295 |
| Median Age[2] | — | — | — | — | — | — | 37.6 | 38.5 | 38.5 |
| Under 18 Years | 23.1% | 22.2% | 23.9% | 23.1% | 23.0% | 22.1% | 725,970 | 1,307,084 | 73,213,705 |
| 18 to 24 Years | 8.3% | 12.0% | 7.3% | 8.6% | 9.0% | 9.4% | 269,588 | 513,816 | 31,282,896 |
| 25 to 34 Years | 11.0% | 12.4% | 12.6% | 14.6% | 13.2% | 13.7% | 459,318 | 751,997 | 45,388,153 |
| 35 to 44 Years | 12.1% | 12.5% | 13.9% | 14.0% | 13.2% | 12.9% | 439,630 | 751,128 | 42,810,359 |
| 45 to 54 Years | 11.6% | 10.9% | 12.9% | 12.3% | 11.9% | 12.4% | 385,986 | 675,835 | 41,087,357 |
| 55 to 64 Years | 14.3% | 12.9% | 13.7% | 12.8% | 13.3% | 12.9% | 404,317 | 756,036 | 42,577,475 |
| 65 to 74 Years | 11.2% | 9.8% | 9.3% | 8.8% | 9.7% | 9.7% | 278,540 | 550,838 | 32,260,679 |
| 75 Years, and Over | 8.4% | 7.3% | 6.3% | 5.9% | 6.8% | 6.8% | 185,018 | 388,558 | 22,476,969 |
| Race: White | 89.2% | 87.2% | 77.0% | 72.5% | 79.7% | 65.9% | 2,283,001 | 4,537,219 | 218,123,424 |
| Race: Black or African American | 1.6% | 4.4% | 7.7% | 10.1% | 6.7% | 12.5% | 316,468 | 382,082 | 41,288,572 |
| Race: American Indian and Alaska Native | 1.7% | 0.8% | 0.4% | 0.5% | 0.9% | 0.8% | 15,906 | 51,434 | 2,786,431 |
| Race: Asian | 1.2% | 2.2% | 6.8% | 7.8% | 5.0% | 5.8% | 246,215 | 286,146 | 19,112,979 |
| Race: Native Hawaiian and Other Pacific Islander | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% | 0.2% | 757 | 2,324 | 624,863 |
| Race: Some Other Race | 1.9% | 1.2% | 2.4% | 2.9% | 2.3% | 6.0% | 91,227 | 133,098 | 20,018,544 |
| Race: Two or More Races | 4.3% | 4.1% | 5.6% | 6.2% | 5.3% | 8.8% | 194,793 | 302,989 | 29,142,780 |
| Hispanic or Latino (of any race) | 5.1% | 3.7% | 5.7% | 6.7% | 5.7% | 18.7% | 210,024 | 327,049 | 61,755,866 |

American Community Survey 2018-2022.

# *Economic and Social Characteristics*

## LABOR FORCE PARTICIPATION

- Civilian labor force: 3,112,649 workers (an increase of 6,865 from the prior year)
- Labor force participation rate: 68.7%
    - This surpasses the national rate by over 5 percentage points
- Participation rate for the prime working-age population (ages 25 to 54): 88.4%.
    - This surpasses the national rate of 82.8%




American Community Survey 2018-2022.

## SOCIAL CHARACTERISTICS

- Minnesota has a lower share of veterans and of people with disabilities than the national average:
    - Veterans are 3.5% of the state population vs. 4.3% nationwide
    - People with disabilities are 9.2% in the state vs. 10.5% nationwide
- Labor force participation for those groups is higher in Minnesota than statewide:
    - Veteran labor force participation in Minnesota is 81.1% vs. 77.1% nationwide
    - Labor force participation rate for people with disabilities is 54.4% in the state vs. 45.5% nationwide
- Minnesota has a lower share of residents in poverty than the national average:
    - 9.3% in Minnesota vs. 12.5% nationwide
- Poverty rates vary between communities:
    - Suburban Twin Cities Metro has the lowest rate, at 6.0%
    - Urban Greater Minnesota has the highest rate, at 11.6%

**Detailed Economic and Social Characteristics**

| Characteristic | Region | | | Region | | | Region (Value) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Rural Greater MN | Urban Greater MN | Suburban Twin Cities Metro | MSP Metro | Minnesota | USA | MSP Metro | Minnesota | USA |
| Labor Force Participation Rate and Size (civilian population 16 years and over) | 64.8% | 67.5% | 70.8% | 71.0% | 68.7% | 63.3% | 1,776,931 | 3,112,649 | 167,857,207 |
| Prime-Age Labor Force Participation Rate and Size (civilian population 25-54) | 87.1% | 88.2% | 89.8% | 89.1% | 88.4% | 82.8% | 1,143,680 | 1,924,211 | 106,380,520 |
| Armed Forces Labor Force | 0.1% | 0.2% | 0.1% | 0.1% | 0.1% | 0.5% | 1,929 | 4,104 | 1,236,378 |
| Veterans, Age 18-64 | 4.2% | 3.9% | 3.3% | 3.0% | 3.5% | 4.3% | 58,744 | 119,296 | 8,636,019 |
| Veterans Labor Force Participation Rate and Size, Age 18-64 | 78.0% | 78.8% | 86.2% | 83.9% | 81.1% | 77.1% | 49,303 | 96,710 | 6,656,238 |
| Median Household Income[2] | — | — | — | — | — | — | $94,934 | $84,313 | $75,149 |
| Per Capita Income | — | — | — | — | — | — | $50,581 | $44,947 | $41,261 |
| Poverty Level (of all people) | 9.5% | 11.6% | 6.0% | 8.5% | 9.3% | 12.5% | 263,051 | 516,284 | 40,521,584 |
| Households Receiving Food Stamps/SNAP | 7.4% | 8.3% | 5.2% | 7.2% | 7.4% | 11.5% | 89,613 | 167,713 | 14,486,880 |
| Enrolled in Grade 12 (% of total population) | 1.4% | 1.3% | 1.6% | 1.5% | 1.4% | 1.4% | 46,478 | 80,290 | 4,476,703 |
| Disconnected Youth[3] | 2.1% | 1.6% | 1.3% | 1.6% | 1.7% | 2.5% | 2,463 | 5,089 | 430,795 |
| Children in Single Parent Families (% of all children) | 28.3% | 28.1% | 25.1% | 28.4% | 28.3% | 34.0% | 198,921 | 355,832 | 23,568,955 |
| Uninsured | 5.4% | 4.1% | 3.7% | 4.4% | 4.6% | 8.7% | 137,032 | 260,483 | 28,315,092 |
| With a Disability, Age 18-64 | 10.3% | 10.1% | 7.6% | 8.4% | 9.2% | 10.5% | 163,686 | 313,760 | 20,879,820 |
| With a Disability, Age 18-64, Labor Force Participation Rate and Size | 52.1% | 54.2% | 57.5% | 55.8% | 54.4% | 45.5% | 91,325 | 170,629 | 9,492,098 |
| Foreign Born | 3.5% | 5.3% | 10.5% | 12.0% | 8.5% | 13.7% | 377,728 | 481,922 | 45,281,071 |

American Community Survey 2018-2022.
*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*

## EDUCATIONAL ATTAINMENT

- Overall, Minnesota residents have higher education attainment than the national average
  - In Minnesota, 5.9% of adults aged 25-64 do not have a high school diploma or equivalent—compared to 10.1% nationwide

- A high school diploma is the highest level of education for 20.9% of adults in Minnesota, compared to 25.1% in the U.S.
- 53.4% of Minnesota adults have an associate degree or higher, compared to 45.0% nationally

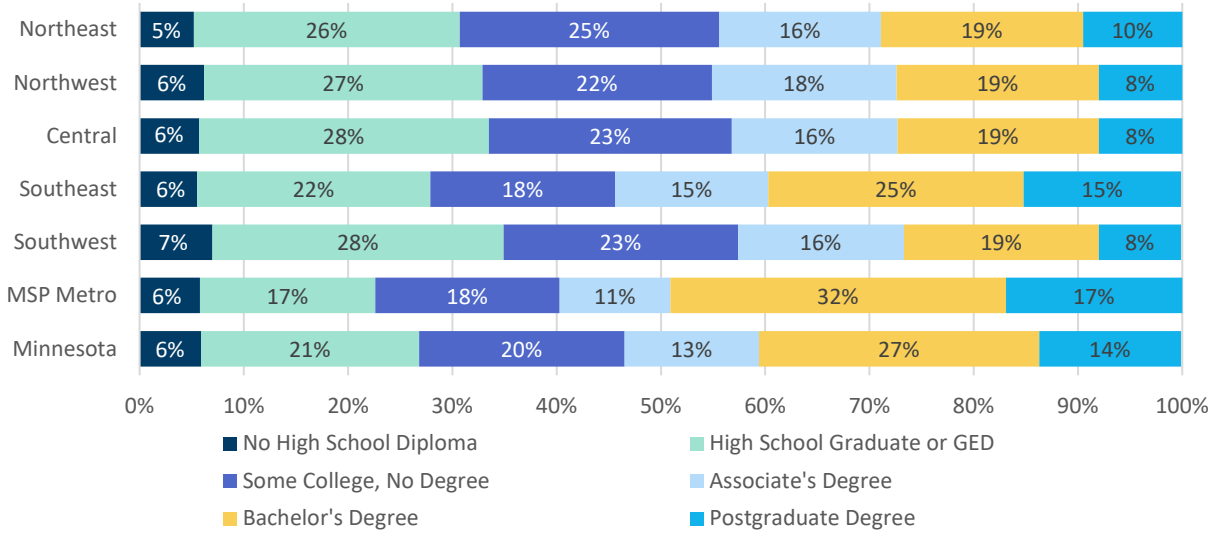
- Educational attainment varies among regions of Minnesota:
  - The MSP Metro is the most highly educated region, with 49.1% holding a bachelor's degree or higher
  - Southwest Minnesota has the largest share of its population that didn't finish high school or holds a high school diploma as their highest education, at 34.9%

**Educational Attainment of Minnesota Residents, Age 25-64**

| | Region | | | Region | | | Region (Value) | | |
|---|---|---|---|---|---|---|---|---|---|
| Educational Attainment | Rural Greater MN | Urban Greater MN | Suburban Twin Cities Metro | MSP Metro | Minnesota | USA | MSP Metro | Minnesota | USA |
| No High School Diploma | 6.5% | 5.2% | 4.5% | 5.8% | 5.9% | 10.1% | 98,721 | 173,843 | 17,373,867 |
| High School Graduate | 28.7% | 22.4% | 17.3% | 16.8% | 20.9% | 25.1% | 283,912 | 614,415 | 43,176,248 |
| Some College, No Degree | 23.0% | 21.4% | 18.3% | 17.7% | 19.7% | 19.7% | 298,796 | 578,062 | 33,916,989 |
| Associate Degree | 16.1% | 15.7% | 11.6% | 10.6% | 12.9% | 9.2% | 179,225 | 377,910 | 15,886,884 |
| Bachelor's Degree | 18.3% | 23.0% | 32.4% | 32.2% | 26.9% | 22.4% | 543,183 | 790,857 | 38,451,123 |
| Postgraduate Degree | 7.5% | 12.4% | 15.8% | 16.9% | 13.6% | 13.4% | 285,414 | 399,909 | 23,058,233 |

American Community Survey 2018-2022.

**Educational Attainment, Age 25-64**




American Community Survey 2018-2022.

## REGIONAL COLLEGES AND UNIVERSITIES

Minnesota has 91 institutions of higher education that offer both degree and non-degree awards, two-year degrees, four-year degrees, and graduate degrees. This list includes Minnesota-based schools with fully online

programming.[3] The table below shows these postsecondary institutions sorted by total awards conferred from all programs during SY2022-23. Total awards continued to drop, at 105,176 awards conferred in the region in SY2022-23, compared to 107,337 awards conferred in the region in SY2021-22. Capella and Walden Universities, which both offer a broad range of online programming, ranked first and third by total awards conferred, with the University of Minnesota-Twin Cities ranking second.

**Postsecondary Awards by Institution, School Year 2022-23**

| School | Certificate < 1 Yr | Certificate 1+ but < 2 Yr | Associate | Certificate 2+ but < 4 Yr | Bachelor's | Post-Bacc | Master's | Post Master's/ Doctorate | Total Awards | Total School Enrollment | Avg Net Price* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Capella University | 0 | 3 | 0 | 0 | 7,543 | 653 | 6,955 | 1,077 | 16,231 | 39,727 | $17,840 |
| University of Minnesota-Twin Cities | 187 | 11 | 0 | 0 | 8,508 | 221 | 3,100 | 1,804 | 13,831 | 54,955 | $17,468 |
| Walden University | 0 | 0 | 0 | 0 | 1,399 | 327 | 8,833 | 1,732 | 12,291 | 42,312 | $18,772 |
| Minnesota State University-Mankato | 161 | 0 | 71 | 0 | 2,704 | 215 | 606 | 85 | 3,842 | 14,590 | $15,832 |
| University of St Thomas | 0 | 0 | 44 | 17 | 1,533 | 200 | 886 | 207 | 2,887 | 9,025 | $30,099 |
| University of Minnesota-Duluth | 37 | 0 | 0 | 0 | 2,070 | 1 | 202 | 3 | 2,313 | 9,675 | $16,960 |
| Saint Cloud State University | 41 | 0 | 111 | 0 | 1,372 | 124 | 505 | 19 | 2,172 | 10,420 | $13,615 |
| Rasmussen University-Minnesota | 323 | 170 | 1,087 | 0 | 141 | 0 | 252 | 12 | 1,985 | 3,058 | $18,239 |
| Century College | 504 | 382 | 1,041 | 35 | 0 | 0 | 0 | 0 | 1,962 | 7,646 | $10,901 |
| Concordia University-Saint Paul | 2 | 0 | 30 | 0 | 893 | 27 | 880 | 123 | 1,955 | 5,544 | $15,944 |
| Metropolitan State University | 9 | 11 | 0 | 0 | 1,567 | 22 | 206 | 15 | 1,830 | 6,294 | $16,830 |
| Winona State University | 0 | 0 | 40 | 0 | 1,447 | 30 | 198 | 61 | 1,776 | 6,154 | $17,283 |
| Saint Mary's University of Minnesota | 0 | 0 | 0 | 0 | 385 | 115 | 985 | 135 | 1,620 | 4,133 | $21,606 |
| Hennepin Technical College | 662 | 422 | 478 | 51 | 0 | 0 | 0 | 0 | 1,613 | 3,974 | $11,194 |
| Minnesota State University Moorhead | 46 | 0 | 13 | 0 | 1,042 | 10 | 282 | 70 | 1,463 | 4,682 | $17,254 |
| Normandale Community College | 255 | 0 | 1,115 | 0 | 0 | 0 | 0 | 0 | 1,370 | 9,346 | $12,354 |
| St Catherine University | 15 | 0 | 154 | 0 | 616 | 46 | 421 | 93 | 1,345 | 3,577 | $19,252 |
| Minneapolis Community and Technical College | 422 | 150 | 733 | 7 | 0 | 0 | 0 | 0 | 1,312 | 6,030 | $12,314 |
| The College of Saint Scholastica | 10 | 0 | 0 | 0 | 706 | 98 | 285 | 197 | 1,296 | 3,207 | $25,744 |
| Saint Paul College | 350 | 297 | 526 | 65 | 0 | 0 | 0 | 0 | 1,238 | 5,365 | $12,391 |
| Bethel University | 15 | 0 | 34 | 0 | 638 | 35 | 286 | 38 | 1,046 | 3,546 | $28,840 |
| Bemidji State University | 16 | 6 | 40 | 0 | 891 | 0 | 88 | 0 | 1,041 | 4,023 | $15,594 |

[3] This was the second year where five campuses in the Minnesota State system were reported together as Minnesota North College, dropping the total number of schools down by four. There still remain multiple campuses for Minnesota North College.

| School | Certificate < 1 Yr | Certificate 1+ but < 2 Yr | Associate | Certificate 2+ but < 4 Yr | Bachelor's | Post-Bacc | Master's | Post Master's/ Doctorate | Total Awards | Total School Enrollment | Avg Net Price* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Anoka-Ramsey Community College | 56 | 17 | 967 | 0 | 0 | 0 | 0 | 0 | 1,040 | 7,902 | $10,929 |
| Minnesota State Community and Technical College | 60 | 216 | 654 | 69 | 0 | 0 | 0 | 0 | 999 | 5,282 | $10,119 |
| Hamline University | 3 | 9 | 0 | 0 | 475 | 163 | 266 | 71 | 987 | 2,638 | $20,239 |
| Minnesota North College | 180 | 122 | 598 | 82 | 0 | 0 | 0 | 0 | 982 | 3,044 | $9,151 |
| Rochester Community and Technical College | 166 | 67 | 668 | 36 | 0 | 0 | 0 | 0 | 937 | 4,482 | $13,522 |
| St Olaf College | 0 | 0 | 0 | 0 | 926 | 0 | 0 | 0 | 926 | 3,046 | $27,729 |
| Lake Superior College | 140 | 100 | 612 | 46 | 0 | 0 | 0 | 0 | 898 | 3,849 | $13,682 |
| North Hennepin Community College | 350 | 17 | 512 | 0 | 0 | 0 | 0 | 0 | 879 | 4,896 | $11,368 |
| Central Lakes College-Brainerd | 135 | 198 | 490 | 53 | 0 | 0 | 0 | 0 | 876 | 4,633 | $12,279 |
| St Cloud Technical and Community College | 24 | 161 | 628 | 61 | 0 | 0 | 0 | 0 | 874 | 3,466 | $8,404 |
| Anoka Technical College | 434 | 188 | 166 | 71 | 0 | 0 | 0 | 0 | 859 | 1,580 | $12,407 |
| Ridgewater College | 58 | 123 | 560 | 105 | 0 | 0 | 0 | 0 | 846 | 2,904 | $11,014 |
| Augsburg University | 0 | 0 | 0 | 0 | 551 | 6 | 230 | 26 | 813 | 3,088 | $23,871 |
| Dakota County Technical College | 149 | 210 | 421 | 12 | 0 | 0 | 0 | 0 | 792 | 2,717 | $11,472 |
| Riverland Community College | 146 | 130 | 398 | 105 | 0 | 0 | 0 | 0 | 779 | 3,175 | $9,276 |
| Minnesota West Community and Technical College | 340 | 176 | 237 | 19 | 0 | 0 | 0 | 0 | 772 | 3,352 | $11,356 |
| Alexandria Technical & Community College | 158 | 132 | 397 | 54 | 0 | 0 | 0 | 0 | 741 | 2,865 | $13,189 |
| Gustavus Adolphus College | 0 | 0 | 0 | 0 | 686 | 0 | 0 | 0 | 686 | 2,072 | $27,657 |
| Macalester College | 0 | 0 | 0 | 0 | 684 | 0 | 0 | 0 | 684 | 2,175 | $30,939 |
| Southwest Minnesota State University | 11 | 0 | 20 | 0 | 456 | 14 | 161 | 12 | 674 | 6,930 | $14,061 |
| University of Northwestern-St Paul | 0 | 0 | 33 | 0 | 581 | 5 | 50 | 0 | 669 | 3,253 | $22,965 |
| Inver Hills Community College | 214 | 20 | 432 | 0 | 0 | 0 | 0 | 0 | 666 | 3,459 | $10,184 |
| Northland Community and Technical College | 122 | 166 | 339 | 31 | 0 | 0 | 0 | 0 | 658 | 2,495 | $11,952 |
| South Central College | 114 | 71 | 379 | 37 | 0 | 0 | 0 | 0 | 601 | 2,602 | $10,025 |
| Carleton College | 0 | 0 | 0 | 0 | 557 | 0 | 0 | 0 | 557 | 2,059 | $31,718 |
| Mayo Clinic College of Medicine and Science | 114 | 122 | 0 | 0 | 0 | 44 | 45 | 219 | 544 | 1,237 | $11,188 |
| Concordia College at Moorhead | 0 | 0 | 0 | 0 | 482 | 0 | 16 | 0 | 498 | 1,903 | $23,890 |
| Dunwoody College of Technology | 23 | 19 | 358 | 0 | 89 | 0 | 0 | 0 | 489 | 1,359 | $24,738 |

| School | Certificate < 1 Yr | Certificate 1+ but < 2 Yr | Associate | Certificate 2+ but < 4 Yr | Bachelor's | Post-Bacc | Master's | Post Master's/ Doctorate | Total Awards | Total School Enrollment | Avg Net Price* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Summit Academy Opportunities Industrialization Center | 484 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 484 | 440 | $16,725 |
| College of Saint Benedict | 0 | 0 | 0 | 0 | 429 | 0 | 0 | 0 | 429 | 1,470 | $28,269 |
| Pine Technical & Community College | 201 | 89 | 129 | 0 | 0 | 0 | 0 | 0 | 419 | 1,873 | $10,971 |
| University of Minnesota-Crookston | 9 | 0 | 0 | 0 | 398 | 0 | 0 | 0 | 407 | 2,303 | $11,925 |
| Minnesota State College Southeast | 103 | 110 | 173 | 2 | 0 | 0 | 0 | 0 | 388 | 1,923 | $14,965 |
| Saint Johns University | 0 | 0 | 0 | 0 | 351 | 0 | 26 | 0 | 377 | 1,645 | $27,750 |
| Aveda Arts & Sciences Institute Minneapolis | 181 | 162 | 0 | 0 | 0 | 0 | 0 | 0 | 343 | 508 | $17,977 |
| Crown College | 1 | 1 | 29 | 0 | 183 | 0 | 129 | 0 | 343 | 1,583 | $25,513 |
| Mitchell Hamline School of Law | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 308 | 327 | 1,192 | |
| Herzing University-Minneapolis | 0 | 61 | 50 | 0 | 172 | 0 | 7 | 0 | 290 | 815 | $22,055 |
| Northwestern Health Sciences University | 0 | 23 | 45 | 0 | 18 | 1 | 35 | 153 | 275 | 1,031 | $23,003 |
| University of Minnesota-Morris | 0 | 0 | 0 | 0 | 263 | 0 | 0 | 0 | 263 | 1,068 | $11,652 |
| Martin Luther College | 59 | 1 | 0 | 3 | 174 | 0 | 17 | 0 | 254 | 880 | $21,988 |
| Northwest Technical College | 40 | 27 | 122 | 49 | 0 | 0 | 0 | 0 | 238 | 721 | $12,540 |
| North Central University | 0 | 0 | 0 | 0 | 207 | 0 | 14 | 0 | 221 | 992 | $24,232 |
| Fond du Lac Tribal and Community College | 30 | 37 | 144 | 0 | 0 | 0 | 0 | 0 | 211 | 1,648 | $10,307 |
| Minneapolis College of Art and Design | 0 | 0 | 0 | 0 | 125 | 0 | 40 | 0 | 165 | 821 | $28,520 |
| University of Minnesota-Rochester | 0 | 0 | 0 | 0 | 159 | 0 | 0 | 0 | 159 | 630 | $14,198 |
| Bethany Global University | 1 | 17 | 6 | 0 | 108 | 0 | 15 | 0 | 147 | 261 | $19,093 |
| Bethany Lutheran College | 0 | 8 | 0 | 0 | 129 | 0 | 7 | 0 | 144 | 830 | $17,640 |
| Luther Seminary | 0 | 0 | 0 | 0 | 0 | 0 | 135 | 4 | 139 | 410 | |
| Nova Academy of Cosmetology | 46 | 86 | 0 | 0 | 0 | 0 | 0 | 0 | 132 | 193 | $17,312 |
| Nova Academy of Cosmetology Woodbury | 76 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 114 | 150 | $16,730 |
| Empire Beauty School-Bloomington | 57 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 95 | 142 | $16,566 |
| Model College of Hair Design | 49 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 93 | 115 | $12,185 |
| PCI Academy-Plymouth | 58 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 93 | 73 | |
| Adler Graduate School | 0 | 0 | 0 | 0 | 0 | 1 | 75 | 9 | 85 | 227 | |

| School | Certificate < 1 Yr | Certificate 1+ but < 2 Yr | Associate | Certificate 2+ but < 4 Yr | Bachelor's | Post-Bacc | Master's | Post Master's/ Doctorate | Total Awards | Total School Enrollment | Avg Net Price* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| The Salon Professional Academy Maplewood | 25 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 54 | 0 | |
| Bethlehem College & Seminary | 0 | 0 | 1 | 0 | 18 | 0 | 34 | 0 | 53 | 242 | $7,500 |
| Hazelden Betty Ford Graduate School | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 50 | 147 | |
| Empire Beauty School-Spring Lake Park | 0 | 42 | 0 | 0 | 0 | 0 | 0 | 0 | 42 | 95 | $15,342 |
| Leech Lake Tribal College | 0 | 2 | 40 | 0 | 0 | 0 | 0 | 0 | 42 | 172 | $9,947 |
| United Theological Seminary of the Twin Cities | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 5 | 32 | 224 | |
| Red Lake Nation College | 0 | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 29 | 184 | $6,956 |
| White Earth Tribal and Community College | 6 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 27 | 102 | $8,562 |
| Avalon School of Cosmetology | 8 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 26 | $9,861 |
| Oak Hills Christian College | 0 | 2 | 7 | 0 | 6 | 0 | 0 | 0 | 15 | 102 | $20,855 |
| Academy College | 0 | 0 | 5 | 0 | 9 | 0 | 0 | 0 | 14 | 105 | $24,488 |
| Hastings Beauty School | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 13 | $12,926 |
| American Academy of Health and Wellness | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 6 | 23 | |
| **Total** | **7,486** | **4,592** | **15,187** | **1,010** | **41,691** | **2,377** | **26,354** | **6,479** | **105,176** | | |

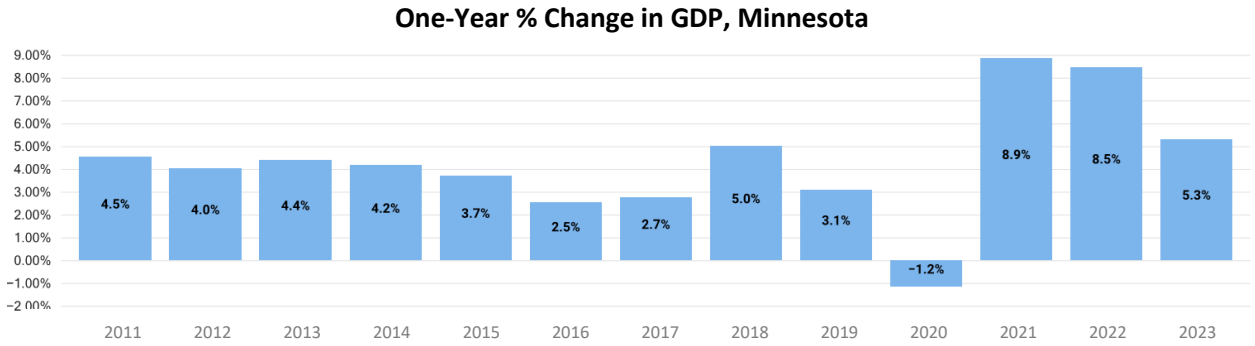
* Average net price represents full-time beginning undergraduate students who paid the in-state or in-district tuition rate and were awarded grant or scholarship aid from federal, state or local governments, or the institution. Data as of the 2022-2023 academic year.

# Economy

## *Economic Indicators*

### GROSS DOMESTIC PRODUCT

Gross Domestic Product (GDP) is the total value of goods and services produced by a region. In 2023, nominal GDP in Minnesota expanded 5.3%. This follows growth of 8.5% in 2022. As of 2023, total GDP in Minnesota was $471,820,009,000—of which $308,412,695,000 is attributed to the MSP Metro.




Gross Domestic Product data are provided by the Bureau of Economic Analysis, imputed by Chmura where necessary, updated through 2023

### INDUSTRY CONTRIBUTIONS TO GDP

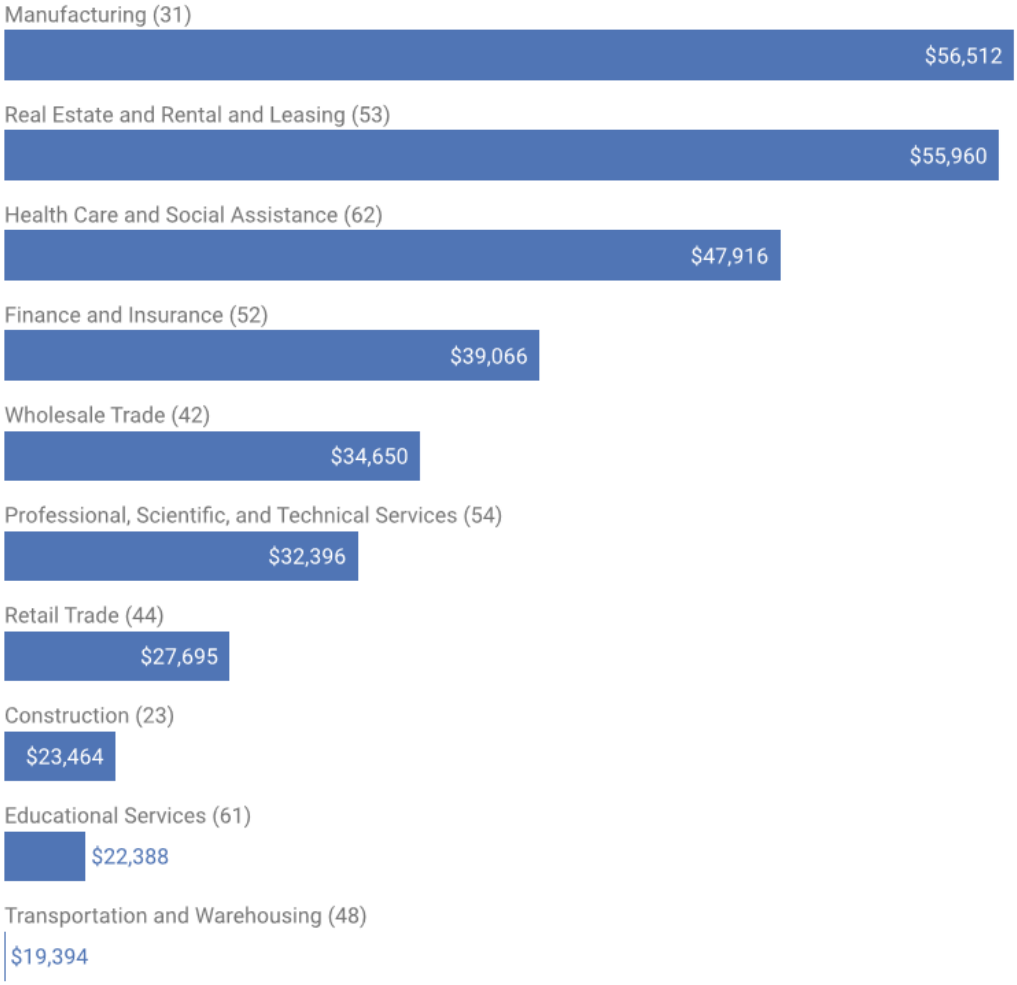
Top Industry Contributions to GDP (2023):

1. Manufacturing: $56.5 billion
2. Real Estate and Rental and Leasing: $56.0 billion
3. Health Care and Social Assistance: $47.9 billion
4. Finance and Insurance: $39.0 billion

Key Changes:

- While most industries saw increased output, two of the four top industries did not: Manufacturing and Finance and Insurance both decreased
- Transportation and Warehousing rose to 10$^{th}$ place in 2023
- Management of Companies and Enterprises fell of the list of top ten industry contributions to GDP

**Industry Contributions to GDP in Minnesota (in $ Millions), 2023**



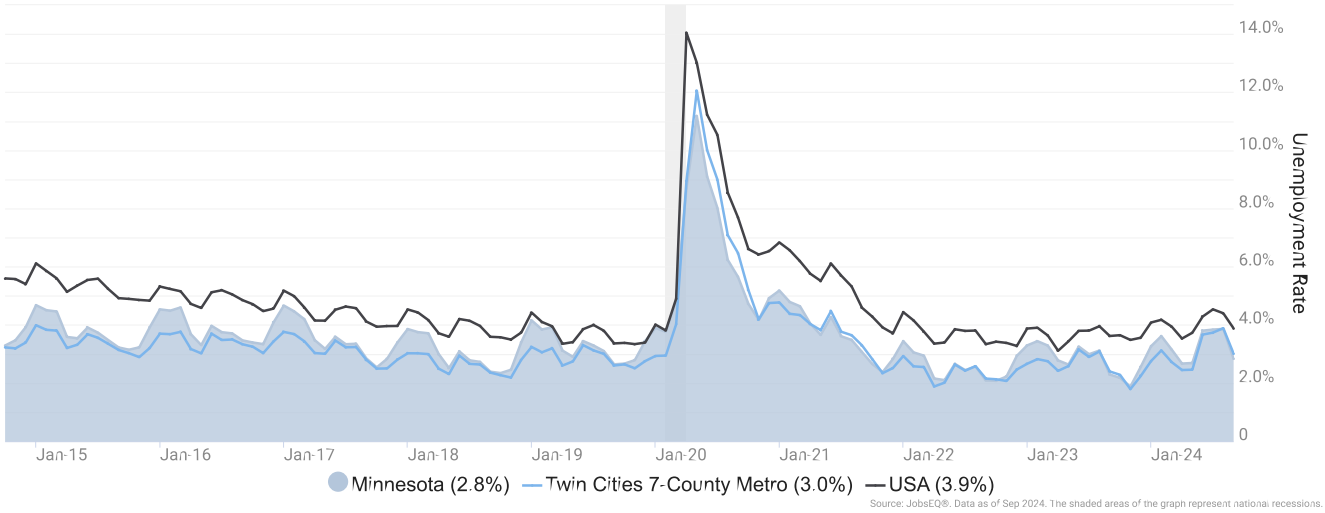

Gross Domestic Product data are provided by the Bureau of Economic Analysis, imputed by Chmura where necessary, updated through 2023.

# *Labor Market*

## UNEMPLOYMENT TRENDS

- The unemployment rate in Minnesota was 2.8% as of September 2024
  - The regional unemployment rate was lower than the national rate of 3.9%
  - One year earlier, in September 2023, the unemployment rate in Minnesota was 2.3%.

**Unemployment for Minnesota**

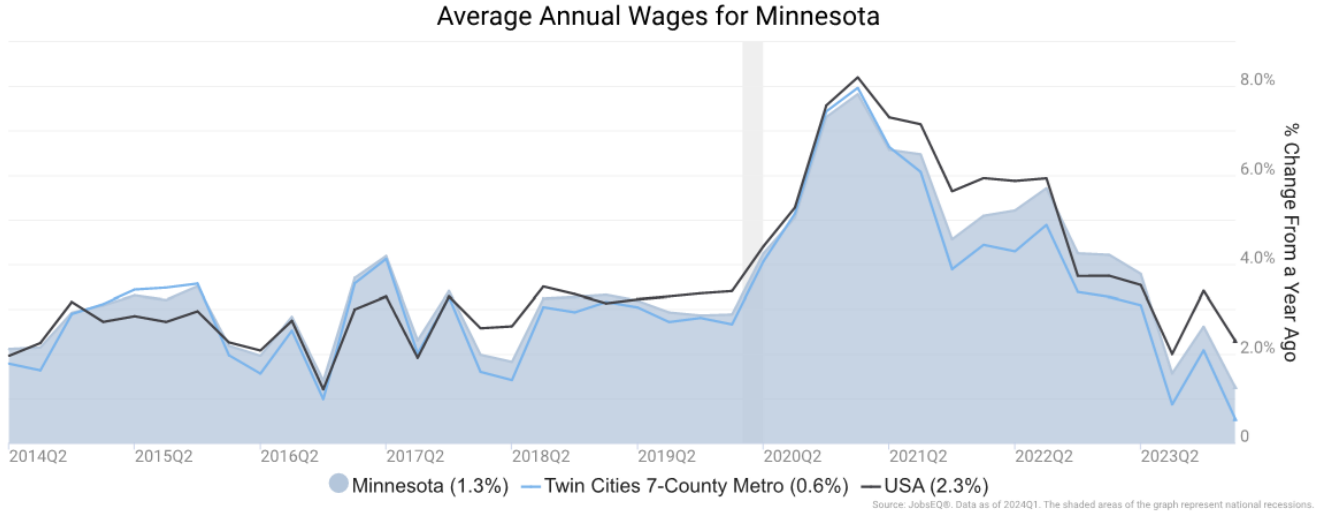



Unemployment rate data are from the Local Area Unemployment Statistics, provided by the Bureau of Labor Statistics and updated through September 2024.

## WAGE TRENDS

- In Minnesota, average annual wages were $70,230 as of 2024Q1
  - This is an increase of 1.3% over the past four quarters, as compared to a 5.0% increase the previous year
- Nationwide, average annual wages were $70,857 as of 2024Q1
  - This represents an increase from $70,318 as of 2023Q2 and $67,777 in 2022Q2

**Change in Average Annual Wages for Minnesota**

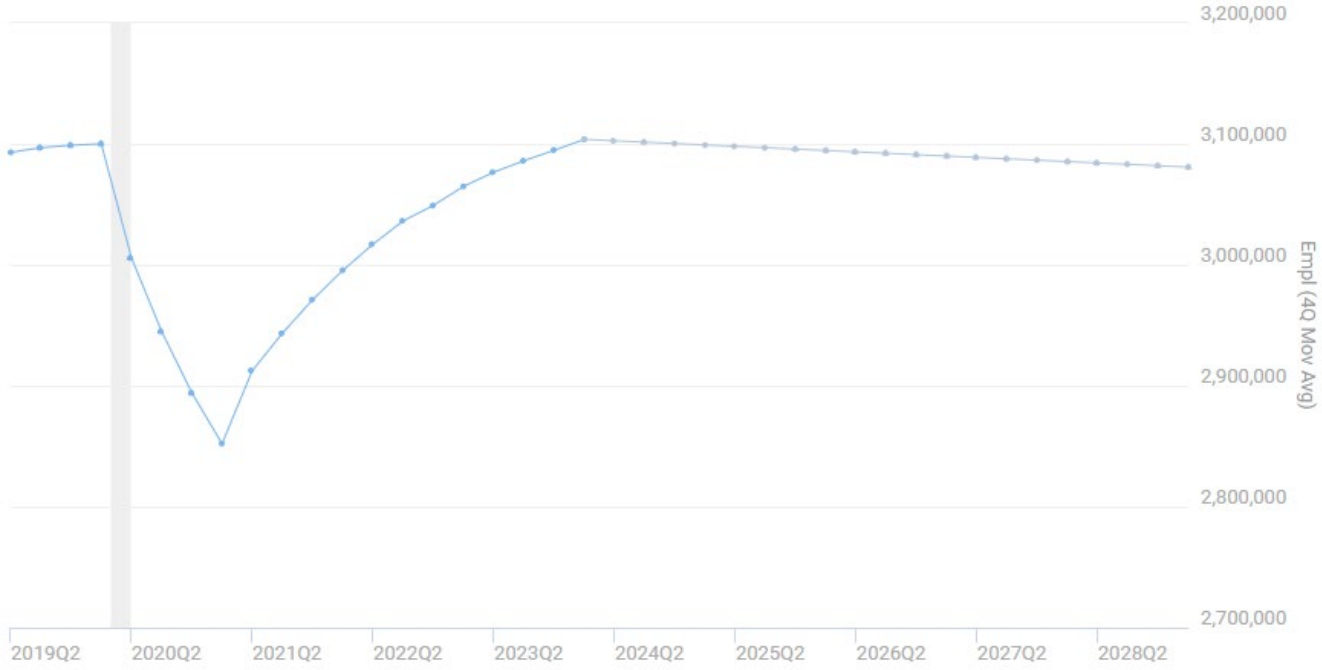



Annual average wages per worker data are derived from the Quarterly Census of Employment and Wages, provided by the Bureau of Labor Statistics and imputed where necessary. Data are updated through 2023Q4 with preliminary estimates updated to 2024Q1.

## EMPLOYMENT TRENDS AND FORECAST

Employment rose by 1.0% in Minnesota between 2023Q1 and 2024Q1, growing more slowly than the prior 12 months. Employment in the region is forecast to decline by -0.1% on average annually through 2029Q1 in a baseline scenario.

**5-Year Employment Forecast in Minnesota**




## INDUSTRY CLUSTER FORECASTS

Employment forecasts vary considerably by industry. An industry cluster is a geographic concentration of interrelated industries or occupations. The chart below shows industry clusters employing talent in Minnesota. The larger the circle, the more concentrated the industry is in the region (compared to the national average); this is called a Location Quotient (LQ). Clusters are positioned on the chart based on their wages and forecast employment. Clusters higher up on the Y-axis of the chart have higher average wages, and clusters located further to the right on the X-axis of the chart have higher forecasted employment growth. In summary, large circles in the top-right corner of the chart would be considered high-wage, high-growth, uniquely important clusters for the region's economy. Smaller circles further to the bottom-left corner of the chart would be lower-wage, declining, underrepresented clusters.

