

Minnesota
Statewide

CAREER & TECHNICAL EDUCATION

Workforce Trends & Careers of Tomorrow

RealTime Talent

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RealTime Talent

Using data to build the
world's best workforce

Workforce Trends & Careers of Tomorrow

Overview

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

This report unpacks the current workforce landscape of Minnesota and the regional nuances of talent demand by career field. We aim to support Minnesota Perkins Consortia in navigating changes in their local labor market and guide their understanding of how these changes may impact enrollment, industry, career advancement, and the needed programs of study by region.² Each of the six regional reports—and statewide report—include:

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

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

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

About This Report

This report was developed by RealTime Talent for the Career and Technical Education Consortia of Minnesota with funding provided by Minnesota State. The contents of this publication were made possible through the Strengthening Career and Technical Education for the 21st Century Act (Perkins V) Federal grant from the United States Department of Education administered through Minnesota State Colleges and Universities. If you have questions about the data found in this report, or are interested in learning more, please contact the Director of Strategic Research Erin Olson at erin@realtimetalentmn.org.

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Minnesota

Introduction

This report highlights the current and future talent needs across Minnesota as a whole. It is a summary report detailing the unique needs by region across the state, as well as a high-level picture of the current economic outlook for Minnesota. Identifying the skills, certifications, and qualifications for positions today—including where they are most in demand—will help the education community anticipate community needs and ensure that curriculum prepares students for relevant job opportunities of the future here in Minnesota.

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

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

Target Occupations

High wage (above regional average)

High-skill (require some credential)

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

*Often also high occupation gap and award gap

Gateway Occupations

Mid-wage (\$42,000 – regional average)

Low-middle skills (HS diploma, some OJT)

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

Origin Occupations

Low wage (<\$42,000/year)

Low skill (no credential)

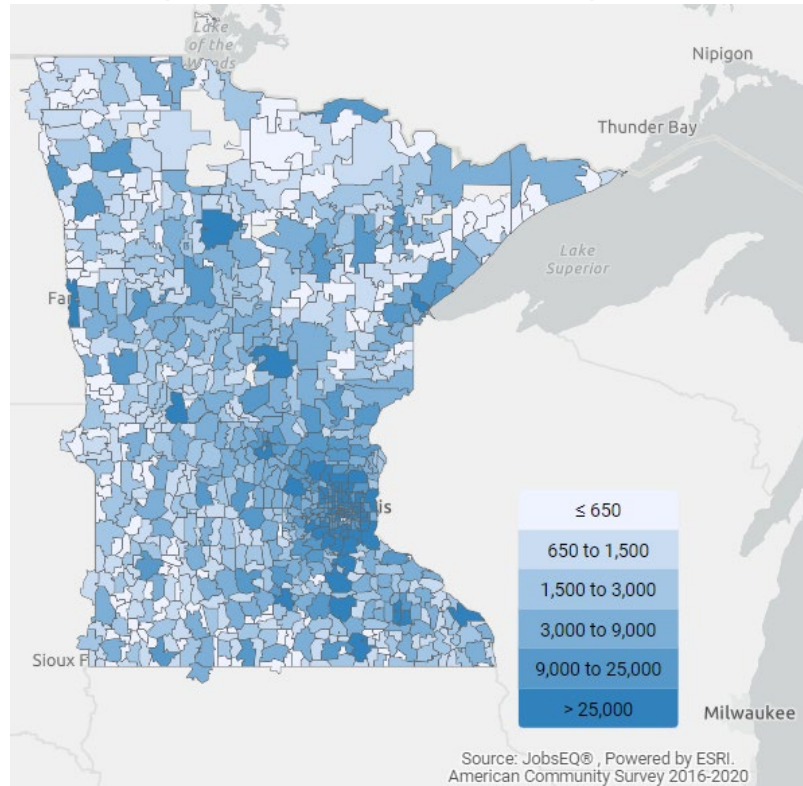
Low demand (over 5% unemployment, low growth, low replacement demand, and/or low job postings)

Community Profile

Population

The population of Minnesota was about 5,600,166 according to the 2016-2020 American Community Survey, an increase of about 36,788 from the prior years' estimates. Based on year-over-year population growth of about 0.6% on average, about 5,657,342 people are estimated to live in Minnesota as of 2021. Approximately 23.2% of Minnesota's population are minors under 18 years of age. Among the population 16 years and over, 69.2% participate in the labor force—a drop of 0.4% from the prior year (and compared to 63.2% nationwide).

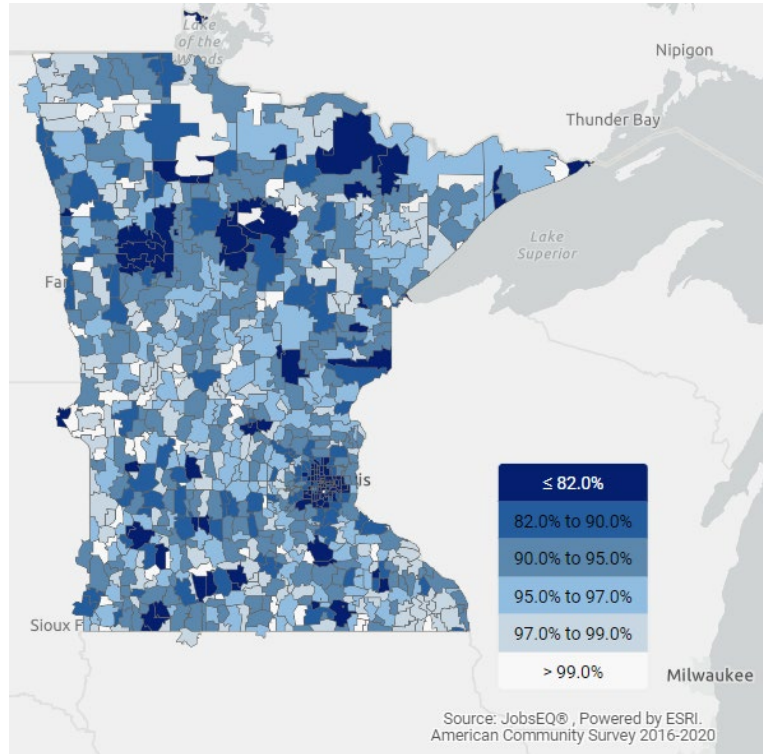
Population Estimates, Minnesota Zip Codes



Demographics

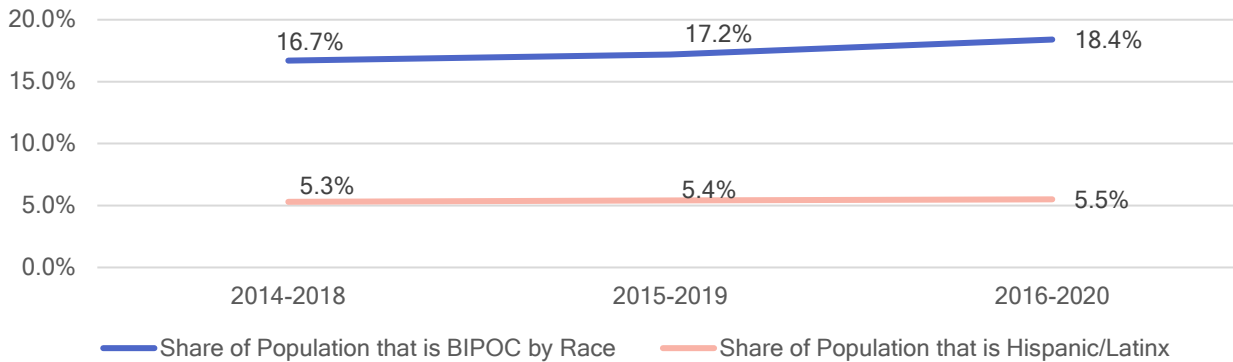
Across Minnesota, 18.4% of the population identify as Black, Asian, American Indian, Native Hawaiian, or some other race, an increase of 1.2 percentage points in BIPOC residents from the prior years' estimates. Minnesota's most diverse region is the MSP Metro. However, by share of population that is BIPOC, it is not necessarily Minnesota's most populous zip codes alone that have high rates of diversity. Several communities with fewer than 650 residents, including just north of Lake of the Woods and the very tip of Minnesota's Arrowhead region, have higher than the state average mix of diversity with over 18% BIPOC residents (shown in dark blue in the map below). Approximately 5.5% of Minnesota residents are Hispanic or Latinx, an increase of 0.1% from the prior years' estimates. The Southwest region of Minnesota has the largest share of Latinx population in Minnesota with 7.4% of the population being Hispanic or Latinx—an increase of 0.2% from the prior years' estimates.

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



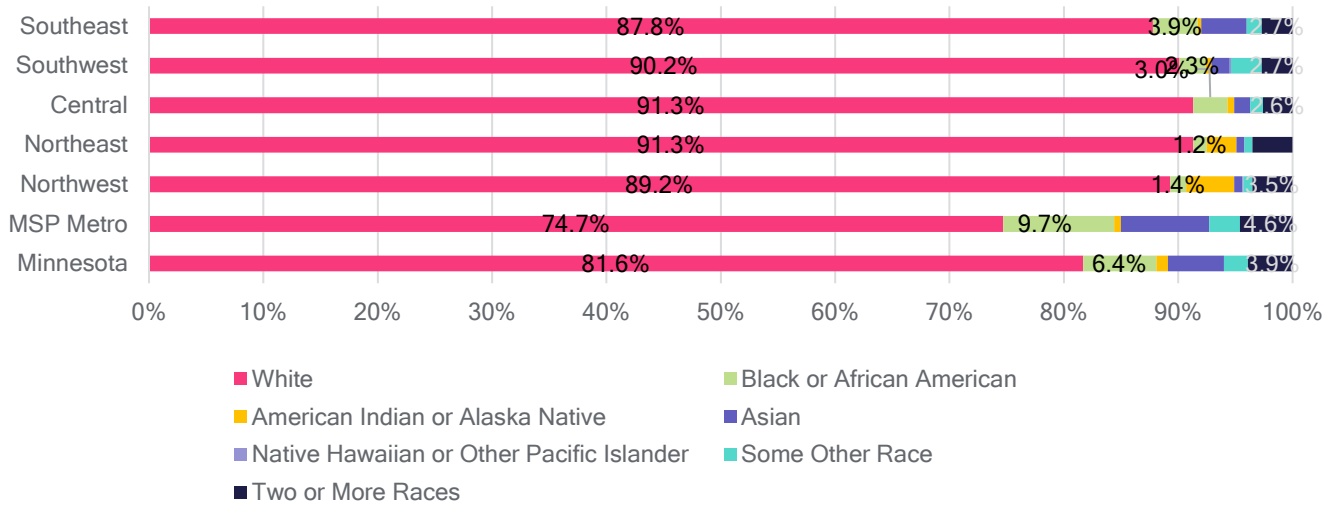
White Zip Codes = 99%-100% white populations; Darker Blue Zip Codes = most diverse

Population Demographic Estimates Over Time by Race and Ethnicity, Minnesota



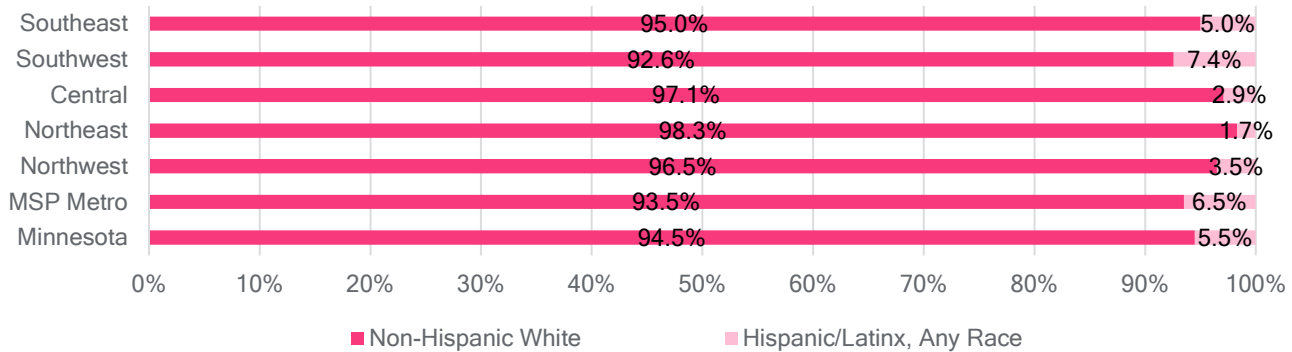
American Community Survey 5-Year Estimates.

Population Race, All Ages



American Community Survey 2016-2020.

Population Ethnicity, All Ages

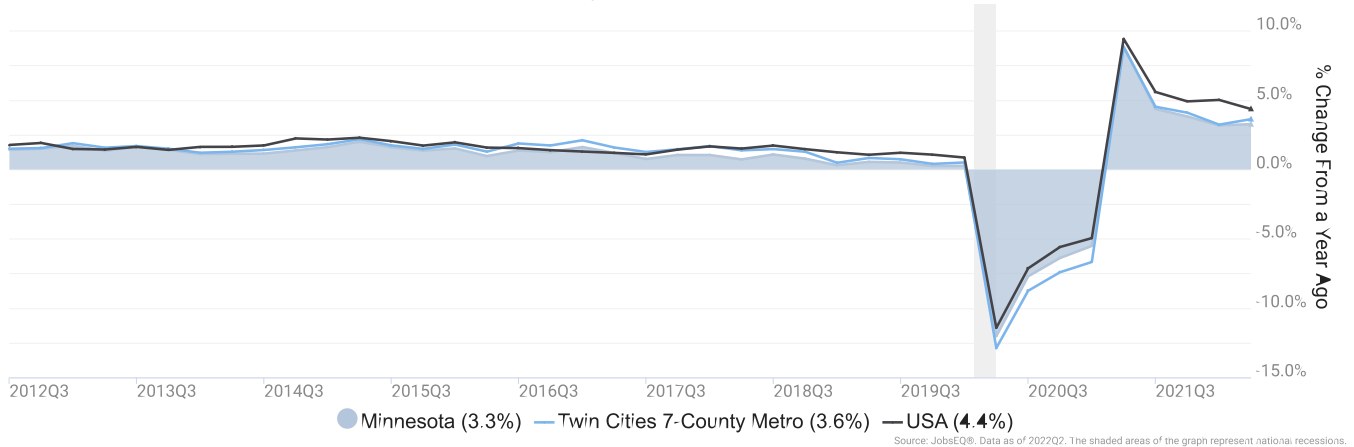


American Community Survey 2016-2020.

Employment

As of 2022Q2, total employment for Minnesota was 3,023,362 (based on a four-quarter moving average, and up from 2,860,470 in 2021Q1). About 60% of employment is concentrated in the 7-county MSP Metro region (1,812,189). Over the year ending 2022Q2, employment increased by 3.3% in Minnesota.