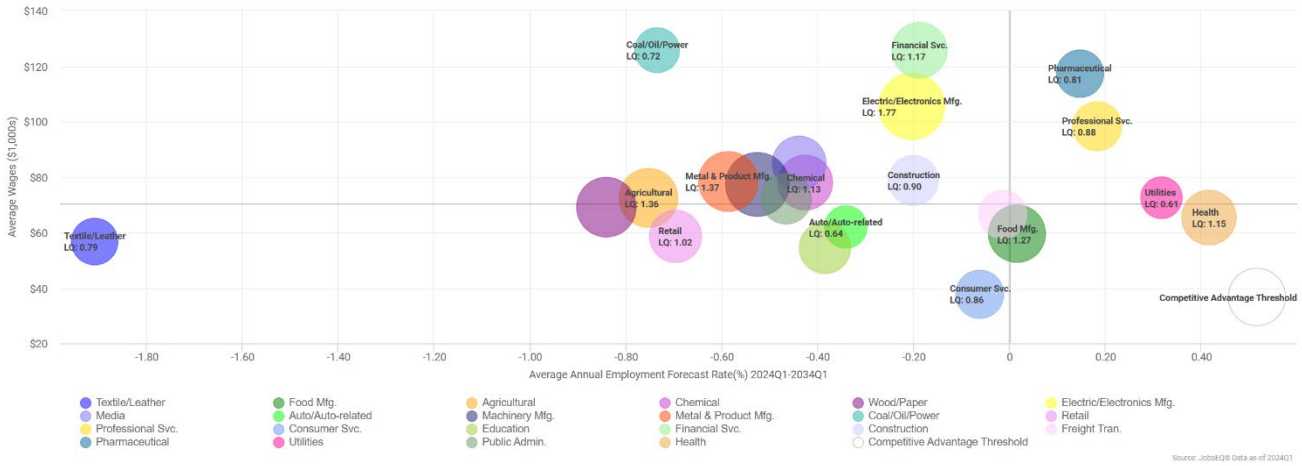
The most highly concentrated cluster in Minnesota is Electric/Electronics Manufacturing:

- Location Quotient: 1.77 (equal to 2023)
- Employment: 57,826 workers (up by ~100 from 2023)
- Average Wage: $105,486 (down ~ $500 from 2023)
- Employment Forecast: Projected to decline by -0.2% annually over the next 10 years

Industry Cluster Employment Forecast Trends:

- Health, Utilities, Professional Services, Pharmaceutical, and Food Manufacturing are the only industry clusters projected to have positive average employment growth in the region; all others are forecast to shrink
- Most industries saw worsening forecasted employment from 2023Q2 to 2024Q1

**Industry Clusters for Minnesota as of 2024Q1**




# Quantifying Talent Shortages

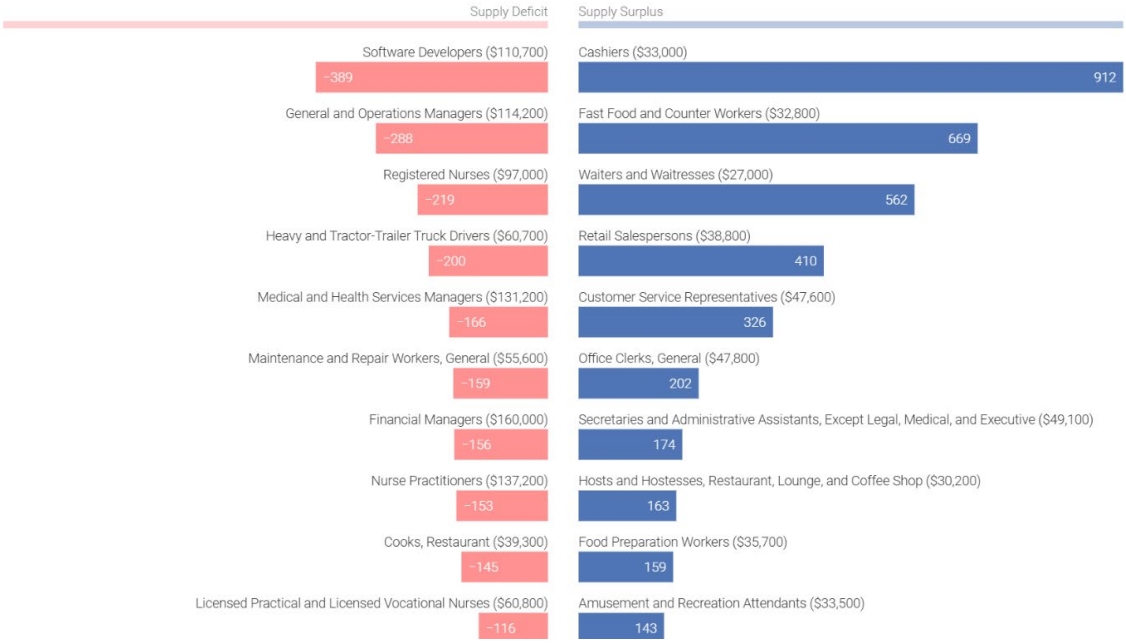
## *Occupation Gaps*

The chart below shows the potential average annual talent gaps by occupation in Minnesota over the next ten years. This summary estimate is based on a forecast comparing occupation demand growth to the local population growth and the projected educational attainment of those residents, matched to specific related programs offered locally. When an area, for example, has an occupation expected to grow quickly but the educational requirement for the occupation does not match well with the educational attainment of its residents, there is a high potential for an occupation shortfall in the region. Alternatively, slow-growing or contracting occupations often represent potential supply surpluses. While this an important high-level 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, award and skill gap analyses, as well as local employer insights.

Key Insights:

- Software Developers, General and Operations Managers, and Registered Nurses are the top occupations in talent shortage, although these shortages are smaller than those seen in 2023
- Growing talent shortage of Heavy and Tractor-Trailer Truck Drivers and Maintenance and Repair Workers
- Continuing talent surplus of Cashiers, Fast Food and Counter Workers, Waiters and Waitresses, and Retail Workers
- Amusement and Recreation Attendants is newly on the list of top occupation shortages, and Bartenders is no longer on the list

**Average Annual Occupation Gaps (i.e. Talent Shortage), 2024Q1 through 2034Q1**



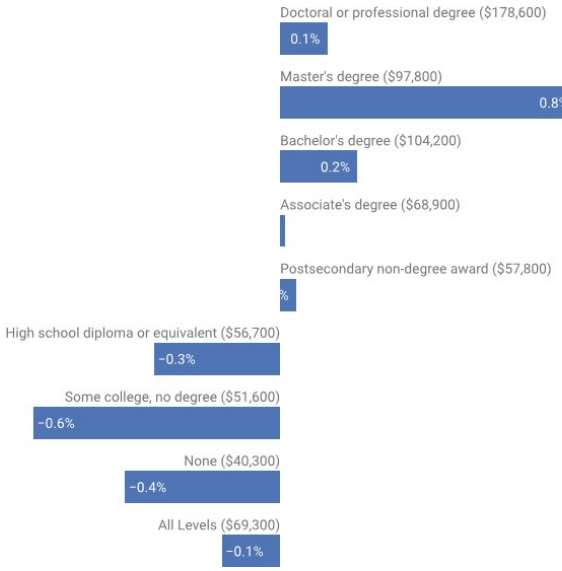

# *The Role of Education*

## EMPLOYMENT FORECAST BY EDUCATION

While overall employment in Minnesota is forecast to decline by -0.1% annually on average, expected forecasts for occupations vary by the education required:

- Occupations requiring no education, high school, or some college (but no degree) have the biggest forecast declines (-0.3% to -0.6%)—larger declines than previously forecast in 2023Q2
- Roles typically requiring a master's degree are expected to grow the most (+0.8)
- Occupations requiring any other postsecondary credential are forecast to grow more modestly or remain flat (0.0% to +0.2%)

**Annual Average Projected Job Growth by Education Required for Minnesota, 2024Q1**

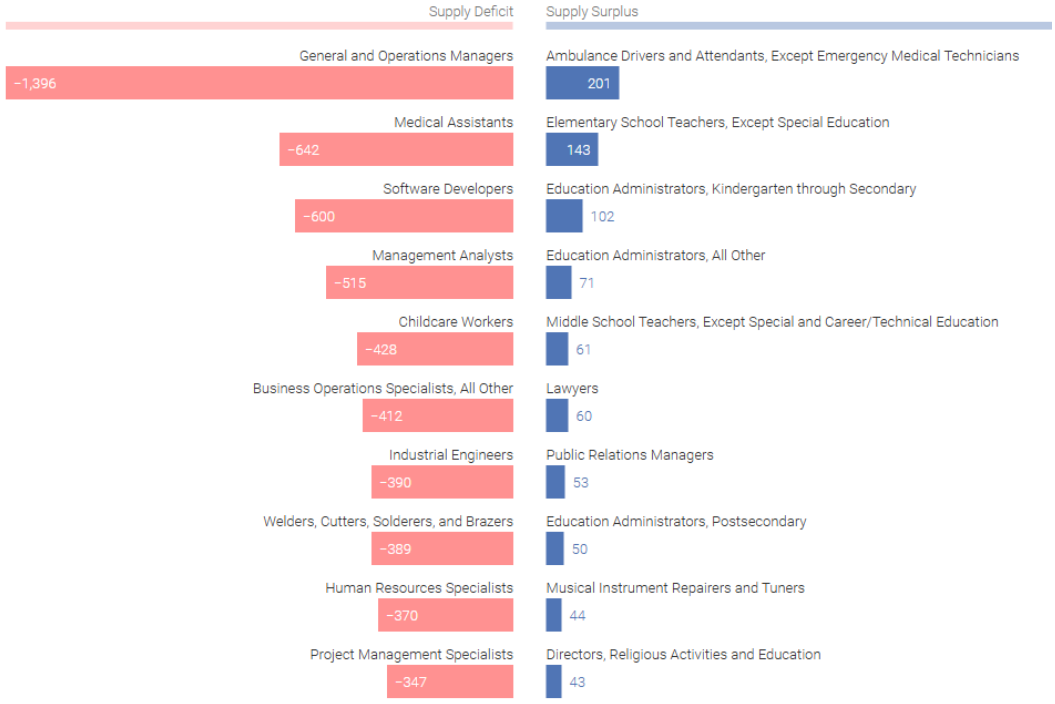



Employment by occupation data are estimates are as of 2024Q1. Education levels of occupations are based on BLS assignments. Forecast employment growth uses national projections from the Bureau of Labor Statistics adapted for regional growth patterns.

## AWARD GAPS

Award gaps quantify the total number of postsecondary award completions in a region tied to an occupation benchmarked against national rates. In Minnesota, local postsecondary programs are now likely underproducing General and Operations Managers, Medical Assistants, Software Developers, and Management Analysts. There is a small oversupply of Ambulance Drivers and Elementary School Teachers (Except Special Education) completing local postsecondary programs compared to national volumes.

**Award Gaps, All Occupations, Minnesota, 2024Q1**




Source: JobsEQ®
Data as of 2024Q1

# *Occupations in Current Shortage*

Several occupations have zero unemployed talent in Minnesota as of 2024Q1 estimates, resulting in an estimated unemployment rate of 0%. The occupations listed below have nonexistent unemployed talent at the regional level and 75 people or more working in these positions locally. Some of these roles have low volumes of online job postings due to unique methods of recruiting talent for specialty roles, while others show high posting volumes which indicates unmet demand and significant likely shortages. Many of these roles pay over the state median of $54,100 annually, with many significantly higher.

## Occupations with No Unemployed Workforce and Employing over 75 Workers, Minnesota 2024Q1

| SOC | Occupation | Current | | | | | | 5-Year History | | 5-Year Forecast | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Empl | Median Ann Wages[2] | LQ | Unempl | Unempl Rate | 30-Day Online Job Ads[3] | Empl Change | Ann % | Total Demand | Exits | Trans-fers | Empl Change | Ann % Change |
| 33-9093 | Transportation Security Screeners | 644 | $60,700 | 0.68 | 0 | n/a | 32 | 54 | 1.8% | 274 | 135 | 154 | -15 | -0.5% |
| 27-2091 | Disc Jockeys, Except Radio | 469 | $42,000 | 0.99 | 0 | n/a | 7 | -28 | -1.2% | 178 | 86 | 95 | -4 | -0.2% |
| 49-2097 | Audiovisual Equipment Installers and Repairers | 379 | $54,100 | 0.76 | 0 | n/a | 72 | -148 | -6.4% | 159 | 47 | 128 | -16 | -0.8% |
| 11-9131 | Postmasters and Mail Superintendents | 310 | $89,300 | 1.21 | 0 | n/a | 80 | -14 | -0.9% | 88 | 45 | 62 | -19 | -1.2% |
| 51-8012 | Power Distributors and Dispatchers | 215 | $118,300 | 1.12 | 0 | n/a | 6 | 16 | 1.6% | 70 | 29 | 54 | -13 | -1.3% |
| 51-8011 | Nuclear Power Reactor Operators | 202 | $130,200 | 1.71 | 0 | n/a | 1 | 35 | 3.9% | 84 | 29 | 54 | 0 | 0.0% |
| 53-6099 | Transportation Workers, All Other | 198 | $43,300 | 0.81 | 0 | n/a | n/a | -57 | -4.9% | 102 | 38 | 65 | -1 | -0.1% |
| 29-9092 | Genetic Counselors | 157 | $97,600 | 2.23 | 0 | n/a | 9 | 17 | 2.3% | 55 | 27 | 22 | 7 | 0.8% |
| 19-2012 | Physicists | 115 | $119,500 | 0.29 | 0 | n/a | 20 | 13 | 2.4% | 33 | 14 | 19 | 0 | 0.0% |
| 11-9071 | Gambling Managers | 108 | $77,300 | 0.99 | 0 | n/a | 7 | -57 | -8.2% | 58 | 22 | 35 | 0 | 0.1% |
| 29-1029 | Dentists, All Other Specialists | 98 | $232,400 | 1.01 | 0 | n/a | 17 | 3 | 0.5% | 14 | 11 | 3 | 0 | 0.0% |
| | **Total - All Occupations** | **3,103,775** | **$54,100** | **1.00** | **89,472** | **2.8%** | **248,532** | **15,052** | **0.1%** | **1,629,916** | **729,502** | **923,342** | **-22,928** | **-0.1%** |

# Job Posting Trends in Minnesota

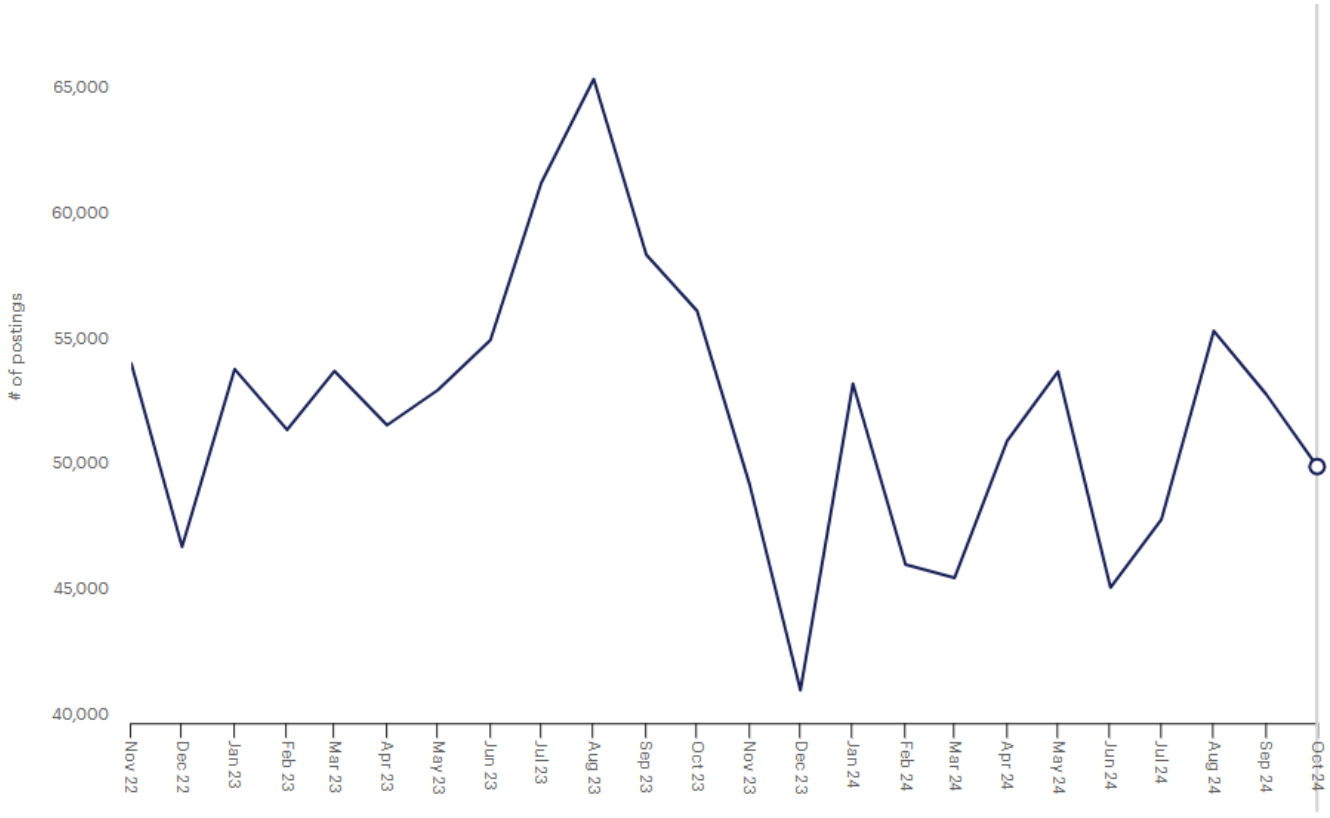
Online job posting data reveals much about employer demand for certain skills, certifications, qualifications, and occupational competencies.

## TOTAL JOBS

**Total job postings in the past 12 months (11/1/23 – 10/31/24):**

- 594,113 unique postings statewide
    - -10% compared to the 12 months prior

**Total Jobs Advertised Monthly in Minnesota, October 2023-2024**



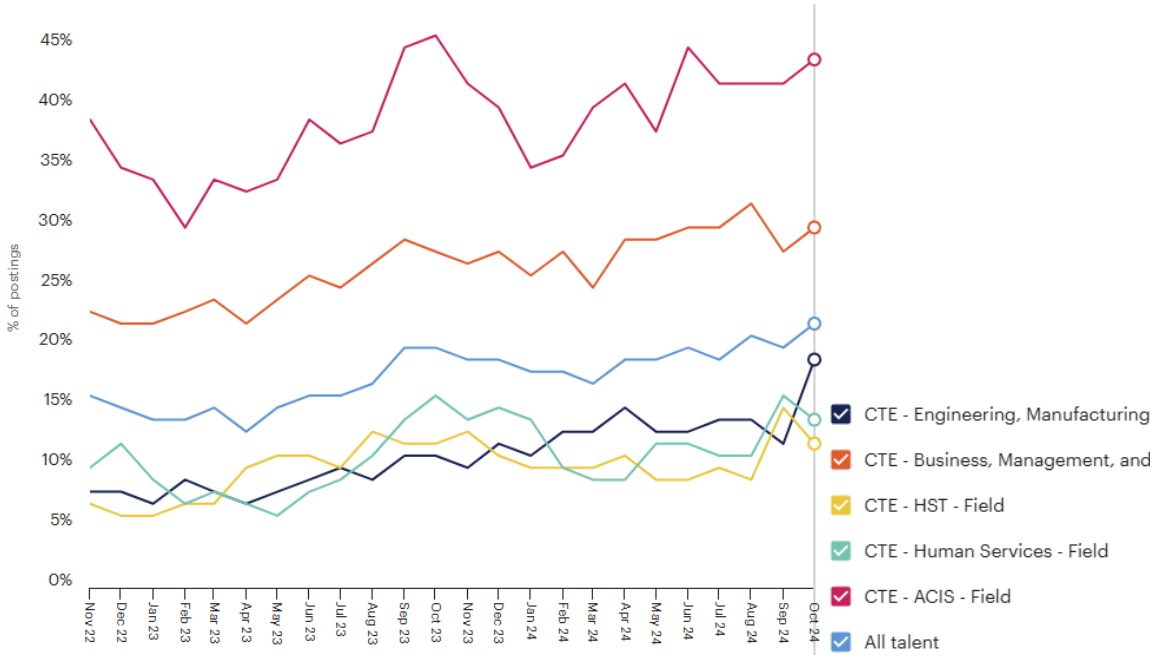

SOURCE: TalentNeuron accessed 11/1/2024

## REMOTE AND HYBRID POSITIONS

Remote and hybrid positions have been shifting greatly in the past five years, and this trend plays out differently across Career and Technical Education (CTE) fields:

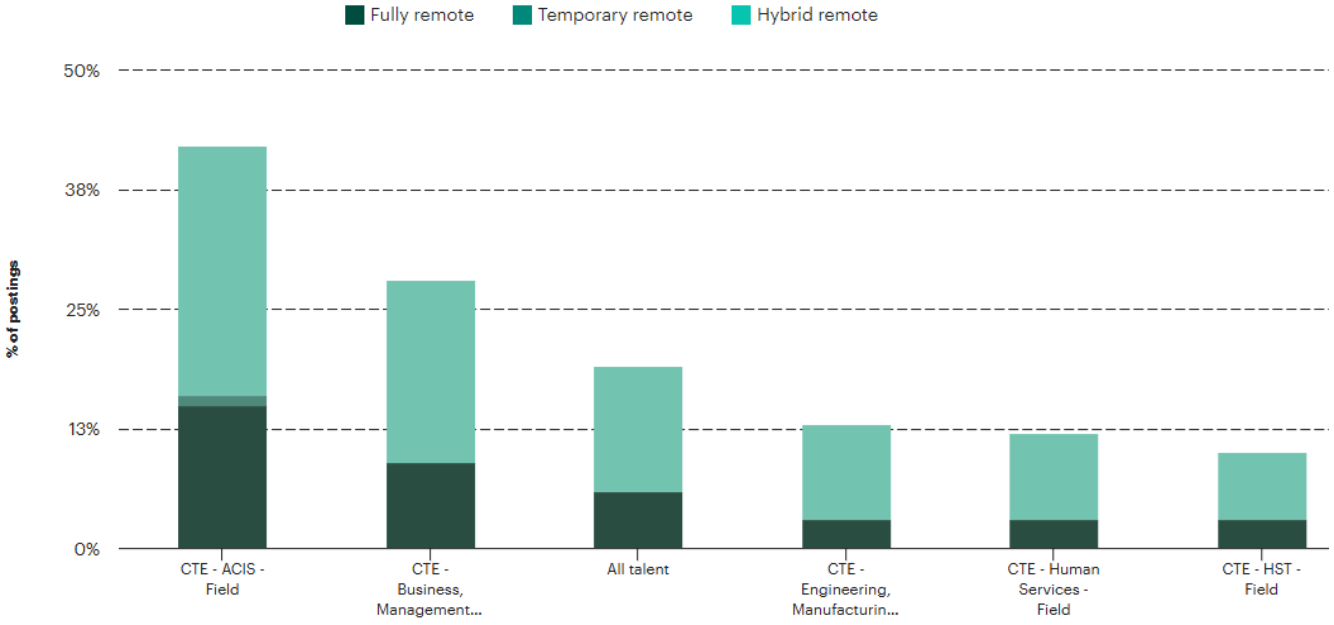
- 19% of all positions advertised in the past 12 months were explicitly listed as remote, hybrid, or telecommute roles—either permanently or temporarily
- Remote work is increasing year over year
    - Among all positions, the share of positions that are remote and hybrid remote increased by four percentage points from the prior year
    - Hybrid remote roles grew the most, representing 13% of all postings
    - Arts, Communications and Information Systems and Engineering, Manufacturing, and Technology roles have particularly seen increases (by five percentage points in both cases from the prior year)

## Total Remote Job Postings Advertised Monthly in Minnesota, October 2023-2024




SOURCE: TalentNeuron accessed 11/1/2024

## Remote Job Postings by Career Field Advertised in Minnesota, October 2023-2024



| Talent Profile | % of postings: Unspecified /Onsite | Total remote | Fully remote | Temporary remote | Hybrid remote |
|---|---|---|---|---|---|
| CTE - ACIS - Field | 58% ▼-5 pp | 42% ▲5 pp | 15% ▲0 pp | 1% ▲0 pp | 26% ▲5 pp |
| CTE - Business, Management, and Administration - Field | 72% ▼-3 pp | 28% ▲3 pp | 9% ▼-1 pp | 0% ▼-1 pp | 19% ▲5 pp |
| All talent | 81% ▼-4 pp | 19% ▲4 pp | 6% ▲0 pp | 0% ▲0 pp | 13% ▲4 pp |
| CTE - Engineering, Manufacturing, and Technology - Field | 87% ▼-5 pp | 13% ▲5 pp | 3% ▲1 pp | 0% ▲0 pp | 10% ▲4 pp |
| CTE - Human Services - Field | 88% ▼-3 pp | 12% ▲3 pp | 3% ▲0 pp | 0% ▲0 pp | 9% ▲3 pp |
| CTE - HST - Field | 90% ▲0 pp | 10% ▲0 pp | 3% ▼-1 pp | 0% ▲0 pp | 7% ▲1 pp |

SOURCE: TalentNeuron accessed 11/1/2024

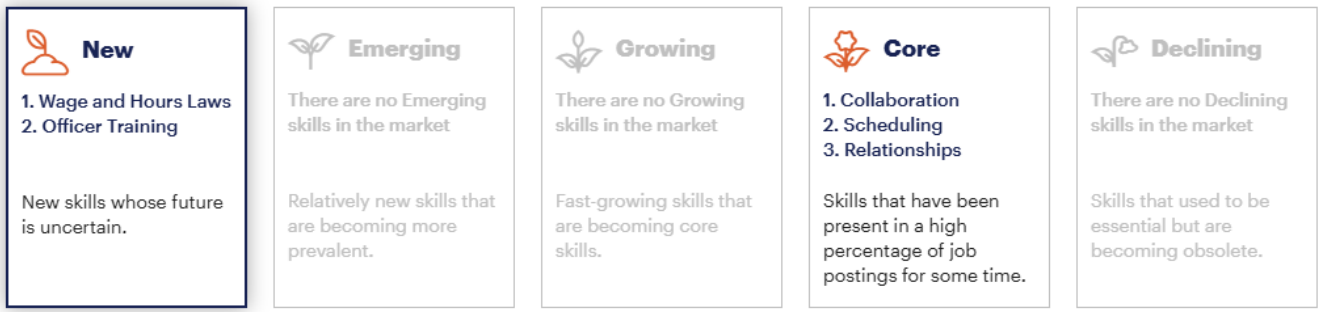
## EVOLVING SKILLS

Talent accumulates valuable skills in ways beyond just work and education. Everything from self-study to apprenticeships and internships, workforce training programs and general life experience all develop relevant skills for career success. Assessing experience in terms of skills unearths a person's qualifications and more clearly identifies training needs for career growth. Skill gap analysis at the occupation level supports postsecondary planning, workforce development, and employer talent strategy.

**Evolving skills key trends**:

- Most of the **newest** skills on the rise statewide are tied to human resources law and public safety training
- **Core** skills have remained relatively consistent with human skills such as communication and relationship management ranking in high importance

**Top Evolving Skills in Minnesota, October 2023-2024**



# Career Fields

Each of the six Career and Technical Education (CTE) career fields has unique talent demand and employment forecasts, based on its mix of occupations and industry needs.

Employment volume ranges from 144,824 in Arts, Communications, and Information Systems, to nearly ten times that in Business, Management, and Administration (1.3 million). All career fields have a concentration in Minnesota that is close to the national average (LQ 0.98-1.06). Unemployment is low to moderate among career fields, with the lowest rate seen for Health Science Technology (1.5%) and the highest for Engineering, Manufacturing, and Technology (3.4%).

Wages are lowest on average in the Human Services career field, at a median of $59,200. By contrast, those in Arts, Communications, and Information Systems can expect the highest wages of all career fields, at a median $91,300.

**CTE Field Employment and Wages in Minnesota, 2024Q1**

| | Current 2024Q1 Estimates | | | | | | | 5-Year History | |
|---|---|---|---|---|---|---|---|---|---|
| CTE Field (occupation overlap exists, will not sum) | Empl | Avg Entry-Level Wages | Median Wages | LQ | Unempl | Unempl Rate | Online Job Ads[3] | Empl Change | Ann % |
| **Health Science Technology** | 305,501 | $41,200 | $71,300 | 1.06 | 4,787 | 1.5% | 45,098 | 2,831 | 0.2% |
| **Human Services** | 494,381 | $44,000 | $59,200 | 1.01 | 11,034 | 2.2% | 31,321 | 20,804 | 0.9% |
| **Arts, Communications, and Information Systems** | 144,824 | $63,100 | $91,300 | 1.03 | 3,167 | 2.2% | 10,638 | -2,979 | -0.4% |
| **Business, Management, and Administration** | 1,343,061 | $43,500 | $61,700 | 0.98 | 42,634 | 3.1% | 86,963 | -14,967 | -0.2% |
| **Engineering, Manufacturing, and Technology** | 752,391 | $46,700 | $62,600 | 0.99 | 26,195 | 3.4% | 40,370 | 10,341 | 0.3% |
| **Agriculture, Food, and Natural Resources*** | 159,325 | $42,700 | $60,900 | 0.99 | 4,597 | 2.8% | 7,955 | 1,545 | 0.2% |
| **Total - All Occupations** | **3,103,775** | | | **1.00** | **89,472** | **2.8%** | **217,197** | **15,052** | **0.1%** |

Data as of 2024Q1 unless noted otherwise
Note: Figures may not sum due to rounding and overlap in occupations between career fields. All clusters are distinct occupations except for Agriculture, Food, and Natural Resources, which overlaps with other clusters. Employment by place of work.
1. Data based on a four-quarter moving average unless noted otherwise.
2. Wage data represent the average for all Covered Employment
3. Data represent found online ads active 10/1/2024-11/1/2024 in the selected region. Due to alternative county-assignment algorithms, ad counts in this analytic may not match that shown in RTI (nor in the popup window ad list). Ad counts for ZCTA-based regions are estimates.

**CTE Field Baseline Employment Forecast for Minnesota, 2029Q1**

| | Current | 5-Year Growth 2029Q1 | | | | |
|---|---|---|---|---|---|---|
| CTE Field (occupation overlap exists, will not sum) | Empl | Total Demand | Exits | Transfers | Empl Change | Ann % Change |
| **Health Science Technology** | 305,501 | 128,674 | 60,240 | 62,406 | 6,027 | 0.4% |
| **Human Services** | 494,381 | 260,750 | 122,863 | 134,039 | 3,847 | 0.2% |
| **Arts, Communications, and Information Systems** | 144,824 | 55,065 | 20,501 | 31,600 | 2,965 | 0.4% |
| **Business, Management, and Administration** | 1,343,061 | 785,428 | 356,873 | 458,044 | -29,488 | -0.4% |
| **Engineering, Manufacturing, and Technology** | 752,391 | 362,167 | 151,871 | 216,945 | -6,649 | -0.2% |
| **Agriculture, Food, and Natural Resources*** | 159,325 | 87,067 | 36,846 | 51,801 | -1,580 | -0.2% |
| **Total - All Occupations** | **3,103,775** | **1,629,916** | **729,502** | **923,342** | **-22,928** | **-0.1%** |

Data as of 2024Q1 unless noted otherwise
Note: Figures may not sum due to rounding and overlap in occupations between career fields. All clusters are distinct occupations except for Agriculture, Food, and Natural Resources, which overlaps with other clusters. Employment by place of work.
1. Data based on a four-quarter moving average unless noted otherwise.
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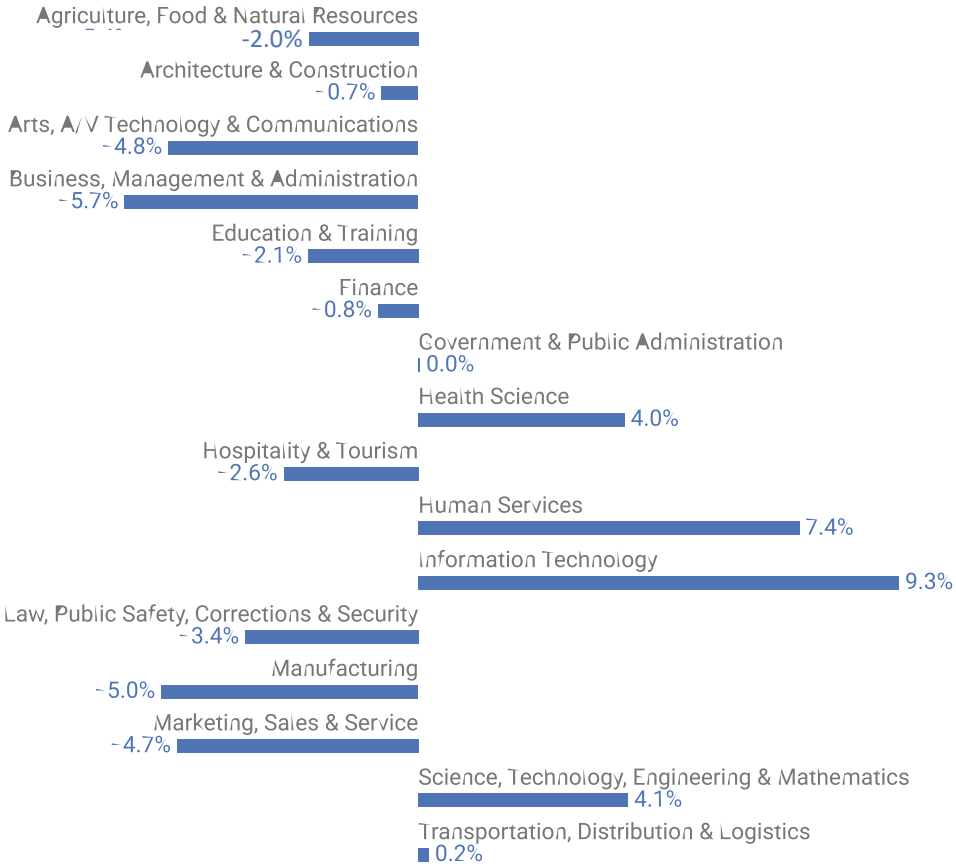
# *Career Cluster Detail*

Of the sixteen career clusters used by Career and Technical Education (CTE), ten are forecast to decline in overall employment over the next ten years as of 2024Q1 estimates. The four clusters with the highest forecast growth are Information Technology (+9.3%), Human Services (+7.4%), Science, Technology, Engineering, and Mathematics (+4.1%), and Health Science (+4.0%). All clusters saw worsening employment outlooks from the prior year's forecasts.

**Baseline 10-Year Forecasts by Career Cluster, Minnesota, 2024Q1**




Cluster forecasts estimated using Chmura, JobsEQ, based on 2024Q1 employment data. All clusters are distinct occupations except for Agriculture, Food, and Natural Resources, which overlaps with other clusters.

An accurate assessment of future occupation demand requires that future growth, retirements, and other job exits be considered. In Minnesota, Hospitality and 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.

Half of the sixteen career clusters have average wages above the average occupation wage in the region. The Science, Technology, Engineering and Mathematics cluster has the highest wages of the Career Clusters followed by the Information Technology and Finance clusters.

**Employment, Wages, and Forecast by Career Cluster, 2024Q1**

| Career Cluster | Employment | Avg Ann Wages | Job Ads | Ann Empl Change | Ann Total Demand |
|---|---|---|---|---|---|
| Science, Technology, Engineering & Mathematics | 48,128 | $111,500 | 7,239 | 192 | 3,133 |
| Information Technology | 95,072 | $108,100 | 8,873 | 850 | 6,528 |
| Finance | 124,713 | $100,400 | 9,798 | -98 | 9,259 |
| Health Science | 305,501 | $93,600 | 45,150 | 1,196 | 25,627 |
| Law, Public Safety, Corrections & Security | 76,681 | $82,000 | 5,044 | -261 | 6,707 |
| Business, Management & Administration | 562,225 | $78,600 | 27,764 | -3,284 | 53,679 |
| Government & Public Administration | 27,002 | $76,700 | 2,183 | 1 | 2,366 |
| Architecture & Construction | 194,822 | $72,100 | 6,813 | -141 | 16,855 |
| Arts, A/V Technology & Communications | 49,752 | $66,400 | 1,826 | -245 | 4,475 |
| Education & Training | 187,810 | $66,300 | 10,253 | -407 | 16,283 |
| Marketing, Sales & Service | 317,141 | $63,700 | 26,761 | -1,510 | 36,631 |
| Agriculture, Food & Natural Resources | 159,325 | $62,500 | 8,813 | -334 | -0.2% |
| Transportation, Distribution & Logistics | 234,855 | $57,400 | 12,182 | 45 | 26,382 |
| Manufacturing | 274,585 | $57,000 | 14,240 | -1,399 | 26,241 |
| Human Services | 202,887 | $48,600 | 14,112 | 1,452 | 26,691 |
| Hospitality & Tourism | 338,983 | $36,900 | 22,923 | -894 | 58,435 |
| **Total - All Occupations** | **3,103,775** | **$69,000** | **217,794** | **-4,599** | **326,725** |

*Cluster forecasts estimated using Chmura, JobsEQ, based on 2024Q1 employment data. All clusters are distinct occupations except for Agriculture, Food, and Natural Resources, which overlaps with other clusters.

## CAREER CLUSTER FORECASTS

Employment statewide is forecast to decline slightly, with only Central Minnesota forecast to see overall employment growth over the next ten years. Previously, MSP Metro had been forecast to grow, but the outlook for the metro has soured. On the other hand, forecasts improved across the board in Northeast, Northwest, Central and Southwest Minnesota, with a majority of career clusters in each seeing a more positive outlook than in 2023Q2.

**Cluster Ten-Year Total Employment Change Forecasts by Region, 2024Q1**

| Career Cluster | Minnesota | MSP Metro | Northeast | Northwest | Central | Southwest | Southeast |
|---|---|---|---|---|---|---|---|
| Agriculture, Food & Natural Resources* | -2.0% | -1.0% | -3.0% (+) | -4.0% (+) | 1.0% (+) | -8.0% (+) | -5.0% (+) |
| Architecture & Construction | -0.7% | -2.0% | -1.8% (+) | 0.0% (+) | 4.7% (+) | -3.7% (+) | -2.2% |
| Arts, A/V Technology & Communications | -4.8% | -6.0% | -5.6% (+) | -5.1% (+) | -0.2% (+) | -10.5% (+) | -5.3% |
| Business, Management & Administration | -5.7% | -6.9% | -7.4% | -6.0% (+) | -1.8% (+) | -9.2% (+) | -6.7% |
| Education & Training | -2.1% | -3.2% | -1.5% (+) | -1.1% (+) | 4.0% (+) | -4.8% (+) | -3.8% |
| Finance | -0.8% | -2.7% | -1.6% (+) | -0.1% (+) | 3.5% (+) | -3.7% (+) | -0.6% |
| Government & Public Administration | 0.0% | -1.6% | -0.7% (+) | -1.4% | 5.4% (+) | -2.0% (+) | -0.6% |
| Health Science | 4.0% | 3.5% | 2.2% | -4.4% | 8.0% (+) | 0.8% (+) | 4.5% |
| Hospitality & Tourism | -2.6% | -3.5% | -3.3% (+) | -1.3% (+) | 3.6% (+) | -5.0% (+) | -3.5% |
| Human Services | 7.4% | 7.4% | 6.0% (+) | 8.6% (+) | 11.5% (+) | 3.3% (+) | 5.1% |
| Information Technology | 9.3% | 6.8% | 3.5% | 4.9% (+) | 10.0% | 1.8% (+) | 4.2% |
| Law, Public Safety, Corrections & Security | -3.4% | -4.9% | -3.2% (+) | -1.2% (+) | 2.6% (+) | -5.2% (+) | -2.5% |
| Manufacturing | -5.0% | -5.9% | -7.8% (+) | -6.1% (+) | 0.3% (+) | -6.7% (+) | -6.1% |
| Marketing, Sales & Service | -4.7% | -5.5% | -7.3% (+) | -5.6% (+) | -1.2% (+) | -9.0% (+) | -7.3% |
| Science, Technology, Engineering & Mathematics | 4.1% | 2.8% | -0.3% (+) | 2.7% (+) | 9.2% | 2.2% (+) | 2.8% (+) |
| Transportation, Distribution & Logistics | -0.2% | -0.3% | -2.1% (+) | -0.7% (+) | 4.1% | -3.7% | -1.9% |
| **Total - All Occupations** | **-1.0%** | **-2.0%** | **-2.0%** (+) | **-2.0%** (+) | **3.0%** (+) | **-5%** (+) | **-2.0%** |

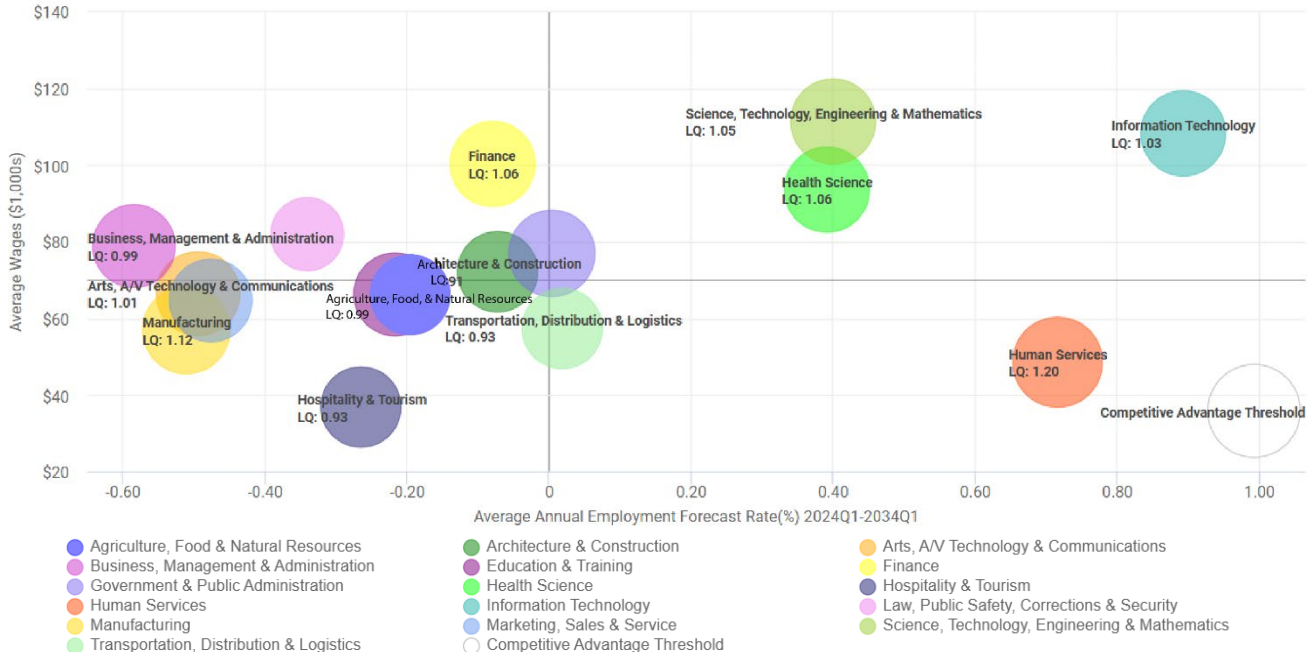
Cluster forecasts estimated using Chmura, JobsEQ, based on 2024Q1 employment data. *All clusters are distinct occupations except for Agriculture, Food, and Natural Resources, which overlaps with other clusters.

Just as with industry clusters, it is possible to chart Career and Technical Education career clusters by wage, forecast, and local concentration. The chart below shows career clusters of employment in Minnesota. The larger the circle, the more concentrated the career cluster is in the region (compared to the national average); this is called a Location Quotient (LQ). Clusters are positioned on the chart based on their wages and forecast employment. Clusters higher up on the Y-axis of the chart have higher average wages, and clusters located further to the right on the X-axis of the chart have higher forecasted employment growth. In summary, large circles in the top-right corner of the chart would be considered high-wage, high-growth, uniquely important clusters for the region's economy. Smaller circles further to the bottom-left corner of the chart would be lower-wage, declining, underrepresented clusters.