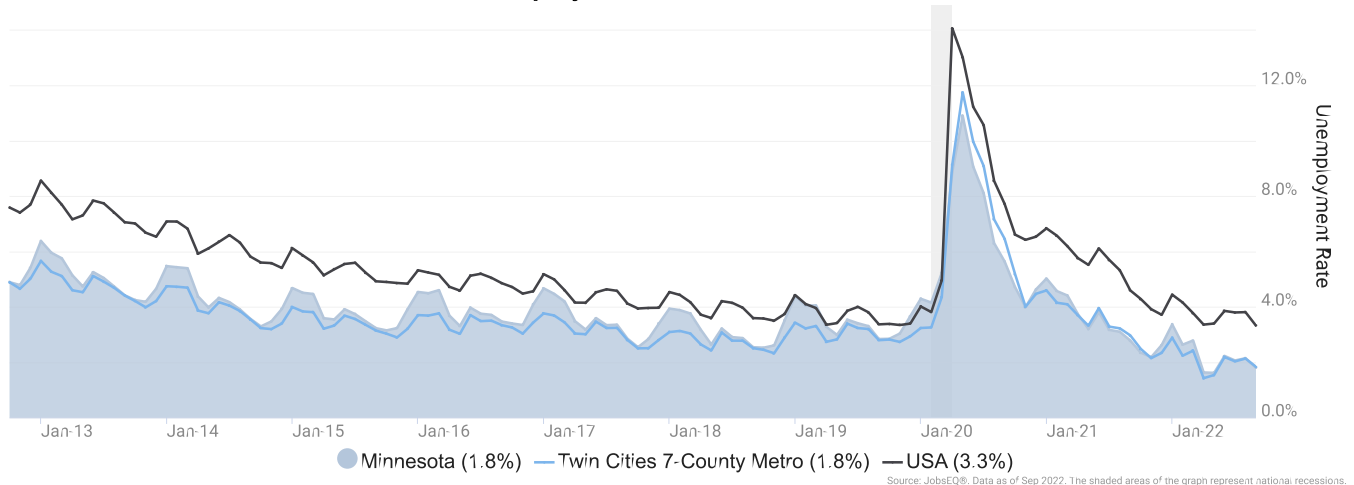
Employment in Minnesota



Employment data are derived from the Quarterly Census of Employment and Wages, provided by the Bureau of Labor Statistics and imputed where necessary. Data are updated through 2021Q1 with preliminary estimates updated to 2022Q2.

The unemployment rate for Minnesota was 1.8% as of September 2022. The regional unemployment rate was lower than the national rate of 3.3%. One year earlier, in September 2021, the unemployment rate in Minnesota was 2.8%, dropping steadily from 3.4% in July 2021 and 7.6% in July 2020.

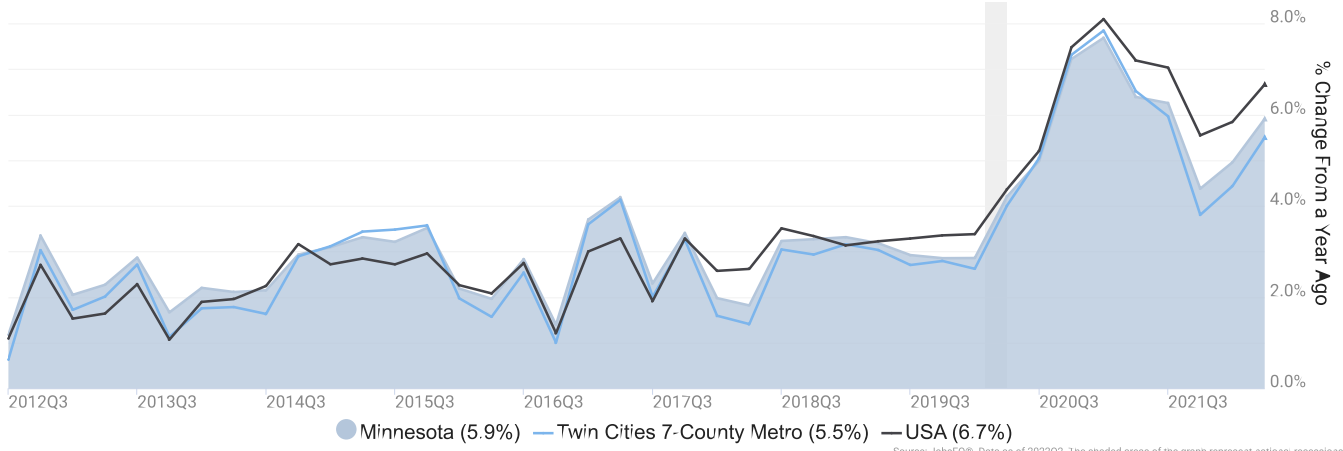
Unemployment Rate in Minnesota



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

The average worker in Minnesota earned annual wages of \$67,447 in 2022Q2 compared to \$63,616 as of 2020Q1. Average annual wages per worker increased 8.5% in Minnesota over the preceding four quarters. Wages rose similarly nationwide, where annual average wages were \$67,777 in 2022Q2 (compared to \$63,393 as of 2021Q1 and \$57,624 as of 2020Q1). Early shifts were due in part to the loss of low-wage workers during the impacts of the COVID-19 pandemic and the ongoing challenge of recruiting and hiring talent for entry-level, lower-wage jobs, particularly in sectors like hospitality, tourism and retail. However, often significant wage uplifts have been recorded particularly in roles that have especially low unemployment or require advanced experience or education credentials.

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 2022Q1 with preliminary estimates updated to 2022Q2.

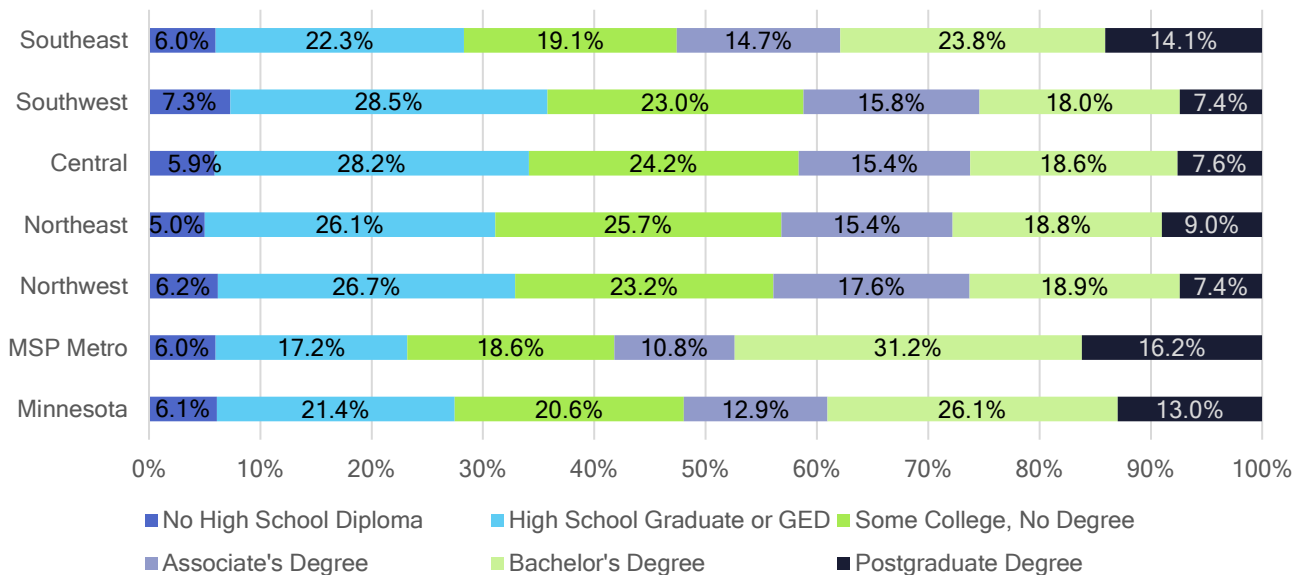
Education



94.0% of prime working age adult residents have at least a high school diploma or GED.

In Minnesota, 6.1% of adults between the ages of 25 and 64 do not have a high school diploma or equivalent, and about 21.4% have a high school diploma as their highest level of education—a drop of 0.3 percentage points from the prior years' estimates. Nationwide, 10.5% of U.S. residents between the ages of 25 and 64 never completed high school or obtained an equivalent credential.

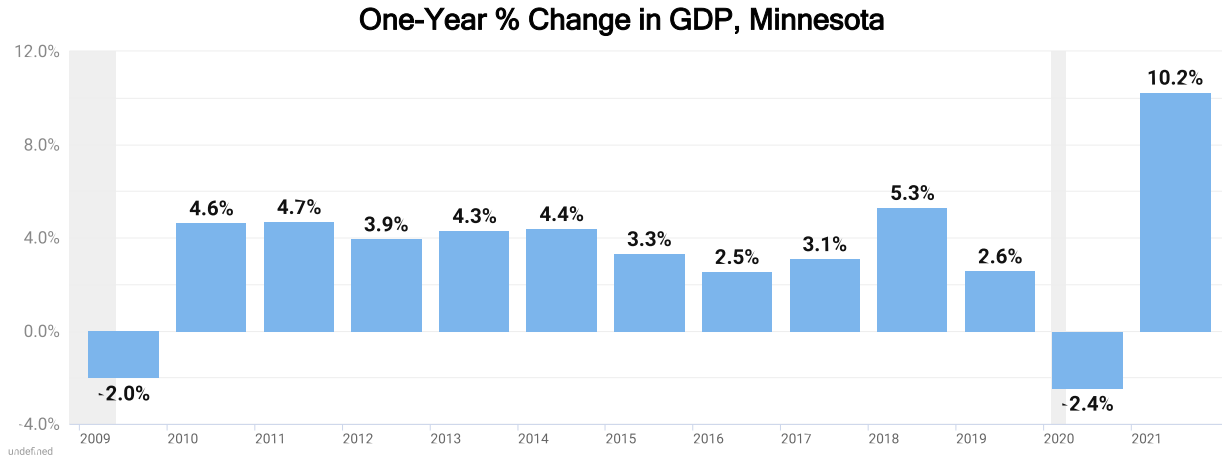
Educational Attainment, Age 25-64



American Community Survey 2016-2020.

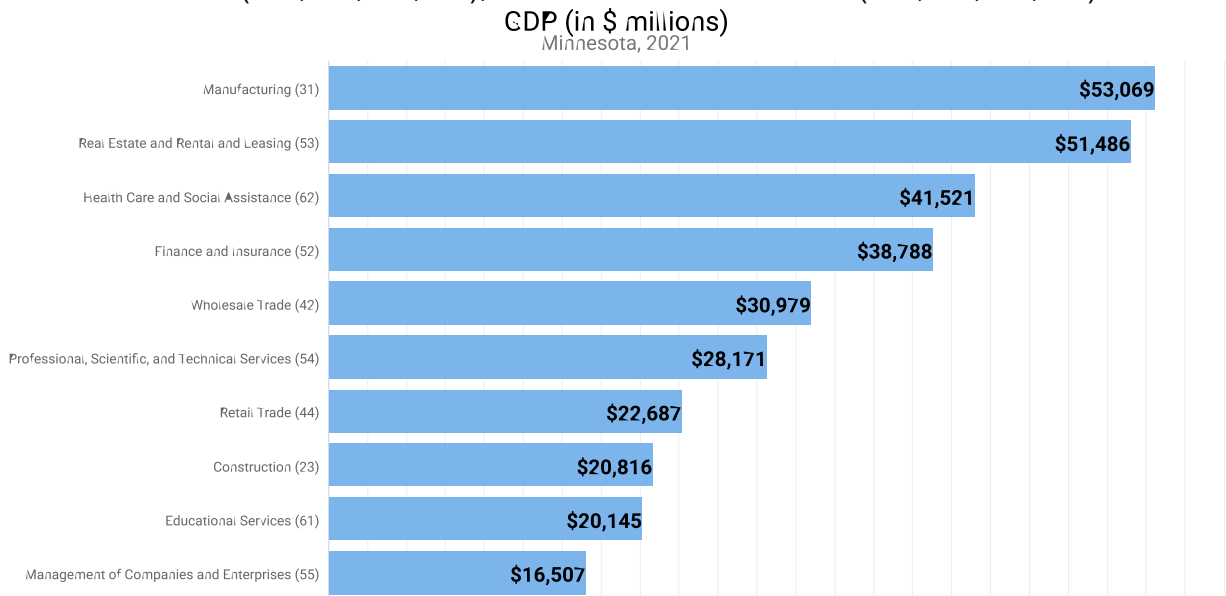
Economic Indicators

Gross Domestic Product (GDP) is the total value of goods and services produced by a region. In 2021, nominal GDP in Minnesota expanded 10.2%. This follows a contraction of 2.4% in 2020. As of 2021, total GDP in Minnesota was \$412,000,800,000.



Gross Domestic Product data are provided by the Bureau of Economic Analysis, imputed by Chmura where necessary, updated through 2021.³

As was the case in 2020, Manufacturing contributed the largest portion of GDP in 2021, \$53,068,797,000. The next-largest contributions came from Real Estate and Rental and Leasing (\$51,485,600,000); Health Care and Social Assistance (\$41,521,227,000); and Finance and Insurance (\$38,787,766,000).



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

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

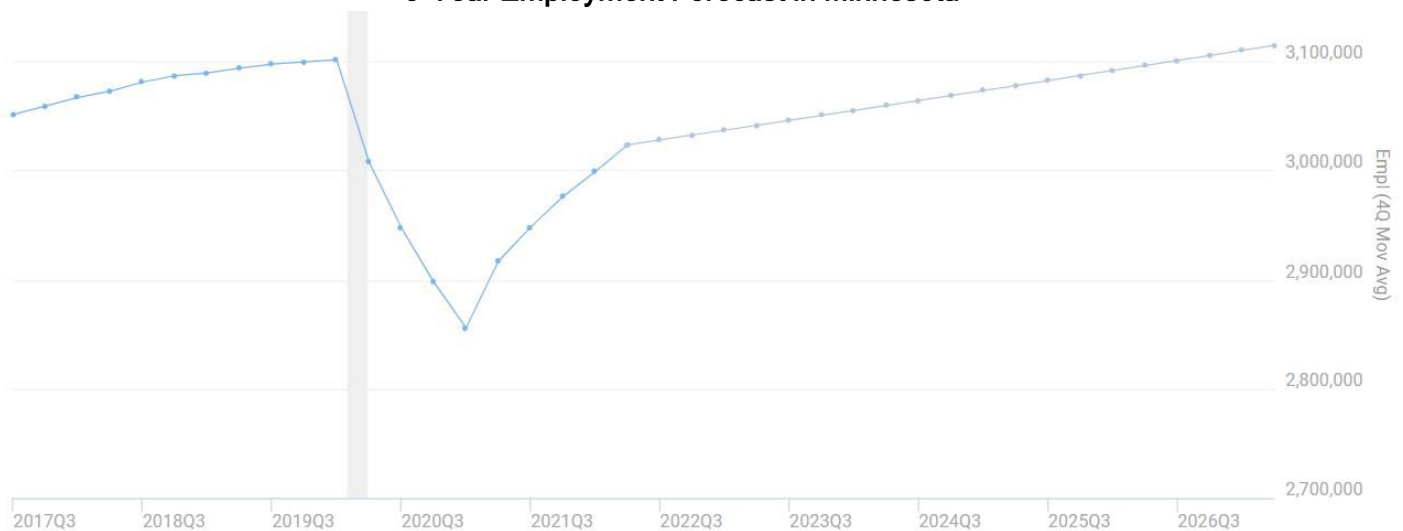
The Workforce of Today and Tomorrow

Workforce Forecast

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

Employment rose by 3.3% between 2021Q2 and 2022Q2, with an estimated 2.5% of the Minnesota workforce being unemployed by July 2022 (about 76,069 people). Future growth in jobs in Minnesota is forecasted to grow by about 0.6% averaged annually through 2027 in a baseline scenario, not reaching pre-pandemic employment volumes until late 2026.