The most highly concentrated career cluster in Minnesota is Human Services:

- Location Quotient: 1.20
- Employment: 202,887 workers
- Average Wage: $48,600
- Employment Forecast: Projected to grow by 0.7% annually over the next 10 years

## Career Clusters for Minnesota as of 2024Q1



# Key Takeaways by Career Field

| Health Science Technology | Human Services | Arts, Communications, and Information Technology |
|---|---|---|
| • Largest volumes of occupations forecasting shortages<br>• Continued shortage of nurses (projected annual talent shortage of at least 219 Registered Nurses in most favorable scenario)<br>• Unique high local concentration<br>• Aging workforce in management and leadership roles | • About 16% of Minnesota's workers employed in this field<br>• High share of workforce over-credentialed for the roles they currently hold; 50% of talent hold a bachelor's degree or higher<br>• High share of workers over 45 years of age, particularly in Northeast and Southwest | • Highest average entry-level wages<br>• High educational attainment, with over 80% holding at least a two-year degree; highest in MSP Metro and Southeast Minnesota<br>• Overrepresentation of male and non-Hispanic/Latine talent; most diverse workforces in the MSP Metro and Southeast Minnesota |
| **Business, Management, and Administration** | **Engineering, Manufacturing, and Technology** | **Agriculture, Food, and Natural Resources** |
| • Largest share of employment by career field<br>• Widest range of industries employing talent<br>• Significant replacement demand needs<br>• Shortages in management roles<br>• Persistent undersupply General and Operations Managers (talent shortage of 288) and new graduates (award gap of 1,396) in the region | • Building Equipment, Fright Trucking, and Building Finishing Contractors are prominent industries in the field, with a large share of forecasted demand<br>• High share of Hispanic/Latine talent compared to other fields; particularly in Southwest and MSP Metro<br>• Aging talent signaling exacerbation of talent shortage due to upcoming retirements with over 45% of workers in this field 45 years or older | • Wide range of industry needs, with Animal Production, Building Services, Building Equipment Contractors, and Crop Production in highest employment volume<br>• Highest share of Hispanic/Latine talent compared to other fields; particularly in Southwest and MSP Metro<br>• Highest share of workforce with less than a high school diploma (11.5%) |

# *Health Science Technology*

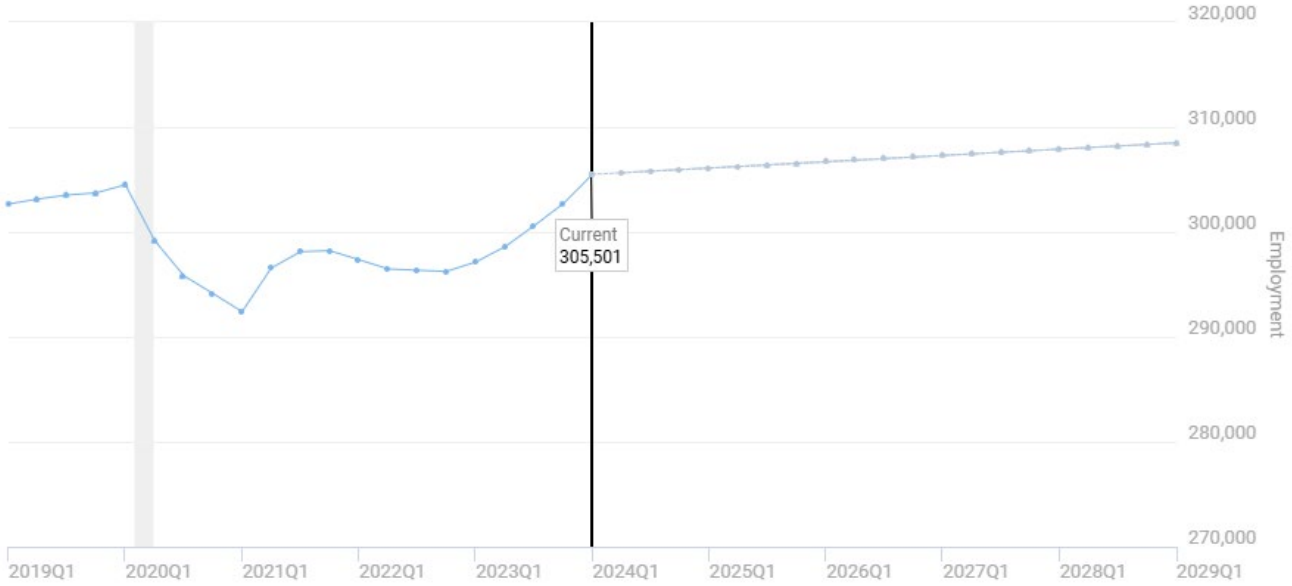
The Health Science Technology field includes an array of careers in the health sciences, including the following career pathways:

- Therapeutic Services
- Diagnostic Services
- Support Services
- Health Informatics
- Biotechnology Research and Development

## EMPLOYMENT FORECAST

Over the next five years, Health Science Technology field employment is forecast to increase by 0.4% on average annually—a softening of prior stronger forecasts.

**Baseline 5-Year Forecast for Health Science Technology Careers, Minnesota, 2024Q1**



## TOP OCCUPATIONS

A total of 305,501 people are employed in Health Science Technology roles in Minnesota, accounting for about 10% of all statewide employment. Medical and Health Services Managers and Home Health Aides are expected to have the highest growth among top occupations, at 2.0% and 1.4%, respectively.

**Top Ten Health Science Technology Occupations by Employment Volume, Minnesota, 2024Q1**

| 6-Digit Occupation | Empl | Median Wages | LQ | Historical 5-Year Empl Change | Forecast 5-Year Demand | Forecast Annual Change |
|---|---|---|---|---|---|---|
| Registered Nurses | 66,248 | $98,100 | 1.08 | 2,455 | 17,683 | 0.0% |
| Nursing Assistants | 27,885 | $43,600 | 1.05 | -2,155 | 19,206 | -0.2% |
| Home Health Aides | 25,740 | $35,600 | 1.33 | -4,599 | 17,045 | 1.4% |
| Medical Secretaries and Administrative Assistants | 15,484 | $50,100 | 1.15 | 1,050 | 8,091 | 0.1% |
| Licensed Practical and Licensed Vocational Nurses | 15,120 | $61,000 | 1.19 | -2,248 | 5,649 | -0.1% |
| Medical Assistants | 13,332 | $50,200 | 0.89 | 1,057 | 9,276 | 0.8% |
| Medical and Health Services Managers | 10,410 | $120,500 | 1.05 | 1,286 | 4,964 | 2.0% |
| Pharmacy Technicians | 7,963 | $47,600 | 0.94 | 429 | 3,543 | 0.0% |
| Pharmacists | 6,383 | $153,000 | 1.01 | 177 | 1,121 | -0.2% |
| Dental Assistants | 6,319 | $64,700 | 0.89 | 315 | 4,444 | 0.2% |
| **Health Science (CTE Field)** | **305,501** | **$71,300** | **1.06** | **2,831** | **128,674** | **0.4%** |

"Forecast 5-Year Demand" is the projected need for new entrants into an occupation over the next five years. 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 Annual Change" 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).

## TOP INDUSTRIES

Nearly a third of talent in Minnesota working in Health Science Technology roles are employed by General Medical and Surgical Hospitals (30.5%), followed by Office of Physicians (18.1%). The next most common industries are and Nursing Care Facilities (8.0%) and Individual and Family Services (5.5%).

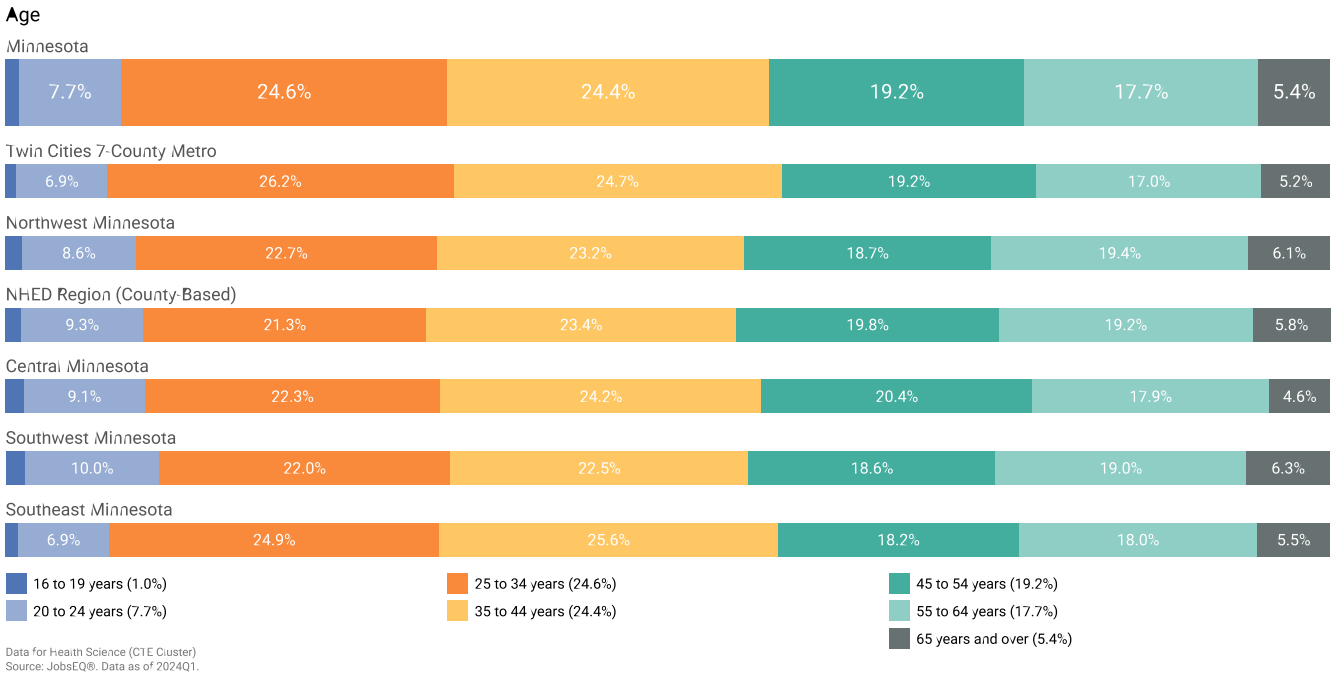
**Health Science Technology Field Employment by Industry, Minnesota, 2024Q1**

| Industry Title | % of Career Field Empl | Career Field Empl | 10-Year Separations | 10-Year Empl Change | 10-Year Total Demand |
|---|---|---|---|---|---|
| General Medical and Surgical Hospitals | 30.5% | 93,215 | 63,186 | -72 | 63,114 |
| Offices of Physicians | 18.1% | 55,433 | 39,273 | 2,769 | 42,042 |
| Nursing Care Facilities (Skilled Nursing Facilities) | 8.0% | 24,408 | 24,512 | -1,632 | 22,880 |
| Individual and Family Services | 5.5% | 16,662 | 19,584 | 3,784 | 23,368 |
| Offices of Dentists | 4.6% | 14,159 | 13,366 | 371 | 13,737 |
| Home Health Care Services | 3.8% | 11,591 | 10,904 | 1,709 | 12,613 |
| Offices of Other Health Practitioners | 3.6% | 10,954 | 8,416 | 1,334 | 9,750 |
| Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly | 2.9% | 8,866 | 10,121 | 907 | 11,027 |
| Health and Personal Care Retailers | 2.4% | 7,481 | 5,524 | -331 | 5,193 |
| Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities | 2.3% | 6,937 | 6,760 | 51 | 6,811 |
| Outpatient Care Centers | 2.2% | 6,703 | 5,153 | 1,174 | 6,327 |
| Other Professional, Scientific, and Technical Services | 2.1% | 6,281 | 6,542 | 1,088 | 7,631 |
| Employment Services | 1.3% | 4,036 | 3,318 | 36 | 3,355 |
| Elementary and Secondary Schools | 1.2% | 3,704 | 2,419 | -19 | 2,401 |
| Colleges, Universities, and Professional Schools | 1.1% | 3,260 | 2,072 | 21 | 2,093 |
| Management of Companies and Enterprises | 1.1% | 3,221 | 2,301 | 229 | 2,530 |
| Other Ambulatory Health Care Services | 0.9% | 2,778 | 2,488 | 350 | 2,838 |
| Insurance Carriers | 0.8% | 2,291 | 1,452 | 130 | 1,581 |
| Medical and Diagnostic Laboratories | 0.7% | 2,118 | 1,631 | 107 | 1,739 |
| Executive, Legislative, and Other General Government Support | 0.7% | 2,034 | 1,565 | -5 | 1,561 |
| All Others | 6.3% | 19,369 | 14,795 | 171 | 14,967 |

## CAREER FIELD DEMOGRAPHICS

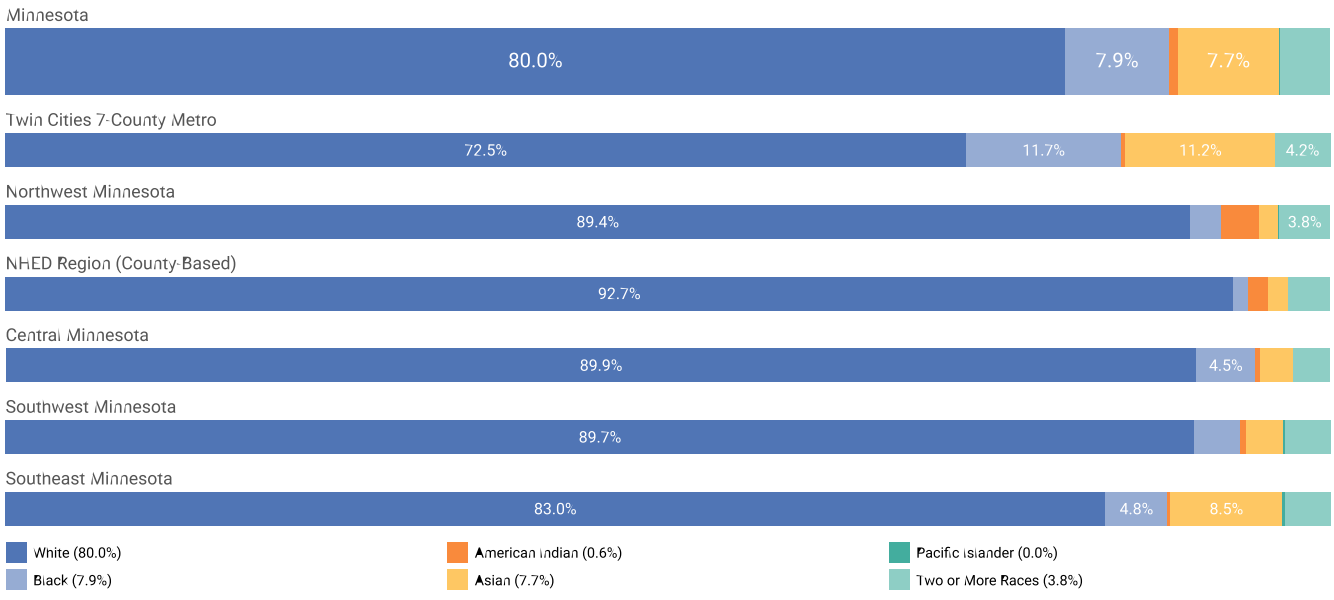
- The Health Science Technology field is predominantly white (80.0%) by race, mirroring the population of Minnesota, and non-Hispanic/Latinx by ethnicity (96.5%)
    - The MSP Metro has the most diverse workforce by race and ethnicity
- Nearly four out of every five people employed in the field are female (78.1%)
    - Southeast Minnesota has a slightly more balanced gender mix, with 71.5% female workers

### Health Science Technology Workforce Age by Region



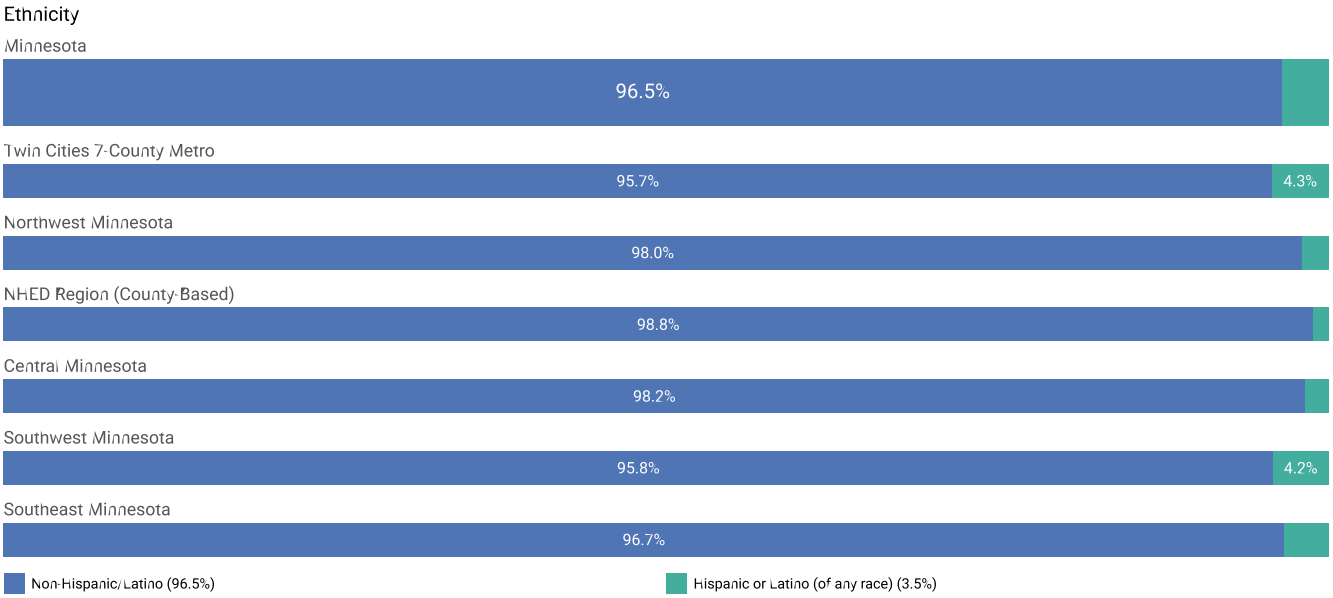

Data for Health Science (CTE Cluster)
Source: JobsEQ®. Data as of 2024Q1.

### Health Science Technology Workforce Race by Region

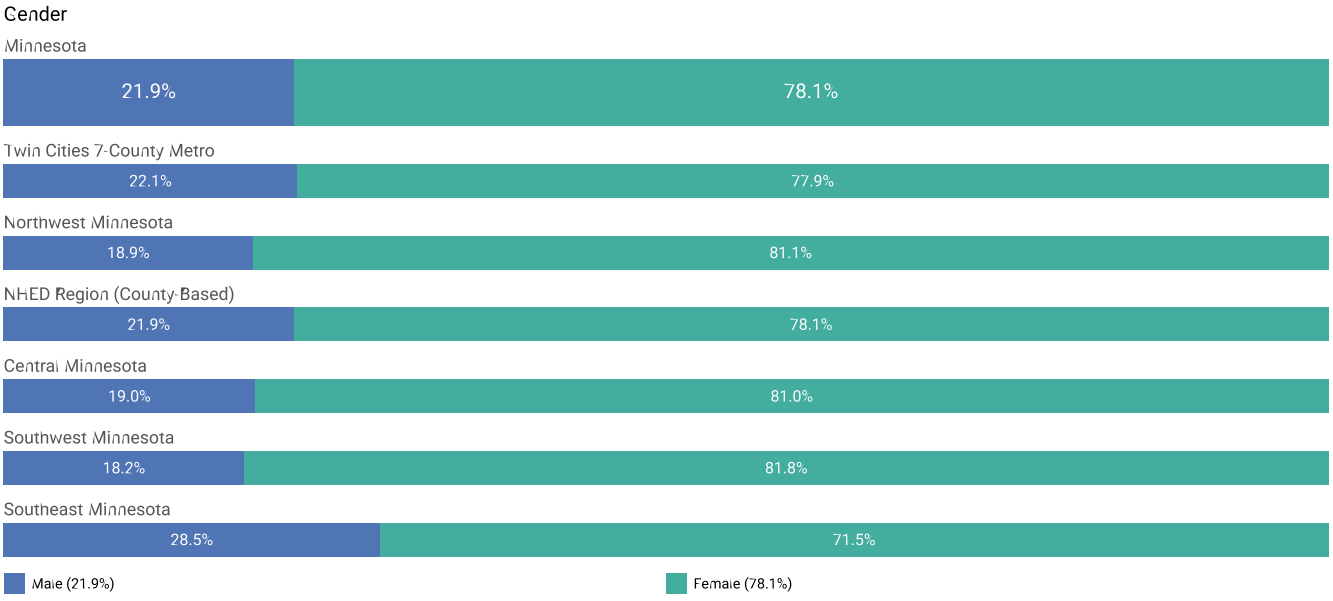



Data for Health Science (CTE Cluster)
Source: JobsEQ®. Data as of 2024Q1.

### Health Science Technology Workforce Ethnicity by Region



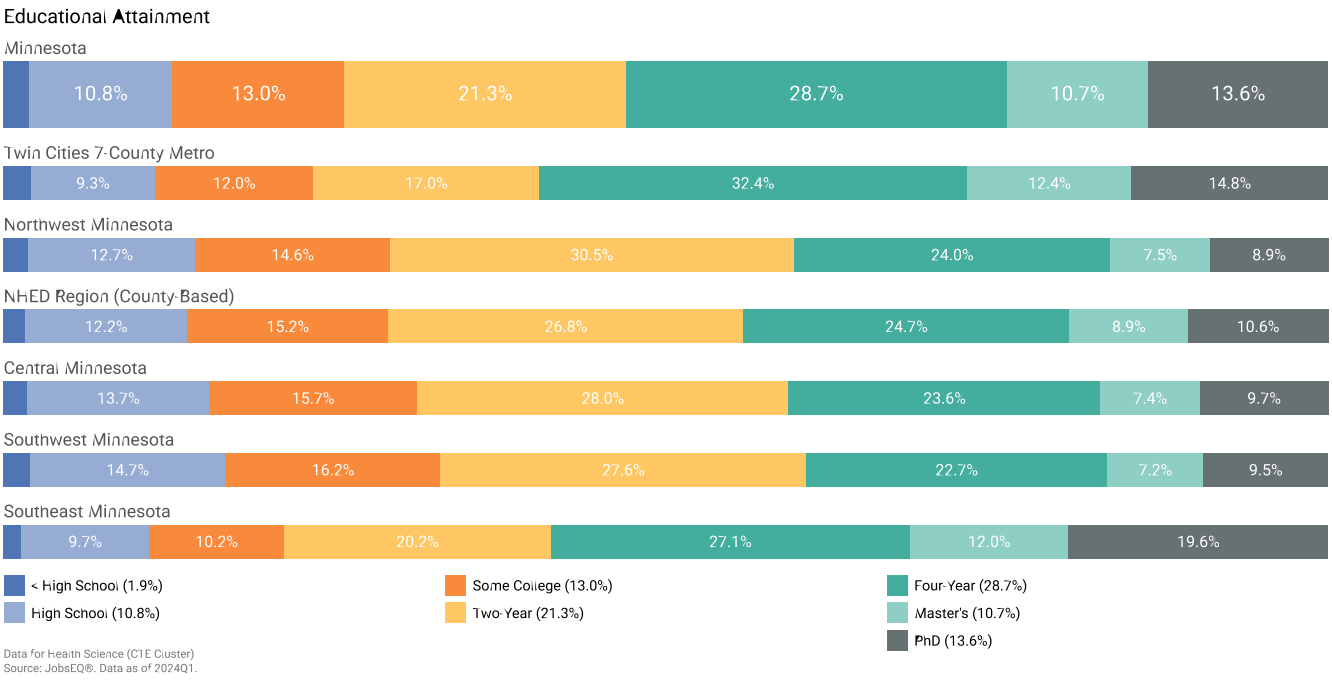

## Health Science Technology Workforce Gender by Region



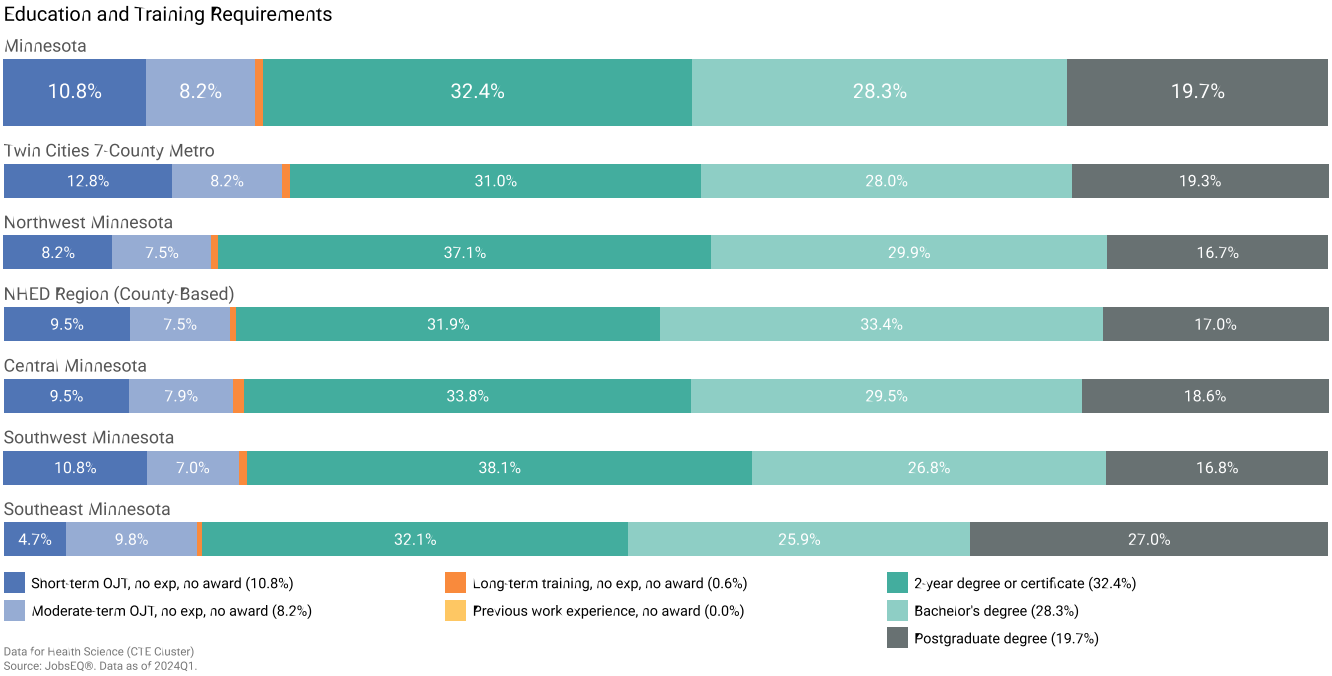
## EDUCATIONAL ATTAINMENT AND REQUIREMENTS

The charts below illustrate the estimated educational attainment of current workers in this career field, followed by the typical education and training requirements in the field.

- Approximately three out of every five of Health Science workers in Northwest (57.8%), Central (57.4%) and Southwest (58.5%) Minnesota have attained a high school diploma, some college, or a two-year degree
- The same approximate share of the field's workforce in the MSP Metro (59.6%) and the Southeast regions (58.7%), by contrast, have attained a 4-year degree or higher
- The Northeast region is slightly more evenly split, with 54.2% who have obtained a high school diploma, some college, or a two-year degree and 44.2% who have obtained at least a four-year degree
- With two-year degrees or certificates being required in 30-40% of positions, this leaves an attainment gap for several regions including Northeast, Northwest, Central, and Southeast; and indicates a possible over attainment of education in the remaining regions
- Share of the field's careers requiring less than a two-year degree are highest in the Metro (21.7% of field employment) and Southwest (18.3%) Minnesota and lowest in the Northwest (16.3%) and Southeast regions (15.0%)




Data for Health Science (CTE Cluster)
Source: JobsEQ®. Data as of 2024Q1.

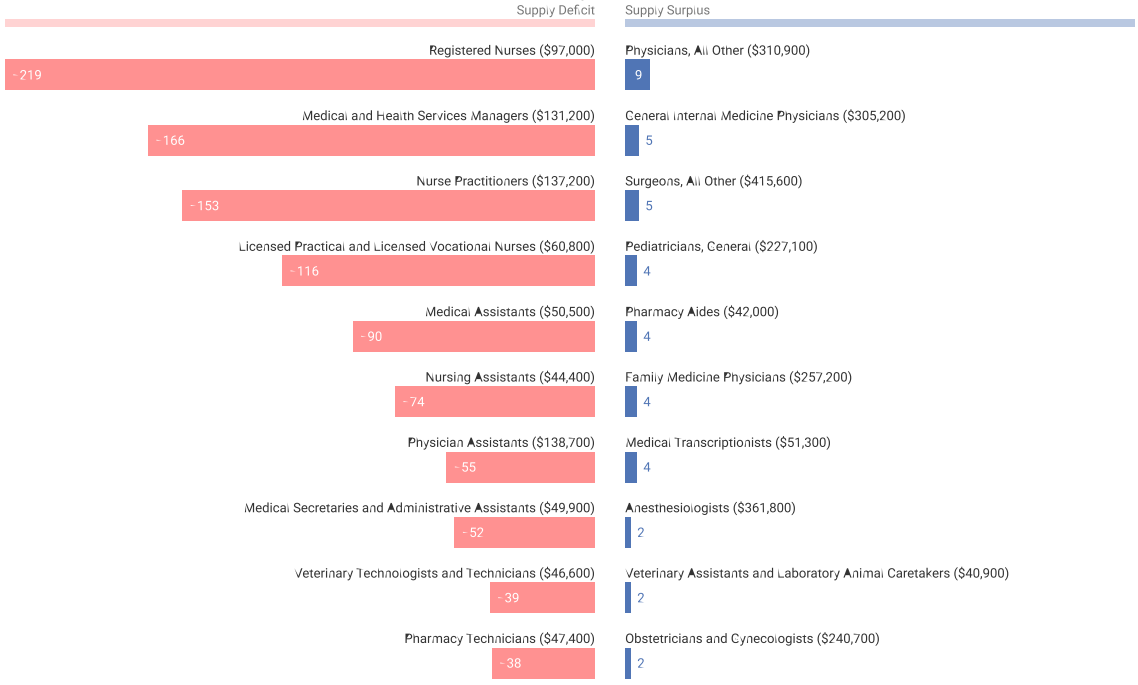



## OCCUPATION GAPS

The chart below shows the potential average annual talent shortages over ten years across the state of Minnesota.

In the Health Science Technology field, Registered Nurses and Medical and Health Service Managers are the two occupations with the greatest annual shortages in Minnesota. Other occupations of high shortage have remained consistent with prior estimates. The top occupation forecasting a slight surplus is general Physician roles. There are several specialized medical doctor roles that also project slight surpluses as well as the roles of Pharmacy Aides and Medical Transcriptionists.

**Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Health Science Technology, Minnesota, 2024Q1**



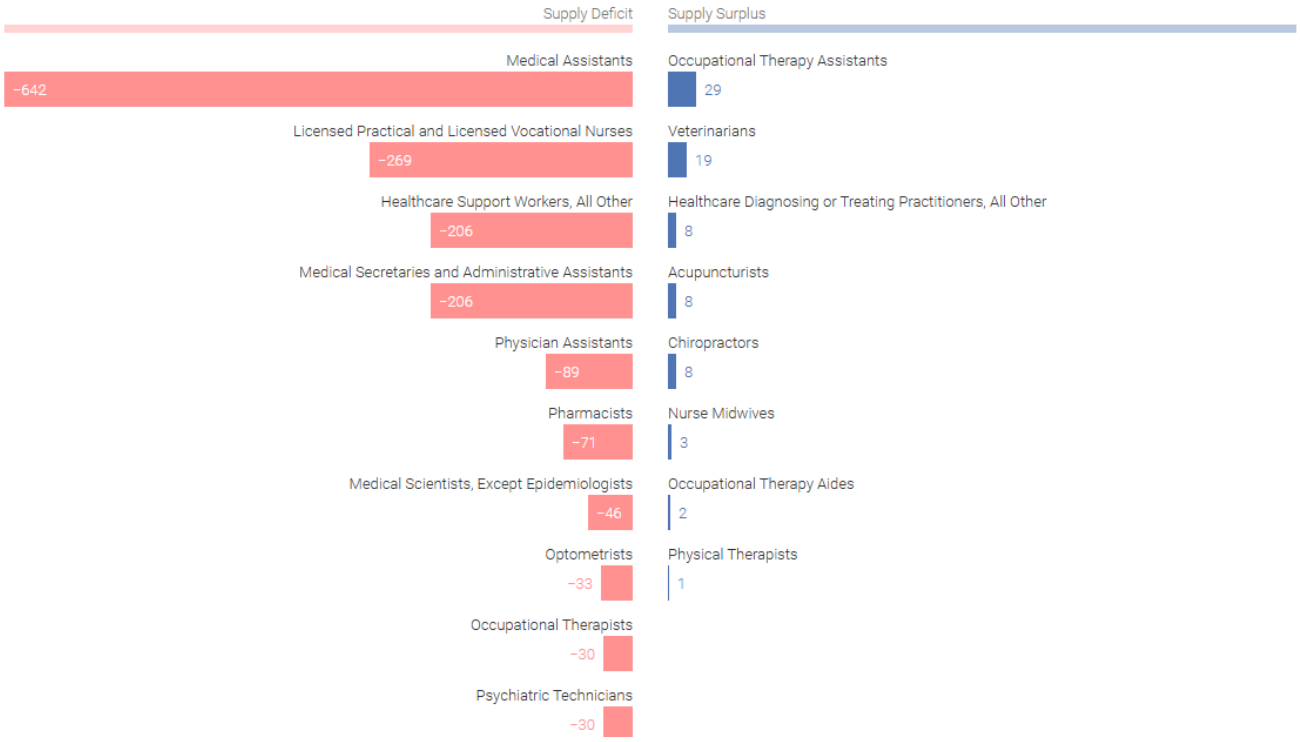
## AWARD GAPS

The chart below shows the shortfall of new postsecondary graduates needed to meet local demand, benchmarked against national average volumes of graduates in the 2022-23 school year.

Minnesota has several Health Science Technology award shortages and some general misalignments:

- 51 of the 91 occupations in the Health Science Technology field (56%) have a local shortage of new graduates from local postsecondary programs, with local employers likely filling a large share of local job openings with talent trained outside of the state
- Minnesota colleges and universities are underproducing about 642 Medical Assistants, 269 Licensed Practical and Licensed Vocational Nurses graduates annually that are needed to fill positions open with employers in the state
- Although there is a large occupation gap amongst Registered Nurses, Minnesota postsecondary institutions are supplying a typical volume of new graduates benchmarked to national volumes

**Award Gaps in Health Science Technology, Minnesota, 2024Q1**



## ORIGIN, GATEWAY, AND TARGET OCCUPATIONS

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

**Origin-to-Gateway-to-Target Occupations for Health Science Technology, Minnesota, 2024Q1**

**Target Occupations (All HW, HD, HS, OG)**
Registered Nurses
Licensed Practical & Licensed Vocational Nurses (AG)
Medical & Health Services Managers
Pharmacists (AG)
Dental Assistants

**Gateway Occupations**
Medical Secretaries (HD, OG, AG)
Medical Assistants (HS, HD, OG, AG)
Pharmacy Technicians (HD, OG, AG)
Healthcare Support Workers, All Other (HD, AG)
Veterinary Technologists & Technicians (HS, HD, OG, AG)

**Origin Occupations**
Nursing Assistants (HS, HD, OG)
Home Health Aides (HD, AG)
Psychiatric Technicians (HS, HD, OG, AG)
Phlebotomists (HS, HD, OG)
Veterinary Assistants & Laboratory Animal Caretakers (HD, AG)

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

**Other Promising Occupations**

Another Health Science Technology occupation that is high-wage and high-demand yet does not meet the high-skill threshold to be considered a Target Occupation, may be a promising career for students to consider. This occupation may offer a fast track to good jobs for those interested in starting a career in the field without requiring a postsecondary credential. This occupation to consider is:

- Hearing Aid Specialists (OG)

**High Location Quotient Occupations**

The following are the most highly concentrated Health Science Technology occupations in Minnesota, relative to the national average.

| Occupation | LQ |
|---|---|
| Surgeons, All Other | 2.36 |
| Genetic Counselors | 2.23 |
| Nurse Anesthetists | 2.14 |
| Dermatologists | 2.09 |
| Medical Scientists, Except Epidemiologists | 1.90 |

RealTime Talent

## Origin-to-Gateway-to-Target Occupations for Health Science Technology, By Region 2024Q1

| | MSP Metro | Northeast | Northwest | Central | Southwest | Southeast |
|---|---|---|---|---|---|---|
| Mdn. Wage | Field: $73,800 | Field: $67,900 | Field: $65,200 | Field: $68,300 | Field: $62,400 | Field: $80,600 |
| Unempl | Region: 2.6%<br>Field: 1.5% | Region: 3.6%<br>Field: 1.9% | Region: 3.2%<br>Field: 1.8% | Region: 3.3%<br>Field: 1.8% | Region: 2.8%<br>Field: 1.6% | Region: 2.3%<br>Field: 1.2% |
| Origin Occupations | • Home Health Aides<br>• Veterinary Assistants & Laboratory Animal Caretakers<br>• Pharmacy Aides<br>• Physical Therapy Aides | • Nursing Assistants<br>• Home Health Aides<br>• Pharmacy Technicians<br>• Healthcare Support Workers<br>• Veterinary Technologists & Technicians | • Nursing Assistants<br>• Home Health Aides<br>• Medical Secretaries & Administrative Assistants<br>• Healthcare Support Workers<br>• Veterinary Technologists & Technicians | • Nursing Assistants<br>• Home Health Aides<br>• Medical Secretaries & Administrative Assistants<br>• Veterinary Technologists & Technicians<br>• Healthcare Support Workers | • Nursing Assistants<br>• Home Health Aides<br>• Pharmacy Technicians<br>• Veterinary Technologists & Technicians<br>• Healthcare Support Workers | • Nursing Assistants<br>• Home Health Aides<br>• Phlebotomists<br>• Veterinary Technologists & Technicians<br>• Veterinary Assistants, & Laboratory Animal Caretakers |
| Gateway Occupations | • Nursing Assistants<br>• Medical Secretaries & Administrative Assistants<br>• Medical Assistants<br>• Pharmacy Technicians<br>• Healthcare Support Workers, All Other | • Medical Secretaries<br>• Medical Assistants<br>• Psychiatric Technicians<br>• Medical Equipment Preparers<br>• Medical Transcriptionists | • Pharmacy Technicians<br>• Medical Assistants<br>• Ophthalmic Medical Technicians<br>• Psychiatric Aides<br>• Medical Transcriptionists | • Medical Assistants<br>• Pharmacy Technicians | • Medical Secretaries & Administrative Assistants<br>• Medical Assistants<br>• Psychiatric Aides<br>• Medical Equipment Preparers<br>• Medical Transcriptionists | • Medical Assistants<br>• Medical Secretaries & Administrative Assistants<br>• Pharmacy Technicians<br>• Healthcare Support Workers, All Other<br>• Opticians, Dispensing |
| Target Occupations | • Registered Nurses<br>• Licensed Practical & Licensed Vocational Nurses<br>• Medical & Health Services Managers<br>• Dental Assistants<br>• Nurse Practitioners | • Registered Nurses<br>• Licensed Practical & Licensed Vocational Nurses<br>• Medical & Health Services Managers<br>• Pharmacists<br>• Dental Assistants | • Registered Nurses<br>• Licensed Practical & Licensed Vocational Nurses<br>• Medical & Health Services Managers<br>• Dental Assistants<br>• Dental Hygienists | • Registered Nurses<br>• Licensed Practical & Licensed Vocational Nurses<br>• Medical & Health Services Managers<br>• Dental Assistants<br>• Pharmacists | • Registered Nurses<br>• Licensed Practical & Licensed Vocational Nurses<br>• Medical & Health Services Managers<br>• Dental Assistants<br>• Dental Hygienists | • Registered Nurses<br>• Licensed Practical & Licensed Vocational Nurses<br>• Nurse Practitioners<br>• Medical & Health Services Managers<br>• Physicians Assistants |

## High Location Quotient (LQ) Occupations for Health Science Technology, By Region 2024Q1

| | MSP Metro | Northeast | Northwest | Central | Southwest | Southeast |
|---|---|---|---|---|---|---|
| LQ > 1.20 | • Bioengineers & Biomedical Engineers<br>• Orthotists & Prosthetists<br>• Medical Scientists, Except Epidemiologists<br>• Genetic Counselors<br>• Surgeons, All Other | • Genetic Counselors<br>• Healthcare Support Workers, All Other<br>• Surgeons, All Other<br>• Nurse Anesthetists<br>• Epidemiologists | • Healthcare Support Workers, All Other<br>• Genetic Counselors<br>• Epidemiologists<br>• Nursing Assistants<br>• Licensed Practical & Licensed Vocational Nurses | • Genetic Counselors<br>• Chiropractors<br>• Surgeons, All Other<br>• Nurse Anesthetists<br>• Healthcare Support Workers, All Other | • Recreational Therapists<br>• Psychiatric Aides<br>• Chiropractors<br>• Healthcare Support Workers, All Other<br>• Veterinary Technologists & Technicians | • Dermatologists<br>• Surgeons, All Other<br>• Nurse Anesthetists<br>• Obstetricians & Gynecologists<br>• Cardiologists |

# *Human Services*

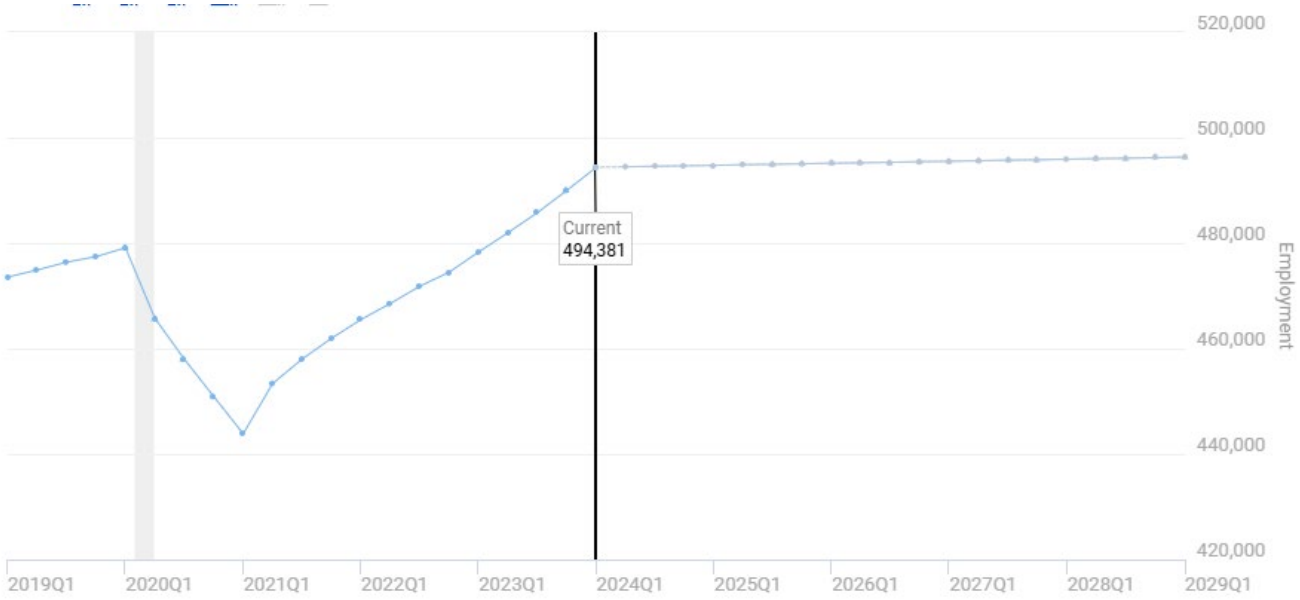
The Human Services field includes a wide range of career pathways sorted into the following career clusters:

- Education and Training
- Law, Public Safety, Corrections, and Security
- Government and Public Administration
- Human Services

## EMPLOYMENT FORECAST

Over the next five years, Human Services employment is forecast to grow by 0.2% annually – slightly slower growth than was forecast in 2022Q2 (0.3%).

**Baseline 5-Year Forecast for Human Services Careers, Minnesota, 2024Q1**



## TOP OCCUPATIONS

A total of 494,381 people are employed in Human Services roles statewide, accounting for about 16% of all Minnesota employment. Personal Care Aides have the highest forecast growth of top occupations, at 1.4%.

**Top Ten Human Services Occupations by Employment Volume, Minnesota, 2024Q1**

| 6-Digit Occupation | Empl | Median Wages | LQ | Historical 5-Year Empl Change | Forecast 5-Year Demand | Forecast Annual Change |
|---|---|---|---|---|---|---|
| Personal Care Aides | 72,926 | $35,600 | 1.33 | 20,124 | 58,654 | 1.4% |
| Teaching Assistants, Except Postsecondary | 33,441 | $40,500 | 1.38 | 34 | 18,440 | -0.4% |
| Elementary School Teachers, Except Special Education | 24,737 | $66,100 | 0.93 | 271 | 7,733 | -0.3% |
| Secondary School Teachers, Except Special and Career/Technical Education | 18,920 | $70,000 | 0.95 | 381 | 5,379 | -0.3% |
| Childcare Workers | 17,933 | $33,400 | 1.14 | -2,194 | 14,088 | -0.5% |
| Preschool Teachers, Except Special Education | 13,481 | $40,400 | 1.39 | -24 | 6,987 | -0.1% |
| Lawyers | 12,301 | $150,700 | 0.79 | -388 | 2,461 | 0.2% |
| Security Guards | 11,770 | $45,700 | 0.52 | 287 | 7,128 | -0.7% |
| Social and Human Service Assistants | 11,516 | $46,800 | 1.41 | 451 | 6,334 | 0.6% |
| Middle School Teachers, Except Special and Career/Technical Education | 10,479 | $66,900 | 0.91 | 146 | 3,283 | -0.3% |
| **Human Services (CTE Field)** | **494,381** | **$59,200** | **1.01** | **20,804** | **260,750** | **0.2%** |

"Forecast 5-Year Demand" is the projected need for new entrants into an occupation over the next five years. 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 Annual Change" 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).

## TOP INDUSTRIES

The largest share of regional Human Services talent in Minnesota is employed by Elementary and Secondary Schools (24.5%) or Individual and Family Services (11.6%). Executive, Legislative, and Other General Government Support is the third largest share, at 7.3%. Individual and Family Services continues to have high forecasted growth and replacement demand needs.

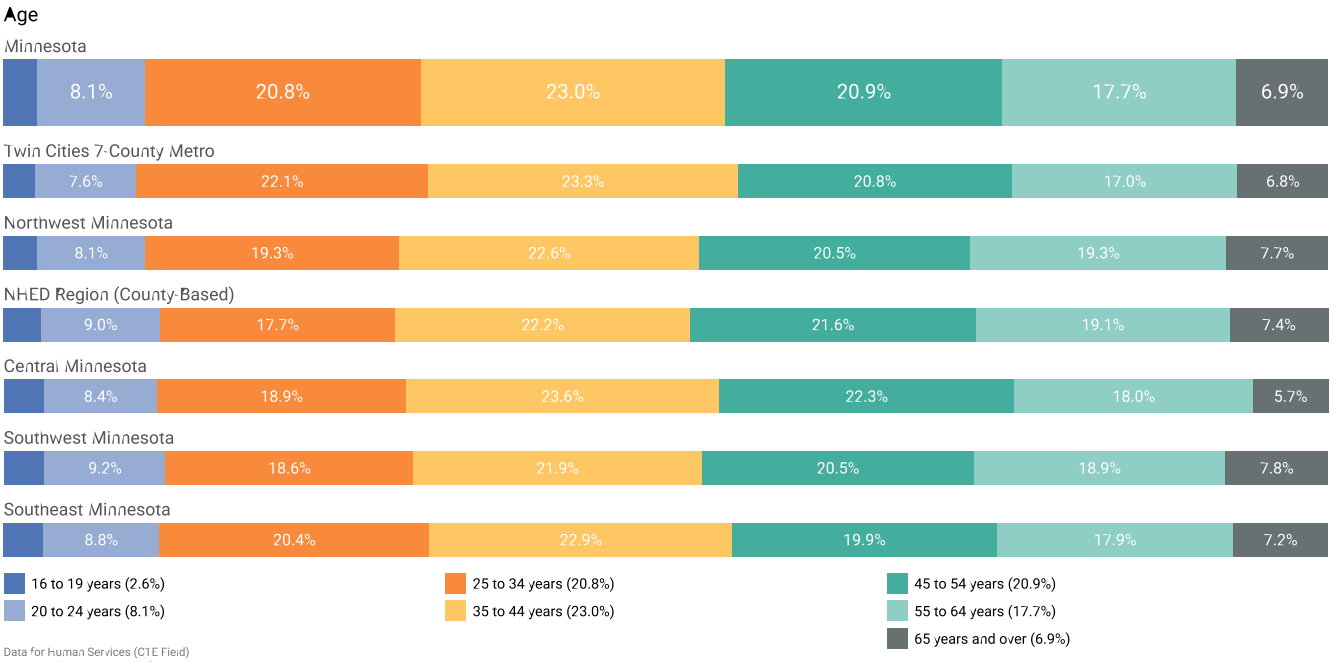
**Human Services Field Employment by Industry, Minnesota, 2024Q1**

| Industry Title | % of Career Field Empl | Career Field Empl | 10-Year Separations | 10-Year Empl Change | 10-Year Total Demand |
|---|---|---|---|---|---|
| Elementary and Secondary Schools | 24.5% | 121,133 | 102,295 | -4,195 | 98,101 |
| Individual and Family Services | 11.6% | 57,486 | 77,512 | 12,644 | 90,156 |
| Executive, Legislative, and Other General Government Support | 7.3% | 35,928 | 30,881 | -728 | 30,153 |
| Colleges, Universities, and Professional Schools | 4.9% | 24,425 | 20,335 | -43 | 20,292 |
| Child Care Services | 4.3% | 21,102 | 26,414 | -1,276 | 25,139 |
| Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities | 3.8% | 18,837 | 22,863 | -10 | 22,853 |
| Religious Organizations | 3.3% | 16,284 | 16,230 | -510 | 15,719 |
| Personal Care Services | 3.1% | 15,320 | 20,268 | 899 | 21,167 |
| Legal Services | 2.9% | 14,235 | 9,555 | -627 | 8,928 |
| Home Health Care Services | 2.5% | 12,279 | 17,497 | 1,685 | 19,181 |
| Justice, Public Order, and Safety Activities | 2.4% | 11,810 | 9,820 | -575 | 9,245 |
| Other Schools and Instruction | 2.3% | 11,205 | 14,238 | -60 | 14,178 |
| Other Residential Care Facilities | 1.7% | 8,226 | 9,677 | -327 | 9,349 |
| Other Amusement and Recreation Industries | 1.5% | 7,560 | 13,201 | 594 | 13,796 |
| Investigation and Security Services | 1.5% | 7,218 | 9,173 | -339 | 8,834 |
| Administration of Human Resource Programs | 1.4% | 7,118 | 5,824 | -432 | 5,391 |
| Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly | 1.4% | 6,708 | 9,738 | 1,134 | 10,873 |
| Offices of Other Health Practitioners | 1.4% | 6,680 | 5,795 | 1,048 | 6,843 |
| General Medical and Surgical Hospitals | 1.2% | 6,126 | 5,516 | -132 | 5,383 |
| Junior Colleges | 1.0% | 5,111 | 4,204 | -200 | 4,004 |
| All Others | 16.1% | 79,591 | 82,877 | -145 | 82,732 |

## CAREER FIELD DEMOGRAPHICS

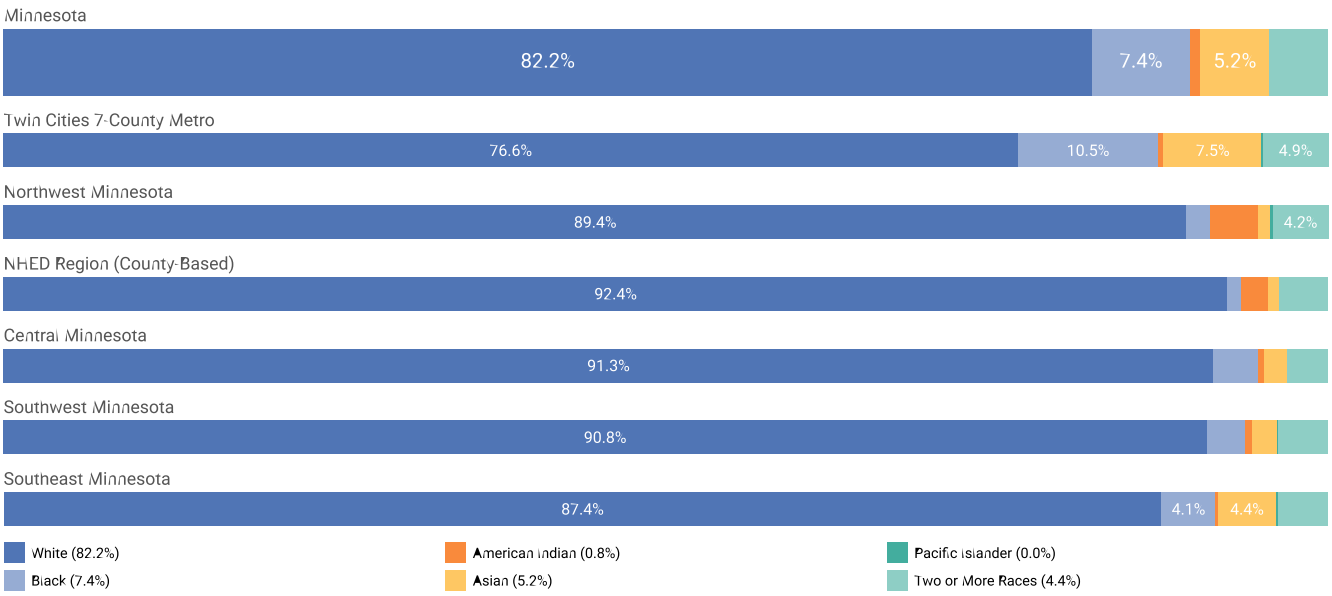
- The Human Services field is predominantly female (64.8%) and white (82.2%)
- The MSP Metro and southern regions of the state have the highest shares of Hispanic/Latine workers employed in the field
- Northeast and Southwest Minnesota have the highest shares over workers 45 years old or older

### Human Services Workforce Age by Region



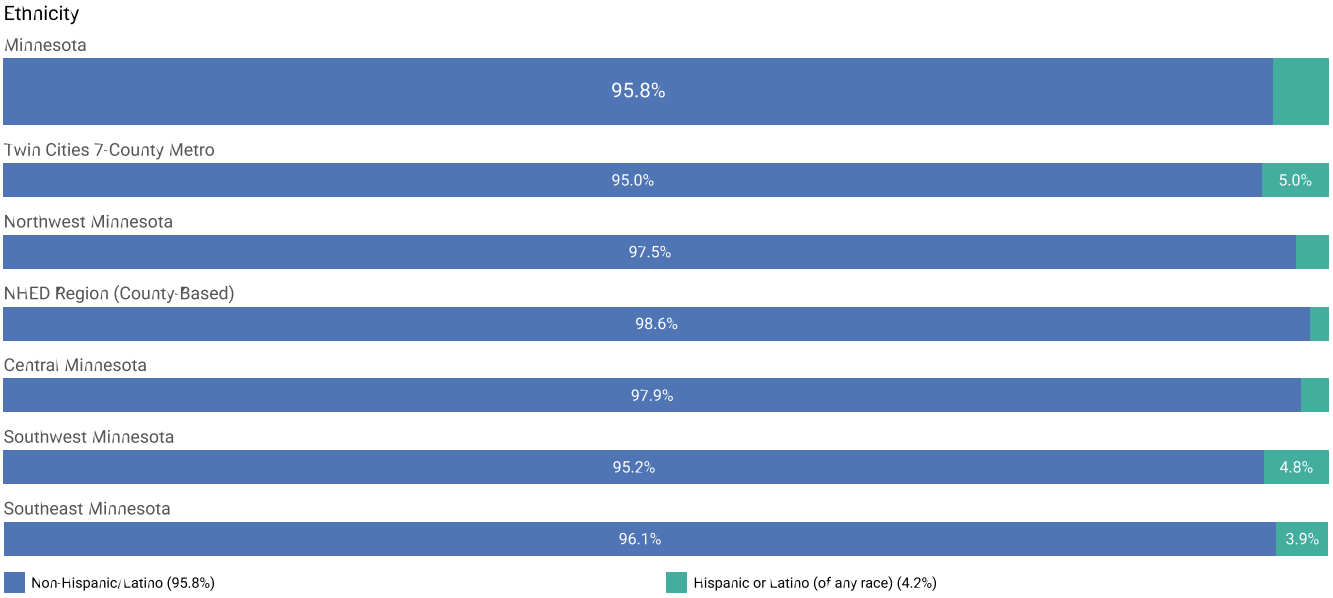

Data for Human Services (CTE Field)
Source: JobsEQ®. Data as of 2024Q1.

### Human Services Workforce Race by Region



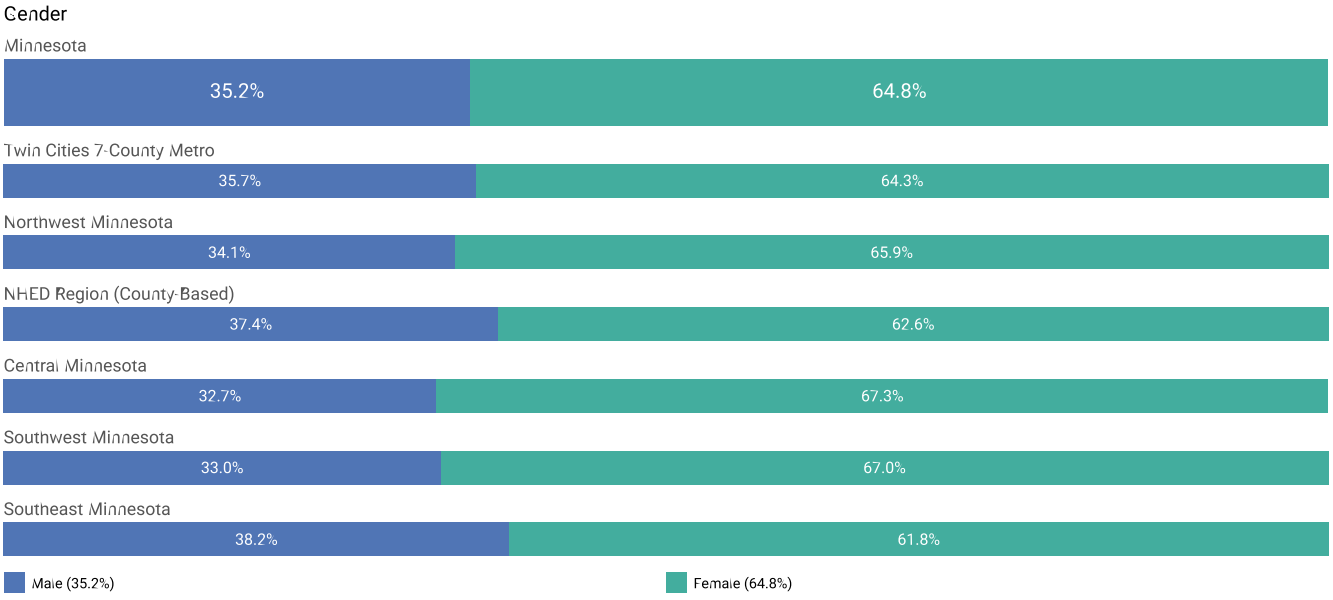

Data for Human Services (CTE Field)
Source: JobsEQ®. Data as of 2024Q1.

## Human Services Workforce Ethnicity by Region




Data for Human Services (CTE Field)
Source: JobsEQ®. Data as of 2024Q1.

## Human Services Workforce Gender by Region



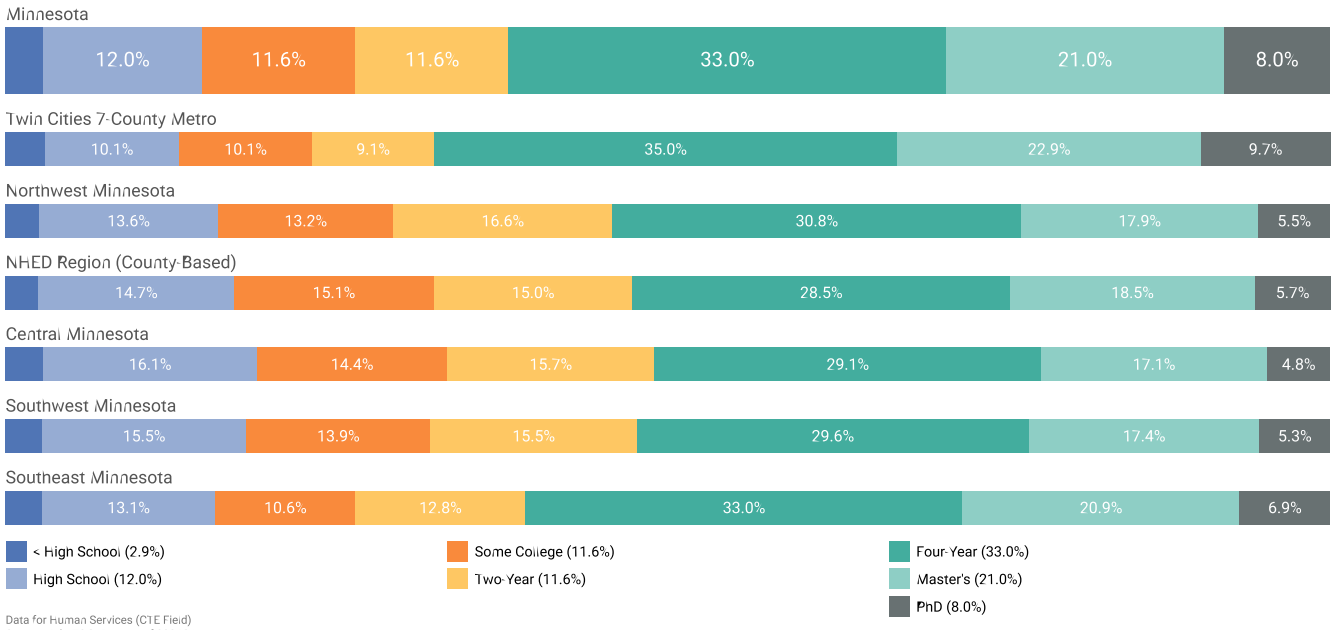

Data for Human Services (CTE Field)
Source: JobsEQ®. Data as of 2024Q1.

## EDUCATIONAL ATTAINMENT AND REQUIREMENTS

The charts below illustrate the estimated educational attainment of current workers in this career field, followed by the typical education and training requirements in the field.

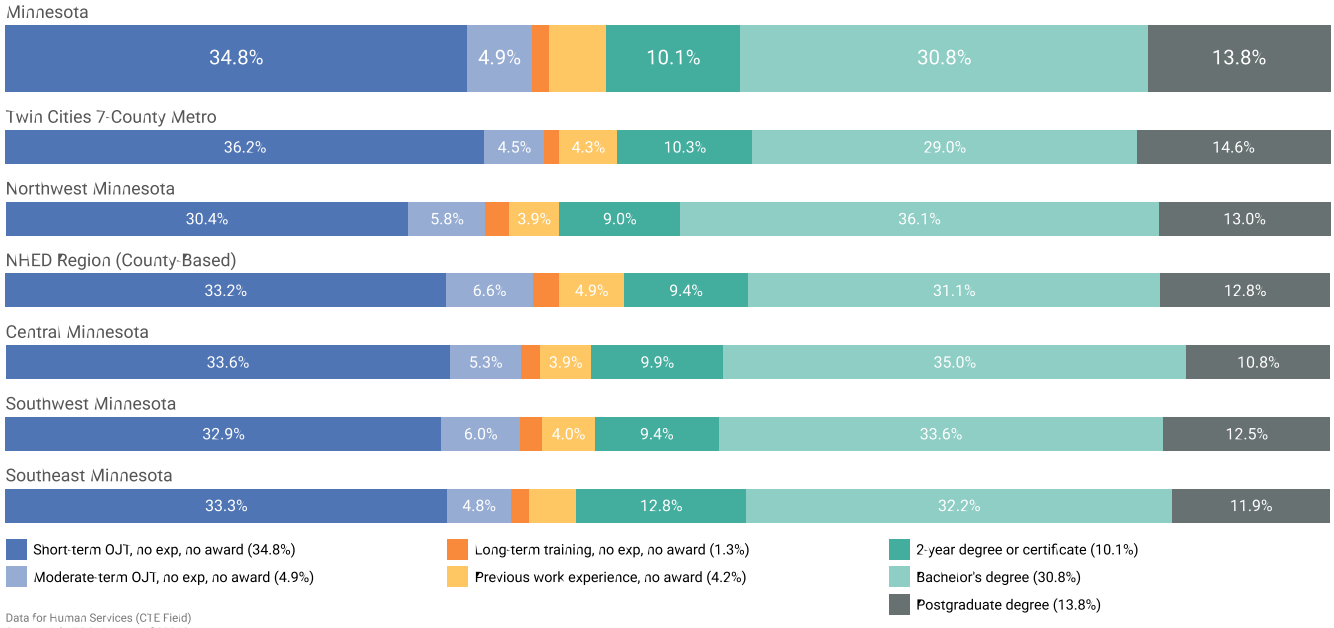
- More than 50% of workers in the Human Services career field have attained a 4-year degree or higher, with the MSP Metro and Southeast regions both having the highest percentages (over 60%)
- Across all regions, more than 40% of the available roles in Human Services require less than a two-year degree or certificate and at least 30% require only short-term on the job training

Educational Attainment




Data for Human Services (CTE Field)
Source: JobsEQ®. Data as of 2024Q1.

Education and Training Requirements



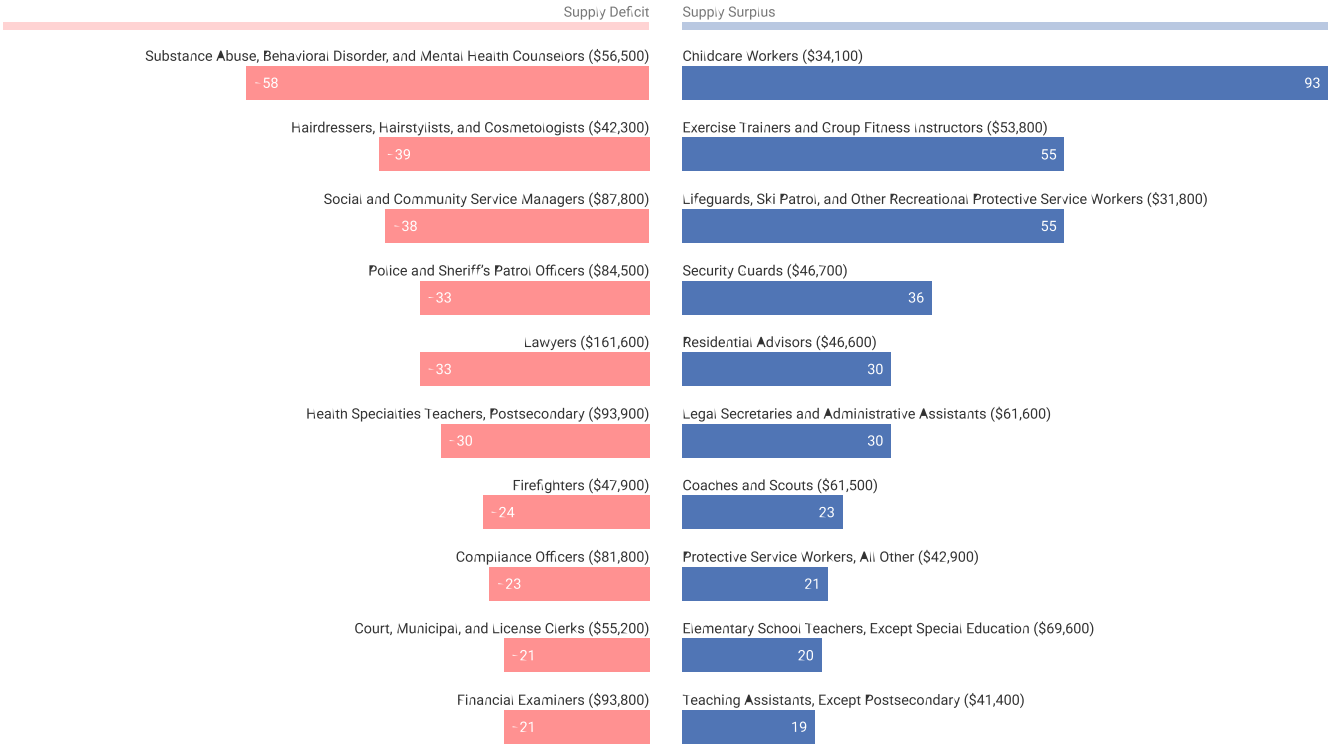

Data for Human Services (CTE Field)
Source: JobsEQ®. Data as of 2024Q1.

## OCCUPATION GAPS

The chart below shows the potential average annual talent shortages over ten years.

In Human Services, Mental Health Counselors, Hairdressers, Hairstylists, and Cosmetologists, as well as Social and Community Service Managers are the top occupations of shortage in the region (-38 or higher). These critical talent shortages in mental health counseling have shifted due in large part to forecasted employment growth and replacement demand needs due to retirements combined with insufficient talent coming through both secondary education and mental health counseling programs. Ten occupations continue to forecast moderate talent surpluses across the state in relation to demand. Of those, Childcare workers, Exercise Trainers, and Recreational Protective Service Workers are forecasting the highest surpluses (50+).

**Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Human Services, Minnesota, 2024Q1**



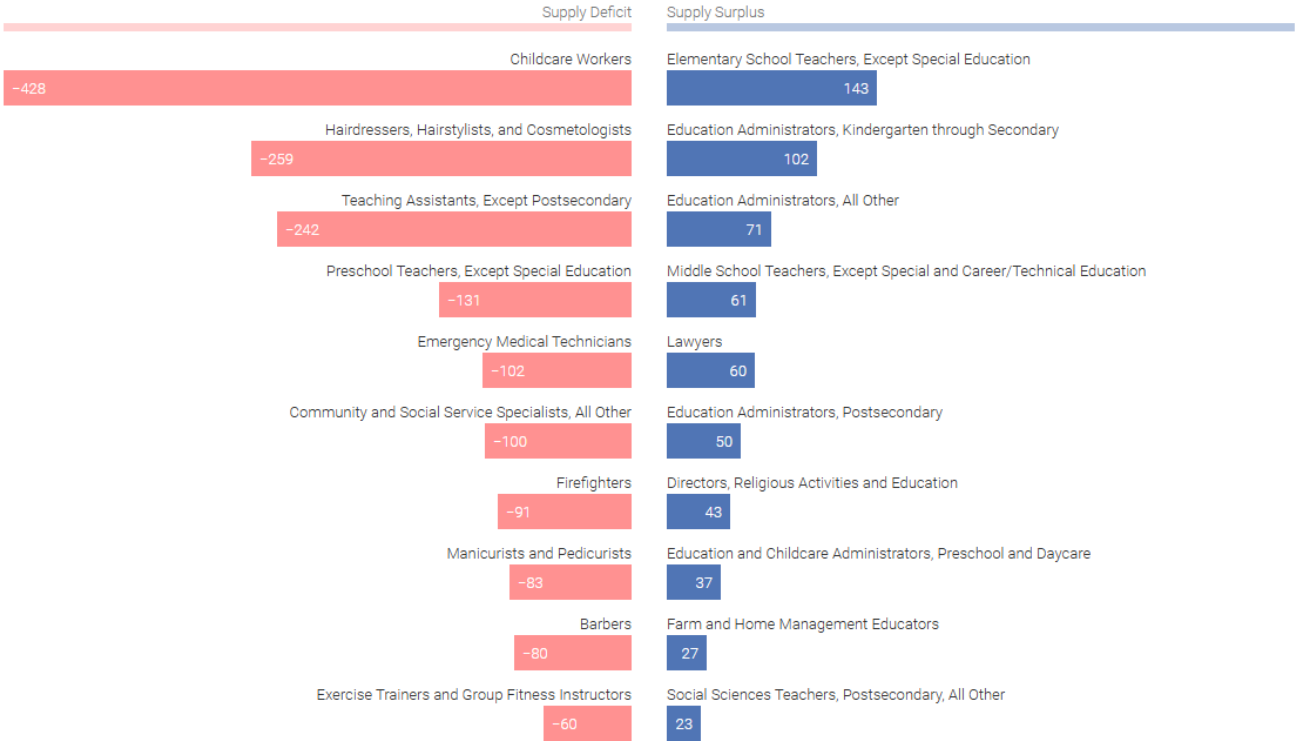
## AWARD GAPS

The chart below shows the shortfall of new postsecondary graduates needed to meet local demand, benchmarked against national average volumes of graduates in the 2022-23 school year.

Minnesota faces several notable Human Services award shortages and some general misalignments:

- The Human Services occupations listed below have a local shortage of new graduates from local postsecondary programs, with local employers likely filling a large share of local job openings with talent trained outside of the region
- Education programs are underproducing the most graduates; Minnesota colleges and universities are underproducing about 428 graduates annually that are needed to fill Childcare workers positions and 259 graduates for Hairdressers, Hairstylists, and Cosmetologist positions
- By contrast, local education programs are slightly overproducing graduates as compared to the national average in Elementary School Educator positions (+147), Middle School Teacher roles (+61) and in a variety of educational administration roles

**Award Gaps in Human Services, Minnesota, 2024Q1**



## ORIGIN, GATEWAY, AND TARGET OCCUPATIONS

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

**Origin-to-Gateway-to-Target Occupations for Human Services, Minnesota, 2024Q1**

**Target Occupations (All HW, HS, HD)**
Elementary School Teachers
Secondary School Teachers
Lawyers (OG)
Middle School Teachers
Substance Abuse, Behavioral Disorder, & Mental Health Counselors (OG)

**Gateway Occupations**
Security Guards (HD)
Social & Human Service Assistants (HD, AG)
Self-Enrichment Teachers (HD)
Exercise Trainers & Group Fitness Instructors (HD, AG)
Court, Municipal, & License Clerks (OG)

**Origin Occupations (All HD, AG)**
Personal Care Aides
Teaching Assistants (HS)
Childcare Workers
Preschool Teachers (HS)
Hairdressers, Hairstylists, & Cosmetologists (HS, OG)

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

**Other Promising Occupations**

A number of other Human Services occupations that are high-wage and high-demand, yet do not meet the high-skill threshold to be considered Target Occupations, may be promising careers for students to consider. These occupations may offer a fast track to good jobs for those interested in starting a career in the field without requiring a postsecondary credential. These occupations to consider include:

- Police & Sheriffs Patrol Officers (OG, AG)
- Correctional Officers & Jailers
- Construction & Building Inspectors
- Detectives & Criminal Investigators (OG, AG)
- Occupational Health & Safety Technicians (OG, AG)

**High LQ Occupations**

The following are the most highly concentrated Human Services occupations in Minnesota, relative to the national average.

| Occupation | LQ |
|---|---|
| Social Workers, All Other | 2.76 |
| Special Education Teachers, Preschool | 2.72 |
| Court, Municipal, and License Clerks | 2.12 |
| Residential Advisors | 1.98 |
| Marriage and Family Therapists | 1.98 |

RealTime Talent

## Origin-to-Gateway-to-Target Occupations for Human Services, By Region 2024Q1

| | MSP Metro | Northeast | Northwest | Central | Southwest | Southeast |
|---|---|---|---|---|---|---|
| Mdn. Wage | Field: $61,600 | Field: $55,100 | Field: $55,400 | Field: $53,700 | Field: $56,400 | Field: $57,000 |
| Unempl | Region: 2.6%<br>Field: 2.1% | Region: 3.6%<br>Field: 2.7% | Region: 3.2%<br>Field: 2.4% | Region: 3.3%<br>Field: 2.5% | Region: 2.8%<br>Field: 2.1% | Region: 2.3%<br>Field: 2.0% |
| Origin Occupations | • Personal Care Aides<br>• Teaching Assistants, Except Postsecondary<br>• Childcare Workers<br>• Preschool Teachers, Except Special Education<br>• Hairdressers, Hairstylists, & Cosmetologists | • Personal Care Aides<br>• Teaching Assistants<br>• Childcare Workers<br>• Social & Human Service Assistants<br>• Preschool Teachers | • Personal Care Aides<br>• Teaching Assistants, Except Postsecondary<br>• Childcare Workers<br>• Preschool Teachers, Except Special Education<br>• Firefighters | • Personal Care Aides<br>• Teaching Assistants, Except Postsecondary<br>• Childcare Workers<br>• Preschool Teachers, Except Special Education<br>• Social & Human Service Assistants | • Personal Care Aides<br>• Teaching Assistants, Except Postsecondary<br>• Childcare Workers<br>• Preschool Teachers, Except Special Education<br>• Firefighters | • Personal Care Aides<br>• Teaching Assistants, except Postsecondary<br>• Preschool Teachers, except Special Education<br>• Hairdressers, Hair Stylists, & Cosmetologists<br>• Laundry & Dry-Cleaning Workers |
| Gateway Occupations | • Security Guards<br>• Social & Human Service Assistants<br>• Self-Enrichment Teachers<br>• Substance Abuse, Behavioral Disorder, & Mental Health Counselors<br>• Exercise Trainers & Group Fitness Instructors | • Residential Advisors<br>• Supervisors of Entertainment & Recreation Workers<br>• Community Health Workers<br>• Skincare Specialists<br>• Judicial Law Clerks | • Social & Human Services Assistants<br>• Substitute Teachers, Short-Term<br>• Self-Enrichment Teachers<br>• Residential Advisors<br>• Rehabilitation Counselors | • Exercise Trainers & Groups Fitness Instructors<br>• Coaches & Scouts<br>• Community & Social Service Specialists<br>• Rehabilitation Counselors<br>• First-Line Supervisors of Entertainment & Recreation Workers | • Service Assistants<br>• Residential Advisors<br>• Community & Social Service Specialists, All Other<br>• First-Line Supervisors of Personal Service Workers<br>• Tutors | • Emergency Medical Technicians<br>• Social & Human Service Assistants<br>• Exercise Trainers & Group Fitness Instructors<br>• Security Guards<br>• Court, Municipal, & License Clerks |
| Target Occupations | • Elementary School Teachers, Except Special Education<br>• Secondary School Teachers, Except Special & CTE<br>• Lawyers<br>• Middle School Teachers, Except Special & CTE<br>• Child, Family, & School Social Workers | • Elementary School Teachers<br>• Secondary School Teachers<br>• Substance Abuse, Behavioral Disorder, & Mental Health Counselors<br>• Child, Family, & School Social Workers<br>• Middle School Teachers | • Child, Family, & School Social Workers<br>• Substance Abuse, Behavioral Disorder, & Mental Health Counselors<br>• Lawyers<br>• Social & Community Service Manager<br>• Educational, Guidance, & Career Counselors | • Elementary School Teachers<br>• Secondary School Teachers, Except Special & CTE<br>• Middle School Teachers, Except Special & CTE<br>• Substance Abuse, Behavioral Disorder, & Mental Health Counselors<br>• Child, Family, & School Social Workers | • Substance Abuse, Behavioral Disorder, & Mental Health Counselors<br>• Child, Family, & School Social Workers<br>• Substitute Teachers, Short-Term<br>• Social & Community Service Managers<br>• Coaches & Scouts | • Substance Abuse, Behavioral Disorder, & Mental Health Counselors<br>• Child, Family, & School Social Workers<br>• Substitute Teachers, Short-Term<br>• Lawyers<br>• Paramedics |

## High Location Quotient (LQ) Occupations for Human Services, By Region 2024Q1

| | MSP Metro | Northeast | Northwest | Central | Southwest | Southeast |
|---|---|---|---|---|---|---|
| LQ > 1.20 | • Social Workers, All Other<br>• Special Education Teachers, Preschool<br>• Marriage & Family Therapists<br>• Geography Teachers, Postsec.<br>• Area, Ethnic, & Cultural Studies Teachers, Postsec. | • Gambling Surveillance Officers & Gambling Investigators<br>• Social Workers, All Other<br>• Court, Municipal, & License Clerks<br>• Residential Advisors<br>• Special Education Teachers, Preschool | • Funeral Home Managers<br>• Special Education Teachers, Preschool<br>• Social Workers, All Other<br>• Court, Municipal, & License Clerks<br>• Morticians, Undertakers, & Funeral Arrangers | • Special Education Teachers, Preschool<br>• Funeral Home Managers<br>• Social Workers, All Other<br>• Court, Municipal, & License Clerks<br>• Residential Advisors | • Funeral Home Managers<br>• Special Education Teachers, Preschool<br>• Court, Municipal, & License Clerks<br>• Gambling Surveillance Officers & Gambling Investigators<br>• Social Workers, All Other | • Emergency Medical Technicians<br>• Paramedics<br>• Special Education Teachers, Preschool<br>• Funeral Home Managers<br>• Social Workers, All Other |

# *Arts, Communications, and Information Systems*

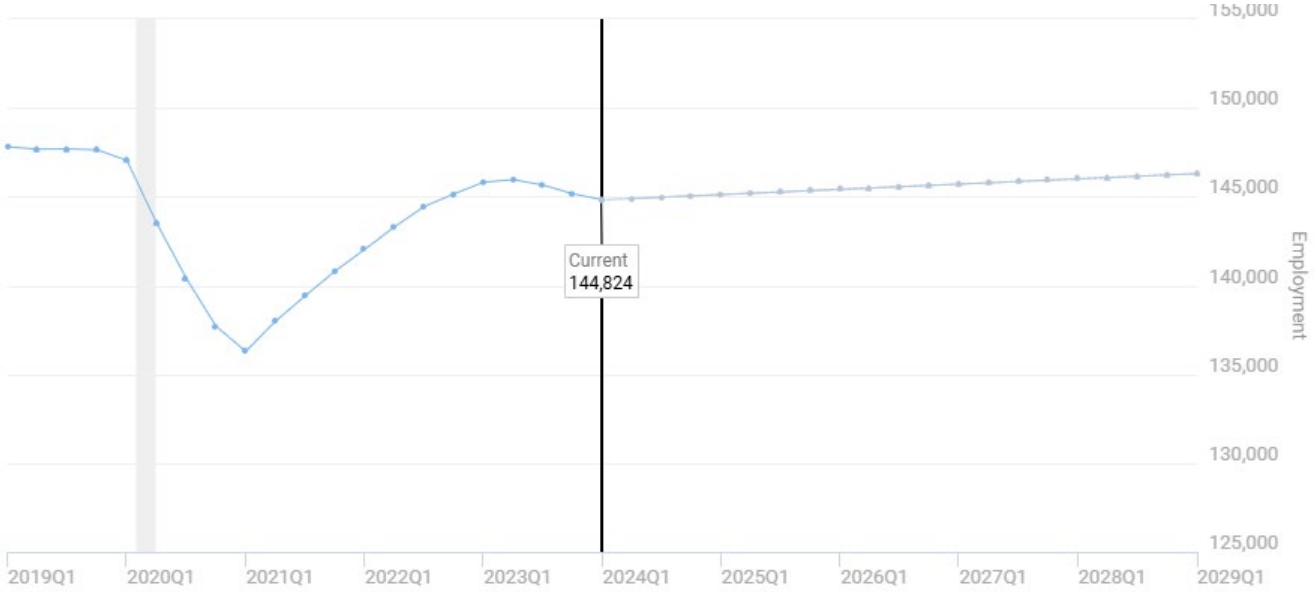
Arts, Communications, and Information Systems is a diverse career field with artistic careers as well as Information Technology career paths. The specific career clusters included in this field are:

- Arts, Audio/Video Technology, and Communications
- Information Technology

## EMPLOYMENT FORECAST

Over the next five years, Arts, Communications, and Information Systems Field employment is forecast to grow by 0.4% annually, dropping moderately from last year's forecast (0.6%).

**Baseline 5-Year Forecast for Arts, Communications, and Information Systems Careers, Minnesota, 2024Q1**



## TOP OCCUPATIONS

A total of 144,824 people are employed in Arts, Communications, and Information Systems roles statewide, accounting for about 5% of all Minnesota employment. This is the smallest CTE Career Field in Minnesota. Among the top ten occupations, there are a variety of forecasts, from the most optimistic for Software Developers (+1.8%) to the sharpest decline in Printing Press Operators (-1.6%).