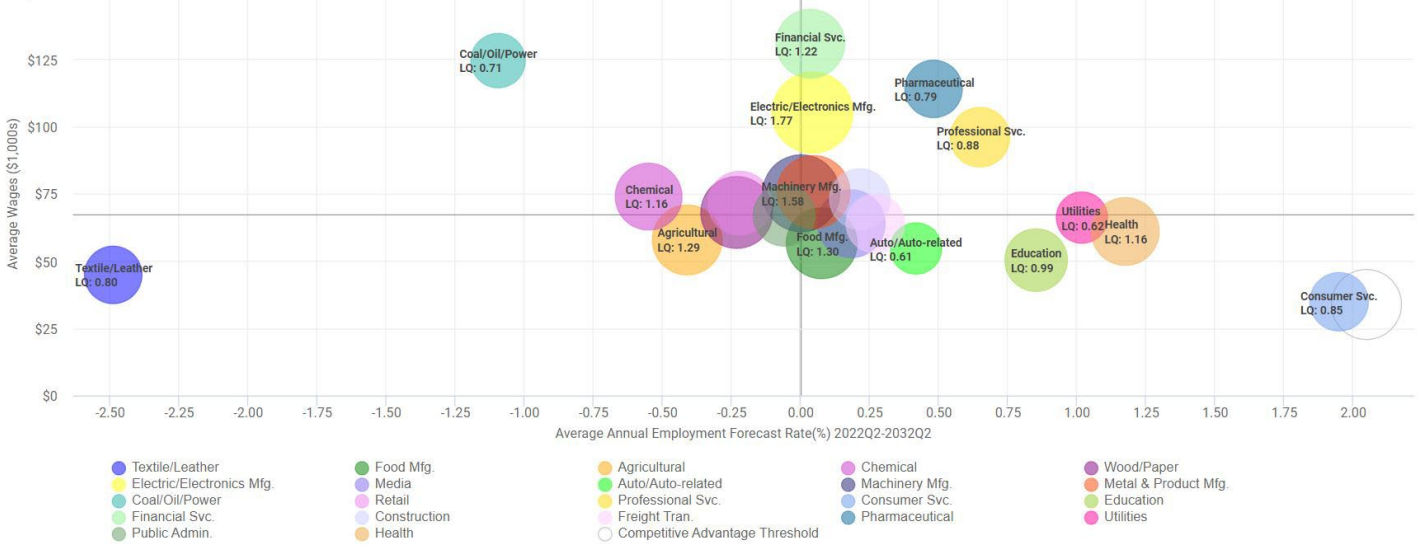
5-Year Employment Forecast in Minnesota



An industry cluster is a geographic concentration of interrelated industries or occupations. The industry cluster in Minnesota with the highest relative concentration is Electric/Electronics Manufacturing with a location quotient of 1.77—a slight decrease in local concentration from estimates in 2021. This cluster employs 56,580 workers in the region (a slight drop from 2021Q1) with an average wage of \$105,112—a wage uplift of nearly \$8,500 from the prior year. Employment in the Electric/Electronics Manufacturing cluster is projected to grow in Minnesota by about 0.05% per year over the next ten years.

In comparison with 2021Q1 forecast estimates by industry cluster, the Consumer Services cluster increased in employment forecast from about 0.4% in 2021Q1 to about 1.9% annual growth in 2022Q2. Textile and Leather Manufacturing employment forecasts dropped from about -1.4% decline in 2021Q1 to -2.5% as of 2022Q2. Most other clusters continue to forecast in close alignment to 2021 estimates, or with slightly more favorable forecasts—as was the case with most other Manufacturing sectors and Professional Services.

Industry Clusters in Minnesota, 2022Q2



Emerging Critical Needs

SECTORS AND OCCUPATIONS OF FOCUS

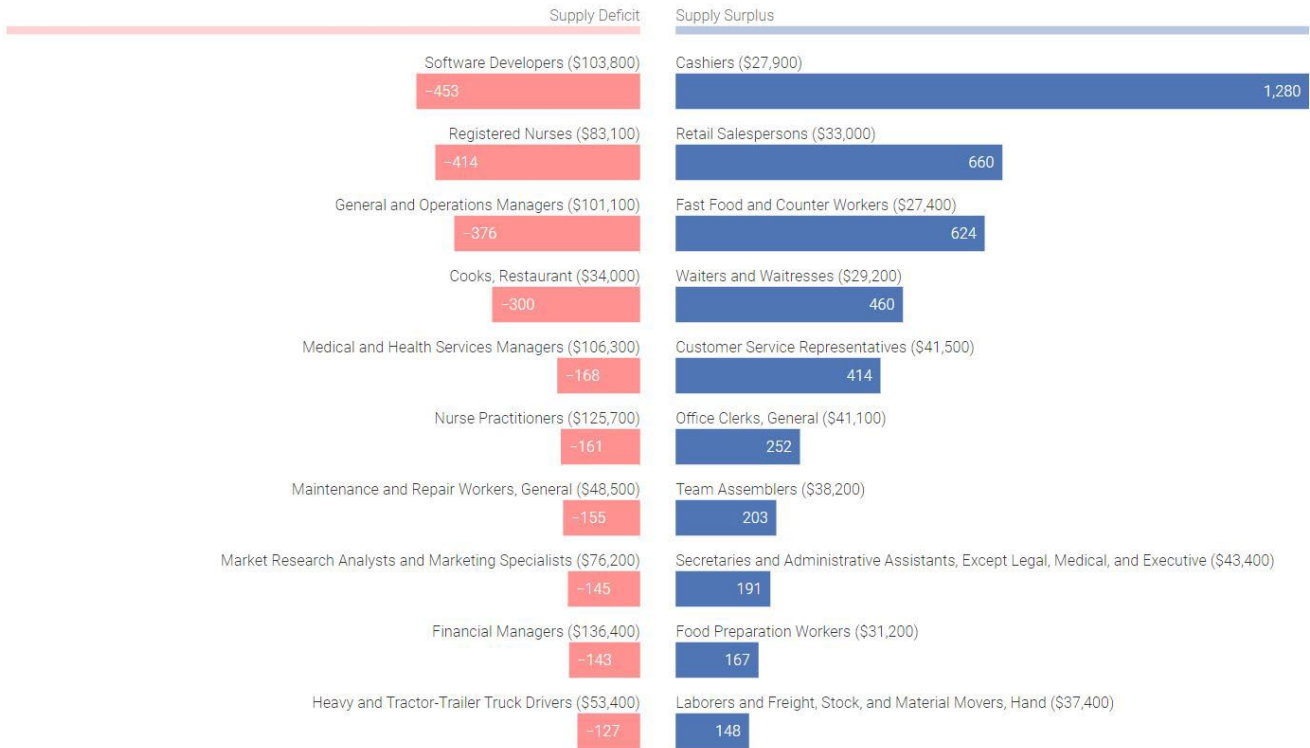
The pandemic's acceleration of critical talent shortages through shifts in demand, supply chains, and resource availability has resulted in dramatic upticks in demand for very specifically-trained talent with some college, an industry credential, a two-year degree, or a bachelor's degree amidst a severe constriction of talent availability for these same middle-skill, middle-wage roles. Now over two years after the pandemic started, new and surprising talent shortages are diverging from initial trends observed in 2020 and 2021. In the first two years of the pandemic, all of the top occupations of shortage were for high-wage roles that typically required postsecondary education; now, several lower-wage Origin and Gateway Occupations are rising through the ranks as critical occupations of forecasted shortage over the next ten years. This section highlights the most critical talent shortages now apparent statewide, the industries that define each region of Minnesota, and the top Gateway Occupations that are in high demand and low talent supply regionally.

Several occupations that forecast high talent surpluses in 2021 have continued to grow in the estimated size of talent surplus in 2022 (shown in blue below), including Cashiers, Fast Food and Counter Workers, Waiters and Waitresses, and Customer Service Representatives. Talent surplus shrunk slightly between 2021 and 2022 for Retail Salespersons and Team Assemblers, but with moderate excess talent still forecast over the coming decade.

Breaking trend with 2020 and 2021, Software Developers outpaced Registered Nurses in 2022 as the occupation of highest statewide talent shortage. The other occupations of highest forecasted shortage in Minnesota have remained relatively consistent since the last analysis in October 2020, still showing that there is a shortage of local Nurses, Software Developers, and General and Operations Managers, among other critical healthcare, information technology, and management occupations. Financial Managers dropped from the fourth highest occupation of shortage in 2021 to seventh in 2022, Licensed Practical Nurses fell out of the top ten occupations of shortage, and Restaurant Cooks rose suddenly and solidly into the top ten shortage occupations in 2022. Among high contact-intensity roles in shortage, Registered Nurses and Nurse Practitioners still make the top ten list of occupations in highest shortage, while Hospitality and Tourism roles are largely forecast to have a surplus of talent. Based on continued high growth demand for health, education, human services, and remote work-friendly management positions, these occupations of shortage are likely to rebound and grow in demand as the pandemic subsides, possibly beyond initial forecasts.

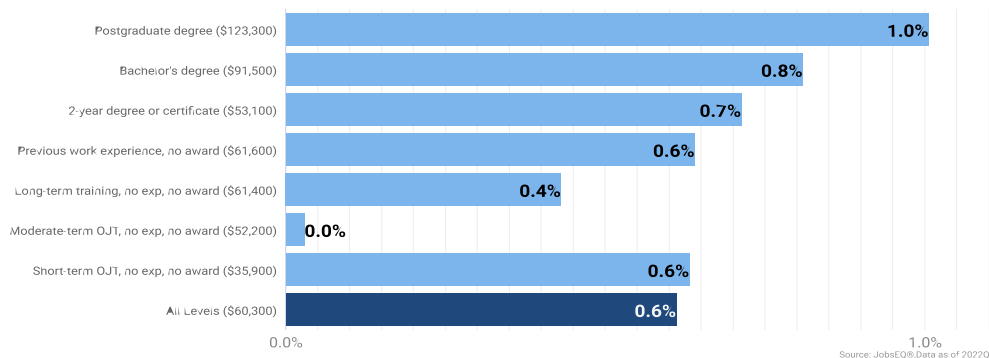
The baseline two-year degree requirement and wage expectations of roles in highest shortage are no longer all above \$50,000 per year as observed in 2020 and 2021. In fact, the two occupations that entered into the top ten occupations of highest shortage in 2022—Restaurant Cooks and Maintenance and Repair Workers—pay notably below the \$50,000 threshold at \$34,000 and \$48,500 annually on average. These are also the only two roles in the top ten shortage list that do not typically require a postsecondary credential.

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



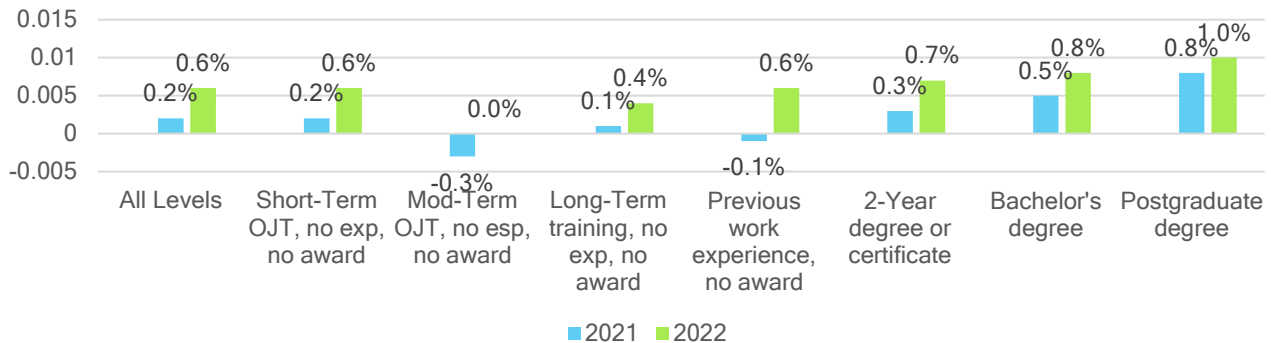
Expected growth rates for occupations continue to vary by the education and training required, but since the pandemic demand for talent with all levels of educational background have increased. Overall, employment forecasts rose from last year’s 0.2% average annual growth to about 0.6% on average over the next ten years. Growth in occupations typically requiring a postgraduate degree is now up to about 1.0% per year statewide (compared to 0.8% estimated one year ago), those requiring a bachelor’s degree are forecast to grow 0.8% per year (compared to 0.5% estimated one year ago), and occupations typically needing a two-year degree or certificate are expected to grow 0.7% per year (up from 0.3% one year ago). Jobs that typically require moderate on-the-job training but no formal degree are now forecast to remain stable. Estimated wages have increased at most education and experience levels, except for jobs that require previous work experience but no award (these roles saw average wages drop from \$63,800 to \$61,600 annually). Jobs requiring a postgraduate degree saw the largest wage gains.

Annual Average Projected Job Growth by Training Required in Minnesota



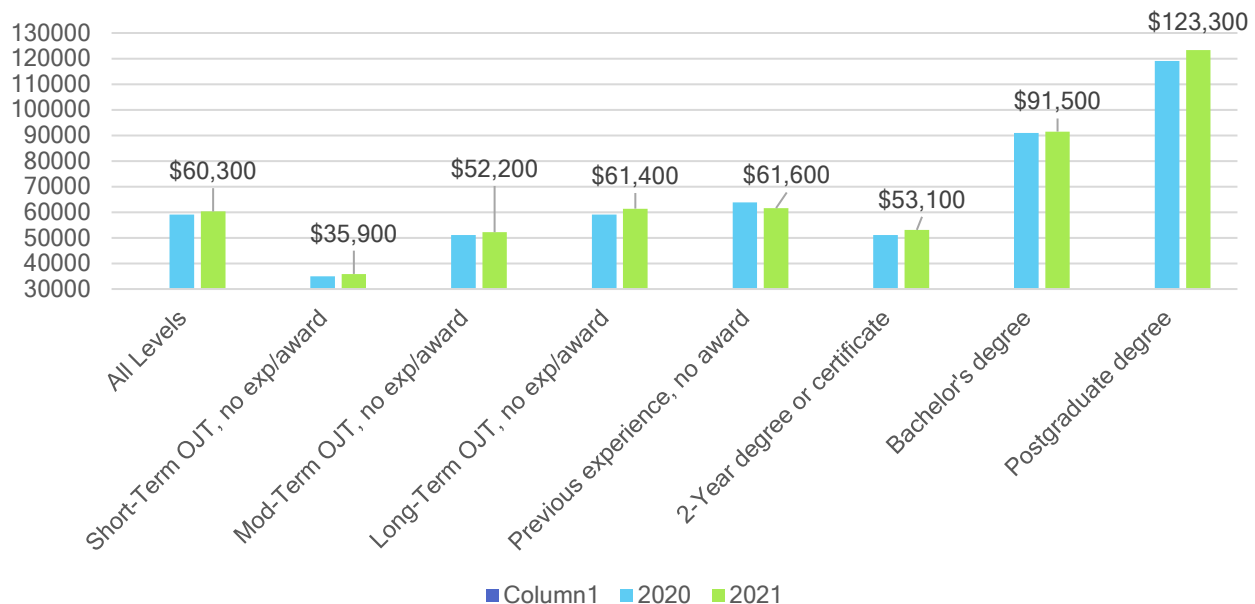
Employment by occupation data are estimates as of 2022Q1. Education levels of occupations are based on BLS assignments. Forecast employment growth uses national projections from the Bureau of Labor Statistics adapted for regional growth patterns.

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



SOURCE: Chmura JobsEQ 2022Q2.

Average Wage Estimates Annually by Education and Training Requirements, Minnesota



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

Each region has critical Gateway Occupations in talent shortage as of 2022Q2 and forecasting worsening shortages over the next five to ten years. Many of the top Gateway Occupations of high need are closely aligned to the top sub-industries of highest concentration in each region, pointing to the importance of making local decisions based on the mix of industry in each particular community. For instance, Maintenance and Repair Workers, Welders, Carpenters, and Machinists are Gateway Occupations in high volume—and with low unemployment and forecasted talent shortages—in the Northwest region where four out of the five most-concentrated sub-industries are in Manufacturing. The importance of the Agriculture and Food industry for Minnesota as a whole is evidenced by the number of sub-industries uniquely concentrated in Minnesota as a whole, and particularly in the Southwest and Central parts of the state. Gateway Occupations supporting the Agriculture and Food Industry cross all career clusters.

Regional Summary of Top High-Demand Industries and Gateway Occupations

	Overall Unemployment Rate 2022Q2	Overall Mean Wage	Gateway Occupation Unemployment Rate 2022Q2	Top 4-Digit Sub-Industries of High Local Concentration (LQ) and High Demand (replacement or growth)	Top Gateway Occupations with Occupation Gaps and/or Award Gaps in Order of Total Employment, including Unemployment Rate*
MSP Metro	2.4%	\$64,300	2.3%	<ul style="list-style-type: none"> Medical Equipment & Supplies Manufacturing (4.25) Scheduled Air Transportation (2.37) Insurance Carriers (2.35) Electrical Equipment Manufacturing (2.33) 	<ul style="list-style-type: none"> Customer Service Representatives (2.8%) Office Clerks, General (2.2%) Secretaries & Administrative Assistants (1.7%) Heavy & Tractor Trailer Truck Drivers (2.2%) Bookkeeping, Accounting, & Auditing Clerks (1.8%)
Northwest	2.8%	\$50,500	2.4%	<ul style="list-style-type: none"> Household Appliances & Electrical & Electronic Goods Merchant Wholesalers (9.61) Other Wood Product Manufacturing (8.93) Other General Purpose Machinery Manufacturing (5.78) Animal Slaughtering and Processing (3.76) 	<ul style="list-style-type: none"> Maintenance & Repair Workers (1.5%) Carpenters (3.3%) LPNs (1.1%) Welders, Cutters, Solderers, & Brazers (2.9%) Machinists (2.3%)
Northeast	3.2%	\$52,500	2.9%	<ul style="list-style-type: none"> Metal Ore Mining (79.16) Residential Intellectual & Developmental Disability, Mental Health, & Substance Abuse Facilities (4.52) Traveler Accommodation (2.90) Executive, Legislative, & Other General Government Support (2.69) 	<ul style="list-style-type: none"> Maintenance & Repair Workers (1.7%) Bookkeeping, Accounting, & Auditing Clerks (2.2%) Carpenters (3.7%) LPNs (1.2%) Social & Human Service Assistants (3.0%)
Central	2.8%	\$52,200	2.4%	<ul style="list-style-type: none"> Household & Institutional Furniture & Kitchen Cabinet Manufacturing (5.01) Machine Shops; Turned Product; & Screw, Nut, & Bolt Manufacturing (4.58) Highway, Street, & Bridge Construction (3.45) Residential Intellectual & Developmental Disability, Mental Health, & Substance Abuse Facilities (3.02) 	<ul style="list-style-type: none"> Supervisors of Retail Sales Workers (1.3%) Maintenance & Repair Workers, General (1.5%) Light Truck Drivers (2.2%) Welders, Cutters, Solderers, & Brazers (3.0%) Machinists (2.2%)
Southwest	2.5%	\$51,300	2.2%	<ul style="list-style-type: none"> Hog & Pig Farming (45.20) Grain & Oilseed Milling (19.73) Animal Slaughtering & Processing (8.88) Residential Intellectual & Developmental Disability, Mental Health, & Substance Abuse Facilities (2.59) 	<ul style="list-style-type: none"> Heavy & Tractor Trailer Truck Drivers (2.1%) Maintenance & Repair Workers, General (1.3%) Supervisors of Retail Sales Workers (1.2%) Bookkeeping, Accounting, & Auditing Clerks (1.7%) Light Truck Drivers (2.0%)
Southeast	2.2%	\$61,100	2.0%	<ul style="list-style-type: none"> Computer & Peripheral Equipment Manufacturing (13.45) Offices of Physicians (8.14) Animal Slaughtering & Processing (5.85) General Medical & Surgical Hospitals (2.01) 	<ul style="list-style-type: none"> Medical Assistants (2.6%) Medical Secretaries & Administrative Assistants (1.1%) Heavy & Tractor Trailer Truck Drivers (1.9%) LPNs (1.0%) Elementary School Teachers (1.2%)
Minnesota Statewide	2.5%	\$60,300	2.3%	<ul style="list-style-type: none"> Hog & Pig Farming (6.05) Metal Ore Mining (5.13) Other Residential Care Facilities (3.28) Farm Product Raw Material Merchant Wholesalers (3.18) 	<ul style="list-style-type: none"> Heavy Tractor Trailer & Truck Drivers (OG, AG; 2.2%) Bookkeeping, Accounting, & Auditing Clerks (AG; 1.8%) Maintenance & Repair Workers (OG; 1.4%) Carpenters (OG; 3.2%) Light Truck Drivers (AG; 2.2%)

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

Several occupations have no unemployed talent as of 2022Q2 estimates, resulting in an estimated unemployment rate of 0%. The occupations listed below have nonexistent unemployed talent at the statewide level and currently have over 100 people working in these positions. Many of these roles have low volumes of online job postings due to unique methods of recruiting talent for these specific roles, due to their specialty nature. All but one of these roles are Target Occupations paying well over \$70,000 annually on average. The outlier is Prepress Technicians, which pays an average wage of \$47,600 annually and is about twice as concentrated in Minnesota as a typical community nationwide.

Occupations with No Unemployed Workforce and Employing over 100 Workers, Minnesota 2022Q2

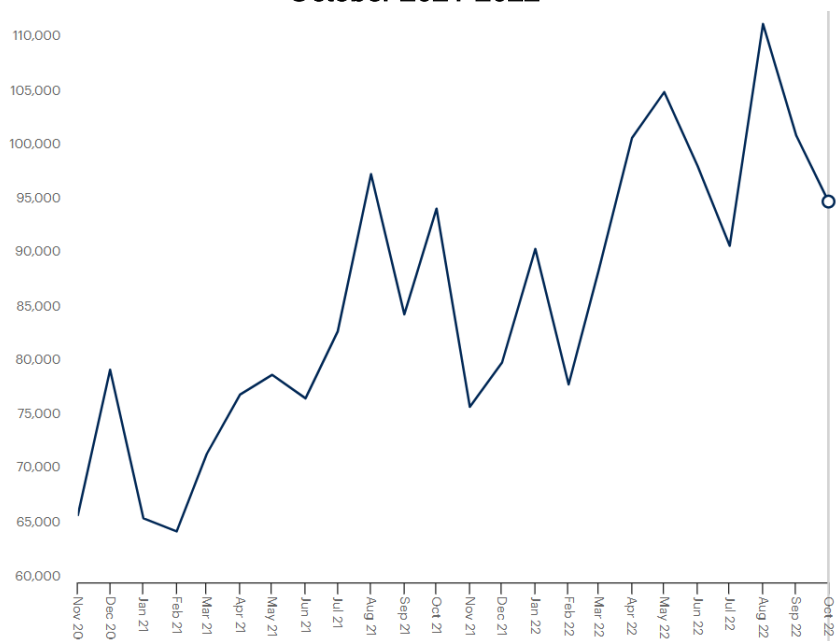
SOC	Occupation	Current						5-Year History		5-Year Forecast				
		Empl	Mean Ann Wages ²	LQ	Unempl	Unempl Rate	30-Day Online Job Ads ³	Empl Change	Ann %	Total Demand	Exits	Transfers	Empl Growth	Ann % Growth
33-1012	First-Line Supervisors of Police and Detectives	1,822	\$102,700	0.78	0	n/a	10	9	0.1%	613	203	379	31	0.3%
51-5111	Prepress Technicians and Workers	1,044	\$47,600	2.02	0	n/a	32	-511	-7.7%	478	175	442	-138	-2.8%
29-1241	Ophthalmologists, Except Pediatric	344	\$223,400	1.41	0	n/a	15	176	15.4%	57	28	19	9	0.5%
11-9131	Postmasters and Mail Superintendents	295	\$79,500	1.21	0	n/a	3	-15	-1.0%	85	32	69	-16	-1.1%
29-1224	Radiologists	243	\$335,800	0.39	0	n/a	55	122	15.0%	41	20	14	7	0.6%
29-1222	Physicians, Pathologists	237	\$277,100	1.08	0	n/a	3	115	14.2%	42	20	13	9	0.7%
29-1217	Neurologists	198	\$327,900	1.23	0	n/a	61	98	14.6%	32	16	11	5	0.5%
23-1021	Administrative Law Judges, Adjudicators, and Hearing Officers	166	\$100,200	0.63	0	n/a	n/a	3	0.4%	35	18	20	-3	-0.4%
19-2012	Physicists	104	\$146,400	0.29	0	n/a	28	9	1.8%	41	10	26	5	1.0%
19-2021	Atmospheric and Space Scientists	104	\$70,300	0.62	0	n/a	8	-19	-3.3%	48	9	36	4	0.7%
29-1023	Orthodontists	104	\$277,200	0.84	0	n/a	4	-12	-2.1%	17	10	4	3	0.6%
29-1022	Oral and Maxillofacial Surgeons	103	\$323,100	0.77	0	n/a	17	-6	-1.2%	17	10	4	4	0.7%
00-0000	Total - All Occupations	3,023,362	\$60,300	1.00	76,069	2.5%	182,940	-21,906	-0.1%	1,760,062	656,019	1,012,939	91,104	0.6%

EMERGING CAREER PATHS

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

From November 1, 2021 through October 31, 2022 there were over one million unique job postings advertised online in Minnesota on job boards, according to analysis using Gartner TalentNeuron Plan (1,119,315 postings). This was 19% higher than the 12 months prior. August 2022 had the highest volume of new job postings advertised in the region on record, topping out at 65,674 unique postings advertised in that month compared to 57,985 postings in August 2021. The decline in job postings from this all-time high may appear to be a startling harbinger of recession, but is actually in-line with seasonal declines in job postings typical of the fourth quarter each year.

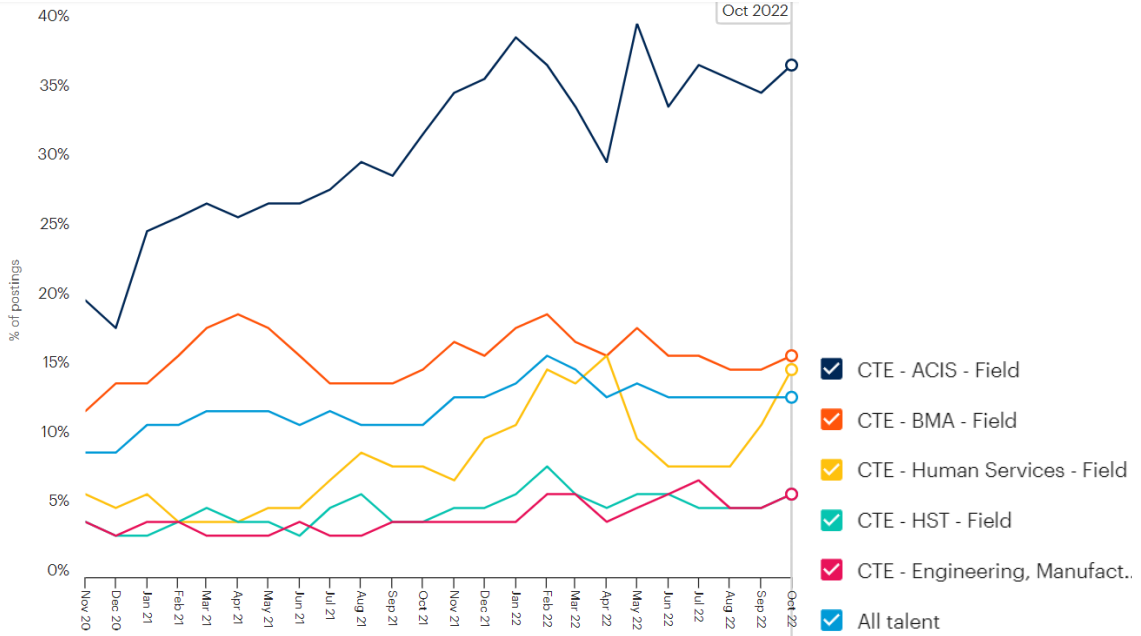
**Total Jobs Advertised Monthly in Minnesota,
October 2021-2022**



SOURCE: Gartner TalentNeuron Plan accessed 11/3/2022

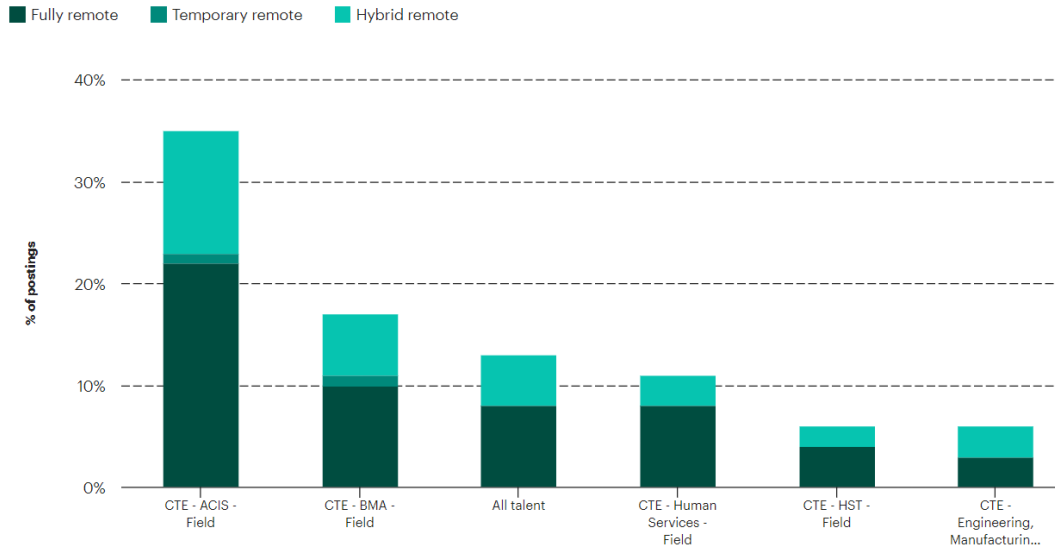
About 13% of all positions advertised were explicitly listed as remote or telecommute roles—either permanently or temporarily. Remote positions increased in prevalence by 38% from the 12 months prior. Remote work opportunities increased significantly among Information Technology careers and Business, Management, and Administration roles during the first year of the pandemic, and has continued to rise for Information Technology careers at a rapid pace over the past 12 months. Specifically, 41% of all Information Technology jobs advertised online in Minnesota between November 2021 and October 2022 were remote positions—up 12 percentage points from the prior year (26% fully remote, 14% hybrid remote, and 1% temporarily remote).