**Top Ten Arts, Communications, and Information Systems Occupations by Employment Volume, Minnesota, 2024Q1**

| 6-Digit Occupation | Empl | Median Wages | LQ | Historical 5-Year Empl Change | Forecast 5-Year Demand | Forecast Annual Change |
|---|---|---|---|---|---|---|
| Software Developers | 35,278 | $127,600 | 1.16 | 4,463 | 13,451 | 1.8% |
| Computer User Support Specialists | 13,500 | $65,700 | 0.98 | 972 | 4,431 | 0.0% |
| Computer Systems Analysts | 12,482 | $110,700 | 1.26 | -516 | 3,906 | 0.4% |
| Computer Network Support Specialists | 6,332 | $75,900 | 1.92 | -106 | 2,180 | 0.2% |
| Graphic Designers | 6,155 | $62,300 | 1.21 | -359 | 2,352 | -0.3% |
| Printing Press Operators | 5,455 | $47,000 | 1.91 | -984 | 2,233 | -1.6% |
| Computer Occupations, All Other | 5,450 | $101,100 | 0.66 | 260 | 1,795 | 0.3% |
| Network and Computer Systems Administrators | 5,033 | $101,500 | 0.79 | -371 | 1,298 | -0.3% |
| Musicians and Singers | 3,072 | $72,900 | 0.94 | -781 | 1,890 | -0.3% |
| Writers and Authors | 2,931 | $73,500 | 1.01 | -465 | 1,388 | -0.1% |
| **Arts, Communications, & Information Systems (CTE Field)** | **144,824** | **$91,300** | **1.03** | **-2,979** | **55,065** | **0.4%** |

"Forecast 5-Year Demand" is the projected need for new entrants into an occupation over the next five years. 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 Annual Change" 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).

## TOP INDUSTRIES

The largest share of talent in Minnesota working in Arts, Communications, and Information Systems roles are employed by Computer Systems Design and Related Services Companies (14.8%) or Management of Companies and Enterprises (8.1%). Overall, employment in this field is relatively spread out across many different industries.

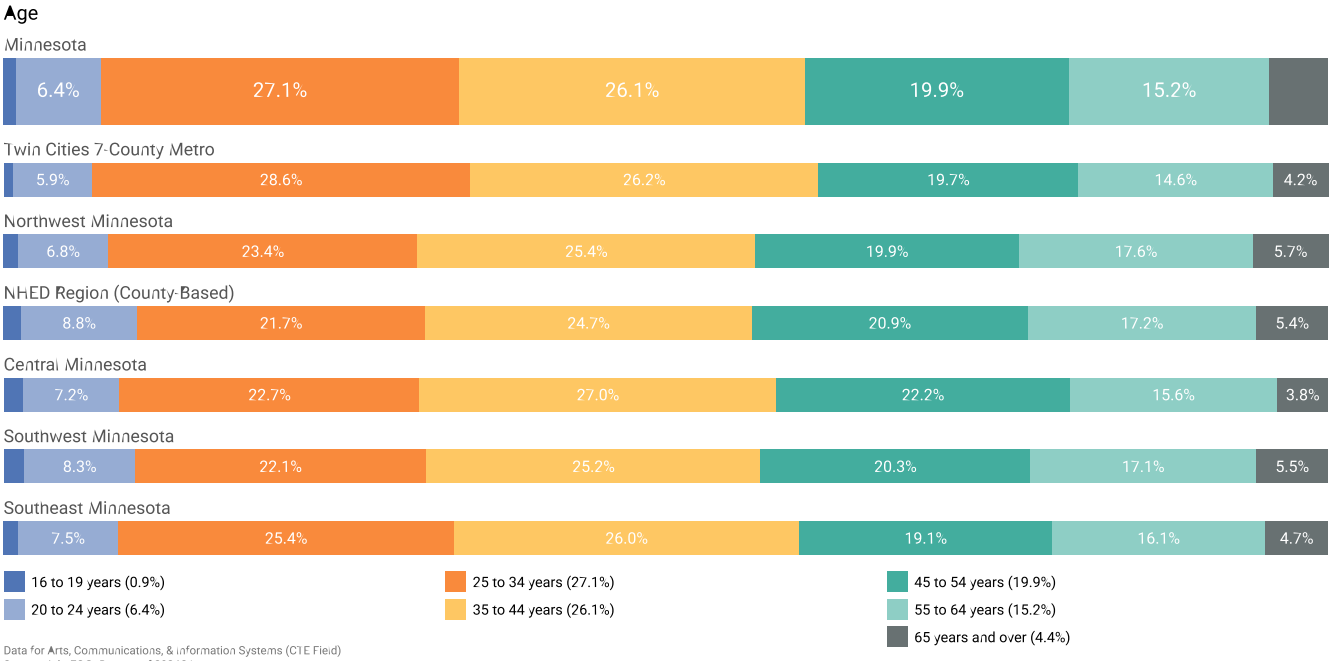
**Arts, Communications, and Information Systems Field Employment by Industry, Minnesota, 2024Q1**

| Industry Title | % of Career Field Empl | Career Field Empl | 10-Year Separations | 10-Year Empl Change | 10-Year Total Demand |
|---|---|---|---|---|---|
| Computer Systems Design and Related Services | 14.8% | 21,386 | 13,486 | 4,012 | 17,498 |
| Management of Companies and Enterprises | 8.1% | 11,788 | 7,420 | 840 | 8,259 |
| Printing and Related Support Activities | 5.7% | 8,184 | 7,390 | -1,691 | 5,699 |
| Independent Artists, Writers, and Performers | 4.0% | 5,826 | 5,647 | -82 | 5,565 |
| Software Publishers | 3.5% | 5,031 | 3,174 | 1,006 | 4,180 |
| Navigational, Measuring, Electromedical, and Control Instruments Manufacturing | 2.9% | 4,149 | 2,368 | 164 | 2,532 |
| Insurance Carriers | 2.7% | 3,978 | 2,364 | 191 | 2,555 |
| Newspaper, Periodical, Book, and Directory Publishers | 2.7% | 3,912 | 3,417 | -206 | 3,211 |
| Depository Credit Intermediation | 2.5% | 3,667 | 2,160 | 250 | 2,410 |
| Wired and Wireless Telecommunications (except Satellite) | 2.5% | 3,593 | 2,911 | 0 | 2,911 |
| Management, Scientific, and Technical Consulting Services | 2.4% | 3,513 | 2,366 | 371 | 2,737 |
| Computing Infrastructure Providers, Data Processing, Web Hosting, and Related Services | 2.3% | 3,361 | 2,122 | 571 | 2,694 |
| Employment Services | 2.2% | 3,211 | 2,102 | 51 | 2,153 |
| Religious Organizations | 2.1% | 3,091 | 3,194 | -114 | 3,080 |
| Other Professional, Scientific, and Technical Services | 2.1% | 3,072 | 2,499 | 128 | 2,626 |
| Advertising, Public Relations, and Related Services | 2.0% | 2,945 | 2,582 | 171 | 2,753 |
| Professional and Commercial Equipment and Supplies Merchant Wholesalers | 1.9% | 2,688 | 1,637 | 60 | 1,697 |
| Colleges, Universities, and Professional Schools | 1.8% | 2,623 | 1,758 | -81 | 1,677 |
| Web Search Portals, Libraries, Archives, and Other Information Services | 1.5% | 2,119 | 1,361 | 568 | 1,929 |
| Architectural, Engineering, and Related Services | 1.3% | 1,865 | 1,133 | 85 | 1,218 |
| All Others | 31.0% | 44,824 | 33,150 | 154 | 33,303 |

## CAREER FIELD DEMOGRAPHICS

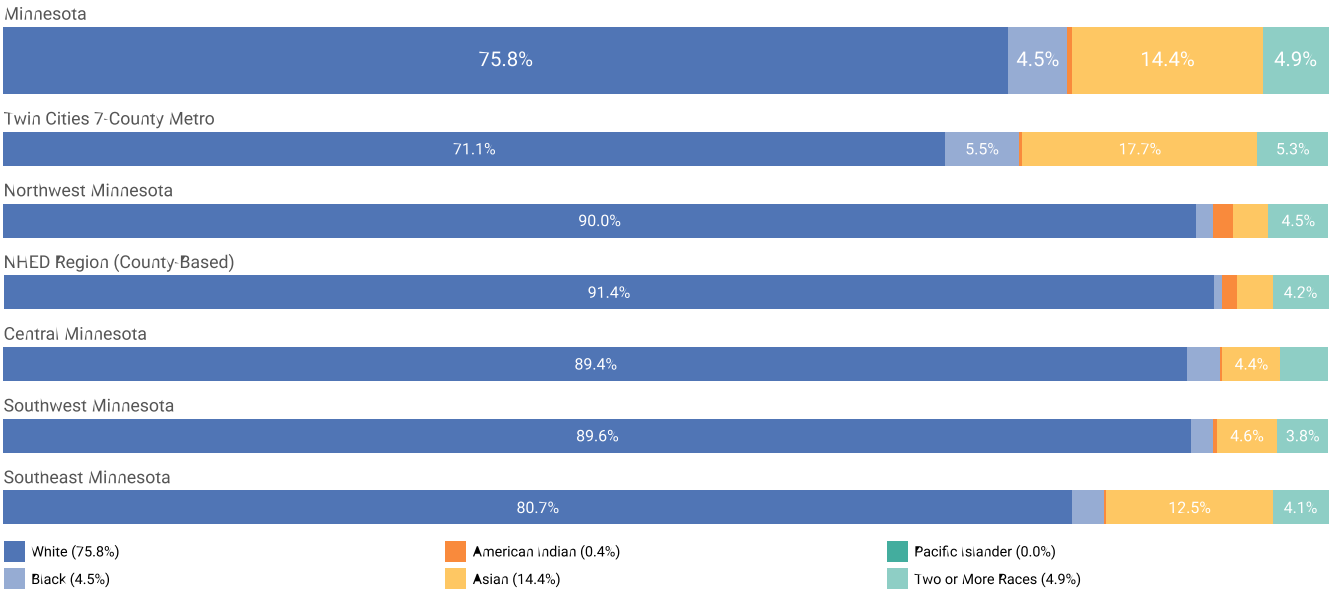
- The Arts, Communications, and Information Systems field is predominantly male (72.6%) and white (75.8%), as well as non-Hispanic/Latine (97.2%)
    - This is the most diverse career field by race
- The MSP Metro has the youngest workforce, with the smallest share of workers 45 years old and older

### Arts, Communications, and Information Systems Workforce Age by Region



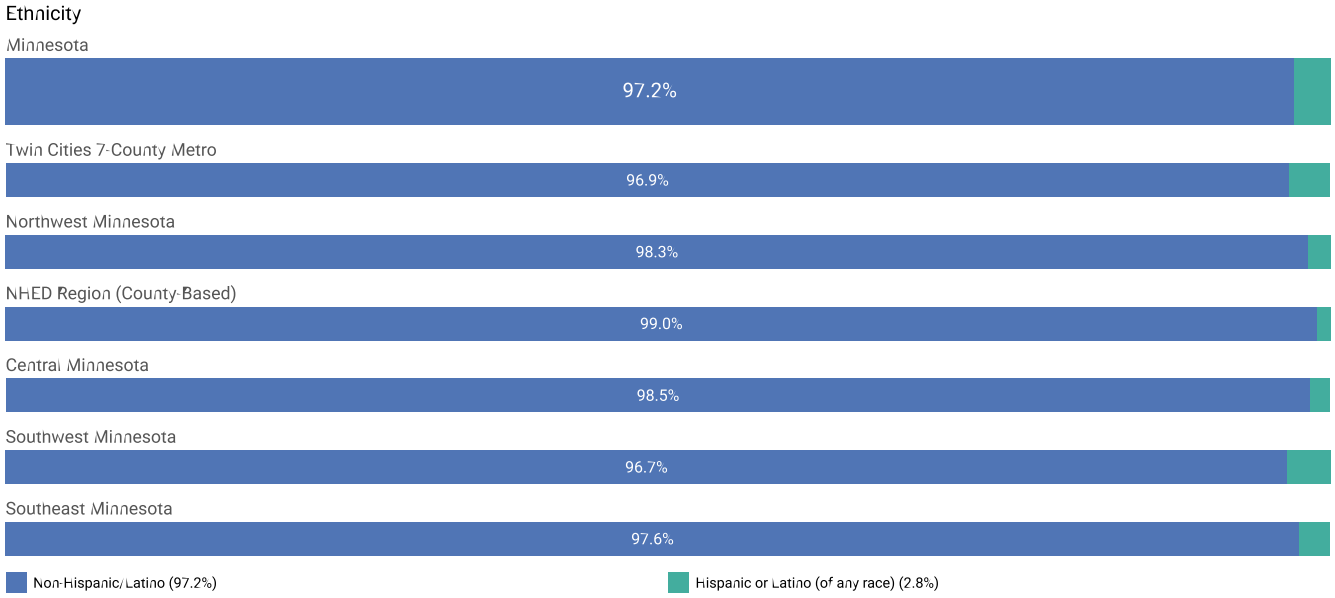

Data for Arts, Communications, & Information Systems (CTE Field)
Source: JobsEQ®. Data as of 2024Q1.

### Arts, Communications, and Information Systems Workforce Race by Region



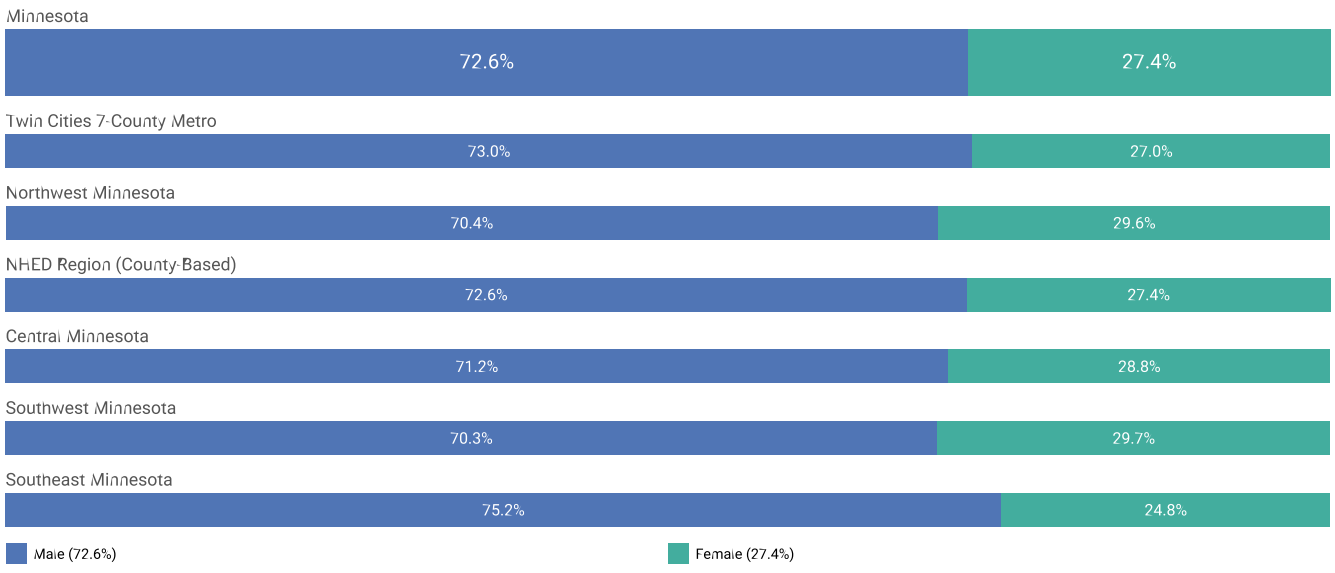

Data for Arts, Communications, & Information Systems (CTE Field)
Source: JobsEQ®. Data as of 2024Q1.

## Arts, Communications, and Information Systems Workforce Ethnicity by Region




Data for Arts, Communications, & Information Systems (CTE Field)
Source: JobsEQ®. Data as of 2024Q1.

## Arts, Communications, and Information Systems Workforce Gender by Region

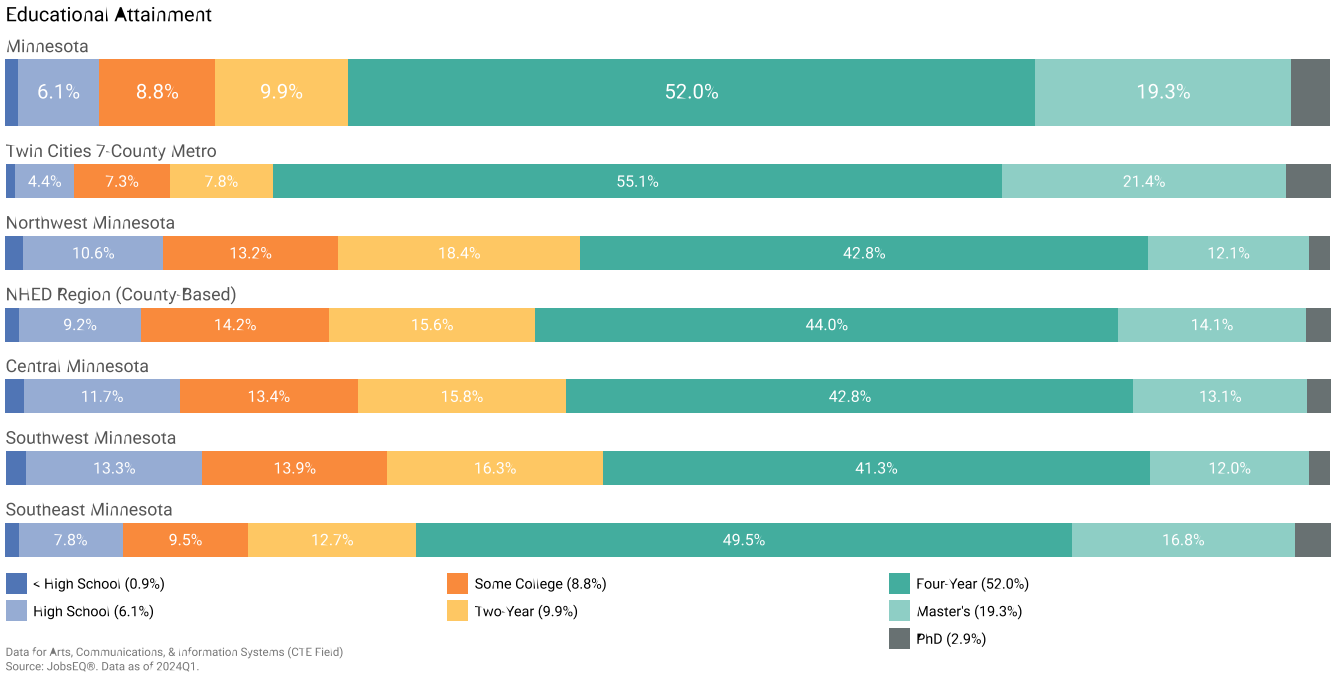



Data for Arts, Communications, & Information Systems (CTE Field)
Source: JobsEQ®. Data as of 2024Q1.

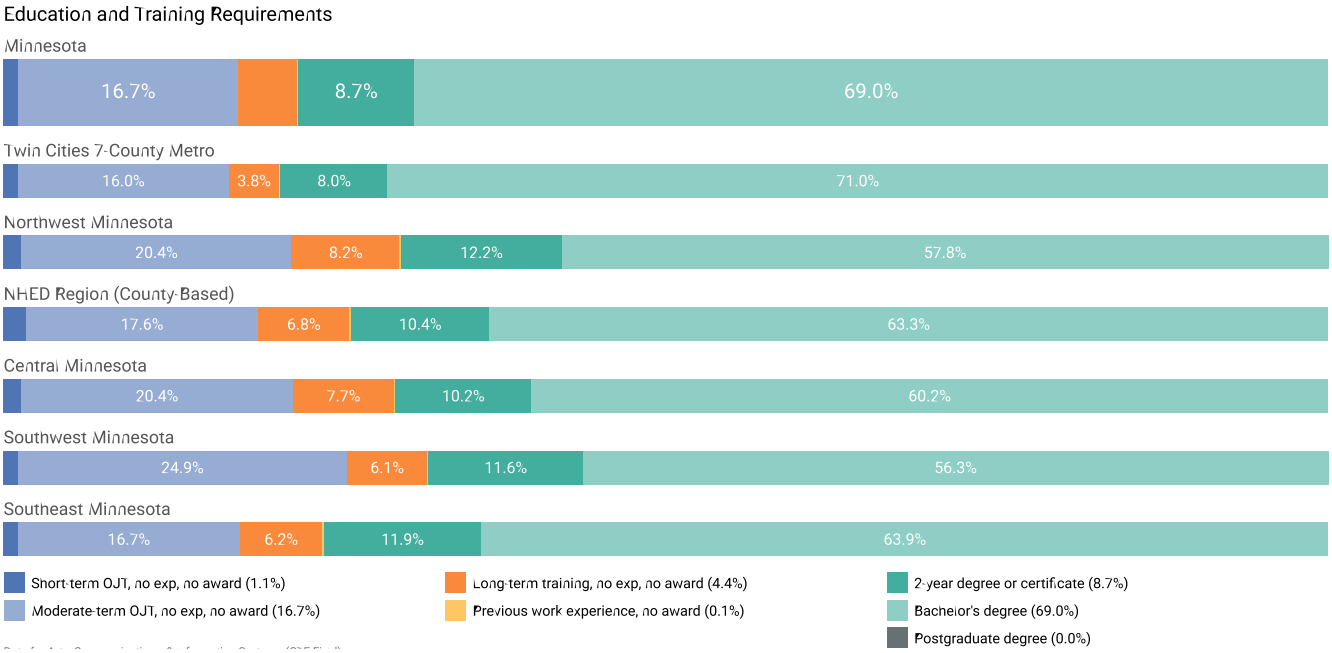
## EDUCATIONAL ATTAINMENT AND REQUIREMENTS

The charts below illustrate the estimated educational attainment of current workers in this career field, followed by the typical education and training requirements in the field.

- Workers in the Arts, Communication, and Information Systems field across the state of Minnesota have attained high levels of education, with over 80% having at least a two-year degree
- Regional educational attainments in this career field vary in terms of percentage of workers with some college or a two-year degree; The MSP Metro has the smallest share (15.1%), followed by the Southeast (22.0%); These regions also have the highest percentage of workers with a bachelor's degree or higher
- The Northwest and Southwest regions have the largest percentage of workers in the field with either some college or a two-year degree as their highest level of educational attainment at approximately 30% each
- With the exception of Southwest Minnesota (66.9%), all other regions' share of occupation in this career field requiring a two-year degree or higher exceeds 70%




Data for Arts, Communications, & Information Systems (CTE Field)
Source: JobsEQ®. Data as of 2024Q1.

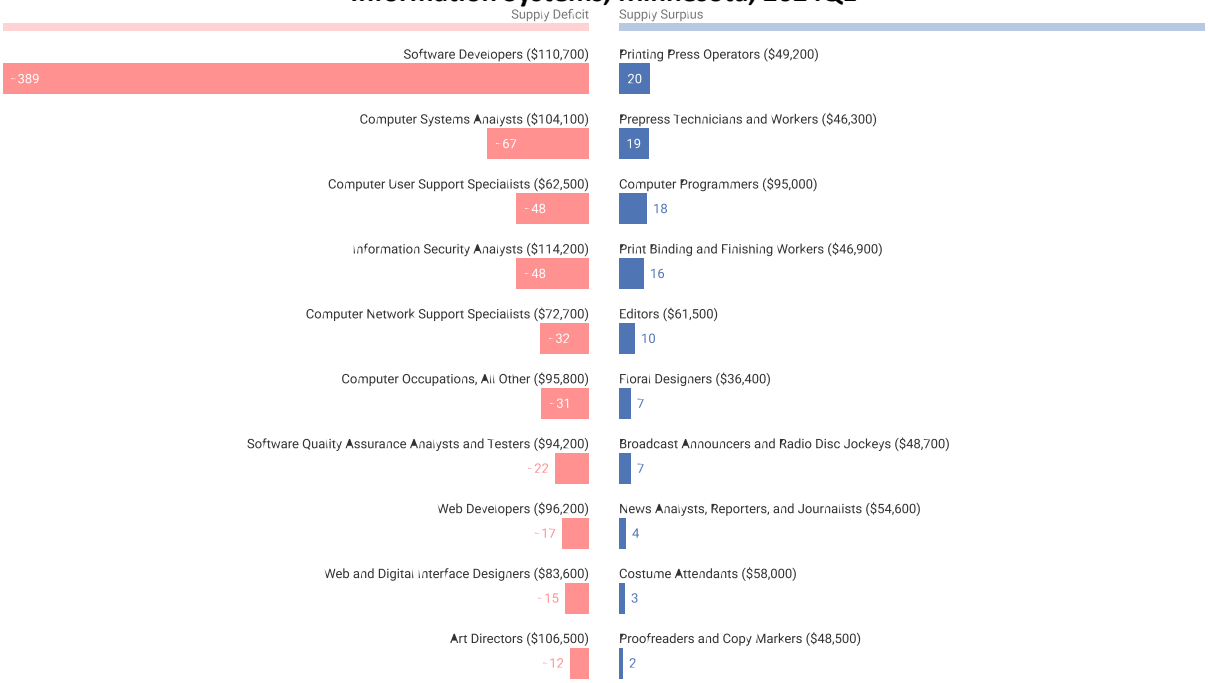



## OCCUPATION GAPS

The chart below shows the potential average annual talent shortages over ten years.

Software Developers are the top occupation of shortage in this field, falling short at least almost 400 skilled workers needed annually (averaged over the next ten years) to meet employer demand. This major talent shortage is primarily due to employment growth which is outpacing the growth in supply of trained software professionals in this region. The Computer Systems Analyst role has the second greatest forecasted shortage and Art Directors are also newly forecast to have shortages. Shortage estimates have shrunk moderately and surplus estimates have remained similar to 2023.

**Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Arts, Communications. And Information Systems, Minnesota, 2024Q1**



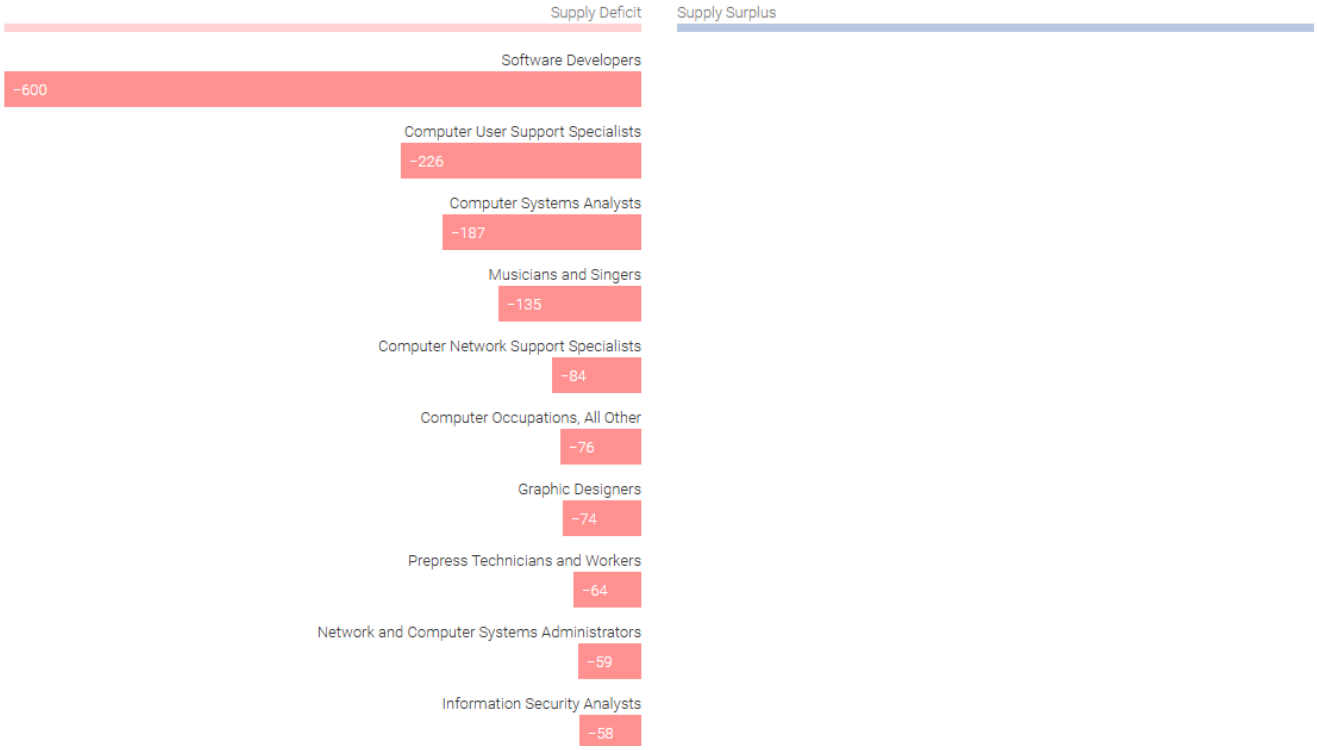
## AWARD GAPS

The chart below shows the shortfall of new postsecondary graduates needed to meet local demand, benchmarked against national average volumes of graduates in the 2022-23 school year.

Minnesota is underproducing graduates in several Arts, Communications, and Information Systems programs in addition to showing some general misalignments:

- There are no occupations in the field forecasting award surpluses at the statewide level
- All occupations in the field have an undersupply or sufficient volume of postsecondary graduates from local institutions
- Minnesota colleges and universities are underproducing trained Software Developers, Musicians, Graphic Designers, Computer User Support Specialists, and more when compared to national trends

**Award Gaps in Arts, Communications, and Information Systems, Minnesota, 2024Q1**



## ORIGIN, GATEWAY, AND TARGET OCCUPATIONS

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

**Origin-to-Gateway-to-Target Occupations for Arts, Communications, and Information Systems, Minnesota, 2024Q1**

**Target Occupations (All HW, HS, HD, AG)**
Software Developers (OG)
Computer User Support Specialists 0OG)
Computer Systems Analysts (OG)
Computer Network Support Specialists (OG)
Graphic Designers

**Gateway Occupations**
Printing Press Operators (AG)
Photographers (OG, AG)
Prepress Technicians & Workers (HS, AG)
Print Binding & Finishing Workers
Audio & Video Technicians (HS, OG, AG)

**Origin Occupations**
Floral Designers (AG)
News Analysts, Reporters, & Journalists (HS)
Broadcast Announcers & Radio Disc Jockeys (HS, AG)
Disk Jockeys, Except Radio (AG)
Artists & Related Workers, All Other (OG, AG)

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

**Other Promising Occupations**

Another Arts, Communications, and Information Systems occupation that is high-wage and high-demand, yet does not meet the high-skill threshold to be considered a Target Occupation, may be a promising career for students to consider. This occupation may offer a fast track to good jobs for those interested in starting a career in the field without requiring a postsecondary credential. This occupation to consider is:

- Telecommunications Line Installers and Repairers (OG, AG)

**High LQ Occupations**

The following are the most highly concentrated Arts, Communications and Information Systems occupations in Minnesota, relative to the national average.

| Occupation | LQ |
|---|---|
| Prepress Technicians & Workers | 3.49 |
| Print Binding & Finishing Workers | 2.14 |
| Computer Network Support Specialists | 1.92 |
| Printing Press Operators | 1.91 |
| Desktop Publishers | 1.85 |

RealTime Talent

## Origin-to-Gateway-to-Target Occupations for Arts, Communications, and Information Systems, By Region 2024Q1

| | MSP Metro | Northeast | Northwest | Central | Southwest | Southeast |
|---|---|---|---|---|---|---|
| Mdn. Wage | Field: $96,000 | Field: $76,200 | Field: $69,300 | Field: $72,800 | Field: $70,800 | Field: $86,600 |
| Unempl | Region: 2.6%<br>Field: 2.1% | Region: 3.6%<br>Field: 2.6% | Region: 3.2%<br>Field: 2.3% | Region: 3.3%<br>Field: 2.4% | Region: 2.8%<br>Field: 2.3% | Region: 2.3%<br>Field: 1.9% |
| Origin Occupations | • News Analysts, Reporters, & Journalists<br>• Floral Designers<br>• Broadcast Announcers & Radio Disc Jockeys<br>• Disc Jockeys, Except Radio<br>• Artists & Related Workers, All Other | • Photographers<br>• Audio & Video Technicians<br>• Floral Designers<br>• Broadcast Announcers & Radio Disc Jockeys<br>• Prepress Technicians & Workers | • Printing Press Operators<br>• Photographers<br>• Floral Designers<br>• Prepress Technicians & Workers<br>• Print Binding & Finishing Workers | • Photographers<br>• Prepress Technicians & Workers<br>• Floral Designers<br>• Broadcast Announcers & Radio Disc Jockeys<br>• News Analysts, Reporters, & Journalists | • Printing Press Operators<br>• Prepress Technicians & Workers<br>• Print Binding & Finishing Workers<br>• Photographers<br>• Broadcast Announcers & Radio Disc Jockeys | • Photographers<br>• Producers & Directors<br>• Floral Designers<br>• Broadcast Announcers & Radio Disc Jockeys<br>• News Analysts, Reporters, & Journalists |
| Gateway Occupations | • Printing Press Operators<br>• Photographers<br>• Prepress Technicians & Workers<br>• Print Binding & Finishing Workers<br>• Audio & Video Technicians | • Printing Press Operators<br>• Producers & Directors<br>• News Analysts, Reporters, & Journalists<br>• Print Binding & Finishing Workers<br>• Camera Operators, Television, Video, & Film | • Editors<br>• Broadcast Technicians<br>• Proofreaders & Copy Markers | • Printing Press Operators<br>• Print Binding & Finishing Workers<br>• Audio & Video Technicians<br>• Broadcast Technicians<br>• Proofreaders & Copy Markers | • Actors<br>• Fine Artists Incl. Painters, Sculptors & Illustrators<br>• Entertainers & Performers, Sports & Related Workers, All Other<br>• Proofreaders & Copy Makers<br>• Agents & Business Managers of Artists, Performers, & Athletes | • Printing Press Operators<br>• Editors<br>• Audio & Video Technicians<br>• Prepress Technicians & Workers<br>• Print Binding & Finishing Workers |
| Target Occupations | • Software Developers<br>• Computer User Support Specialists<br>• Computer Systems Analysts<br>• Computer Occupations, All Other<br>• Network & Computer Systems Administrators | • Software Developers<br>• Computer Systems Analysts<br>• Computer Network Support Specialists<br>• Computer Occupations, All Other<br>• Telecommunications Equipment Installers | • Software Developers<br>• Computer Systems Analysts<br>• Telecommunications Equipment Installers & Repairers<br>• Computer Occupations, All Other<br>• Web & Digital Interface Designers | • Software Developers<br>• Computer User Support Specialists<br>• Computer Systems Analysts<br>• Graphic Designers<br>• Computer Network Support Specialists | • Software Developers<br>• Web & Digital Interface Designers<br>• Web Developers<br>• Makeup Artists, Theatrical & Performance | • Software Developers<br>• Computer Systems Analysts<br>• Telecommunications Equipment Installers<br>• Web & Digital Interface Designers<br>• Web Developers |

## High Location Quotient (LQ) Occupations for Arts, Communications, and Information Systems, By Region 2024Q1

| | MSP Metro | Northeast | Northwest | Central | Southwest | Southeast |
|---|---|---|---|---|---|---|
| LQ > 1.20 | • Prepress Technicians & Workers<br>• Print Binding & Finishing Workers<br>• Desktop Publishers<br>• Computer Network Support Specialists<br>• Printing Press Operators | • Broadcast Announcers & Radio Disc Jockeys<br>• Prepress Technicians & Workers<br>• Computer Network Support Specialists<br>• Dancers<br>• Artists & Related Workers, All Other | • Prepress Technicians & Workers<br>• Broadcast Announcers & Radio Disc Jockeys<br>• Floral Designers<br>• Print Binding & Finishing Workers<br>• Commercial & Industrial Designers | • Prepress Technicians & Workers<br>• Print Binding & Finishing Workers<br>• Printing Press Operators<br>• Commercial & Industrial Designers<br>• Broadcast Announcers & Radio Disc Jockeys | • Prepress Technicians & Workers<br>• Print Binding & Finishing Workers<br>• Printing Press Operators<br>• Broadcast Announcers & Radio Disc Jockeys<br>• Desktop Publishers | • Sound Engineering Technicians<br>• Prepress Technicians & Workers<br>• Computer Network Support Specialists<br>• Broadcast Announcers & Radio Disc Jockeys |

# *Business, Management, and Administration*

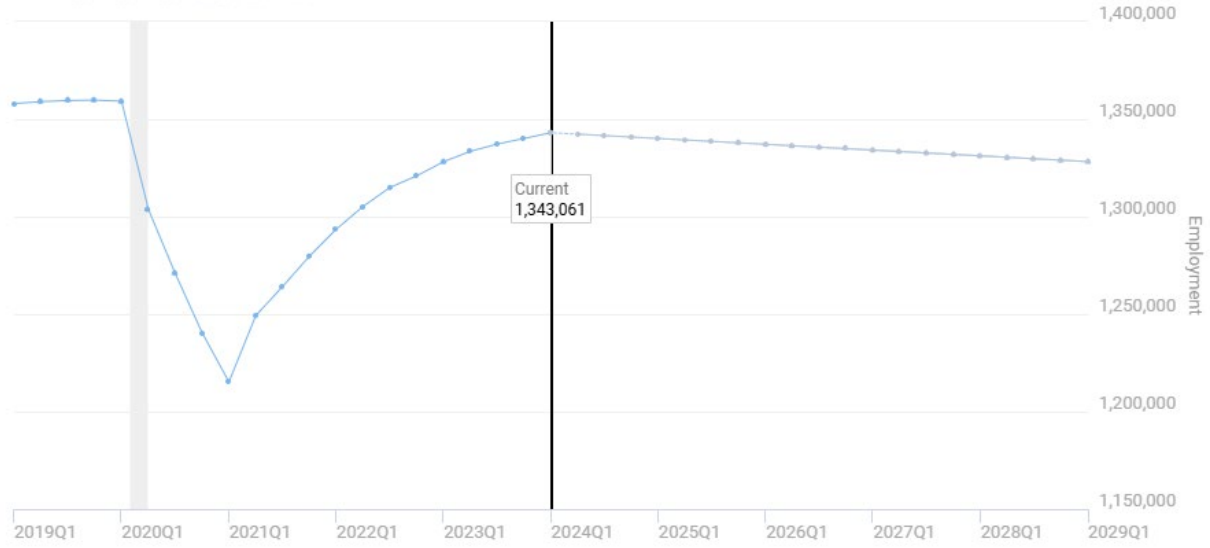
Business, Management, and Administration is a diverse career field with the following career clusters:

- Hospitality and Tourism
- Finance
- Marketing
- Business, Management, and Administration

## EMPLOYMENT FORECAST

Over the next five years, Business, Management, and Administration Field employment is forecast to decline by -0.4%, a slightly worse forecast than the -0.3% decline projected one year ago.

**Baseline 5-Year Forecast for Business, Management, and Administration Careers, Minnesota 2024Q1**



## TOP OCCUPATIONS

A total of 1,343,061 people are employed in Business, Management and Administration Systems roles in Minnesota, accounting for about 43% of all statewide employment. The sole occupation in the top ten predicted to grow is Stockers and Order Fillers (+0.2%).

**Top Ten Business, Management, and Administration Systems Occupations by Employment Volume in Minnesota, 2024Q1**

| 6-Digit Occupation | Empl | Median Wages | LQ | Historical 5-Year Empl Change | Forecast 5-Year Demand | Forecast Annual Change |
|---|---|---|---|---|---|---|
| General and Operations Managers | 75,588 | $100,800 | 1.13 | 11,371 | 29,593 | 0.0% |
| Retail Salespersons | 69,234 | $36,000 | 0.98 | -8,289 | 46,702 | -0.6% |
| Cashiers | 61,806 | $33,100 | 0.97 | -3,429 | 51,801 | -1.4% |
| Customer Service Representatives | 58,126 | $48,300 | 1.05 | 747 | 33,975 | -1.1% |
| Fast Food and Counter Workers | 55,592 | $32,200 | 0.85 | -3,595 | 61,275 | -0.4% |
| Office Clerks, General | 55,100 | $47,800 | 1.09 | -4,068 | 28,193 | -1.1% |
| Stockers and Order Fillers | 44,723 | $39,700 | 0.82 | 4,477 | 36,635 | 0.2% |
| Janitors and Cleaners, Except Maids and Housekeeping Cleaners | 44,135 | $39,700 | 0.97 | -655 | 29,575 | -0.4% |
| Waiters and Waitresses | 39,748 | $26,400 | 0.93 | -4,138 | 38,235 | -0.8% |
| Secretaries and Administrative Assistants, Except Legal, Medical, and Executive | 35,945 | $50,500 | 0.94 | -1,396 | 15,645 | -1.7% |
| **Business, Management, & Administration (CTE Field)** | **1,343,061** | **$61,700** | **0.98** | **-14,967** | **785,428** | **-0.4%** |

"Forecast 5-Year Demand" is the projected need for new entrants into an occupation over the next five years. 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 Annual Change" 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).

## TOP INDUSTRIES

In Minnesota, the industry with the greatest share of Business, Management, and Administration talent is Restaurants (12.7%). Beyond Restaurants, current Business, Management and Administration employment is relatively spread out over many different industries, each touching less than 5% of statewide talent.