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



SOURCE: Gartner TalentNeuron Plan accessed 11/3/2022

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



Talent Profile	Unspecified /Onsite	Total remote	Fully remote	Temporary remote	Hybrid remote
CTE - ACIS - Field	65% ▼ -9 pp	35% ▲ 9 pp	22% ▲ 6 pp	1% ▼ -2 pp	12% ▲ 5 pp
CTE - BMA - Field	83% ▼ -1 pp	17% ▲ 1 pp	10% ▼ -1 pp	1% ▲ 0 pp	6% ▲ 2 pp
All talent	87% ▼ -2 pp	13% ▲ 2 pp	8% ▲ 1 pp	0% ▼ -1 pp	5% ▲ 2 pp
CTE - Human Services - Field	89% ▼ -5 pp	11% ▲ 5 pp	8% ▲ 5 pp	0% ▼ -1 pp	3% ▲ 1 pp
CTE - HST - Field	94% ▼ -2 pp	6% ▲ 2 pp	4% ▲ 1 pp	0% ▲ 0 pp	2% ▲ 1 pp
CTE - Engineering, Manufacturing, and Technology - Field	94% ▼ -3 pp	6% ▲ 3 pp	3% ▲ 1 pp	0% ▲ 0 pp	3% ▲ 2 pp

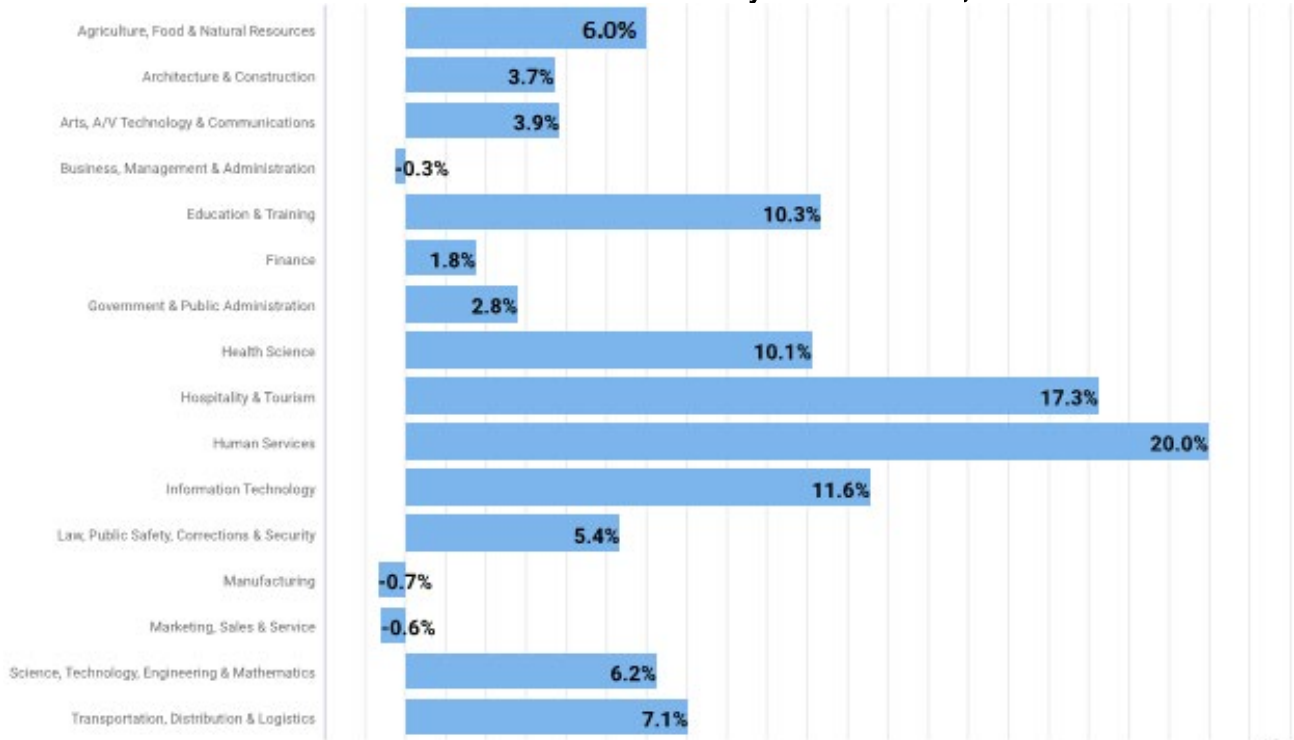
SOURCE: Gartner TalentNeuron Plan accessed 11/3/2022

Career Field Insights

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

All career clusters saw improvements in the forecasted outlook from one year ago. Out of sixteen career clusters used by Career and Technical Education (CTE), thirteen are forecast in a worst-case scenario model to increase in overall employment over the next ten years. The clusters expecting the greatest growth statewide are Human Services (now 20.0%, up from 17.1% one year ago), Hospitality and Tourism (17.3%, up from 4.8% one year ago and reflecting rapid recovery from early pandemic impacts), and Information Technology (11.6% up from 9.4% one year ago). Arts, Audio/Video Technology and Communications (3.9%, up from -5.9%) and Agriculture, Food, and Natural Resources (6.0%, up from 0%) both reversed trend with much more favorable employment outlooks as of 2022Q2. Manufacturing and Marketing, Sales and Service clusters are anticipating the greatest declines in overall employment statewide.⁴

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



Cluster forecasts estimated using Chmura, JobsEQ, based on 2022Q2 employment data. All clusters are distinct occupations except for Agriculture, Food, and Natural Resources, which overlaps with other clusters.

An accurate assessment of future occupation demand requires that both future growth and the number of people retiring be taken into account. Statewide, 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.

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

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

Career Cluster	Employment	Avg Ann Wages	Job Ads	Baseline 10-		
				Year Forecasted Empl Change	Ann Empl Growth	Ann Total Demand
Science, Technology, Engineering & Mathematics	46,136	\$101,900	6,404	6.2% (+)	280	3,544
Information Technology	106,707	\$96,400	12,679	11.6% (+)	1,174	8,983
Finance	122,935	\$86,000	8,526	1.8% (+)	214	10,526
Health Science	295,076	\$79,200	30,649	10.1% (+)	2,857	25,979
Law, Public Safety, Corrections & Security	77,096	\$70,500	3,419	5.4% (+)	403	7,744
Government & Public Administration	25,827	\$70,400	1,275	2.8% (+)	71	2,340
Business, Management & Administration	533,714	\$67,100	29,838	-0.3% (+)	-139	54,389
Architecture & Construction	188,789	\$62,800	4,278	3.7% (+)	690	19,439
Arts, A/V Technology & Communications	48,346	\$60,200	2,195	3.9% (+)	183	5,119
Education & Training	179,184	\$60,000	6,485	10.3% (+)	1,773	18,133
Agriculture, Food & Natural Resources	157,751	\$58,200	5,748	6.0% (+)	194	9,236
Marketing, Sales & Service	320,130	\$55,200	23,836	-0.6% (+)	-193	39,588
Transportation, Distribution & Logistics	226,228	\$49,500	10,365	7.1% (+)	1,547	27,893
Manufacturing	270,363	\$48,900	12,290	-0.7% (+)	-186	28,047
Human Services	191,665	\$42,000	8,746	20.0% (+)	3,525	28,077
Hospitality & Tourism	325,370	\$32,700	20,386	17.3% (+)	5,221	61,437
Total - All Occupations	3,023,362	\$60,300	183,232	6.0% (+)	18,005	349,715

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

The Northeast and Southwest regions of Minnesota are forecasting flat employment over the next ten years, but all regions saw improvements in their employment forecasts between 2021Q1 and 2022Q2 (indicated by a “+” in the table below).

Cluster Forecasts by Region

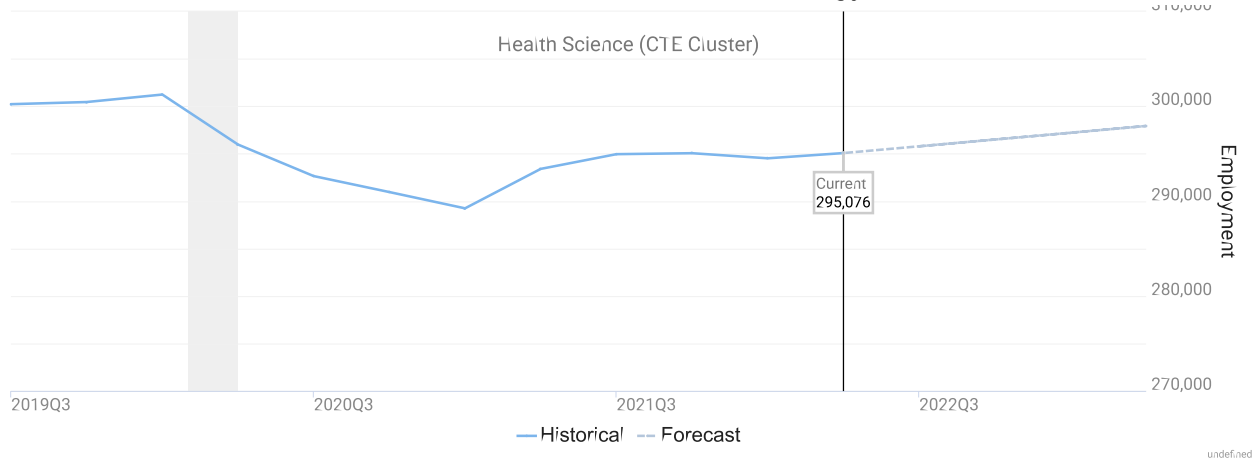
Career Cluster	Minnesota	MSP	Northeast	Northwest	Central	Southwest	Southeast
		Metro					
Science, Technology, Engineering & Mathematics	6.2% (+)	6.5% (+)	-3.0% (+)	3.0% (+)	6.8% (+)	2.1% (+)	2.9% (+)
Information Technology	11.6% (+)	11.0% (+)	0.3% (+)	4.7% (+)	8.4% (+)	1.1% (+)	5.7% (+)
Finance	1.8% (+)	1.4%	-4.8% (+)	-0.5% (+)	2.0%	-4.2%	0.8% (+)
Health Science	10.1% (+)	12.0% (+)	2.0% (+)	6.9% (+)	10.3% (+)	4.3% (+)	10.5% (+)
Law, Public Safety, Corrections & Security	5.4% (+)	6.1% (+)	-1.1% (+)	3.5% (+)	6.4%	0.6% (+)	5.8% (+)
Government & Public Administration	2.8% (+)	2.9% (+)	-3.2% (+)	2.2% (+)	4.9% (+)	-0.4% (+)	2.5% (+)
Business, Management & Administration	-0.3% (+)	0.1% (+)	-7.0%	-3.1% (+)	0.2% (+)	-6.2% (+)	2.5% (+)
Architecture & Construction	3.7% (+)	4.6% (+)	-2.8% (+)	2.0% (+)	6.1% (+)	-0.8% (+)	2.7% (+)
Arts, A/V Technology & Communications	3.9% (+)	4.9% (+)	-2.1% (+)	0.2% (+)	4.0% (+)	-6.3% (+)	0.2% (+)
Education & Training	10.3% (+)	12.9% (+)	3.5% (+)	7.0% (+)	10.0% (+)	3.2% (+)	7.1% (+)
Agriculture, Food & Natural Resources	6.0% (+)	7.0% (+)	-3.0% (+)	-1.0% (+)	2.0% (+)	-5.0% (+)	-1.0% (+)
Marketing, Sales & Service	-0.6% (+)	0.8% (+)	-9.5% (+)	-4.5% (+)	-1.0%	-7.5% (+)	-4.3% (+)
Transportation, Distribution & Logistics	7.1% (+)	8.6% (+)	-1.4% (+)	2.9% (+)	7.7% (+)	0.6% (+)	3.9% (+)
Manufacturing	-0.7% (+)	0.3% (+)	-6.5% (+)	-3.6% (+)	2.2% (+)	-5.1% (+)	-2.9% (+)
Human Services	20.0% (+)	22.6% (+)	11.5% (+)	15.8% (+)	19.2% (+)	13.2% (+)	16.8% (+)
Hospitality & Tourism	17.3% (+)	18.4% (+)	12.5% (+)	16.5% (+)	19.6% (+)	13.2%	16.2% (+)
Total - All Occupations	6.0% (+)	7.0% (+)	0.0% (+)	3.0% (+)	7.0% (+)	0.0% (+)	5.0% (+)

HEALTH SCIENCE TECHNOLOGY

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

Following average annual employment growth of 0.4% over the past five years, Health Science Technology employment is forecast to grow by 1.0% annually over the coming five years. The 295,076 Health Science Technology careers statewide pay about \$79,200 annually on average, and are slightly more concentrated in Minnesota than other states (LQ 1.08). Health Science Technology roles employ about 9.8% of Minnesota's workforce. As of 2022Q2, there are about 3,822 unemployed Health Science Technology professionals in Minnesota, giving an unemployment rate of 1.3%. Total five-year demand for Health Science Technology talent is 131,380 new professionals needed to meet replacement and growth demand.

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



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

6-Digit Occupation	Empl	Avg Mean Wages	LQ	3-Year Empl Change	Annual Demand	Forecast Ann Growth
Registered Nurses	67,817	\$84,000	1.14	-639	3,934	0.5%
Nursing Assistants	27,293	\$36,700	1.09	-2,866	3,454	0.4%
Home Health Aides	24,006	\$30,300	1.33	-4,258	3,527	2.5%
Medical Secretaries and Administrative Assistants	15,624	\$43,800	1.23	166	1,806	0.6%
Licensed Practical and Licensed Vocational Nurses	14,353	\$51,200	1.17	-2,129	1,187	0.5%
Medical Assistants	12,100	\$44,000	0.84	286	1,646	1.4%
Medical and Health Services Managers	9,476	\$107,000	1.09	350	1,028	2.6%
Pharmacy Technicians	7,657	\$42,200	0.91	194	551	0.2%
Pharmacists	6,221	\$129,200	1.01	30	204	-0.4%
Dental Assistants	5,828	\$53,100	0.85	-7	744	0.8%
Remaining Component Occupations	104,699	\$110,200	1.10	4,127	7,793	1.0%
Health Science (CTE Cluster)	295,076	\$79,200	1.08	-4,745	25,979	1.0%

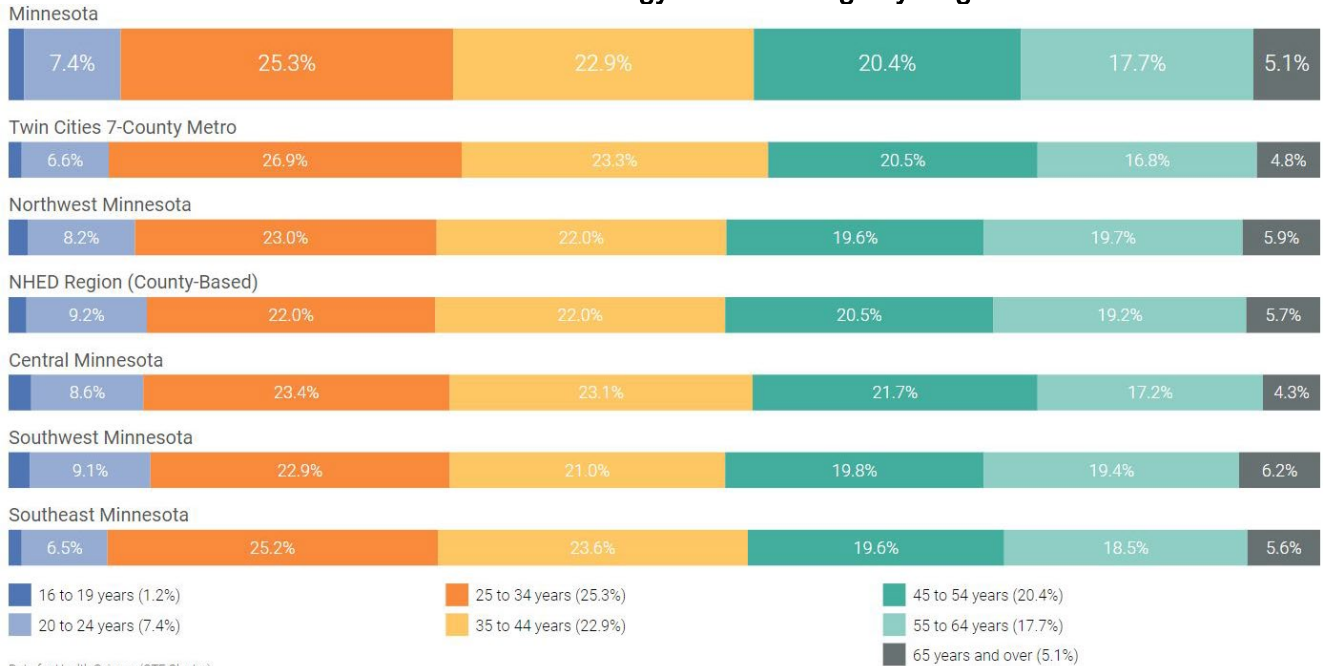
"Annual Demand" is the projected need for new entrants into an occupation. New entrants are needed due to expected growth and to replace workers who left the occupation due to factors such as retirement or switching careers.

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

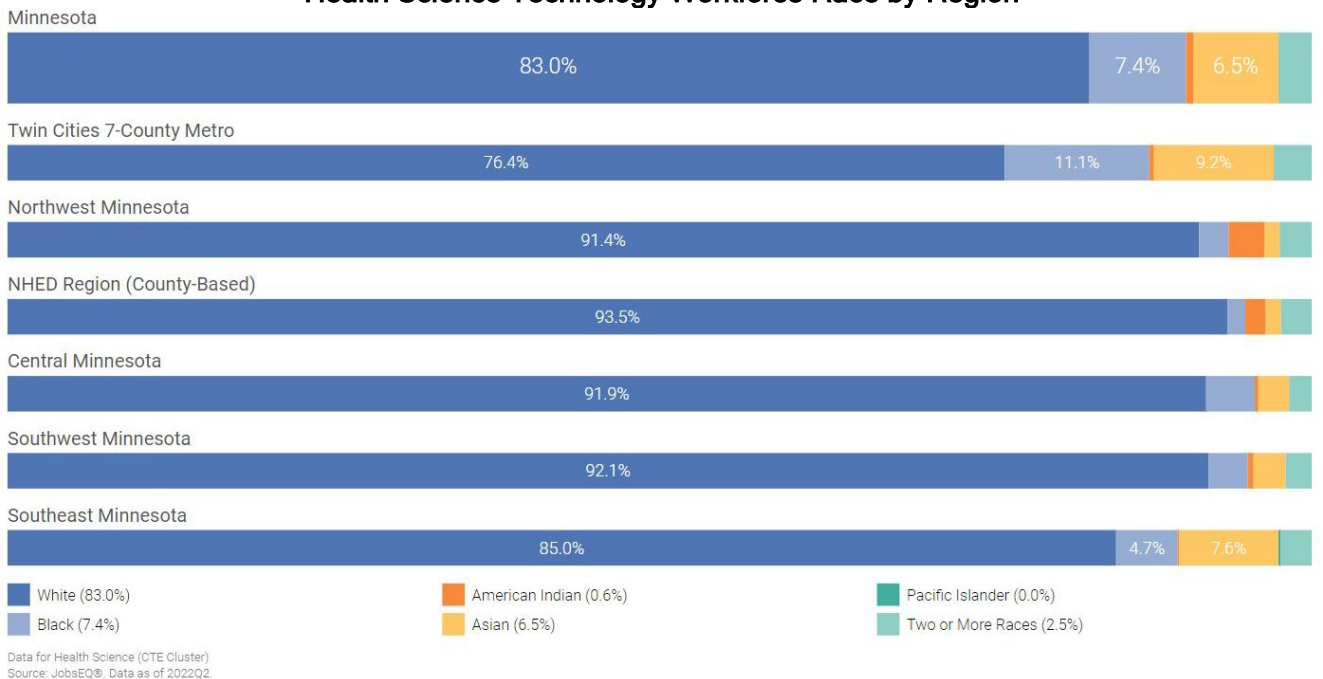
Career Field Demographics

The Health Science Technology field is predominantly female (78.1%) and white (83.0%). The share of Minnesota Health Science Technology professionals in the 34 to 44 year range and 55 years or older increased from the prior years' estimates. The share of talent employed in Health Science Technology roles that are BIPOC by race increased by 0.8 percentage points, and Hispanic talent increased by 0.2 percentage points.

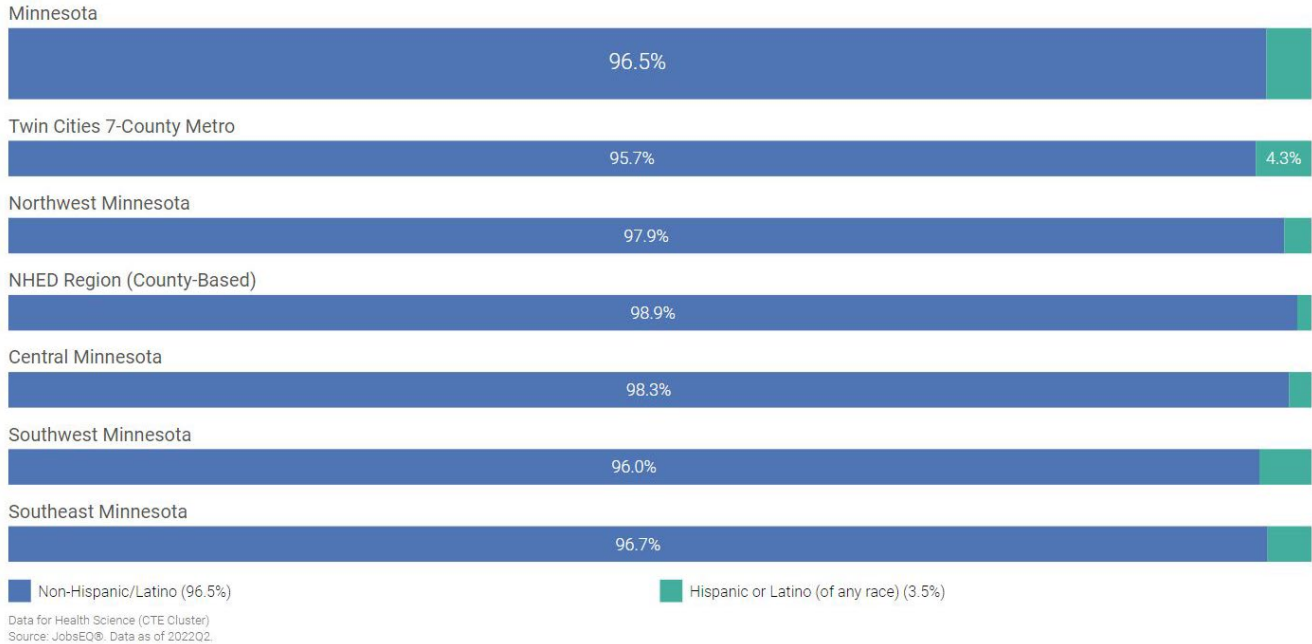
Health Science Technology Workforce Age by Region



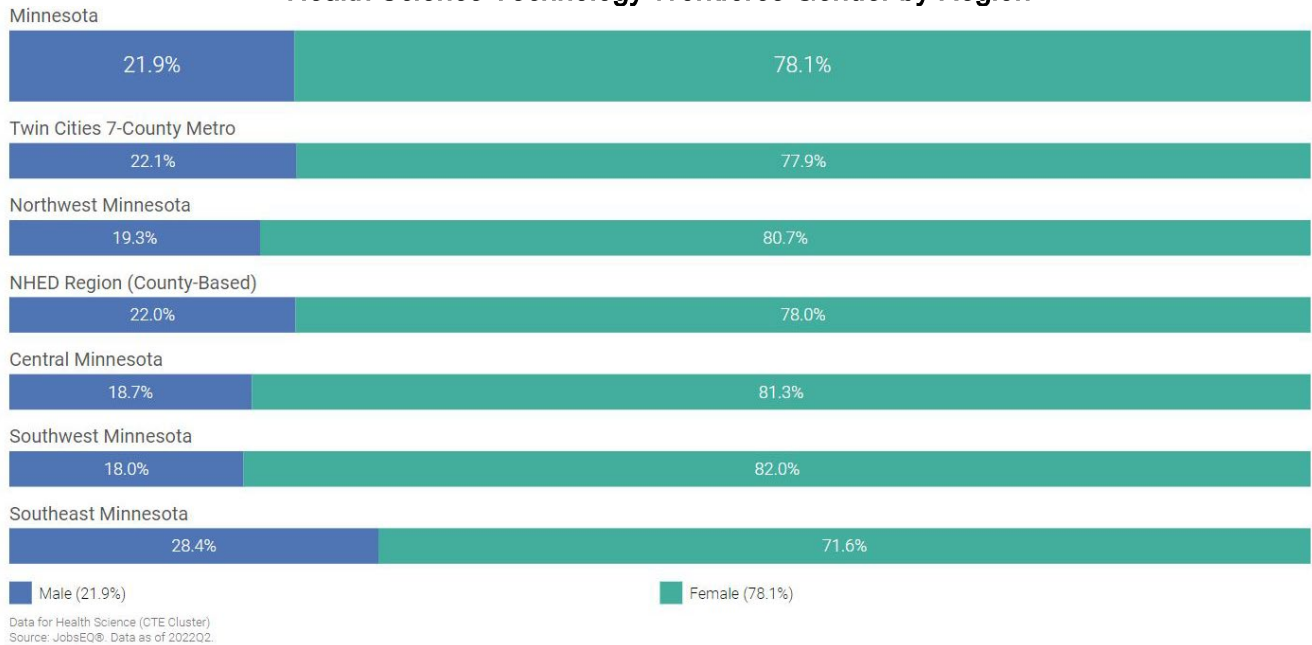
Health Science Technology Workforce Race by Region



Health Science Technology Workforce Ethnicity by Region



Health Science Technology Workforce Gender by Region



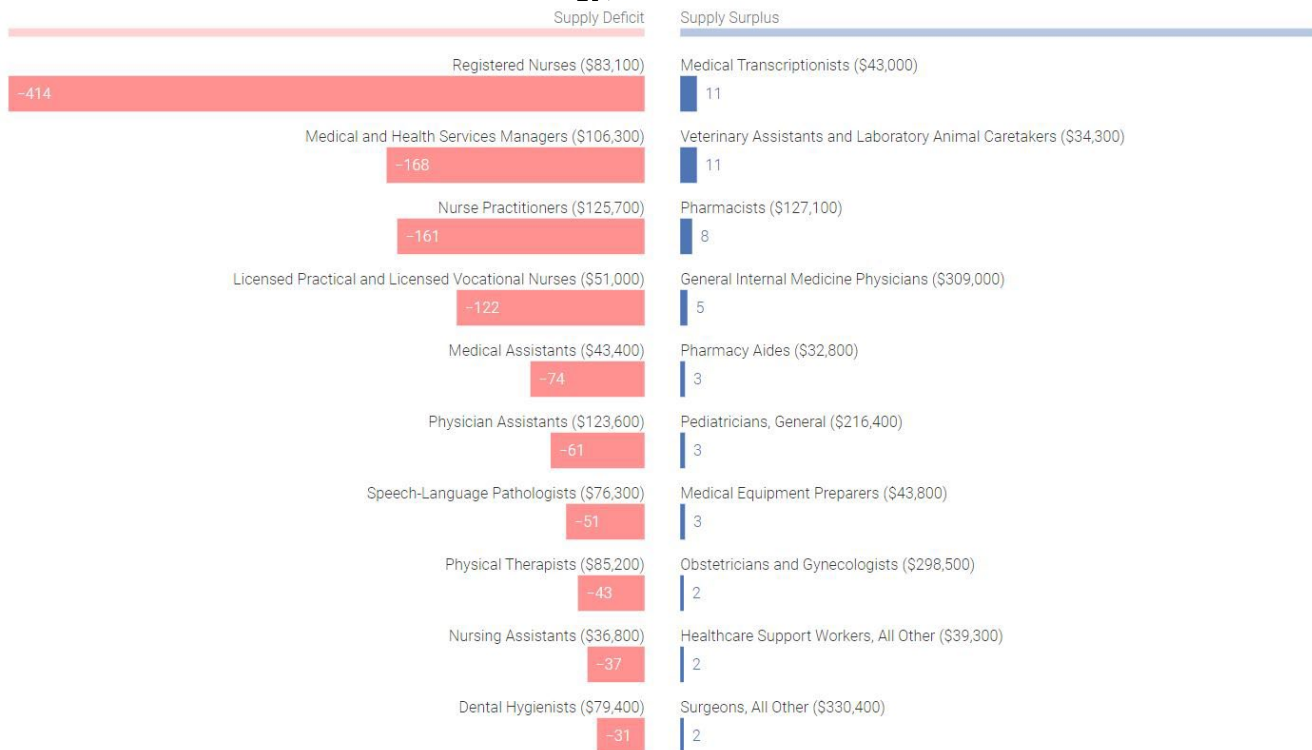
Occupation Gaps

The chart below shows the potential average annual gaps over 10 years. Many variables go into this analysis, but at its core it is based on a forecast comparing occupation demand growth to the local population growth and the projected educational attainment of those residents, then matched to specific related programs offered locally. When an area, for example, has an occupation expected to grow quickly but the educational requirement for the occupation does not match well with the educational attainment of its residents, there is a high potential for an occupation shortfall in the region. Alternatively, slow-growing or contracting occupations often represent potential supply surpluses.

The potential supply shortfall is an underlying force that the market needs to resolve one way or another, such as by employers recruiting from further distances for these occupations, wages going up to attract more candidates, and/or increased demand and wages enticing more local residents to get training for these occupations. While this an important analysis for determining local occupation needs, the occupation gap should be considered along with other regional data including growth and separation forecasts, unemployment rates, wage trends, and award and skill gap analyses.

Registered Nurses are the occupation of second-highest annual shortages statewide, and number one for the Health Science Technology Field. This critical talent shortage is due in large part to forecasted employment growth and replacement demand needs due to retirements and turnover, as well as misalignment between where talent is being developed and where demand is geographically.