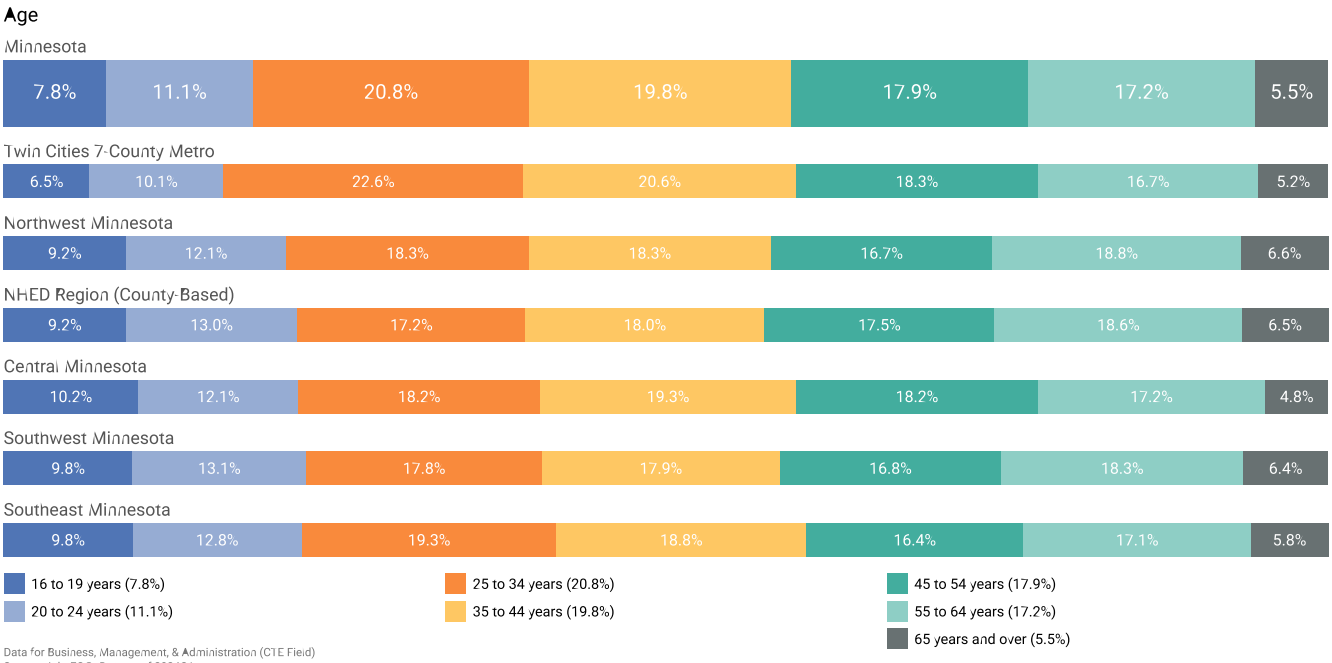
**Business, Management, and Administration Field Employment by Industry, Minnesota, 2024Q1**

| Industry Title | % of Career Field Empl | Career Field Empl | 10-Year Separations | 10-Year Empl Change | 10-Year Total Demand |
|---|---|---|---|---|---|
| Restaurants and Other Eating Places | 12.7% | 170,847 | 310,968 | -4,973 | 305,996 |
| Management of Companies and Enterprises | 4.3% | 57,909 | 52,312 | 489 | 52,801 |
| Depository Credit Intermediation | 3.1% | 41,984 | 35,142 | -2,815 | 32,327 |
| Warehouse Clubs, Supercenters, and Other General Merchandise Retailers | 2.9% | 39,026 | 56,957 | -2,634 | 54,324 |
| Grocery and Convenience Retailers | 2.8% | 38,214 | 59,752 | -2,452 | 57,301 |
| Insurance Carriers | 2.1% | 27,763 | 23,963 | -1,454 | 22,508 |
| Management, Scientific, and Technical Consulting Services | 2.1% | 27,682 | 24,175 | 999 | 25,174 |
| Traveler Accommodation | 2.0% | 26,232 | 38,721 | -451 | 38,270 |
| Gasoline Stations | 2.0% | 26,195 | 43,182 | -2,509 | 40,673 |
| Services to Buildings and Dwellings | 1.8% | 24,173 | 31,080 | -1,046 | 30,034 |
| Elementary and Secondary Schools | 1.7% | 23,428 | 29,283 | -2,234 | 27,049 |
| Agencies, Brokerages, and Other Insurance Related Activities | 1.7% | 23,257 | 20,763 | 466 | 21,229 |
| General Medical and Surgical Hospitals | 1.6% | 21,496 | 24,947 | -1,612 | 23,335 |
| Building Material and Supplies Dealers | 1.5% | 20,419 | 28,038 | -581 | 27,457 |
| Executive, Legislative, and Other General Government Support | 1.4% | 19,004 | 21,187 | -1,415 | 19,772 |
| Other Amusement and Recreation Industries | 1.4% | 18,282 | 32,780 | 653 | 33,432 |
| Employment Services | 1.4% | 18,223 | 20,404 | -1,054 | 19,350 |
| Offices of Physicians | 1.3% | 17,277 | 18,731 | -1,024 | 17,707 |
| Department Stores | 1.2% | 16,751 | 24,501 | -1,174 | 23,328 |
| Accounting, Tax Preparation, Bookkeeping, and Payroll Services | 1.2% | 16,223 | 14,195 | -934 | 13,261 |
| All Others | 49.8% | 668,676 | 717,874 | -30,819 | 687,055 |

## CAREER FIELD DEMOGRAPHICS

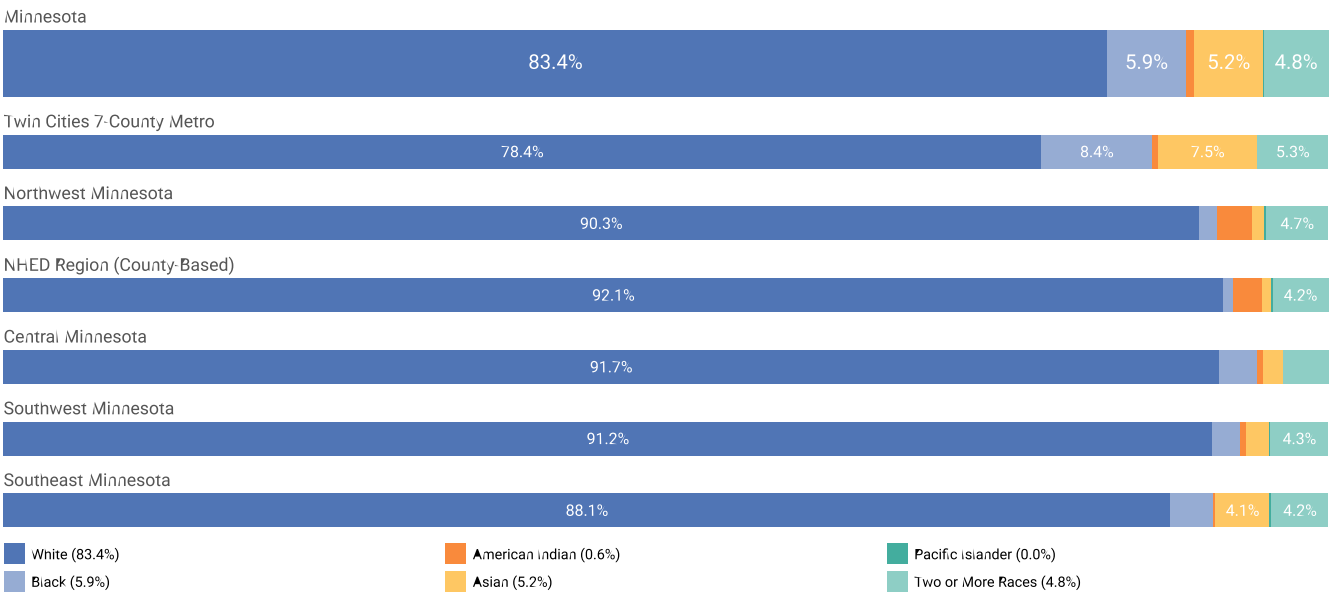
- The Business, Management, and Administration field is evenly balanced by gender overall, with 45.9% of the workforce identifying as male
- While Minnesota's Business, Management, and Administration workforce is about as diverse by ethnicity as the state's population overall (with 5.4% Hispanic/Latine workers), it is less diverse by race, at 83.4% white

### Business, Management, and Administration Workforce Age by Region



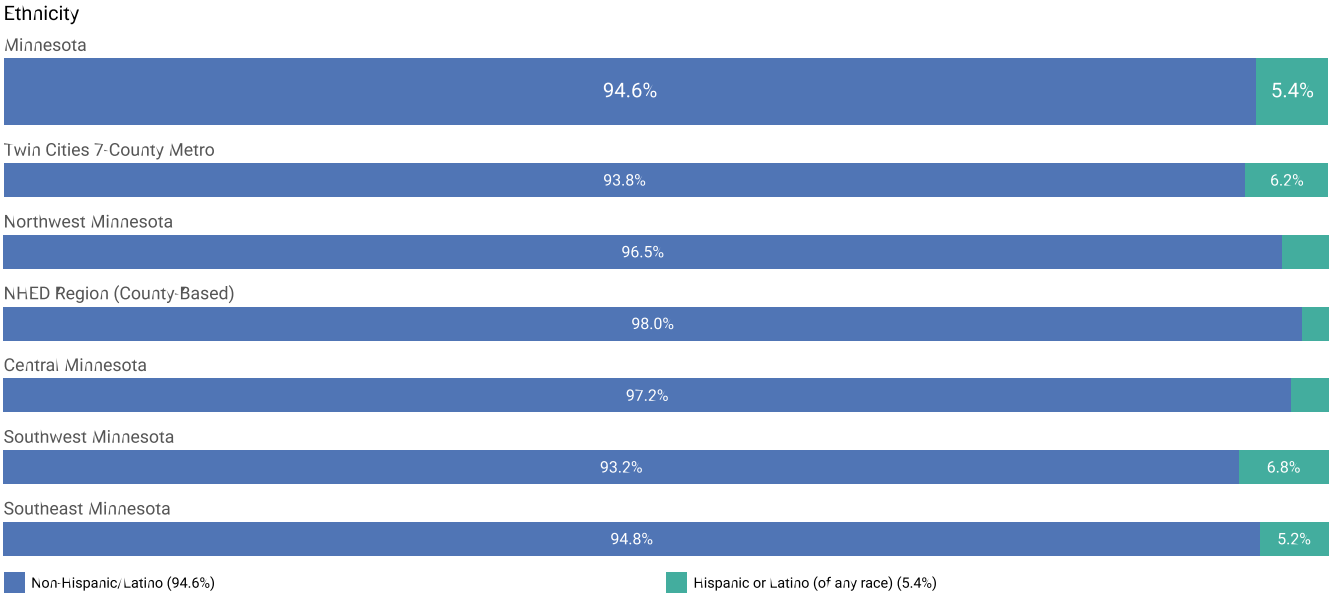

Data for Business, Management, & Administration (CTE Field)
Source: JobsEQ®. Data as of 2024Q1.

### Business, Management, and Administration Workforce Race by Region



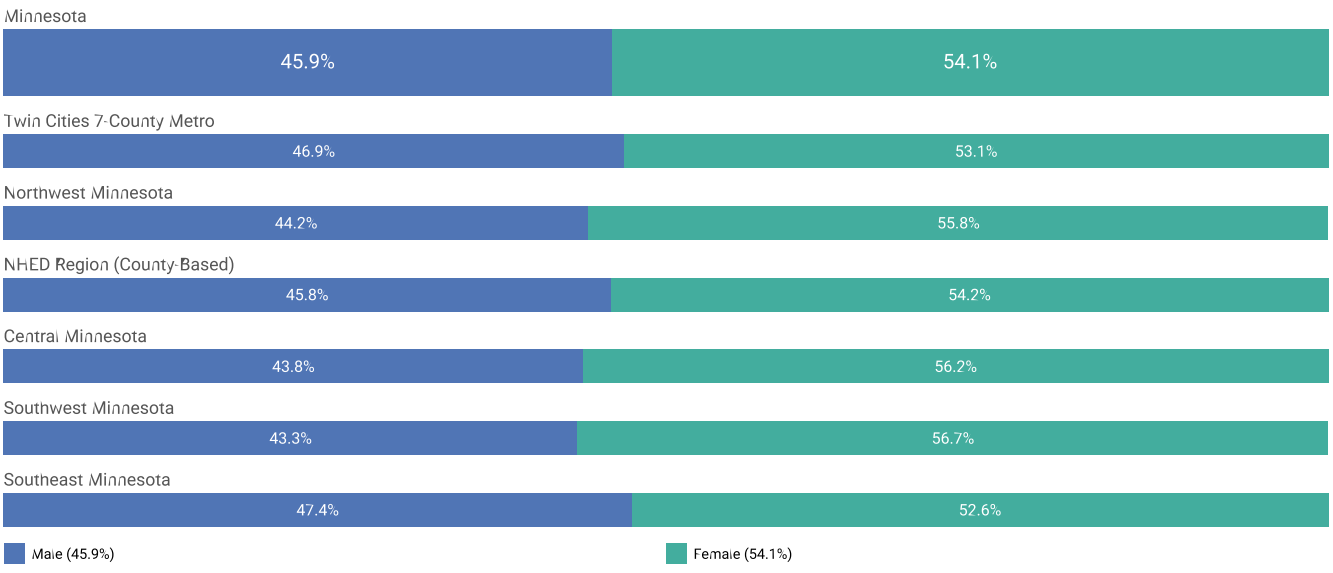

Data for Business, Management, & Administration (CTE Field)
Source: JobsEQ®. Data as of 2024Q1.

## Business, Management, and Administration Workforce Ethnicity by Region




Data for Business, Management, & Administration (CTE Field)
Source: JobsEQ®. Data as of 2024Q1.

## Business, Management, and Administation Workforce Gender by Region

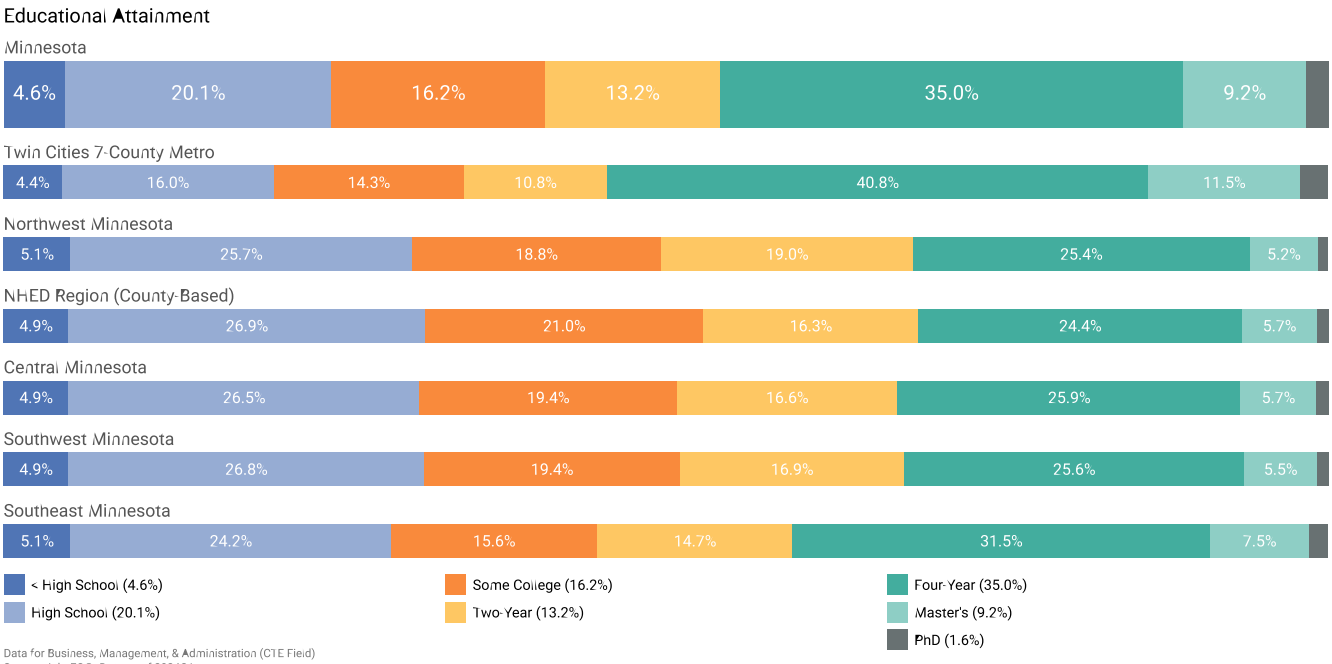



Data for Business, Management, & Administration (CTE Field)
Source: JobsEQ®. Data as of 2024Q1.

## EDUCATIONAL ATTAINMENT AND REQUIREMENTS

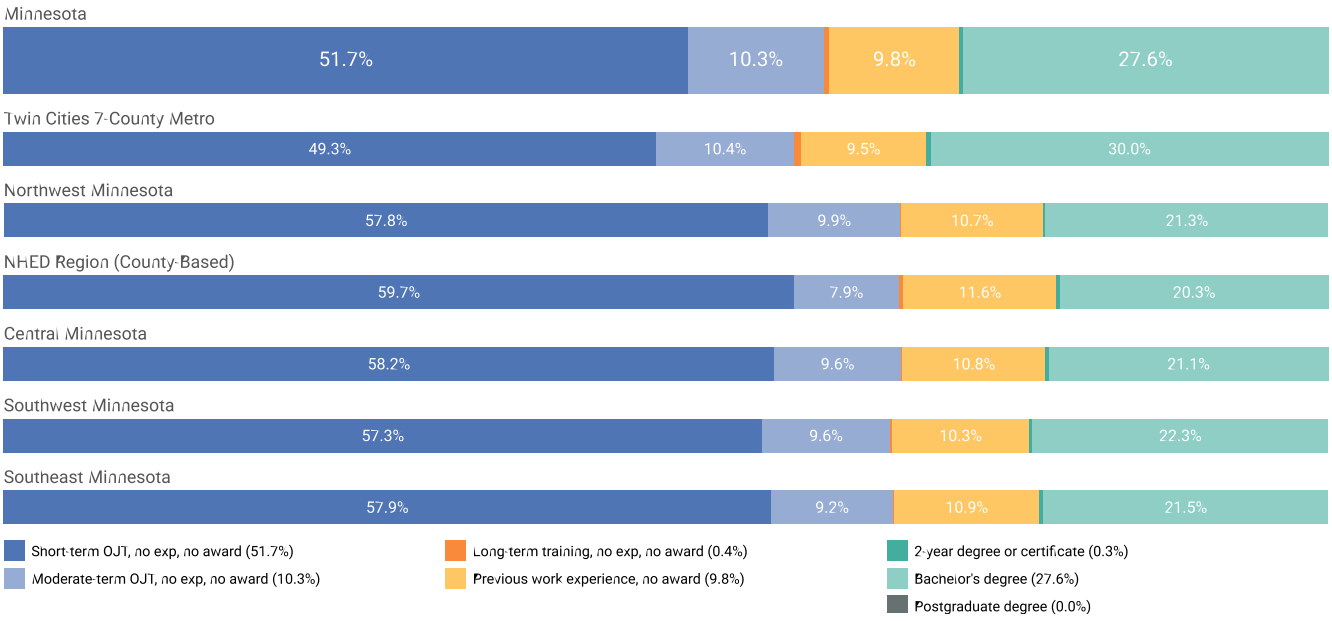
The charts below illustrate the estimated educational attainment of current workers in this career field, followed by the typical education and training requirements in the field.

- With the exception of the MSP Metro region, the level of educational attainment for workers in the Business, Management, and Administration career field is fairly similar among regions
  - All five regions outside the MSP Metro have a workforce in this field where approximately 25% of workers have attained a high school diploma as their highest level of education, more than 30% have obtained some college or a two-year degree, and another 30% have attained at least a four-year degree
  - The MSP Metro region has a significantly larger percentage of their field's workforce with at least a four-year degree (over 50%), and a lower percentage with their highest education being high school (16%) or some college or a two-year degree (25.1%)
  - By contrast, the education and training requirements for roles in this career field require significantly less attainment than the workforce currently holds; only slightly more than 20% of the jobs across the regions (with the exception of the MSP Metro which is 30%) require a bachelor's degree or higher and only a tiny fraction of the jobs require a two-year degree
  - The majority of roles in this field across the regions require less than a two-year degree (more than 70% in all regions except the MSP Metro)




Data for Business, Management, & Administration (CTE Field)
Source: JobsEQ®. Data as of 2024Q1.

Education and Training Requirements

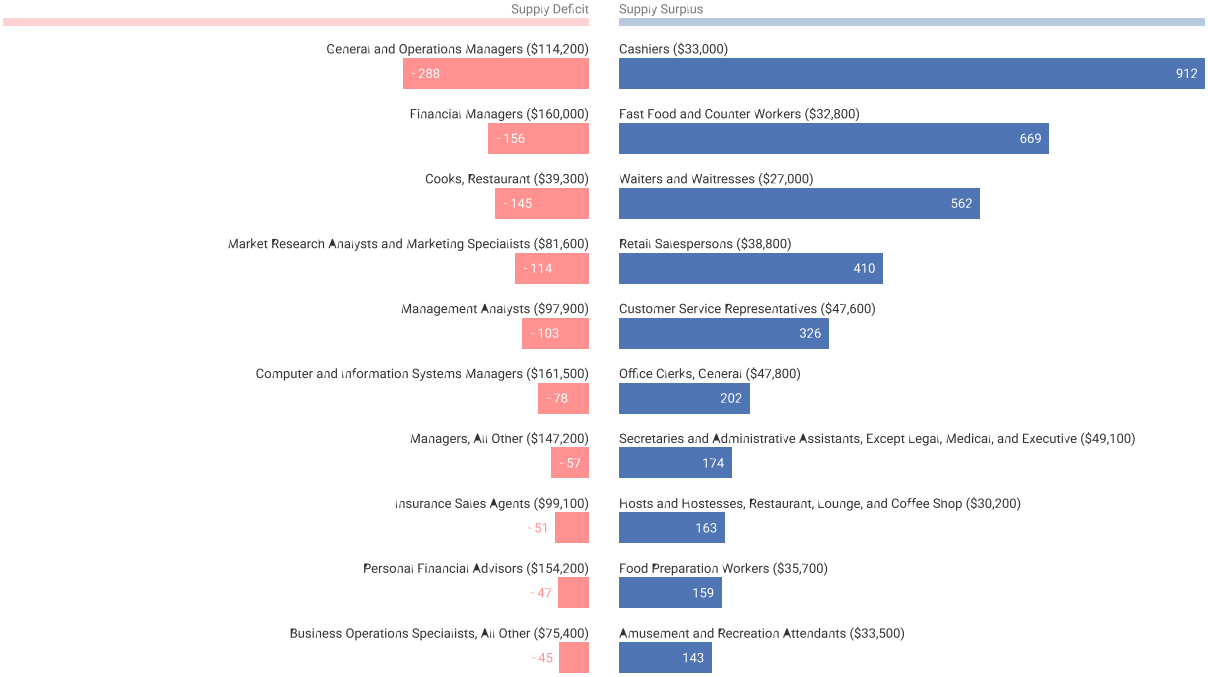



## OCCUPATION GAPS

The chart below shows the potential average annual talent shortages over ten years.

Many management roles indicate significant shortages in the years ahead, for example, the General and Operations Manager talent pool in this region will likely fall short at least 288 skilled workers needed annually to meet employer demand. Occupations shortage forecasts have remained consistent in comparison to 2023 estimates. Hospitality related occupations other than management positions are forecasting relatively large surpluses over the next ten years.

**Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Business, Management, and Administration, Minnesota, 2024Q1**



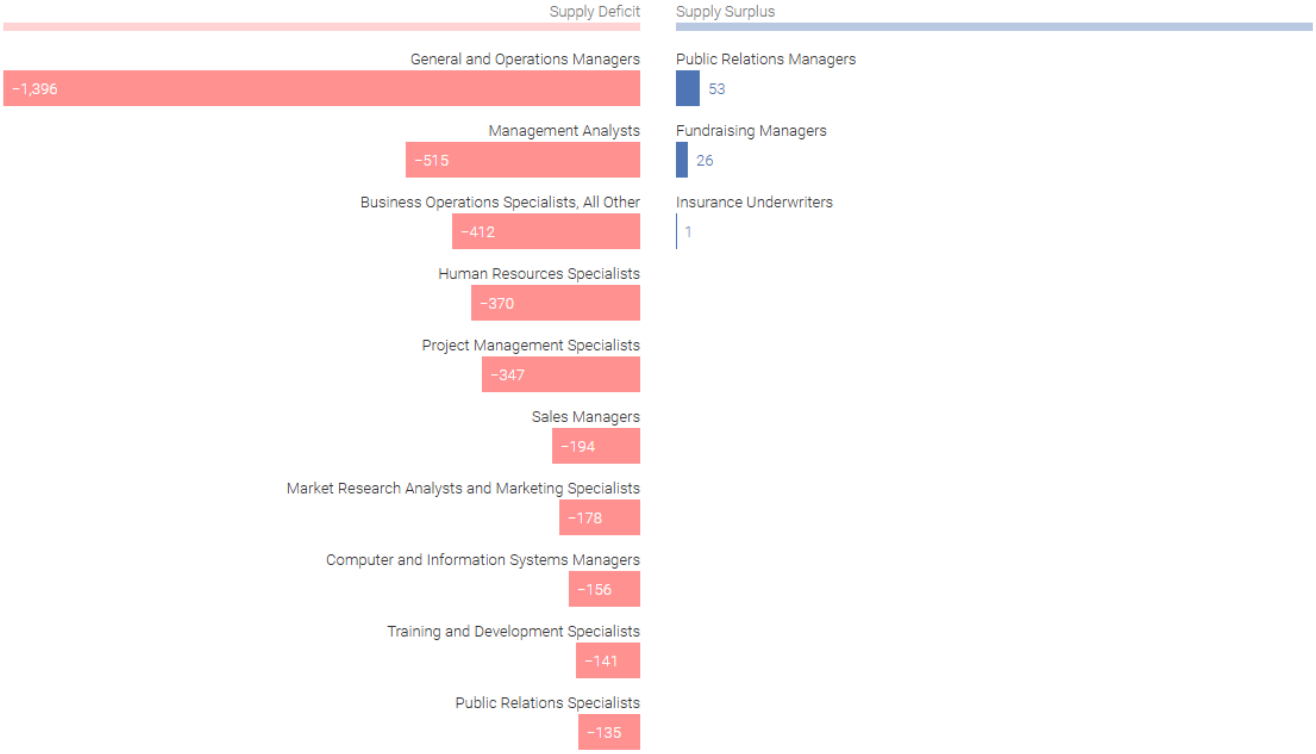
## AWARD GAPS

The chart below shows the shortfall of new postsecondary graduates needed to meet local demand, benchmarked against national average volumes of graduates in the 2022-23 school year.

Minnesota faces several shortages in Business, Management and Administration awards:

- Award gaps are continuing to grow in most cases for occupations in this field. Most notably, regional colleges and universities are underproducing around 1,369 graduates annually that are needed to fill General and Operations Manager positions. Award gaps for Chief Executives has fallen off the top ten for 2023
- There are few areas of surplus in this field in terms of awards; surpluses are increasing for Public Relations Managers and Fundraising Managers

**Award Gaps in Business, Management, and Administration, Minnesota, 2024Q1**



## ORIGIN, GATEWAY, AND TARGET OCCUPATIONS

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

**Origin-to-Gateway-to-Target Occupations for Business, Management, and Administration, Minnesota, 2024Q1**

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

**Gateway Occupations (All HD)**
Customer Service Representatives (AG)
Office Clerks, General (AG)
Secretaries & Administrative Assistants
Bookkeeping, Accounting, & Auditing Clerks (HS, AG)
Supervisors of Retail Workers

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

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

**Other Promising Occupations**

A number of other Business, Management, and Administration occupations that are high-wage and high-demand, yet do not meet the high-skill threshold to be considered Target Occupations, may be promising careers for students to consider. These occupations may offer a fast track to good jobs for those interested in starting a career in the field without requiring a postsecondary credential. Occupations to consider include:

- First-Line Supervisors of Office & Administrative Support Workers (AG)
- Insurance Sales Agents (OG, AG)
- Executive Secretaries & Executive Administrative Assistants
- Property, Real Estate, & Community Association Managers (OG, AG)
- Claims Adjusters, Examiners, & Investigators (AG)

**High LQ Occupations**

The following are the most highly concentrated Business, Management, and Administration occupations in Minnesota, relative to the national average.

| Occupation | LQ |
|---|---|
| Gambling Service Workers, All Other | 8.48 |
| Gambling & Sports Book Writers & Runners | 3.35 |
| Chief Executives | 1.81 |
| Food Servers, Nonrestaurant | 1.76 |
| Actuaries | 1.68 |

RealTime Talent

## Origin-to-Gateway-to-Target Occupations for Business, Management, and Administration, By Region 2024Q1

| | MSP Metro | Northeast | Northwest | Central | Southwest | Southeast |
|---|---|---|---|---|---|---|
| Mdn. Wage | Field: $66,600 | Field: $48,700 | Field: $50,300 | Field: $51,100 | Field: $51,700 | Field: $54,800 |
| Unempl | Region: 2.6%<br>Field: 2.8% | Region: 3.6%<br>Field: 4.1% | Region: 3.2%<br>Field: 3.5% | Region: 3.3%<br>Field: 3.6% | Region: 2.8%<br>Field: 3.2% | Region: 2.3%<br>Field: 2.8% |
| Origin Occupations | • Retail Salespersons<br>• Fast Food & Counter Workers<br>• Cashiers<br>• Janitors & Cleaners, Except Maids & Housekeeping Cleaners<br>• Stockers & Order Fillers | • Retail Salespersons<br>• Cashiers<br>• Fast Food & Counter Workers<br>• Waiters & Waitresses<br>• Office Clerks, General | • Cashiers<br>• Retail Salespersons<br>• Fast Food & Counter Workers<br>• Office Clerks, General<br>• Stockers & Order Fillers | • Cashiers<br>• Retail Salespersons<br>• Fast Food & Counter Workers<br>• Office Clerks, General<br>• Stockers & Order Fillers | • Cashiers<br>• Retail Salespersons<br>• Fast Food & Counter Workers<br>• Office Clerks, General<br>• Stockers & Order Fillers | • Cashiers<br>• Retail Salespersons<br>• Fast Food & Counter Workers<br>• Stockers & Order Fillers<br>• Janitors & Cleaners, Except Maids & Housekeeping Cleaners |
| Gateway Occupations | • Customer Service Representatives<br>• Office Clerks, General<br>• Secretaries & Administrative Assistants<br>• Bookkeeping, Accounting, & Auditing Clerks<br>• First-Line Supervisors of Retail Sales Workers | • Secretaries & Administrative Assistants<br>• Supervisors of Retail Workers<br>• Bookkeeping, Accounting, & Auditing Clerks<br>• Billing & Posting Clerks<br>• Supervisors of Housekeeping & Janitorial Workers | • Secretaries & Administrative Assistants<br>• First-Line Supervisors of Retail Sales Workers<br>• Bookkeeping, Accounting, & Auditing Clerks<br>• Shipping, Receiving, & Inventory Clerks<br>• Office & Administrative Support Workers, All Other | • First-Line Supervisors of Retail Sales Workers<br>• Secretaries & Administrative Assistants<br>• Bookkeeping, Accounting, & Auditing Clerks<br>• Billing & Posting Clerks<br>• Loan Interviewers & Clerks | • Secretaries & Administrative Assistants<br>• First-Line Supervisors of Retail Sales Workers<br>• Bookkeeping, Accounting, & Auditing Clerks<br>• Billing & Posting Clerks<br>• Office & Administrative Support Workers, All Other | • Office Clerks, General<br>• Customer Service Representatives<br>• Receptionists & Information Clerks<br>• Secretaries & Administrative Assistants<br>• Bookkeeping, Accounting, & Auditing Clerks |
| Target Occupations | • General & Operations Managers<br>• Accountants & Auditors<br>• Market Research Analysts & Marketing Specialists<br>• Management Analysts<br>• Business Operations Specialists, All Others | • General & Operations Managers<br>• Accountants & Auditors<br>• Managers, All Other<br>• Business Operations Specialists<br>• Management Analysts | • Financial Managers<br>• Management Analysts<br>• Securities, Commodities, & Financial Services Sales Agents<br>• Public Relations Specialists<br>• Computer & Information Systems Managers | • General & Operations Managers<br>• Accountants & Auditors<br>• Managers, All Other<br>• Market Research Analysts & Marketing Specialists<br>• Business Operations Specialists, All Other | • Accountants & Auditors<br>• Human Resources Specialists<br>• Financial Managers<br>• Management Analysts<br>• Computer & Information Systems Managers | • Human Resources Specialists<br>• Financial Managers<br>• Management Analysts<br>• Computer & information System Managers<br>• Securities, Commodities, & Financial Services Sales Agents |

## High Location Quotient (LQ) Occupations for Business, Management, and Administration, By Region 2024Q1

| | MSP Metro | Northeast | Northwest | Central | Southwest | Southeast |
|---|---|---|---|---|---|---|
| LQ > 1.20 | • Gambling Service Workers, All Other<br>• Actuaries<br>• Gambling & Sports Book Writers & Runners<br>• Labor Relations Specialists<br>• Brokerage Clerks | • Gambling Service Workers, All Other<br>• Gambling & Sports Book Writers & Runners<br>• Gambling Cage Workers<br>• Gambling Change Persons & Booth Cashiers<br>• First-Line Supervisors of Gambling Services Workers | • Gambling Service Workers, All Other<br>• Gambling & Sports Book Writers & Runners<br>• Chief Executives<br>• Gambling Cage Workers<br>• First-Line Supervisors of Gambling Services Workers | • Gambling Service Workers, All Other<br>• Gambling & Sports Book Writers & Runners<br>• First-Line Supervisors of Gambling Services Workers<br>• Bartenders<br>• Food Servers, Nonrestaurant | • Gambling Service Workers, All Other<br>• Gambling & Sports Book Writers & Runners<br>• Gambling Cage Workers<br>• Gambling Change Persons & Booth Cashiers<br>• First-Line Supervisors of Gambling Services Workers | • Gambling Service Workers, All Other<br>• Telephone Operators<br>• Food Servers, Nonrestaurant<br>• Receptionists & Information Clerks<br>• Billing & Posting Clerks |

# *Engineering, Manufacturing, and Technology*

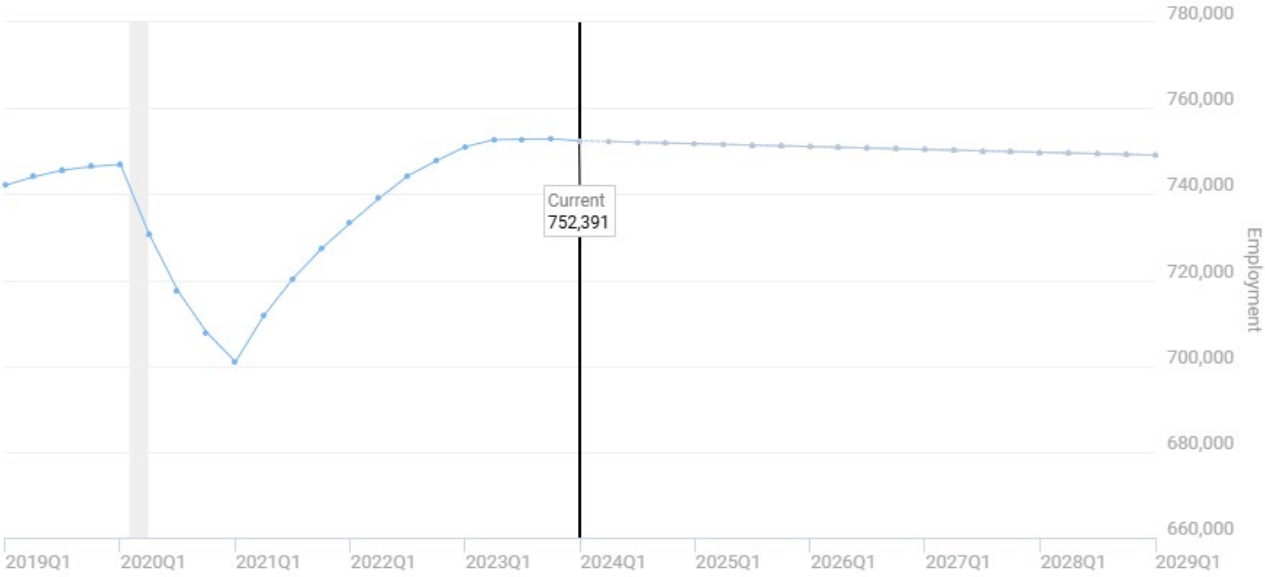
Engineering, Manufacturing, and Technology is a wide career field with the following career clusters:

- Transportation, Distribution, and Logistics
- Architecture and Construction
- Manufacturing
- Science, Technology, Engineering, and Mathematics

## EMPLOYMENT FORECAST

Over the next five years, this career field's employment is forecast to decline slightly (-0.2% annually), a slightly more pessimistic forecast that the -0.1% estimated in 2023Q2.

**5-Year Forecast for Engineering, Manufacturing, and Technology Careers, Minnesota 2024Q1**



## TOP OCCUPATIONS

A total of 752,391 people are employed in Engineering, Manufacturing, and Technology roles statewide, accounting for about 24% of all Minnesota employment. While most of the top ten occupations are forecast to remain steady or decline, Light Truck Drivers, Industrial Engineers, and Construction Laborers are predicted to grow slightly (by 0.2% to 0.6%).

**Top Ten Engineering, Manufacturing, and Technology Occupations by Employment Volume, Minnesota, 2024Q1**

| 6-Digit Occupation | Empl | Median Wages | LQ | Historical 5-Year Empl Change | Forecast 5-Year Demand | Forecast Annual Change |
|---|---|---|---|---|---|---|
| Laborers and Freight, Stock, and Material Movers, Hand | 52,718 | $45,800 | 0.96 | 1,524 | 34,032 | 0.0% |
| Heavy and Tractor-Trailer Truck Drivers | 39,884 | $61,600 | 0.96 | 1,915 | 20,627 | 0.0% |
| Maintenance and Repair Workers, General | 29,904 | $56,100 | 0.98 | 250 | 13,180 | -0.1% |
| Construction Laborers | 28,589 | $57,900 | 1.04 | 2,534 | 12,464 | 0.2% |
| Team Assemblers | 26,885 | $44,500 | 1.15 | 1,064 | 13,194 | -1.3% |
| Light Truck Drivers | 20,677 | $49,200 | 0.96 | 332 | 11,465 | 0.5% |
| Landscaping and Groundskeeping Workers | 19,835 | $44,200 | 0.89 | 300 | 12,713 | 0.0% |
| Carpenters | 19,519 | $67,000 | 1.09 | -383 | 7,694 | -0.2% |
| Industrial Engineers | 15,154 | $100,800 | 2.40 | 2,278 | 4,683 | 0.6% |
| First-Line Supervisors of Production and Operating Workers | 13,993 | $75,500 | 1.08 | 156 | 6,023 | -0.4% |
| **Engineering, Manufacturing, & Technology (CTE Field)** | **752,391** | **$62,600** | **0.99** | **10,341** | **362,167** | **-0.2%** |

"Forecast 5-Year Demand" is the projected need for new entrants into an occupation over the next five years. 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 Change" 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).

## TOP INDUSTRIES

Many different industries employ Engineering, Manufacturing, and Technology talent in Minnesota. Locally, the industries with the greatest share of this field's talent are Building Equipment Contractors (4.3%) and Employment Services (3.6%). Most industries employing talent in this field touch less than 1% of total talent skilled in this field, suggesting that education and training programs will need to build broad strategies that cross each of these sectors.