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

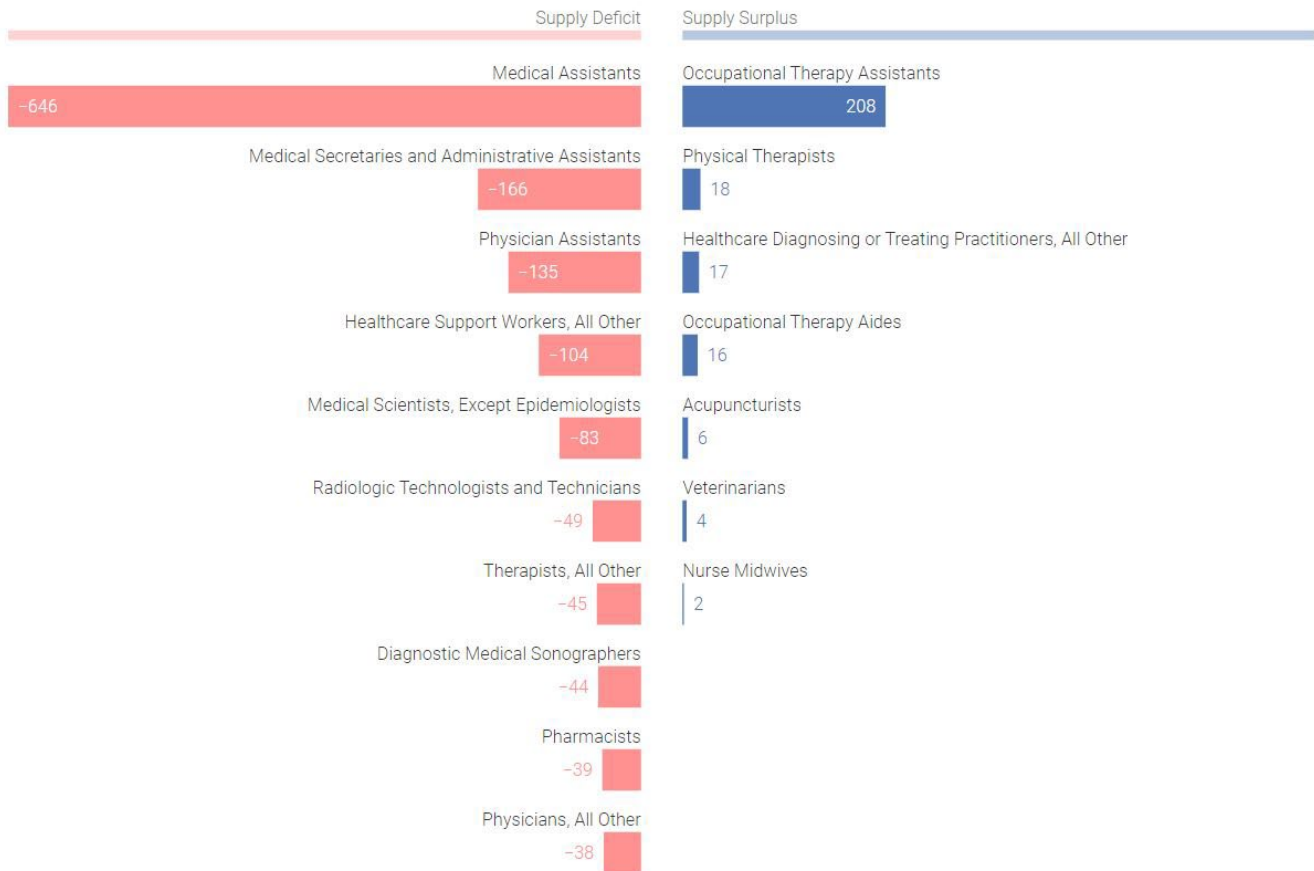


Award Gaps

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

The award gap for Medical Assistants decreased moderately from the prior year's estimates, but still easily ranks as the largest local graduate talent gap. Medical Secretaries and Administrative Assistants leapt into second place as of 2022Q2, and all other award gaps continued to become more severe in 2022Q2 compared to 2021Q1. Minnesota continues to produce more Occupational Therapy Assistants than in demand locally, and is likely an important supplier of this critical talent for employers in other states as well as Minnesota.

Award Gaps in Health Science Technology, Minnesota 2022Q2



Promising Pathways

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

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

Gateway Occupations are good jobs that can lead to Target Occupations as skills and experience are developed. These typically offer between \$42,000 up to the regional average wage. Below are a few Gateway Occupations in Health Science Technology locally. Gateway occupations offer a wage uplift to those previously employed in Origin Occupations, and offer longer-term economic mobility and career advancement opportunities. These are most often best-suited for adult workforce programming and first postsecondary experiences.

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

Origin-to-Gateway-to-Target Occupations for Health Science Technology, By Region 2022Q2

	MSP Metro	Northeast	Northwest	Central	Southwest	Southeast
Avg. Wage	Region: \$63,000 Field: \$79,900	Region: \$52,500 Field: \$70,000	Region: \$50,500 Field: \$67,800	Region: \$52,200 Field: \$73,300	Region: \$51,300 Field: \$69,600	Region: \$61,100 Field: \$97,200
Unempl Rate	Region: 2.4% Field: 1.3%	Region: 3.2% Field: 1.5%	Region: 2.8% Field: 1.4%	Region: 2.8% Field: 1.4%	Region: 2.5% Field: 1.3%	Region: 2.2% Field: 1.1%
Origin Occupations	<ul style="list-style-type: none"> Home Health Aides Nursing Assistants Veterinary Technologists & Technicians Healthcare Support Workers, All Other Psychiatric Technicians 	<ul style="list-style-type: none"> Nursing Assistants Home Health Aides Medical Secretaries Medical Assistants Psychiatric Technicians 	<ul style="list-style-type: none"> Nursing Assistants Home Health Aides Medical Secretaries Pharmacy Technicians Medical Assistants 	<ul style="list-style-type: none"> Nursing Assistants Home Health Aides Medical Secretaries Medical Assistants Pharmacy Technicians 	<ul style="list-style-type: none"> Nursing Assistants Home Health Aides Medical Secretaries Medical Assistants Pharmacy Technicians 	<ul style="list-style-type: none"> Nursing Assistants Home Health Aides Pharmacy Technicians Phlebotomists Opticians, Dispensing
Gateway Occupations	<ul style="list-style-type: none"> Medical Secretaries LPNs Medical Assistants Pharmacy Technicians Dental Assistants 	<ul style="list-style-type: none"> LPNs Dental Assistants Medical Records Specialists Health Technicians, Other Ophthalmic Technicians 	<ul style="list-style-type: none"> LPNs Dental Assistants Medical Records Specialists Ophthalmic Technicians Recreational Therapists 	<ul style="list-style-type: none"> LPNs Dental Assistants Medical Dosimetrists Occupational Therapy Assistants Recreational Therapists 	<ul style="list-style-type: none"> LPNs Dental Assistants Medical Records Specialists Ophthalmic Medical Technicians Occupational Therapy Assistants 	<ul style="list-style-type: none"> Medical Assistants Medical Secretaries & Administrative Assistants LPNs Medical Dosimetrists Dental Assistants
Target Occupations	<ul style="list-style-type: none"> Registered Nurses Medical & Health Services Managers Dental Hygienists Nurse Practitioners Physical Therapists 	<ul style="list-style-type: none"> Registered Nurses Medical & Health Services Managers Radiologic Technicians Physical Therapists Nurse Practitioners 	<ul style="list-style-type: none"> Registered Nurses Medical & Health Services Managers Dental Hygienists Physical Therapists Radiologic Technicians 	<ul style="list-style-type: none"> Registered Nurses Medical & Health Services Managers Dental Hygienists Nurse Practitioners Speech-Language Pathologists 	<ul style="list-style-type: none"> Registered Nurses Medical & Health Services Managers Dental Hygienists Physical Therapists Nurse Practitioners 	<ul style="list-style-type: none"> Registered Nurses Nurse Practitioners Medical & Health Services Managers Physician Assistants Diagnostic Medical Sonographers

High Location Quotient (LQ) Occupations for Health Science Technology, By Region 2022Q2

	MSP Metro	Northeast	Northwest	Central	Southwest	Southeast
LQ > 1.20	<ul style="list-style-type: none"> Bioengineers & Biomedical Engineers Genetic Counselors Dermatologists Orthotists & Prosthetists Nurse Anesthetists 	<ul style="list-style-type: none"> Genetic Counselors Pediatric Surgeons Recreational Therapists Psychiatric Aides Epidemiologists 	<ul style="list-style-type: none"> Recreational Therapists Psychiatric Aides Genetic Counselors Nursing Assistants Epidemiologists 	<ul style="list-style-type: none"> Genetic Counselors Chiropractors Nurse Anesthetists Pediatric Surgeons Dermatologists 	<ul style="list-style-type: none"> Recreational Therapists Psychiatric Aides Dermatologists Nurse Anesthetists Chiropractors 	<ul style="list-style-type: none"> Dermatologists Nurse Anesthetists Pediatric Surgeons Orthopedic Surgeons Ophthalmologists

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

- 1) Dermatologists (2.48)
- 2) Genetic Counselors (2.37)
- 3) Nurse Anesthetists (2.29)

- 4) Pediatric Surgeons (2.12)
- 5) Bioengineers and Biomedical Engineers (2.07)

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

2022Q2 Unemployment: 3,822
 (1.3% unemployment rate)
30-Day Job Ads: 30,561
 (compared to 182,561 across all occupations)
5-Year Ann Avg Employment Change: 0.4%
Forecast 5-Year Ann Employment Change: 1.0%
Total 5-Year Demand: 131,380

Target Occupations (all HW, HD, HS, OG, AG)
 Registered Nurses (OG)
 Medical & Health Services Managers (OG, AG)
 Nurse Practitioners (OG)
 Radiologic Technologists & Technicians (OG, AG)
 Dental Hygienists (OG)

Gateway Occupations
 Medical Secretaries (HS, OG, AG)
 Licensed Practical Nurses (HS, HD, OG)
 Medical Assistants (HS, HD, OG, AG)
 Pharmacy Technicians (HD, OG, AG)
 Dental Assistants (HS, HD, OG)

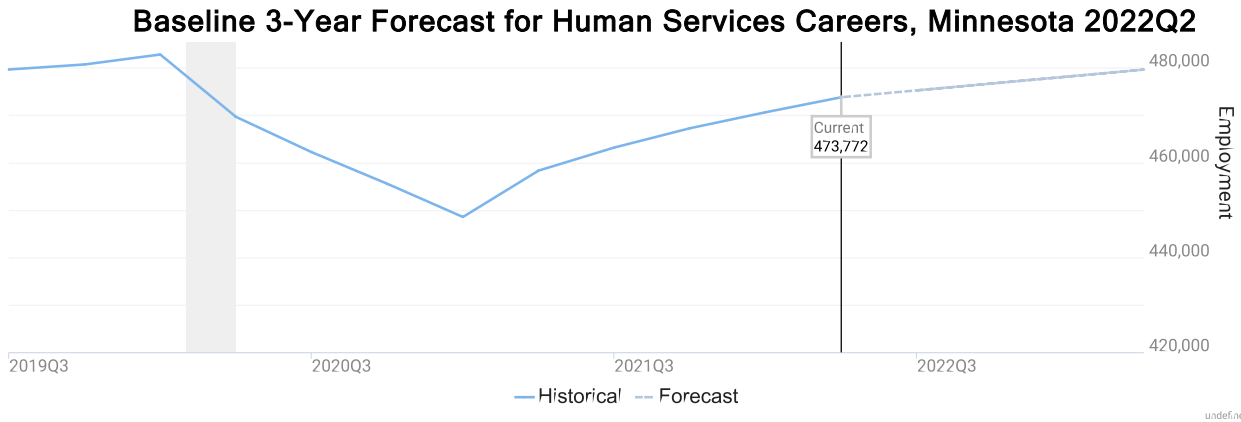
Origin Occupations *Likely*
 Nursing Assistants (HS, HD, OG)
 Home Health Aides (HD, AG)
 Veterinary Technologists & Technicians (HS, HD, OG, AG)
 Healthcare Support Workers (HD, AG)
 Psychiatric Technicians (HS, HD, OG, AG)

Top Ten Target Occupations in Health Science Technology, Minnesota 2022Q2

SOC	Occupation	2022Q2 Empl	Mean Ann Wages ²	High-Wage	High-Skill	High-Demand	OG	AG
29-1141	Registered Nurses	67,817	\$84,000	HW	HS	HD	OG	
11-9111	Medical and Health Services Managers	9,476	\$107,000	HW	HS	HD	OG	AG
29-1171	Nurse Practitioners	5,066	\$127,000	HW	HS	HD	OG	
29-2034	Radiologic Technologists and Technicians	4,492	\$69,900	HW	HS	HD	OG	AG
29-1292	Dental Hygienists	4,375	\$79,800	HW	HS	HD	OG	
29-1123	Physical Therapists	4,270	\$86,400	HW	HS	HD	OG	
29-1071	Physician Assistants	3,121	\$124,400	HW	HS	HD	OG	AG
29-1127	Speech-Language Pathologists	3,051	\$77,600	HW	HS	HD	OG	
19-1042	Medical Scientists, Except Epidemiologists	2,922	\$84,300	HW	HS	HD	OG	AG
29-1122	Occupational Therapists	2,719	\$80,100	HW	HS	HD	OG	AG

HUMAN SERVICES

Following average annual employment growth of 0.5% over the past five years, Human Services employment is forecast to grow by 1.2% annually over the coming five years. The 473,772 Human Services careers statewide pay about \$55,000 annually on average, and are about as concentrated in Minnesota than other states (LQ 1.01). Human Services roles employ about 15.7% of Minnesota’s workforce. As of 2022Q2, there are about 9,298 unemployed Human Services professionals in Minnesota, giving an unemployment rate of 2.0%. Total five-year demand for Human Services talent is 285,476 new professionals needed to meet replacement and growth demand.



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

6-Digit Occupation	Empl	Avg Mean Wages	LQ	3-Year Empl Change	Annual Demand	Forecast Ann Growth
Personal Care Aides	68,025	\$30,300	1.33	10,333	11,988	2.5%
Teaching Assistants, Except Postsecondary	30,964	\$36,100	1.35	-1,498	3,178	0.8%
Elementary School Teachers, Except Special Education	23,713	\$67,300	0.93	-736	1,879	0.7%
Childcare Workers	18,221	\$29,600	1.16	-2,036	2,657	0.6%
Secondary School Teachers, Except Special and Career/Technical Education	18,175	\$64,000	0.93	-444	1,397	0.7%
Lawyers	13,678	\$133,800	0.85	-203	749	0.7%
Security Guards	12,256	\$37,200	0.58	-866	1,779	1.1%
Social and Human Service Assistants	10,835	\$42,900	1.36	-247	1,483	1.6%
Preschool Teachers, Except Special Education	10,474	\$37,900	1.17	-766	1,273	1.7%
Police and Sheriff's Patrol Officers	10,050	\$77,000	0.82	-394	809	0.4%
Remaining Component Occupations	257,381	\$60,900	0.94	-7,473	28,988	1.0%
Human Services (CTE Field)	473,772	\$55,000	1.01	-4,331	56,177	1.2%

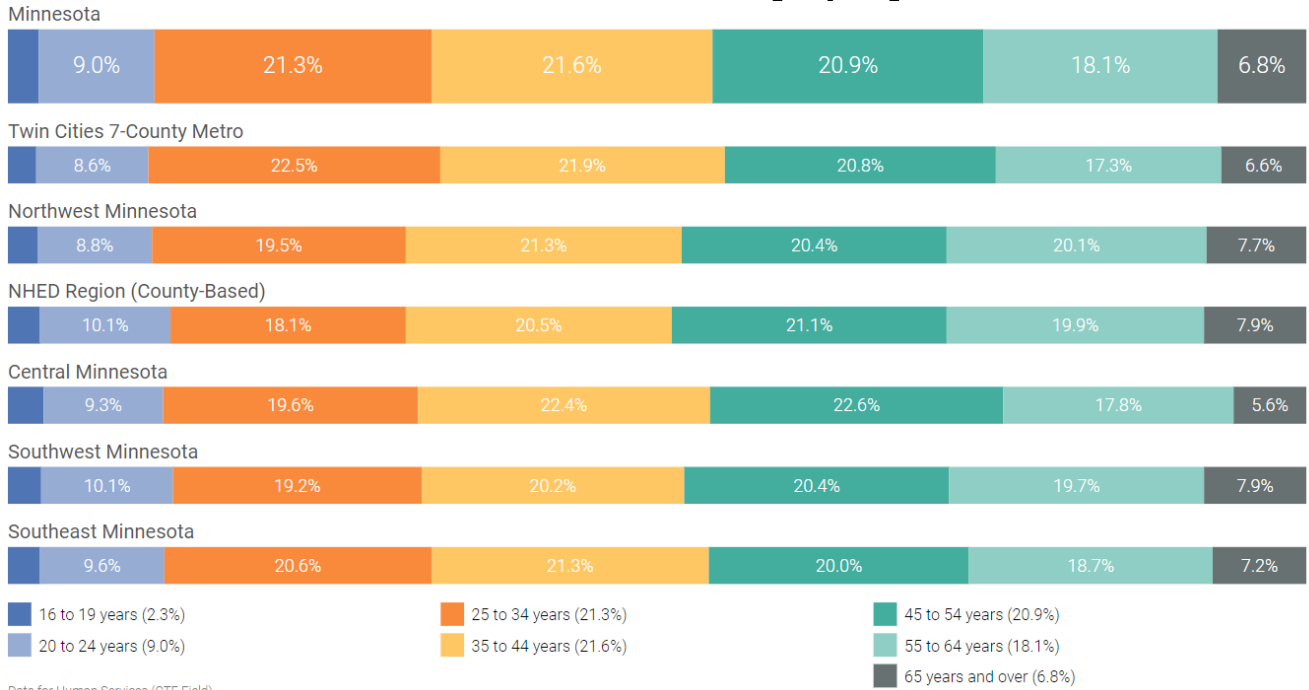
“Annual Demand” is the projected need for new entrants into an occupation. New entrants are needed due to expected growth and to replace workers who left the occupation due to factors such as retirement or switching careers.