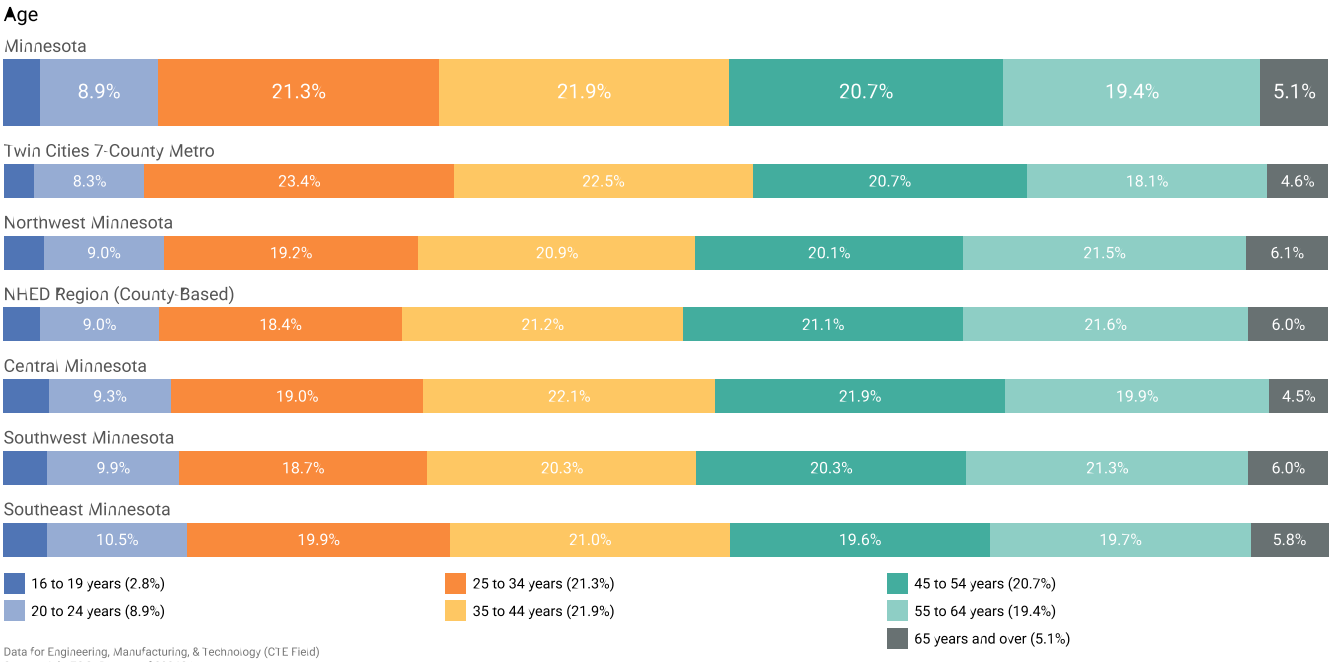
**Engineering, Manufacturing, and Technology Field Employment by Industry, Minnesota, 2024Q1**

| Industry Title | % of Career Field Empl | Career Field Empl | 10-Year Separations | 10-Year Empl Change | 10-Year Total Demand |
|---|---|---|---|---|---|
| Building Equipment Contractors | 4.3% | 32,675 | 28,185 | -28 | 28,158 |
| Employment Services | 3.6% | 26,938 | 30,576 | -478 | 30,098 |
| General Freight Trucking | 2.6% | 19,605 | 20,288 | -163 | 20,125 |
| Building Finishing Contractors | 2.6% | 19,398 | 15,355 | -404 | 14,951 |
| Architectural, Engineering, and Related Services | 2.2% | 16,874 | 12,416 | -323 | 12,094 |
| Other Specialty Trade Contractors | 2.2% | 16,854 | 14,621 | -3 | 14,619 |
| Foundation, Structure, and Building Exterior Contractors | 2.1% | 15,988 | 13,161 | -195 | 12,966 |
| Residential Building Construction | 2.1% | 15,761 | 12,755 | -89 | 12,666 |
| Automotive Repair and Maintenance | 2.0% | 15,197 | 14,405 | -213 | 14,192 |
| Animal Slaughtering and Processing | 2.0% | 15,111 | 17,364 | -540 | 16,824 |
| Executive, Legislative, and Other General Government Support | 2.0% | 14,980 | 13,978 | -131 | 13,847 |
| Navigational, Measuring, Electromedical, and Control Instruments Manufacturing | 1.9% | 14,540 | 12,024 | -802 | 11,221 |
| Services to Buildings and Dwellings | 1.9% | 14,172 | 16,837 | -215 | 16,622 |
| Couriers and Express Delivery Services | 1.8% | 13,492 | 15,785 | 1,582 | 17,367 |
| Highway, Street, and Bridge Construction | 1.8% | 13,357 | 11,230 | -214 | 11,016 |
| Medical Equipment and Supplies Manufacturing | 1.7% | 13,139 | 12,603 | -637 | 11,966 |
| Plastics Product Manufacturing | 1.7% | 12,556 | 12,463 | -401 | 12,063 |
| Nonresidential Building Construction | 1.6% | 12,034 | 9,632 | -222 | 9,410 |
| Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing | 1.5% | 11,558 | 11,176 | -169 | 11,006 |
| Management of Companies and Enterprises | 1.5% | 11,287 | 9,731 | 534 | 10,265 |
| All Others | 56.7% | 426,873 | 432,890 | -9,561 | 423,329 |

## CAREER FIELD DEMOGRAPHICS

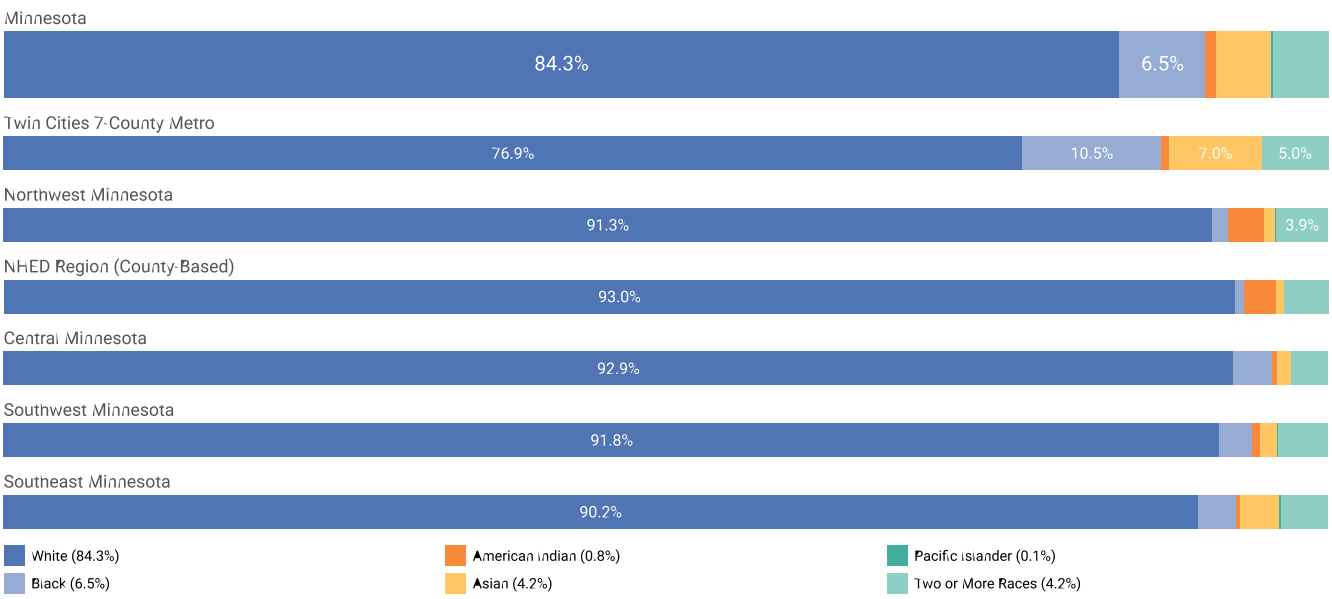
- The Engineering, Manufacturing, and Technology field is heavily male (81.3%) and white (84.3%)
- However, the field is fairly diverse by ethnicity, with workers of Latine/Hispanic ethnicity making up 8.0% of the workforce
- This field has seen a notable share of its workforce retire in recent years; 45.2% of workers this field are 45 years or older

### Engineering, Manufacturing, and Technology Workforce Age by Region



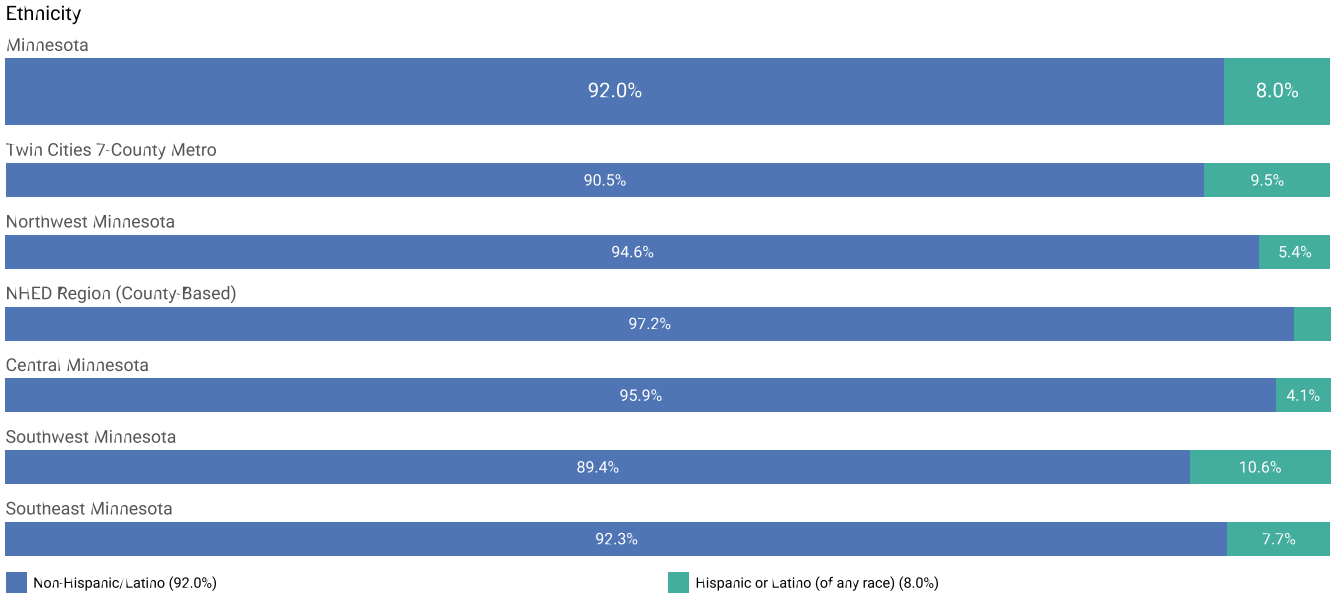

Data for Engineering, Manufacturing, & Technology (CTE Field)
Source: JobsEQ®. Data as of 2024Q1.

### Engineering, Manufacturing, and Technology Workforce Race by Region




Data for Engineering, Manufacturing, & Technology (CTE Field)
Source: JobsEQ®. Data as of 2024Q1.

## Engineering, Manufacturing, and Technology Workforce Ethnicity by Region

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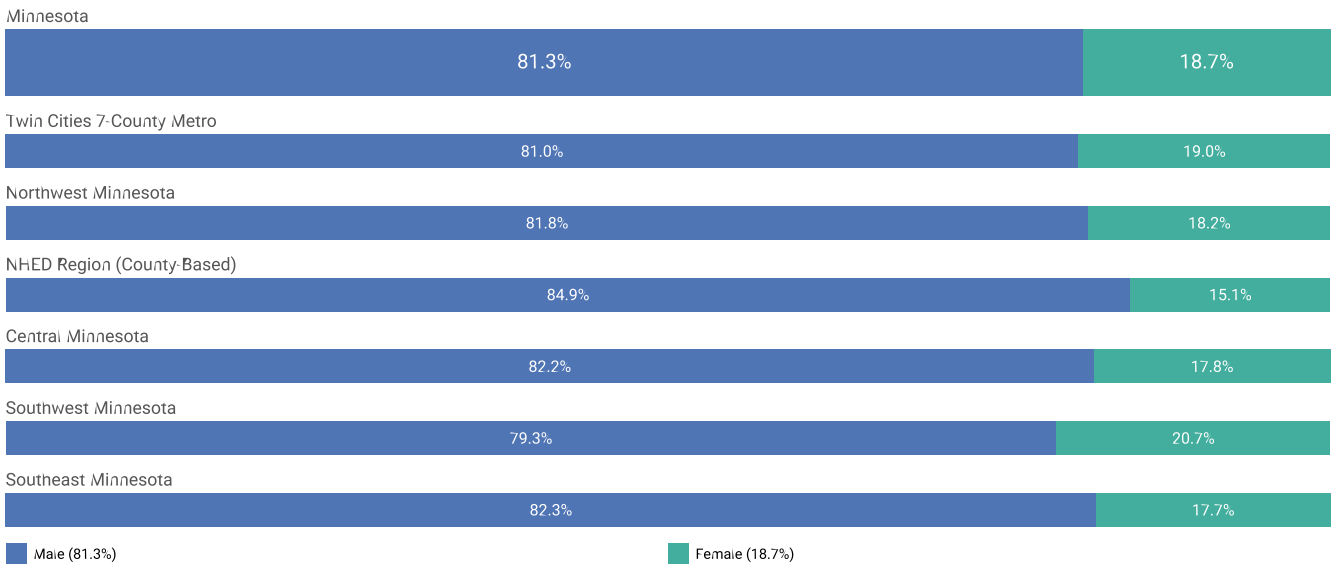
## Engineering, Manufacturing, and Technology Workforce Gender by Region

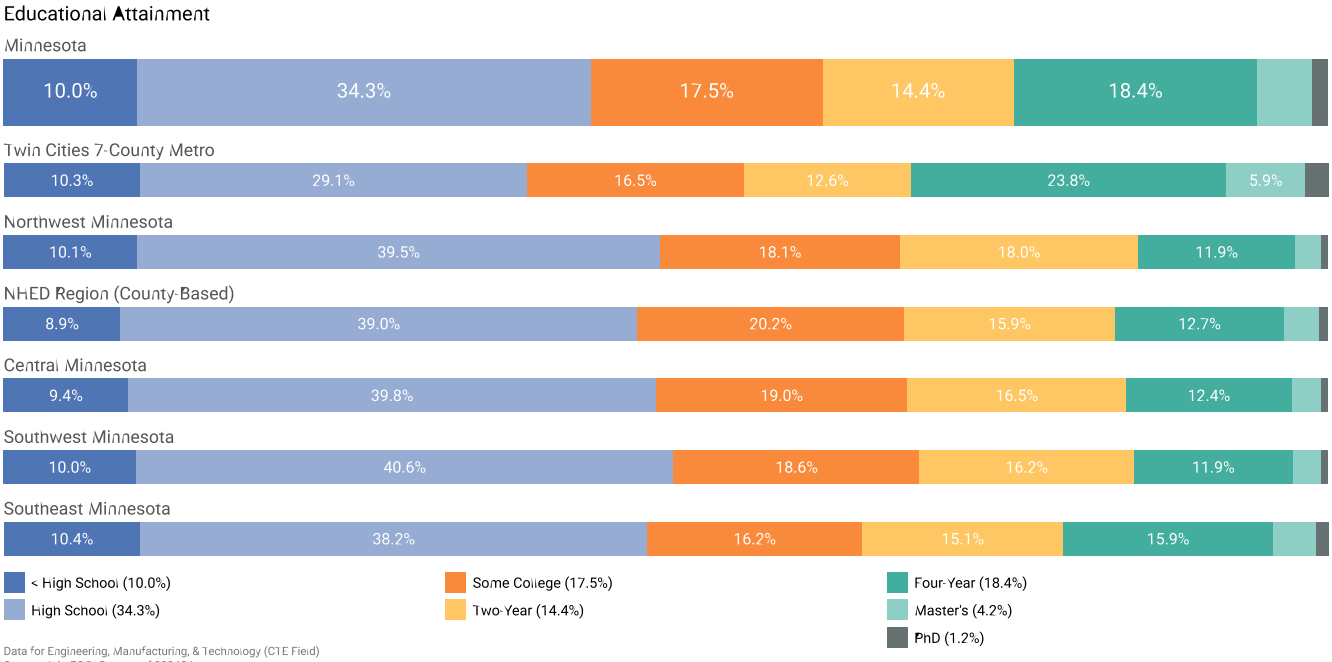



Data for Engineering, Manufacturing, & Technology (CTE Field)
Source: JobsEQ®. Data as of 2024Q1.

## EDUCATIONAL ATTAINMENT AND REQUIREMENTS

The charts below illustrate the estimated educational attainment of current workers in this career field, followed by the typical education and training requirements in the field.

- Educational attainment for the workforce across Minnesota in the Engineering, Manufacturing, and Transportation field matches local demand
    - This career field has a high percentage of the workforce who have obtained a high school diploma or less in every region, from a high of 50% of workers in the Southwest region, to a low of 39% in the MSP Metro
    - Similarly at the high end of the education scale, 31.5% of the MSP Metro Engineering, Manufacturing, and Technology workforce holds a bachelor's degree or higher, while just 14.3% of the workers in the Northwest region do
    - With the exception of the MSP Metro (about 13%) and Northeast Minnesota (about 10%), less than 10% of local roles typically require a 4-year degree of higher
    - The majority of the educational and training requirements for this career field (over 75%) require no degree or award

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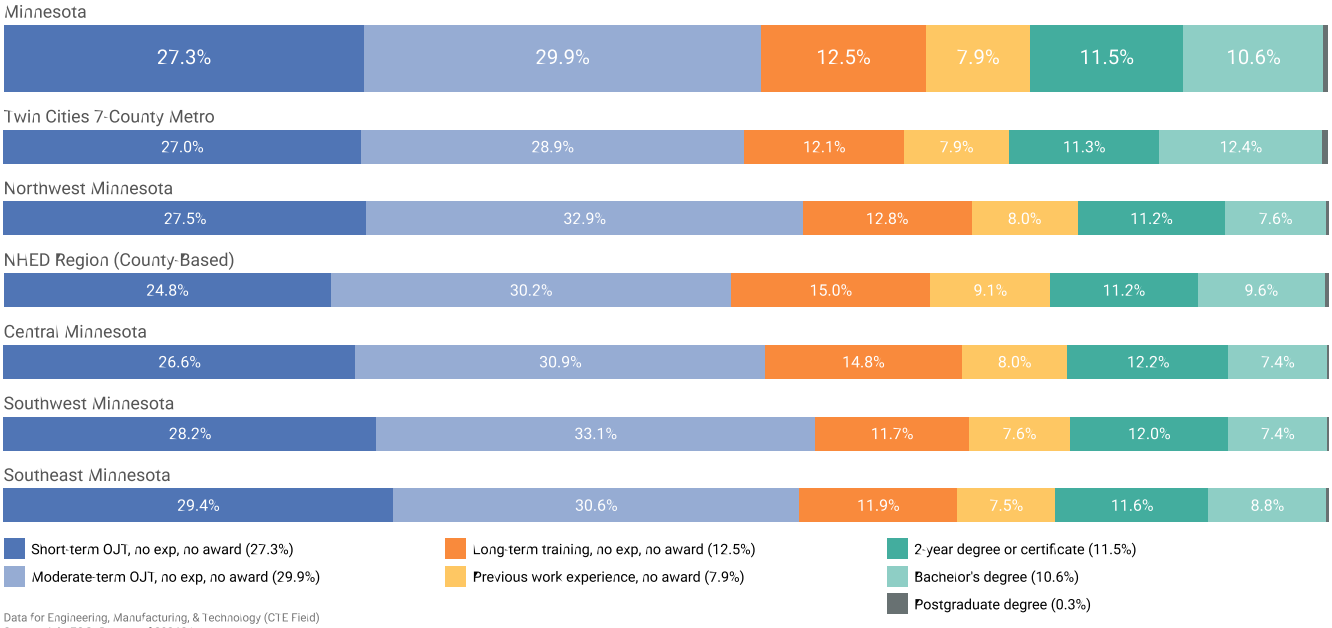
Education and Training Requirements




Data for Engineering, Manufacturing, & Technology (CTE Field)
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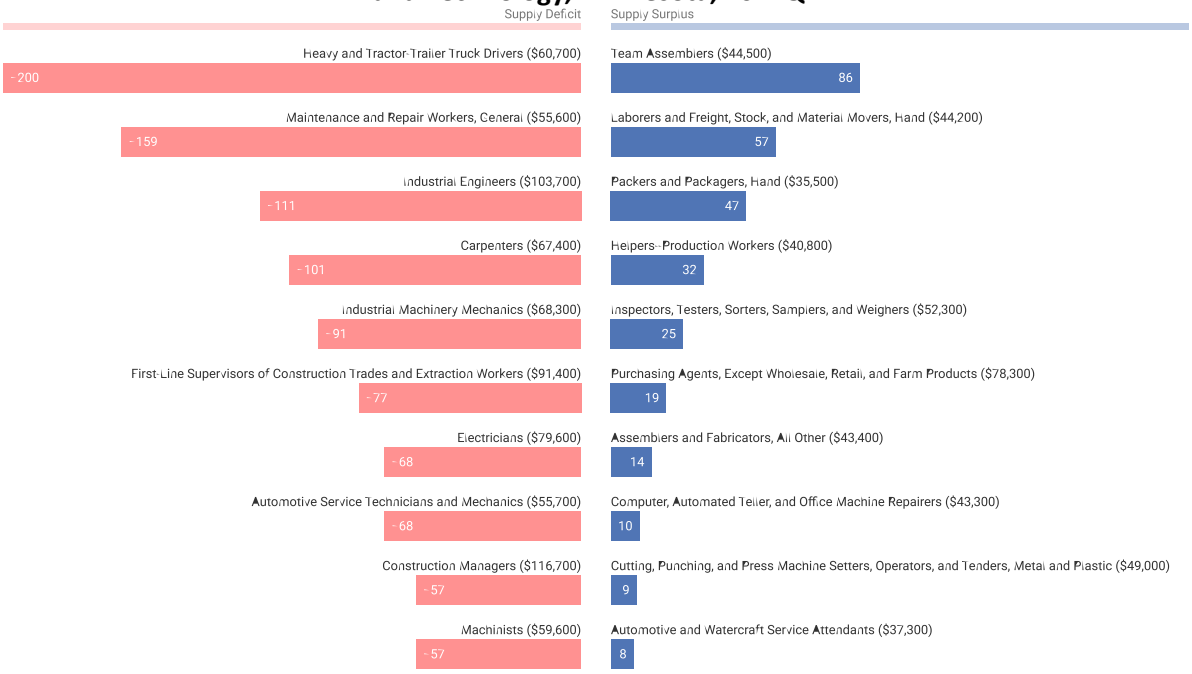
## OCCUPATION GAPS

The chart below shows the potential average annual talent shortages over ten years.

Several management, maintenance, construction, and automotive roles continue to signal increased shortages in the years ahead. The Heavy and Tractor-Trailer Truck Driver forecasted shortage continued to grow from last year's estimate and is now falling short at least 200 workers needed annually to meet employer demand. The only occupation in the top ten whose shortage shrank was Industrial Engineers, but that occupation is still forecasted to be short 111 workers annually. Surplus awards are falling in almost all occupations in this field as well with occupations like CNC Operators, and Cleaners of Vehicles falling out of the top ten.

**Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Engineering, Manufacturing, and Technology, Minnesota, 2024Q1**



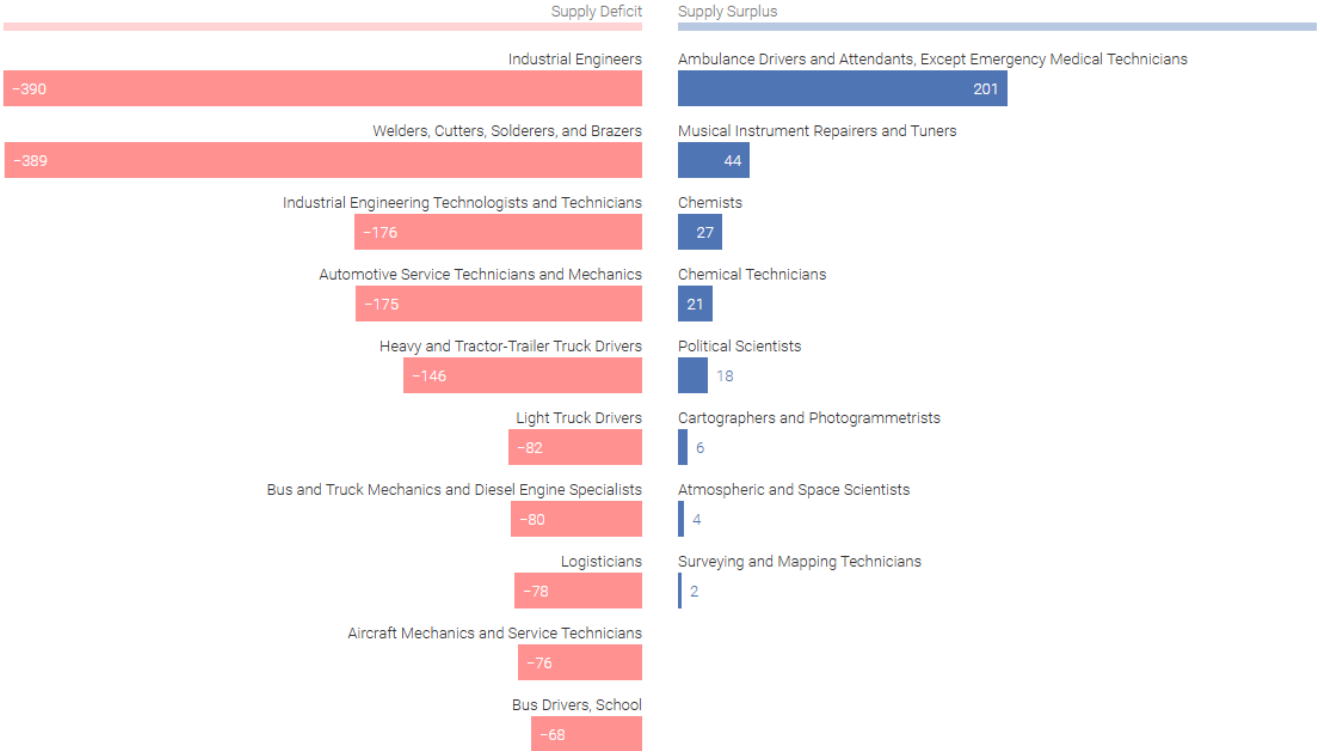
## AWARD GAPS

The chart below shows the shortfall of new postsecondary graduates needed to meet local demand, benchmarked against national average volumes of graduates in the 2022-23 school year.

Minnesota faces many Engineering, Manufacturing and Technology award shortages and generates a surplus of graduates in six specialized occupations:

- Postsecondary institutions based in the state continue to underproduce Industrial Engineers, Welders, Cutters, Solderers, and Brazers as well as Automotive Service Technicians and Mechanics, among other occupations, as compared with national volumes of new graduates for a state of equivalent size and industry mix
- Occupations such as Ambulance Drivers, Musical Instrument Repairers and Tuners, and Chemists show higher awards conferred in the state than what is currently needed in the local talent market; these programs likely serve other parts of the Midwest where talent demand is high but relevant programs may not exist

**Award Gaps in Engineering, Manufacturing, and Technology, Minnesota, 2024Q1**



## ORIGIN, GATEWAY, AND TARGET OCCUPATIONS

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

**Origin-to-Gateway-to-Target Occupations for Engineering, Manufacturing, and Technology, Minnesota, 2024Q1**

**Target Occupations (All HW, HS, HD)**
Heavy & Tractor-Trailer Truck Drivers (OG, AG)
Industrial Engineers (OG, AG)
Automotive Service Technicians & Mechanics (OG, AG)
Construction Managers (OG, AG)
Purchasing Agents, Except Wholesale, Retail, & Farm Products

**Gateway Occupations**
Laborers & Freight, Stock, & Material Movers, Hand (HD)
Light Truck Drivers (HD, AG)
Inspectors, Testers, Sorters, Samplers, & Weighers (HD)
School Bus Drivers (HD, AG)
Industrial Truck & Tractor Operators (AG)

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

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

**Other Promising Occupations**

Several additional Engineering, Manufacturing, and Technology occupations that are high-wage and high-demand, yet do not meet the high-skill threshold to be considered Target Occupations, may be promising careers for students to consider. These occupations may offer a fast track to good jobs for those interested in starting a career in the field without requiring a postsecondary credential. These occupations include:

- Maintenance & Repair Workers, General (OG)
- Construction Laborers
- First-Line Supervisors of Production & Operating Workers (OG)
- First-Line Supervisors of Construction Trades & Extraction Workers (OG)
- Electricians (OG)

**High LQ Occupations**

The following are the most highly concentrated Engineering, Manufacturing, and Technology occupations in Minnesota, relative to the national average.

| Occupation | LQ |
|---|---|
| Underground Mining Machine Operators, All Other | 4.51 |
| Ophthalmic Laboratory Technicians | 2.92 |
| Industrial Engineering Technologists & Technicians | 2.81 |
| Shoe Machine Operators & Tenders | 2.70 |
| Slaughterers & Meat Packers | 2.55 |

RealTime Talent

## Origin-to-Gateway-to-Target Occupations for Engineering, Manufacturing, and Technology, By Region 2024Q1

| | MSP Metro | Northeast | Northwest | Central | Southwest | Southeast |
|---|---|---|---|---|---|---|
| Mdn. Wage | Field: $67,100 | Field: $62,000 | Field: $54,200 | Field: $57,400 | Field: $55,300 | Field: $57,900 |
| Unempl | Region: 2.6%<br>Field: 3.2% | Region: 3.6%<br>Field: 4.2% | Region: 3.2%<br>Field: 3.7% | Region: 3.3%<br>Field: 3.7% | Region: 2.8%<br>Field: 3.3% | Region: 2.3%<br>Field: 2.9% |
| Origin Occupations | • Packers & Packagers, Hand<br>• Packaging & Filling Machine Operators & Tenders<br>• Cleaners of Vehicles & Equipment<br>• Shuttle Drivers & Chauffeurs<br>• Couriers & Messengers | • Laborers & Freight, Stock Movers<br>• Landscaping & Groundskeeping Workers<br>• Team Assemblers<br>• Packers & Packagers, Hand<br>• Shuttle Drivers & Chauffeurs | • Laborers & Freight, Stock, & Material Movers, Hand<br>• Team Assemblers<br>• Landscaping & Groundskeeping Workers<br>• Food Batchmakers<br>• Packaging & Filling Machine Operators & Tenders | • Laborers & Freight, Stock, & Material Movers<br>• Team Assemblers<br>• Landscaping & Groundskeeping Workers<br>• Packers & Packagers, Hand<br>• Packaging & Filling Machine Operators & Tenders | • Laborers & Freight, Stock & Material Movers<br>• Team Assemblers<br>• Landscaping & Groundskeeping Workers<br>• Packers & Filling Machine Operators & Tenders<br>• Slaughterers & Meat Packers | • Laborers & Freight, Stock Movers<br>• Team Assemblers<br>• Landscaping & Groundskeeping Workers<br>• Slaughterers & Meat Packers<br>• Meat, Poultry, & Fish Cutters & Trimmers |
| Gateway Occupations | • Laborers & Freight, Stock & Material Movers, Hand<br>• Team Assemblers<br>• Light Truck Drivers<br>• Landscaping & Groundskeeping Workers<br>• Inspectors, Testers, Sorters, Samplers, & Weighers | • Light Truck Drivers<br>• School Bus Drivers<br>• Industrial Truck & Tractor Operators<br>• Computer Numerically Controlled Tool Operators<br>• Automotive Body & Related Repairers | • Light Truck Drivers<br>• Automotive Service Technicians & Mechanics<br>• School Bus Drivers<br>• Industrial Truck & Tractor Operators<br>• Painters, Construction & Maintenance | • Light Truck Drivers<br>• School Bus Drivers<br>• Inspectors, Testers, Sorters, Samplers, & Weighers<br>• Cabinetmakers & Bench Carpenters<br>• Industrial Truck & Tractor Operators | • Light Truck Drivers<br>• Inspectors, Testers, Sorters, Samplers, & Weighers<br>• Industrial Truck & Tractor Operators<br>• Production Workers, All Other<br>• Cutting, Punching, & Press Machine Setters, Operators, & Tenders | • Maintenance & Repair Workers, General<br>• Construction Laborers<br>• Automotive Service Technicians & Mechanics<br>• Light Truck Drivers<br>• School Bus Drivers |
| Target Occupations | • Heavy & Tractor-Trailer Truck Drivers<br>• Industrial Engineers<br>• Automotive Services Technicians & Mechanics<br>• Construction Managers<br>• Purchasing Agents | • Heavy & Tractor-Trailer Truck Drivers<br>• Construction Managers<br>• Industrial Engineers<br>• HVAC Mechanics<br>• Civil Engineers | • Heavy & Tractor-Trailer Truck Drivers<br>• Industrial Engineers<br>• Construction Managers<br>• HVAC Mechanics & Installers<br>• Mechanical Engineers | • Heavy & Tractor-Trailer Truck Drivers<br>• Automotive Service Technicians & Mechanics<br>• Industrial Engineers<br>• Construction Managers<br>• HVAC Mechanics | • Industrial Engineers<br>• Mechanical Engineers<br>• Logisticians<br>• CNC Tool Programmers<br>• Data Scientists | • Heavy & Tractor-Trailer Truck Drivers<br>• Industrial Engineers<br>• HVAC Mechanics & Installers<br>• Mechanical Engineers<br>• Logisticians |

## High Location Quotient (LQ) Occupations for Engineering, Manufacturing, and Technology, By Region 2024Q1

| | MSP Metro | Northeast | Northwest | Central | Southwest | Southeast |
|---|---|---|---|---|---|---|
| LQ > 1.20 | • Ophthalmic Laboratory Technicians<br>• Industrial Engineering Technologists & Technicians<br>• Medical Appliance Technicians<br>• Photographic Process Workers a& Processing Machine Operators<br>• Timing Device Assemblers & Adjusters | • Underground Mining Machine Operators, All Other<br>• Loading & Moving Machine Operators, Underground Mining<br>• Extraction Workers, All Other<br>• Continuous Mining Machine Operators<br>• Rail Yard Engineers, Dinkey Operators, & Hostlers | • Fiberglass Laminators & Fabricators<br>• Slaughterers & Meat Packers<br>• Woodworking Machine Setters, Operators, & Tenders, Except Sawing<br>• Food Cooking Machine Operators & Tenders<br>• Food Batchmakers | • Nuclear Power Reactor Operators<br>• Nuclear Technicians<br>• Nuclear Engineers<br>• Recreational Vehicle Service Technicians<br>• Cabinetmakers & Bench Carpenters | • Shoe Machine Operators & Tenders<br>• Slaughterers & Meat Packers<br>• Shoe & Leather Workers & Repairers<br>• Meat, Poultry, & Fish Cutters & Trimmers<br>• Nuclear Power Reactor Operators | • Slaughterers & Meat Packers<br>• Meat, Poultry, & Fish Cutters & Trimmers<br>• Ambulance Drivers & Attendants<br>• Food Processing Workers, All Other<br>• Food Cooking Machine Operators & Tenders |

# *Agriculture, Food, and Natural Resources*

Agriculture, Food, and Natural Resources is a wide career field that includes eight career pathways:

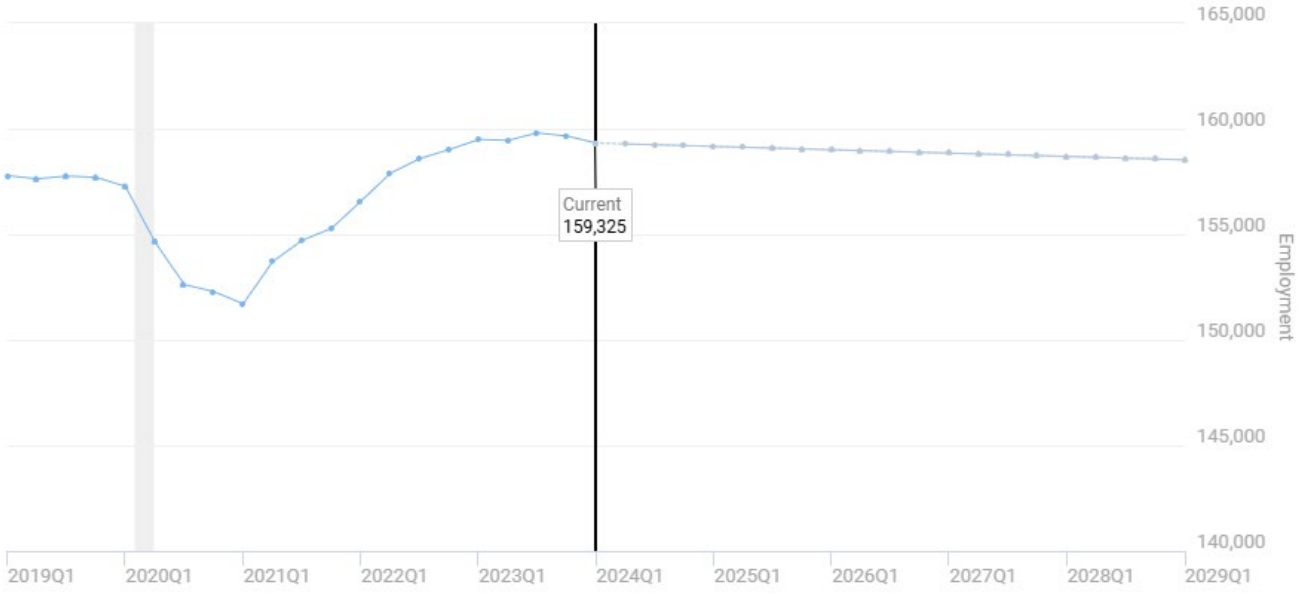
- Food Products and Processing Systems
- Plant Systems
- Animal Systems
- Natural Resources Systems
- Agribusiness Systems
- Environmental Services Systems
- Power, Structural and Technical Systems
- Biotechnology Systems

These roles represent positions that are at least 50% or more concentrated in Agriculture, Food, and Natural Resources industries, and as such exclude some occupations that are critical to the industry but may have smaller in-industry employment numbers (such as Ag Loan Officers, Ag Financing, or some trades). This career field is the only one of the six Career and Technical Education career fields that has overlapping occupations with other fields.

## EMPLOYMENT FORECAST

Over the next five years, this career field's employment is forecast to decline by about -0.2% in Minnesota, holding steady from last year's forecast.

**5-Year Forecast for Agriculture, Food, and Natural Resources Careers, Minnesota, 2024Q1**



## TOP OCCUPATIONS

A total of 159,325 people are employed in Agriculture, Food, and Natural Resources roles statewide, accounting for about 5% of all Minnesota employment. This is the second smallest career field in the state. While most occupations are forecast to remain flat or decline, Animal Caretakers are projected to grow by 1.1% annually over the next five years.

**Top Ten Agriculture, Food, and Natural Resources Occupations by Employment Volume, Minnesota, 2024Q1**

| 6-Digit Occupation | Empl | Median Wages | LQ | Historical 5-Year Empl Change | Forecast 5-Year Demand | Forecast Annual Change |
|---|---|---|---|---|---|---|
| Farmers, Ranchers, and Other Agricultural Managers | 23,976 | $68,500 | 1.68 | -3,307 | 10,325 | -1.2% |
| Landscaping and Groundskeeping Workers | 19,835 | $44,200 | 0.89 | 300 | 12,713 | 0.0% |
| Plumbers, Pipefitters, and Steamfitters | 9,133 | $85,000 | 0.98 | 456 | 3,829 | -0.1% |
| Farmworkers and Laborers, Crop, Nursery, and Greenhouse | 6,821 | $37,500 | 0.63 | 688 | 4,655 | -0.6% |
| Food Batchmakers | 6,068 | $39,400 | 1.85 | 596 | 4,585 | 0.2% |
| Heating, Air Conditioning, and Refrigeration Mechanics and Installers | 5,832 | $72,900 | 0.73 | 956 | 2,485 | 0.2% |
| Animal Caretakers | 5,674 | $34,700 | 0.88 | 817 | 5,654 | 1.1% |
| Farmworkers, Farm, Ranch, and Aquacultural Animals | 5,546 | $37,100 | 1.97 | -58 | 3,607 | -1.0% |
| Meat, Poultry, and Fish Cutters and Trimmers | 4,142 | $40,300 | 1.56 | -326 | 2,330 | -0.3% |
| Bakers | 3,437 | $40,300 | 0.83 | 144 | 2,496 | 0.0% |
| **Agriculture, Food, and Natural Resources (CTE Field)** | **159,325** | **$60,900** | **0.99** | **1,545** | **87,067** | **-0.2%** |

"Forecast 5-Year Demand" is the projected need for new entrants into an occupation over the next five years. 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 Annual Change" 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).

## TOP INDUSTRIES

Many different industries employ Agriculture, Food, and Natural Resources talent in Minnesota. Locally, the industries with the greatest share of this field's talent are Animal Production (Proprietors) (8.9%), Services to Buildings and Dwellings (8.5%), and Building Equipment Contractors (7.8%). Overall, employment in this field is relatively spread out across many different industries.

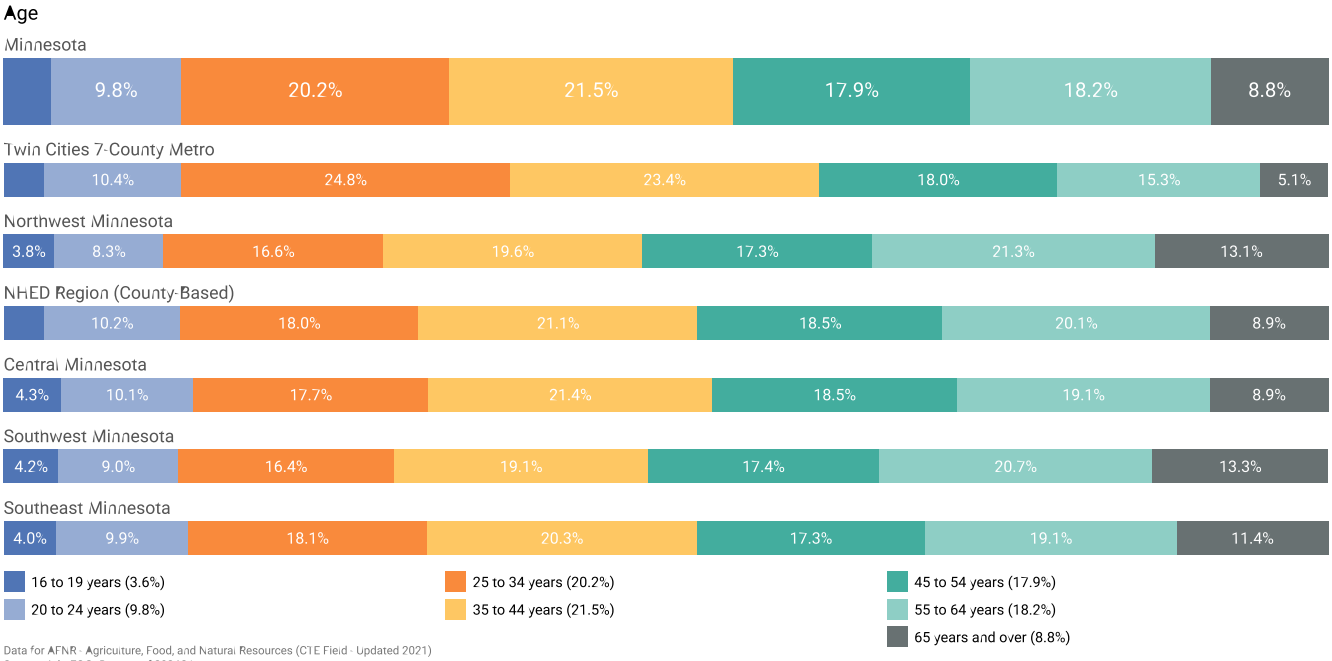
**Agriculture, Food, and Natural Resources Field Employment by Industry, Minnesota, 2024Q1**

| Industry Title | % of Career Field Empl | Career Field Empl | 10-Year Separations | 10-Year Empl Change | 10-Year Total Demand |
|---|---|---|---|---|---|
| Animal Production (Proprietors) | 8.9% | 14,188 | 13,721 | -1,912 | 11,809 |
| Services to Buildings and Dwellings | 8.5% | 13,520 | 16,601 | -166 | 16,435 |
| Building Equipment Contractors | 7.8% | 12,498 | 10,716 | 33 | 10,750 |
| Other Professional, Scientific, and Technical Services | 4.4% | 6,997 | 7,871 | 1,186 | 9,057 |
| Crop Production (Proprietors) | 3.5% | 5,516 | 5,476 | -730 | 4,746 |
| Executive, Legislative, and Other General Government Support | 3.3% | 5,280 | 5,324 | -116 | 5,208 |
| Animal Slaughtering and Processing | 2.9% | 4,631 | 5,545 | -115 | 5,429 |
| Cattle Ranching and Farming | 2.6% | 4,195 | 5,286 | -326 | 4,959 |
| Other Personal Services | 2.6% | 4,100 | 7,327 | 607 | 7,934 |
| Architectural, Engineering, and Related Services | 2.3% | 3,639 | 3,159 | -55 | 3,104 |
| Electric Power Generation, Transmission and Distribution | 2.2% | 3,487 | 2,724 | -281 | 2,443 |
| Other Amusement and Recreation Industries | 2.2% | 3,444 | 4,380 | 180 | 4,560 |
| Colleges, Universities, and Professional Schools | 2.0% | 3,119 | 2,966 | -65 | 2,901 |
| Grocery and Convenience Retailers | 1.9% | 3,098 | 3,786 | -194 | 3,593 |
| Hog and Pig Farming | 1.7% | 2,742 | 3,411 | -282 | 3,129 |
| Greenhouse, Nursery, and Floriculture Production | 1.6% | 2,535 | 3,387 | 16 | 3,402 |
| Restaurants and Other Eating Places | 1.5% | 2,403 | 3,124 | 15 | 3,139 |
| Poultry and Egg Production | 1.4% | 2,281 | 2,895 | -146 | 2,749 |
| Oilseed and Grain Farming | 1.4% | 2,170 | 2,838 | -81 | 2,757 |
| Wired and Wireless Telecommunications (except Satellite) | 1.3% | 2,079 | 2,035 | 110 | 2,145 |
| All Others | 36.0% | 57,403 | 64,712 | -615 | 64,098 |

## CAREER FIELD DEMOGRAPHICS

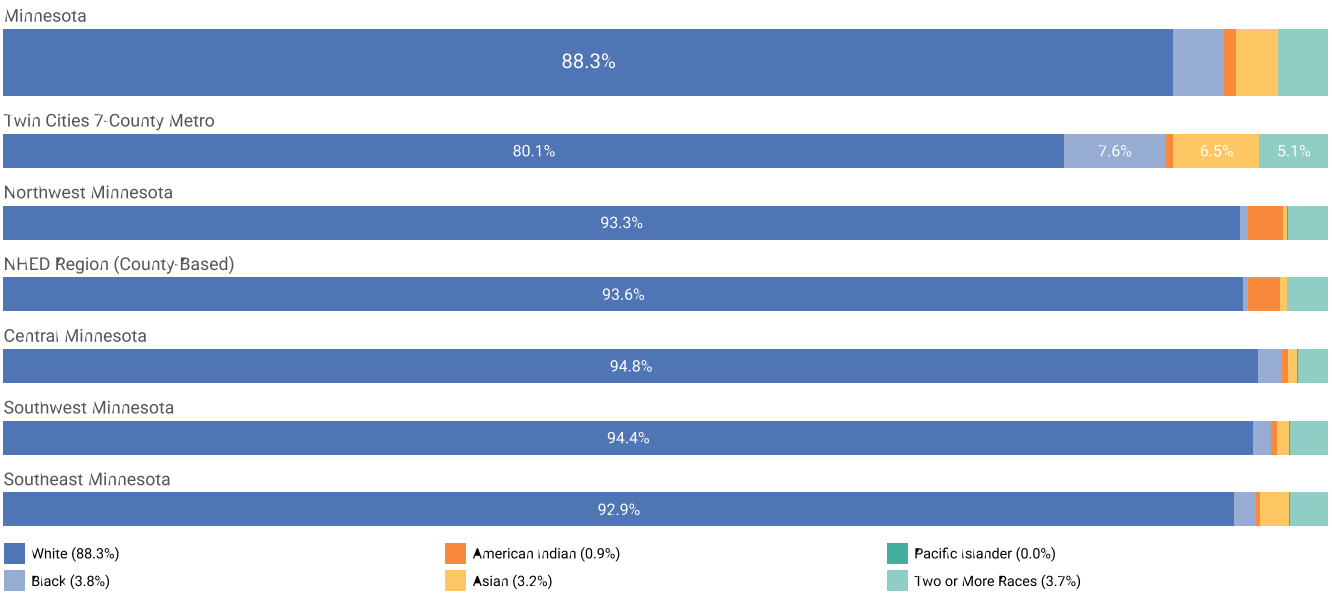
- The Agriculture, Food, and Natural Resources field remains predominantly male (72.4%) and white (88.3%), but with significant variation across the eight career pathways
- In Southwest Minnesota, 11.4% of the workforce is of Hispanic/Latine ethnicity; in the MSP Metro, 10.5% are of Hispanic/Latine ethnicity—much higher than other regions of the state

### Agriculture, Food, and Natural Resources Workforce Age by Region



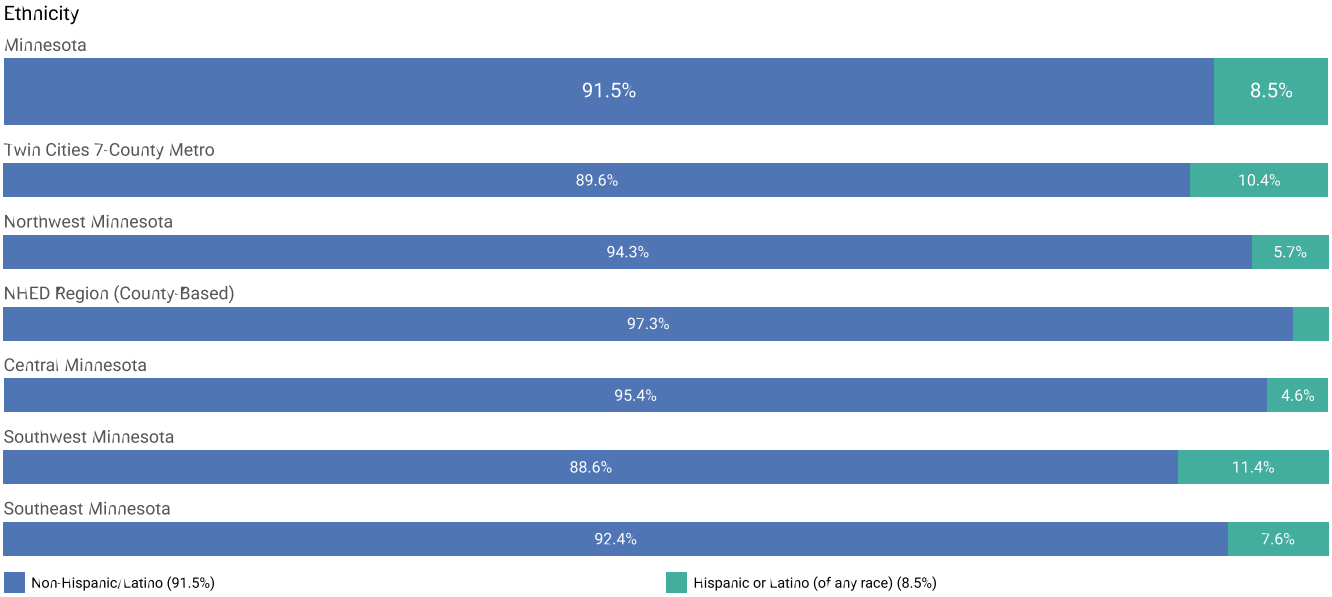

Data for AFNR - Agriculture, Food, and Natural Resources (CTE Field - Updated 2021)
Source: JobsEQ®. Data as of 2024Q1.

### Agriculture, Food, and Natural Resources Workforce Race by Region



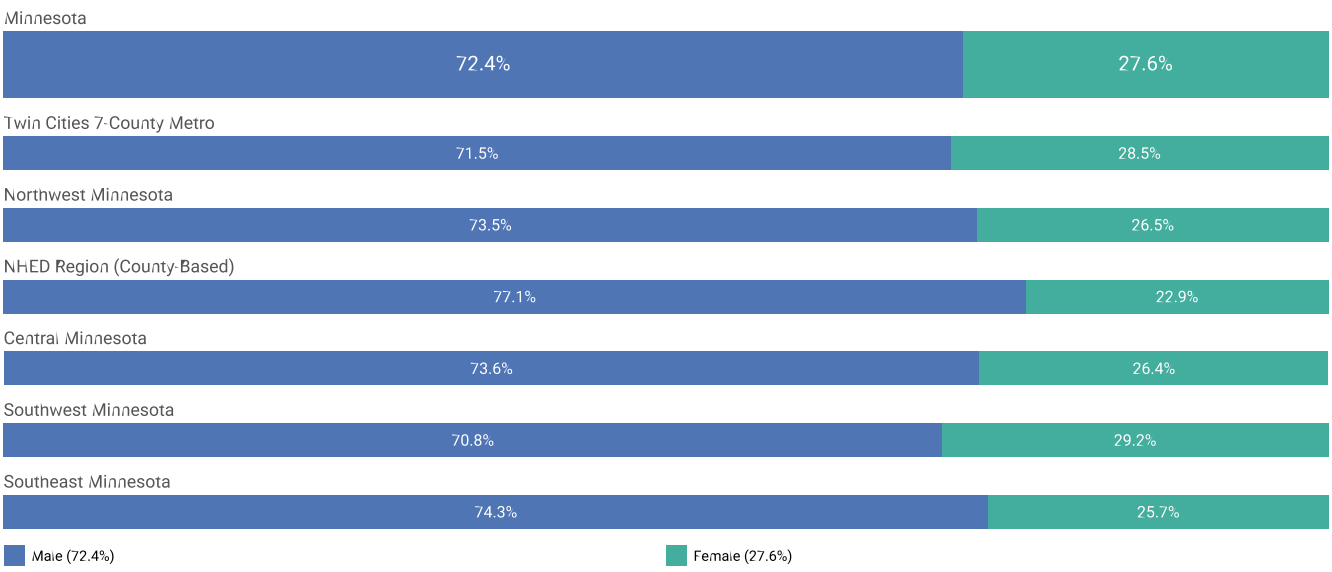

Data for AFNR - Agriculture, Food, and Natural Resources (CTE Field - Updated 2021)
Source: JobsEQ®. Data as of 2024Q1.

## Agriculture, Food, and Natural Resources Workforce Ethnicity by Region




Data for AFNR - Agriculture, Food, and Natural Resources (CTE Field - Updated 2021)
Source: JobsEQ®. Data as of 2024Q1.

## Agriculture, Food, and Natural Resources Workforce Gender by Region

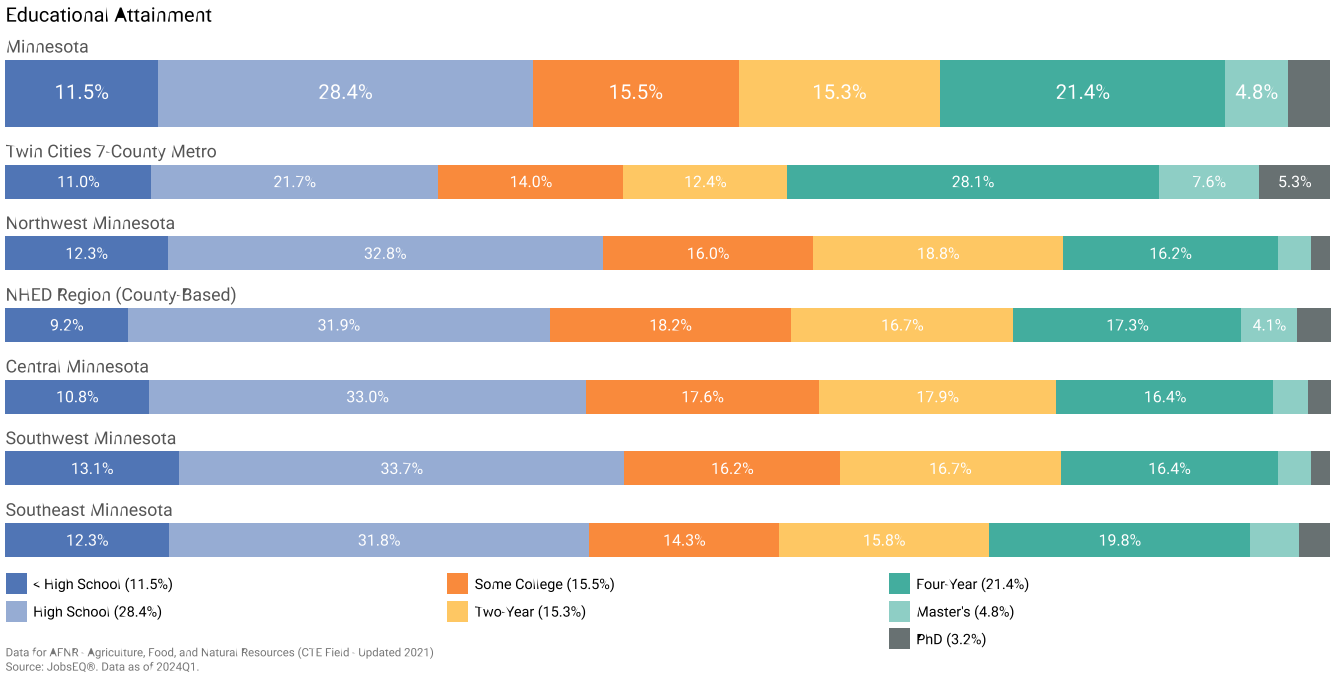



Data for AFNR - Agriculture, Food, and Natural Resources (CTE Field - Updated 2021)
Source: JobsEQ®. Data as of 2024Q1.

## EDUCATIONAL ATTAINMENT AND REQUIREMENTS

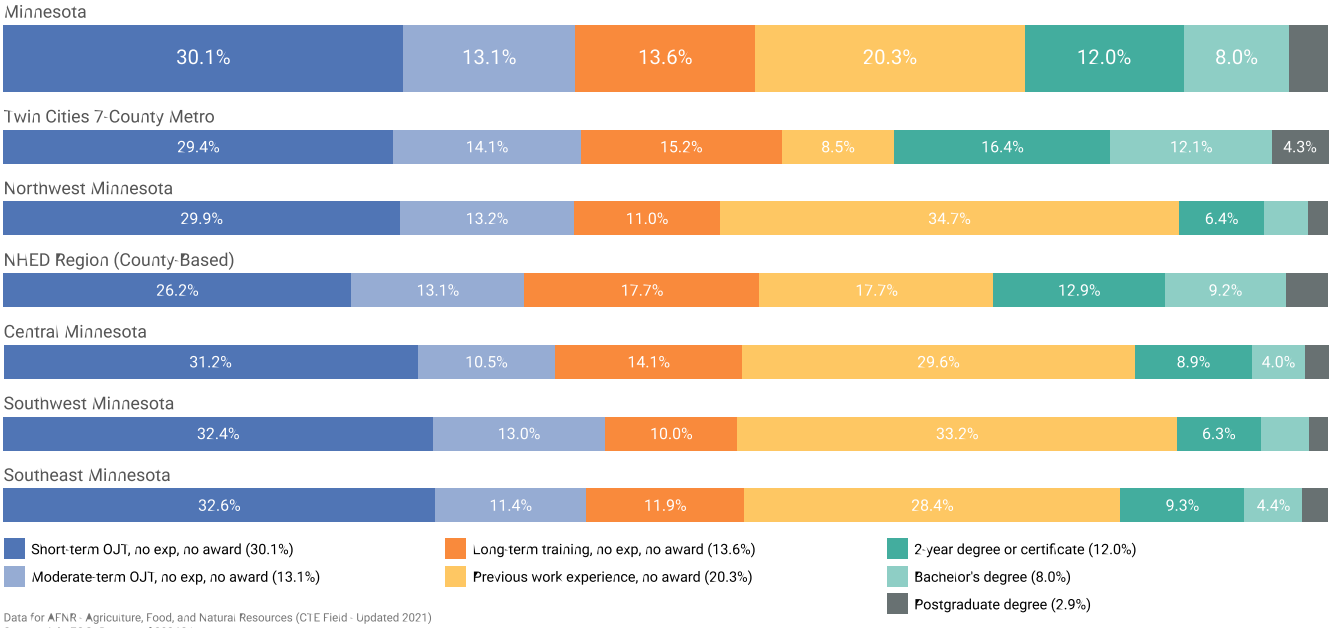
The charts below illustrate the estimated educational attainment of current workers in this career field, followed by the typical education and training requirements in the field.

- The Agriculture, Food, and Natural Resources career field has the highest percentage of its workforce across the state with less than a high school diploma (11.5% on average); Northeast Minnesota has the smallest percentage in this category (9.2%), while Southwest Minnesota has the highest (13.1%)
- The MSP Metro and Southeast Minnesota have a higher percentage of workers with at least a four-year degree
- At the high end, just 16.4% of the jobs in this career field in the MSP Metro require a four-year degree or higher. In all the other regions this statistic is 10% or less
- In the Central region, 85.4% of the jobs require less than a 2-year degree and in the Northwest and Southwest regions over 30% of the roles require previous work experience but no award




Data for AFNR - Agriculture, Food, and Natural Resources (CTE Field - Updated 2021)
Source: JobsEQ®. Data as of 2024Q1.

Education and Training Requirements



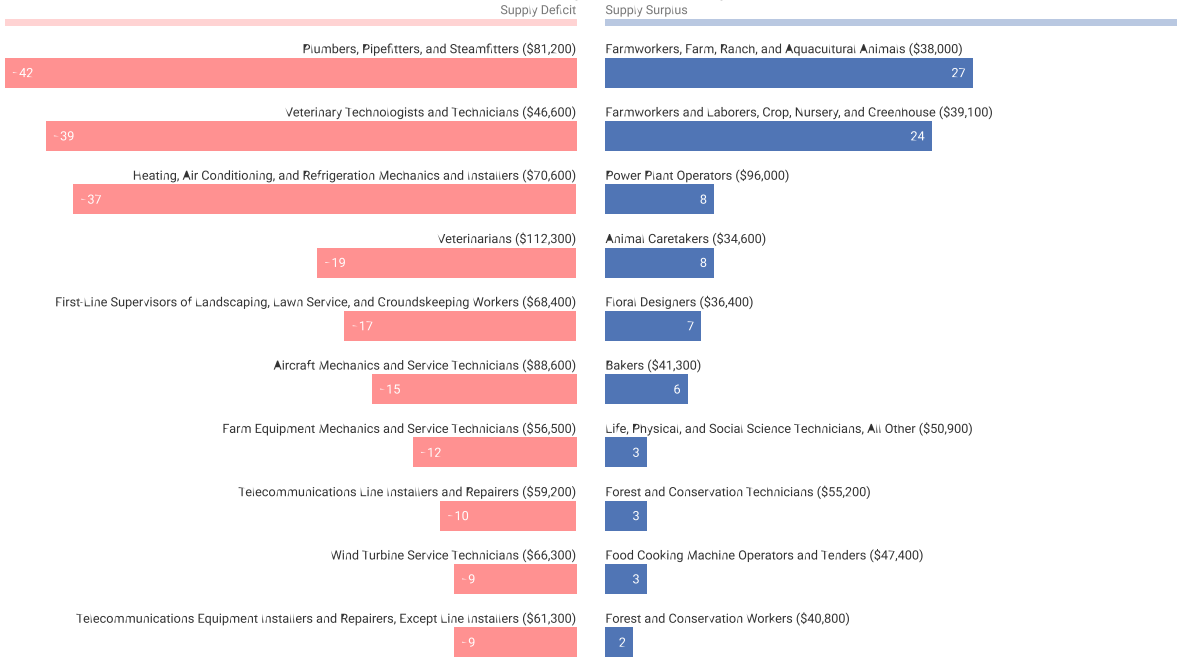

Data for AFNR - Agriculture, Food, and Natural Resources (CTE Field - Updated 2021)
Source: JobsEQ®. Data as of 2024Q1.

## OCCUPATION GAPS

The chart below shows the potential average annual talent shortages over ten years.

Occupation shortage forecasts in this field have persisted since 2022, worsening for several roles including Plumbers and Pipefitters. All of the occupations in the top ten showing a supply deficit in 2022 remain in the top ten for 2024. It is a similar story on the surplus side, with most occupations staying in the top ten, but with shrinking numbers. Retirements and growing demand unmet by the local talent supply chain are both contributing factors. There is continued demand for replacement talent to fill job openings that will be challenging to meet with the supply of local talent currently available.

**Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Agriculture, Food, and Natural Resources, Minnesota, 2024Q1**



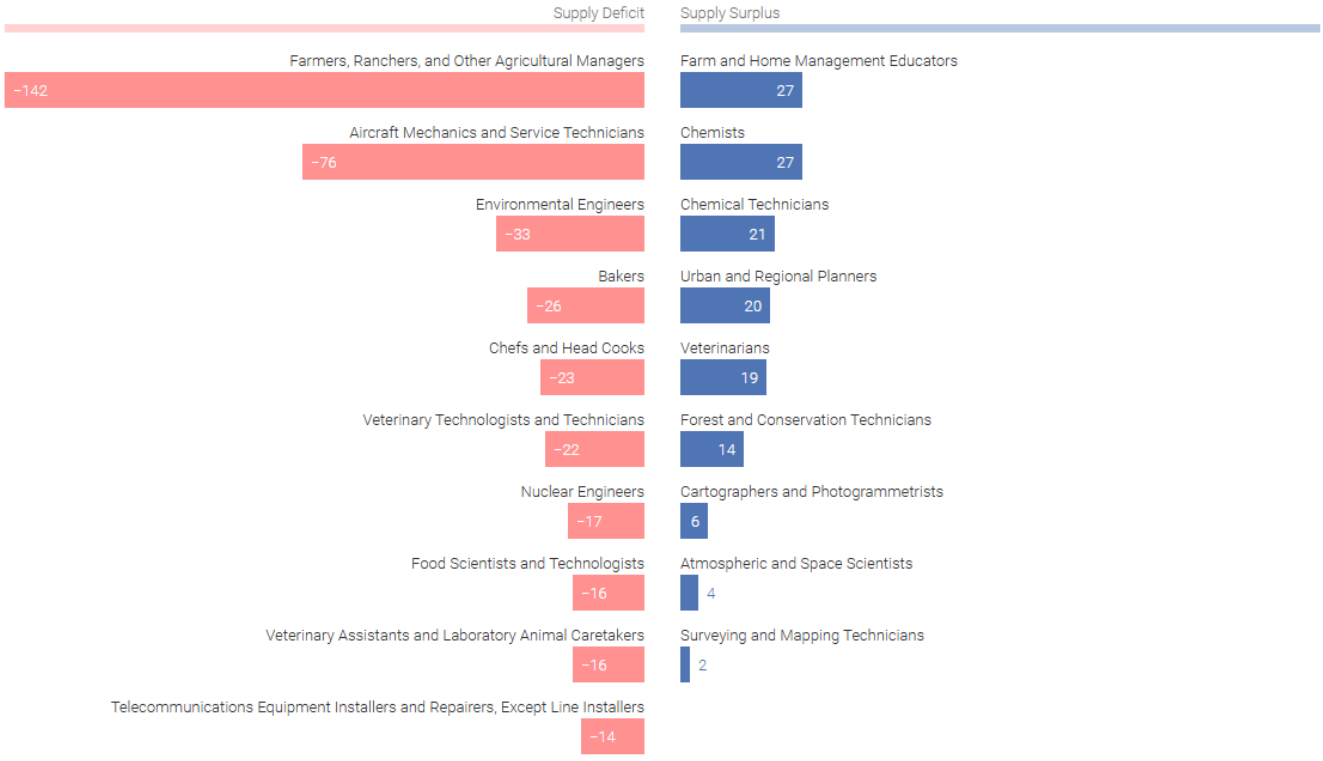
## AWARD GAPS

The chart below shows the shortfall of new postsecondary graduates needed to meet local demand, benchmarked against national average volumes of graduates in the 2022-23 school year.

Minnesota faces some moderate Agriculture, Food, and Natural Resources postsecondary award shortages and generates a surplus of graduates in other areas:

- Minnesota colleges and universities are underproducing at least 142 graduates annually that are needed to fill Farmers, Ranchers, and Other Agricultural Manager positions open with employers based in Minnesota, a significant expansion of the graduate deficit from the prior year (-68) tied to growing demand
- Aircraft Mechanics and Service Technicians and Environmental Engineer postsecondary awards also lag national volumes considerably and contribute to statewide talent shortages
- Only seven occupations have a higher supply of local postsecondary graduates from aligned local programs than the national average for a state of similar size and industry composition. Occupations with a higher relative share of postsecondary completions in the local talent market are examples of programs that serve other parts of the state or Midwest region where talent demand is high but relevant programs may not exist

**Award Gaps in Agriculture, Food, and Natural Resources, Minnesota, 2024Q1**



## ORIGIN, GATEWAY, AND TARGET OCCUPATIONS

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

**Origin-to-Gateway-to-Target Occupations for Agriculture, Food, and Natural Resources, Minnesota, 2024Q1**

**Target Occupations (All HW, HS, HD)**
HVAC Mechanics (OG)
Telecommunications Equipment Installers (OG, AG)
Veterinarians (OG)
Chemists
Environmental Scientists & Specialists (OG, AG)

**Gateway Occupations**
Veterinary Technologists & Technicians (HS, HD, OG, AG)
Butchers & Meat Cutters (OG)
Agricultural Equipment Operator (HD, AG)
Life, Physical, & Social Science Technicians (HS, HD, AG)
Food Cooking Machine Operators & Tenders (HD)

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

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

**Other Promising Occupations**

A number of other Agriculture, Food, and Natural Resources occupations that are high-wage and high-demand, yet do not meet the high-skill threshold to be considered Target Occupations, may be promising careers for students to consider. These occupations may offer a fast track to good jobs for those interested in starting a career in the field without requiring a postsecondary credential. These occupations to consider include:

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

**High LQ Occupations**

The following are the most highly concentrated Agriculture, Food, and Natural Resources occupations in Minnesota, relative to the national average.

| Occupation | LQ |
|---|---|
| Animal Scientists | 3.07 |
| Hydrologists | 2.14 |
| Foresters | 2.11 |
| Farm Equipment Mechanics & Service Technicians | 2.08 |
| Food Cooking Machine Operators & Tenders | 2.05 |

RealTime Talent

## Origin-to-Gateway-to-Target Occupations for Agriculture, Food, and Natural Resources, By Region 2024Q1

| | MSP Metro | Northeast | Northwest | Central | Southwest | Southeast |
|---|---|---|---|---|---|---|
| Mdn. Wage | Field: $67,600 | Field: $59,600 | Field: $54,300 | Field: $58,700 | Field: $57,700 | Field: $59,400 |
| Unempl | Region: 2.6%<br>Field: 2.8% | Region: 3.6%<br>Field: 3.4% | Region: 3.2%<br>Field: 2.9% | Region: 3.3%<br>Field: 3.0% | Region: 2.8%<br>Field: 2.6% | Region: 2.3%<br>Field: 2.3% |
| Origin Occupations | • Animal Caretakers<br>• Food Batchmakers<br>• Bakers<br>• Farmworkers & Laborers, Crop, Nursery, & Greenhouse<br>• Veterinary Assistants & Laboratory Animal Caretakers | • Landscaping & Groundskeeping Workers<br>• Animal Caretakers<br>• Veterinary Technologists & Technicians<br>• Bakers<br>• Farmworkers & Laborers, Crop, Nursery, & Greenhouse | • Landscaping & Groundskeeping Workers<br>• Farmworkers & Laborers, Crop, Nursery, & Greenhouse<br>• Food Batchmakers<br>• Meat, Poultry, & Fish Cutters & Trimmers<br>• Farmworkers, Farm, Ranch, & Aquacultural Animals | • Landscaping & Groundskeeping Workers<br>• Farm Workers, Farm, Ranch, & Aquacultural Animals<br>• Farmworkers & Laborers, Crop, Nursery, & Greenhouse<br>• Meat, Poultry, & Fish Cutters & Trimmers<br>• Food Batchmakers | • Farmworkers, Farm, Ranch, & Aquacultural Animals<br>• Landscaping & Groundskeeping Workers<br>• Food Batchmakers<br>• Farmworkers & Laborers, Crop, Nursery, & Greenhouse<br>• Meat, Poultry, & Fish Cutters & Trimmers | • Landscaping & Groundskeeping Workers<br>• Meat, Poultry, & Fish Cutters & Trimmers<br>• Farmworkers, Farm, Ranch, & Aquacultural Animals<br>• Food Batchmakers<br>• Farm Workers & Laborers, Crop, Nursery, & Greenhouse |
| Gateway Occupations | • Landscaping & Groundskeeping Workers<br>• Veterinary Technologists & Technicians<br>• Butchers & Meat Cutters<br>• Biological Technicians<br>• Life, Physical, & Social Science Technicians, All Other | • Logging Equipment Operators<br>• Butchers & Meat Cutters<br>• Biological Technicians<br>• Outdoor Power Equipment Mechanics<br>• Pesticide Handlers, Sprayers, & Applicators, Vegetation | • Agricultural Equipment Operators<br>• Food Cooking Machine Operators & Tenders<br>• Logging Equipment Operators<br>• Pesticide Handlers, Sprayers, & Applicators, Vegetation<br>• Outdoor Power Equipment & Other Small Engine Mechanics | • Food Cooking Machine Operators & Tenders<br>• Outdoor Power Equipment & Other Small Engine Mechanics<br>• Food & Tobacco Roasting, Baking, & Drying Machine Operators & Tenders<br>• Logging Equipment Operators<br>• Animal Breeders | • Butchers & Meat Cutters<br>• Food Cooking Machine Operators & Tenders<br>• Pesticide Handlers, Sprayers, & Applicators, Vegetation<br>• Graders & Sorters, Agricultural Products<br>• Outdoor Power Equipment & Other Small Engine Mechanics | • Butchers & Meat Cutters<br>• Refuse & Recyclable Material Collectors<br>• Agricultural Equipment Operators<br>• Chemical Technicians<br>• Outdoor Power Equipment & Other Small Engine Mechanics |
| Target Occupations | • HVAC Mechanics & Installers<br>• Chemists<br>• Veterinarians<br>• Chemical Technicians<br>• Food Science Technicians | • HVAC Mechanics<br>• Telecommunications Equipment Installers<br>• Environmental Scientists & Specialists<br>• Chemical Technicians<br>• Surveyors | • HVAC Mechanics & Installers<br>• Telecommunications Equipment Installers & Repairers<br>• Environmental Scientists & Specialists<br>• Urban & Regional Planners<br>• Biological Science Teachers, Postsecondary | • HVAC Mechanics<br>• Veterinarians<br>• Telecommunications Equipment Installers & Repairers<br>• Nuclear Engineers<br>• Environmental Scientists & Specialists | • Veterinarians<br>• Food Science Technicians<br>• Biological Technicians<br>• Biological Science Teachers, Postsecondary<br>• Wind Turbine Service Technicians | • HVAC Mechanics<br>• Telecommunications Equipment Installers<br>• Biological Technicians<br>• Conservation Scientists<br>• Wind Turbine Service Technicians |

## High Location Quotient (LQ) Occupations for Agriculture, Food, and Natural Resources, By Region 2024Q1

| | MSP Metro | Northeast | Northwest | Central | Southwest | Southeast |
|---|---|---|---|---|---|---|
| LQ > 1.20 | • Hydrologists<br>• Animal Scientists<br>• Foresters<br>• Stationary Engineers & Boiler Operators<br>• Food Scientists & Technologists | • Mining & Geological Engineers, Including Mining Safety Engineers<br>• Logging Equipment Operators<br>• Logging Workers, All Other<br>• Fallers<br>• Stationary Engineers & Boiler Operators | • Farmers, Ranchers, & Other Agricultural Managers<br>• Farm Equipment Mechanics & Service Technicians<br>• Food Cooking Machine Operators & Tenders<br>• Animal Scientists<br>• Food Batchmakers | • Nuclear Power Reactor Operators<br>• Nuclear Technicians<br>• Animal Breeders<br>• Farmworkers, Farm, Ranch, & Aquacultural Animals<br>• Nuclear Engineers | • Farmworkers, Farm, Ranch, & Aquacultural Animals<br>• Animal Breeders<br>• Farm Equipment Mechanics & Service Technicians<br>• Animal Scientists<br>• Meat, Poultry, & Fish Cutters & Trimmers | • Meat, Poultry, & Fish Cutters & Trimmers<br>• Farmworkers, Farm, Ranch, & Aquacultural Animals<br>• Animal Breeders<br>• Food Cooking Machine Operators & Tenders<br>• Farmers, Ranchers, & Other Agricultural Managers |

# Conclusion

Minnesota continues to experience a persistent labor shortage in critical career fields and has seen slower workforce growth in the past two years compared to other states due to retirement-related departures. Demand for talent in Architecture, Engineering, Health Science, and other Life Sciences continues to grow significantly, with the diversity of Minnesota's industries remaining one of its greatest economic strengths. Minnesota's highly educated workforce is a critical asset for addressing future talent gaps, as many occupations forecasting shortages typically require an associate or bachelor's degree, although interest in skills-based hiring and developments in Learning and Employment Records (LERs) may shift the landscape of career opportunities rapidly for individuals with related experience and skillsets.

Minnesota lags 2019 pre-pandemic employment volumes by only about 4,000 workers and is currently exceeding pre-pandemic employment forecast expectations. However, despite a steady recovery for the region since 2021 and improving employment forecasts for all six career fields compared to last year's estimates, Minnesota is likely to experience an overall employment decline of about -0.1% on average annually over the next five years due in large part to the aging of the local workforce. With a rapidly aging workforce in Health Science Technology, Human Services, and Engineering, Manufacturing, and Technology—the three career fields most closely aligned to Minnesota's top industries by economic contribution—talent shortages have persisted and will continue to be exacerbated without an influx of new talent into these careers.

# FAQ

**What is a location quotient?**

A location quotient (LQ) is a measurement of concentration in comparison to the nation. An LQ of 1.00 indicates a region has the same concentration of an industry (or occupation) as the nation. An LQ of 2.00 would mean the region has twice the expected employment compared to the nation and an LQ of 0.50 would mean the region has half the expected employment in comparison to the nation.

**What is a cluster?**

A cluster is a geographic concentration of interrelated industries or occupations. If a regional cluster has a location quotient of 1.25 or greater, the region is considered to possess a competitive advantage in that cluster.

**What is the CTE Career Field, Cluster, and Pathway taxonomy used in this report?**

Career clusters and pathways have been identified for this report by the Source: National Career Clusters® Framework external site implemented by Department of Defense ASVAB Career Exploration Program, Advance CTE and viewable on ONET https://www.onetonline.org/find/career?c=8, updated to the 2020 SOC classification system. A summary of these six career fields and associated clusters and pathways can be found at https://www.minnstate.edu/system/cte/consortium_resources/documents/pos-career-wheel-8x11-2016.pdf. This report uses the prior Framework currently in use nationally, *not* the Modern Framework, which was released in October 2024.

**What is separation demand?**

Separation demand is the number of jobs required due to separations—labor force exits (including retirements) and turnover resulting from workers moving from one occupation into another. Note that separation demand does not include all turnover—it does not include when workers stay in the same occupation but switch employers. The total projected demand for an occupation is the sum of the separation demand and the growth demand (which is the increase or decrease of jobs in an occupation expected due to expansion or contraction of the overall number of jobs in that occupation).

**What is the difference between industry wages and occupation wages?**

Industry wages and occupation wages are estimated via separate data sets, often the time periods being reported do not align, and wages are defined slightly differently in the two systems (for example, certain bonuses are included in the industry wages but not the occupation wages). It is therefore common that estimates of the average industry wages and average occupation wages in a region do not match exactly.

**What is NAICS?**

The North American Industry Classification System (NAICS) is used to classify business establishments according to the type of economic activity. The NAICS Code comprises six levels, from the “all industry” level to the 6-digit level. The first two digits define the top level category, known as the “sector,” which is the level examined in this report.

**What is SOC?**

The Standard Occupational Classification system (SOC) is used to classify workers into occupational categories. All workers are classified into one of over 804 occupations according to their occupational definition. To facilitate classification, occupations are combined to form 22 major groups, 95 minor groups, and 452 occupation groups. Each occupation group includes detailed occupations requiring similar job duties, skills, education, or experience.

**What is CIP?**

The Classification of Instructional Programs (CIP) is a taxonomy of academic programs developed by the US Department of Education. Colleges and universities across the country assign CIP codes to their academic programs. CIP codes are also often assigned to courses, certificates, and degrees.

**Where can I learn more about the sources that were used in this report?**

**Lightcast** offers a suite of labor market data analysis tools that are used to analyze candidate profiles and educational data from NCES IPEDS to track program graduate data and estimate talent pool availability. These tools scrape millions of candidate profiles and model skills, credentials, and employment experience to link where talent is located to where talent is in demand.

**Chmura JobsEQ** is a labor market data analysis tool that provides employment, unemployment, and education data from sources like the Bureau of Labor Statistics, Census Bureau, and NCES IPEDS and models this data at detailed geographic levels. This tool is utilized by RealTime Talent to model alternate forecasts impacted by COVID-19 to show possible future-state talent gaps, award gaps, and optimistic employment growth.

**Who created this report?**

This report was developed by RealTime Talent for Minnesota State in November 2024. If you have questions about the data found in this report, or are interested in learning more, please contact Catherine Jett at catherine@realtimetalentmn.org or visit the RealTime Talent website at www.realtimetalent.org

# Data Notes

## Chmura JobsEQ Source Details

- Occupation employment by default indicates employment by place of work. Occupation employment is as of 2024Q1 and based on industry employment and local staffing patterns calculated by JobsEQ and utilizing BLS OES data. Employment forecasts are by RealTime Talent using models provided by JobsEQ and are consistent with BLS national-level 10-year forecasts. Occupation wages (mean, median, and percentiles) are derived from BLS OES data as of 2023 and represent the average for all Covered Employment. Entry-level and experienced wages are derived from these source data, computed by JobsEQ.
- Industry employment is as of 2024Q1 and based upon BLS QCEW data that are imputed by JobsEQ where necessary and supplemented by additional sources including Census ZBP data.
- Education and training requirements are from the BLS. Educational attainment mix and other occupation demographics data are modeled by JobsEQ for 2024Q1 using regional occupation employment from JobsEQ, ZCTA-level demographics data from the Census Bureau, and national occupation-demographics patterns from the BLS.
- Postsecondary awards are per the NCES and for the 2022-2023 academic year. Any programs shown are linked with the occupation(s) being analyzed via the program-occupation crosswalk, which may not be comprehensive. Any programs shown reflect only data reported to the NCES; reporting is required of all Title IV schools. Training providers that do not report data to the NCES are not reflected.
- The sections on Employer Demand include Job ads data from TalentNeuron, which allows for greater specificity on education, explerience level, and employer names. Since many extraneous factors can affect short-term volume of online job postings, time-series data can be volatile and should be used with caution. All ad counts represent deduplicated figures.
- Occupation gaps are modeled by JobsEQ, indicating long-term potential supply and demand mismatches in a region due, in part, to job demand and labor pool dyanamics, including educational attainment and projected growth.
- Occupation employment by place of residence is as of 2024Q1 and modeled by JobsEQ based upon occuaption employment by place of work and commuting patterns. Commuting patterns are derived from source data from the Census Bureau, occupation-specific commuting tendancies, and updated to reflect more recent population and employment estimates.
- Annual demand is the sum of the annual projected growth demand and separation demand. Separation demand is the number of jobs required due to separations—labor force exits (including retirements) and turnover resulting from workers moving from one occupation into another. Note that separation demand does not include all turnover—it does not include when workers stay in the same occupation but switch employers. Growth demand is the increase or decrease of jobs expected due to expansion or contraction of the overall number of jobs.
- Figures may not sum due to rounding.

# Job Posting Source Details

- **Chmura JobsEQ:** General job ads data from the Regional Overview section of the report are based on online job posts from the Real-Time Intelligence (RTI) data set, produced by JobsEQ and gleaned from over 45,000 websites. Data reflect ads active during October 2024 and advertised for any Zip Code Tabulation Area in or intersecting with the region for which this report was produced. Historical ad volume is revised as additional data are made available and processed.

- **TalentNeuron:** Detailed job posting data insights provided in the Job Postings section of the report are aggregated using TalentNeuron (https://www.talentneuron.com/), a job posting aggregation tool which allows for greater specificity on education, explerience level, and employer names. This report summarizes information from postings newly advertised between November 1, 2023, and October 31, 2024. Since many extraneous factors can affect short-term volume of online job postings, time-series data can be volatile and should be used with caution. All ad counts represent deduplicated figures.

    - Demand: TalentNeuron scrapes approximately 1.3 million job postings daily, which are cleaned, deduplicated, and aggregated on the platform daily.

    - Skills: TalentNeuron categorizes and tags skill and experience data from individual job postings for analysis at the aggregate level. The platform recognizes over 30,000 unique individual skills.

    - Salary: TalentNeuron AI algorithms scrape job postings for salaries which are added to a historical database. As not all job postings include salaries, statistical analysis is used to predict or model the likely salary offer, which is vetted against U.S. Bureau of Labor Statistics employment wage data.

# Definitions and Methodology

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| **High-Wage**<br>High-Wage occupations are defined as occupations that have average annual wages greater than the overall regional median wage ($54,100 in the state as of 2024Q1). |
| **High-Skill**<br>High-Skill occupations are those that typically require a certificate or other formal credential for employment. Occupation by educational attainment are regional data modeled by JobsEQ using U.S. Census Bureau Educational Attainment data projected to 2024Q1 along with source data from the BLS. |
| **High-Demand**<br>High-Demand occupations are defined as occupations that fulfill two or more of the following demand criteria: 1) high growth, 2) high total demand, 3) low unemployment, 4) high unemployment-to-posting ratio, and/or 5) high posting volume. |
| **D1: 5-Yr Growth**<br>An occupation is considered to have high growth in that occupation has forecasted 5-year growth that is greater than the overall regional forecasted 5-year pessimistic growth model. |
| **D2: Total Demand**<br>An occupation is considered to have high total demand if the total 5-year forecast employment growth, transfers, and exits combined is greater than 50% of total employment in that occupation as of 2024Q1 (i.e. high long-term demand) |
| **D3: Unempl <3%**<br>An occupation is considered to have low unemployment if the estimated unemployment rate for the occupation is below 3% in the region as of 2024Q1 (i.e. high employer retention demand) |
| **D4: Posting Ratio**<br>An occupation is considered to have a strained unemployment-to-posting ratio if the estimated volume of unemployed individuals regionally exceeds the number of online job postings advertised in the month of October 2024 (i.e. ratio of unemployed-to-posts is greater than 1; low talent supply) |
| **D5: Posting Volume**<br>An occupation is considered to have high posting volumes if the volume of online job postings in August 2024 was greater than 200 in the region, the occupation is considered to have high job posting volumes (i.e. high immediate employer demand). |
| **Occupation Gaps**<br>Occupation gaps are developed by JobsEQ and use a multitude of data sources. Employment supply and demand projections are based on a starting date of 2024Q1 using baseline low-growth forecasts modeled from the Bureau of Labor Statistics (more pessimistic forecast outlook than utilized in D1 and D2). The potential supply shortfall is an underlying force that the market needs to resolve one way or another, such as by employers recruiting from further distances for these occupations, wages going up to attract more candidates, and/or increased demand and wages enticing more local residents to get training for these occupations. While this is an important analysis for determining local occupation needs, the occupation gap should be considered along with other regional data including growth and separation forecasts, unemployment rates, wage trends, and award and skill gap analyses. |

**Award Gaps**

This metric illustrates the difference between the number of awards conferred (which are post-secondary certificates or degrees) and the occupation demand in your region. Negative values represent the gap, or shortage, of degrees being awarded in the region to meet the demand for the occupations selected. The positive values represent the surplus of awards meaning that the number of awards awarded are greater than the target range of demand for the region. Awards data are based upon degrees conferred for the academic year 2022-2023 and are provided by the National Center for Education Statistics (NCES). Occupation employment data are derived from the most recent four quarters of industry employment (from the Bureau of Labor Statistics, updated quarterly) and the industry/occupation matrix available for the region. Occupation training concentrations and shortfalls are calculated by JobsEQ. The percent college educated are provided by the BLS per the Employment Projections Program.

**Location Quotient**

Location quotient is a measurement of concentration in comparison to the nation. An LQ of 1.00 indicates a region has the same concentration of an industry (or occupation) as the nation. An LQ of 2.00 would mean the region has twice the expected employment compared to the nation and an LQ of 0.50 would mean the region has half the expected employment in comparison to the nation. Click here to see the formula for LQ. Occupations with a LQ greater than or equal to 1.2 have been flagged in this analysis of having a unique specialization in the region.