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

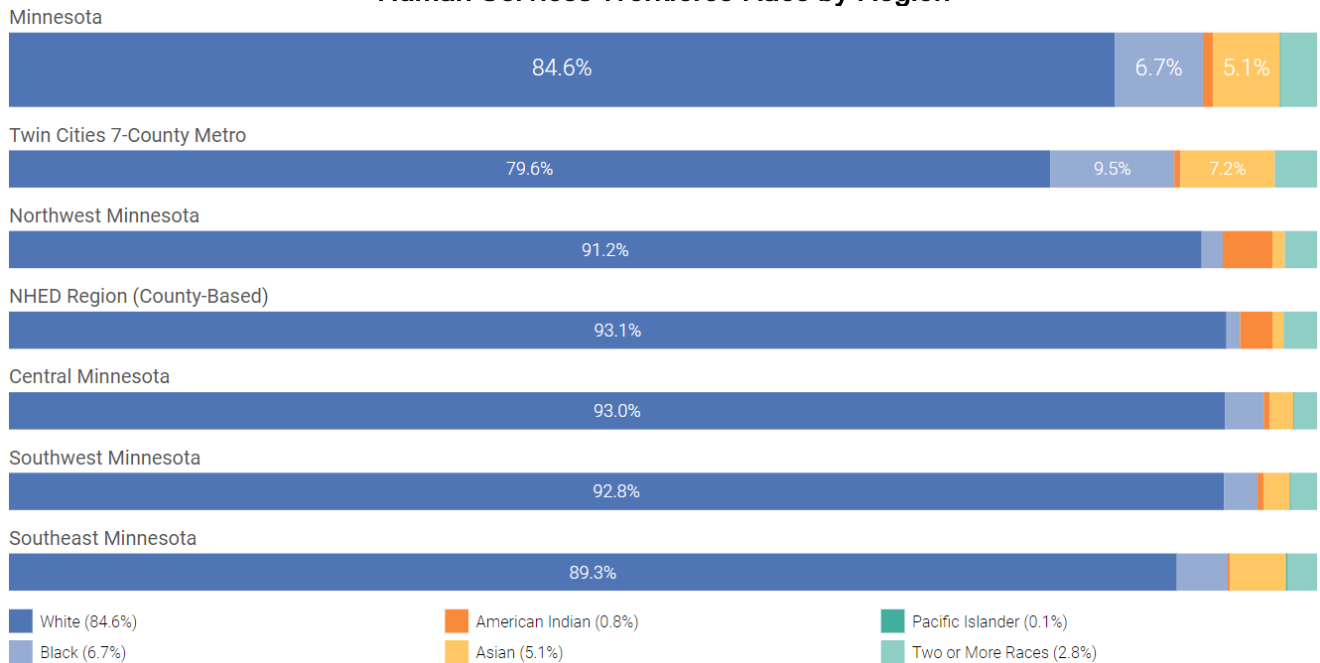
Career Field Demographics

The Human Services field statewide is predominantly female (65.5%) and white (84.6%), becoming more diverse year over year (a change of 0.9 percentage points from the prior year’s estimates by race and 0.8 percentage points by gender). The share of Hispanic talent in this field increased by 0.1 percentage point from the prior year. The workforce overall has aged from the prior year’s estimates from 24.3% aged 55 and older to now 24.9% in this age bracket.

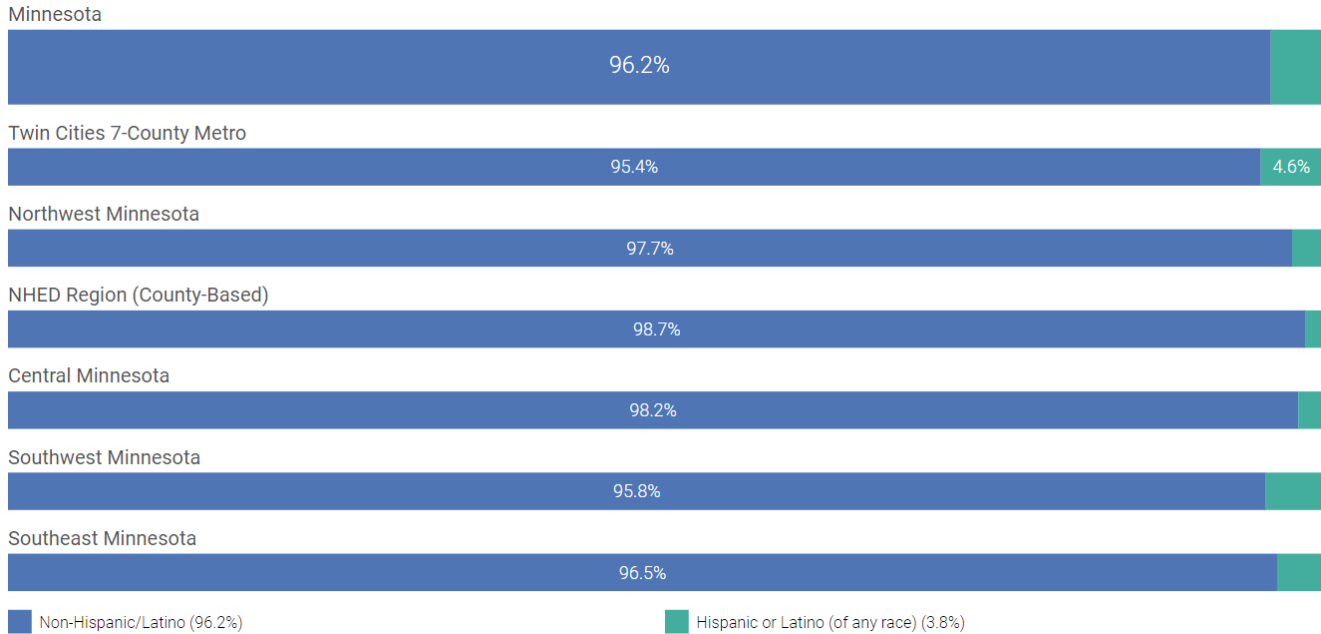
Human Services Workforce Age by Region



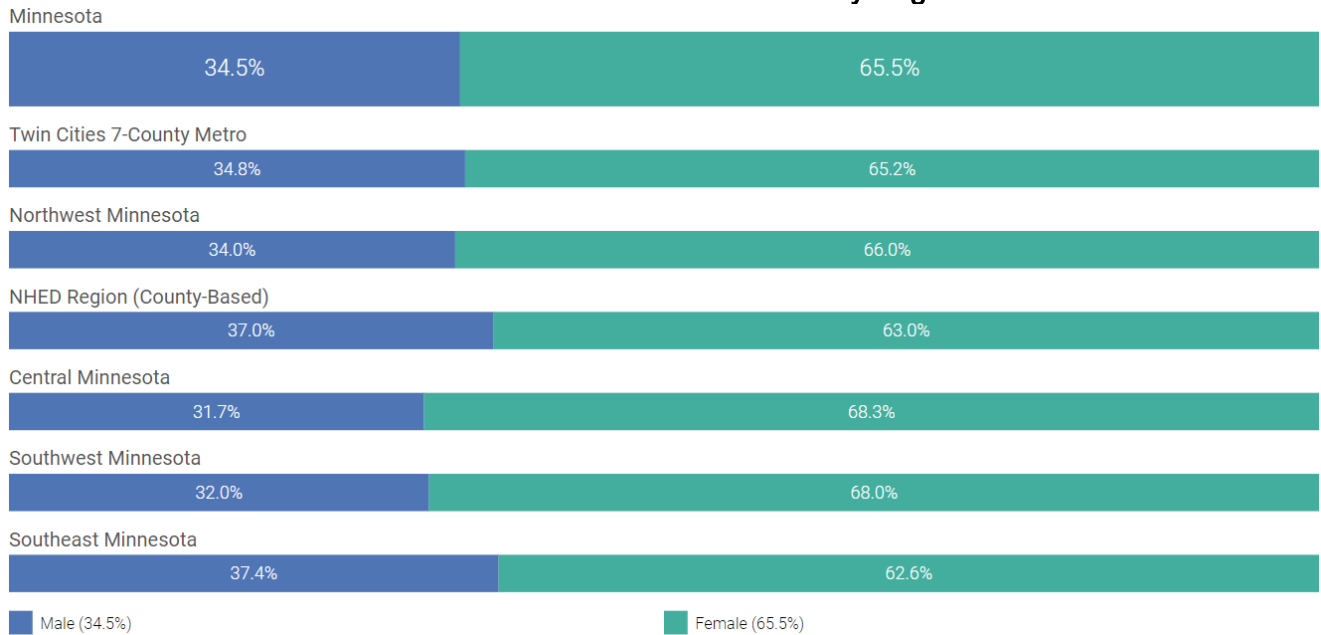
Human Services Workforce Race by Region



Human Services Workforce Ethnicity by Region



Human Services Workforce Gender by Region



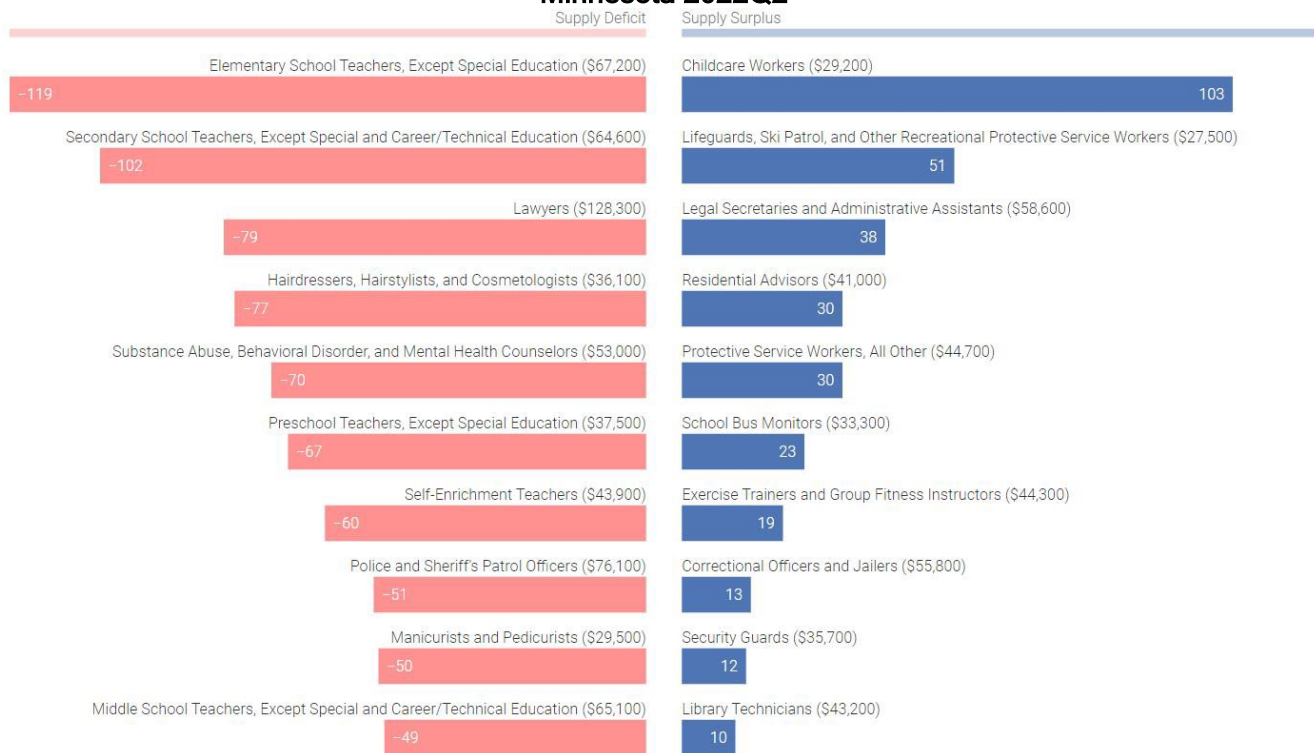
Occupation Gaps

The chart below shows the potential average annual gaps over 10 years. Many variables go into this analysis, but at its core it is based on a forecast comparing occupation demand growth to the local population growth and the projected educational attainment of those residents, then matched to specific related programs offered locally. When an area, for example, has an occupation expected to grow quickly but the educational requirement for the occupation does not match well with the educational attainment of its residents, there is a high potential for an occupation shortfall in the region. Alternatively, slow-growing or contracting occupations often represent potential supply surpluses.

The potential supply shortfall is an underlying force that the market needs to resolve one way or another, such as by employers recruiting from further distances for these occupations, wages going up to attract more candidates, and/or increased demand and wages enticing more local residents to get training for these occupations. While this an important analysis for determining local occupation needs, the occupation gap should be considered along with other regional data including growth and separation forecasts, unemployment rates, wage trends, and award and skill gap analyses.

In Human Services, educator roles leapt up in the rankings of talent shortage, knocking out Mental Health Counselors which were the occupation of highest shortage. Now, Elementary and Secondary School Teachers are forecasting the most severe talent shortages in large part due to the exodus of talent from these occupations due to the challenges brought on by the pandemic. Lawyers, Mental Health Practitioners, Preschool Teachers, Public Safety workers all continue to rank in high shortage, but also joined by high contact-intensity roles that experienced significant workforce exits over the past two years: Hairstylists and Cosmetologists are now forecasting possible shortages as market dynamics shift. Talent surplus indicated in blue columns to the right should be considered with caution, as several surplus scenarios are indications of broken systems (i.e. Childcare workforce and Correctional Officers) rather than true labor surplus.

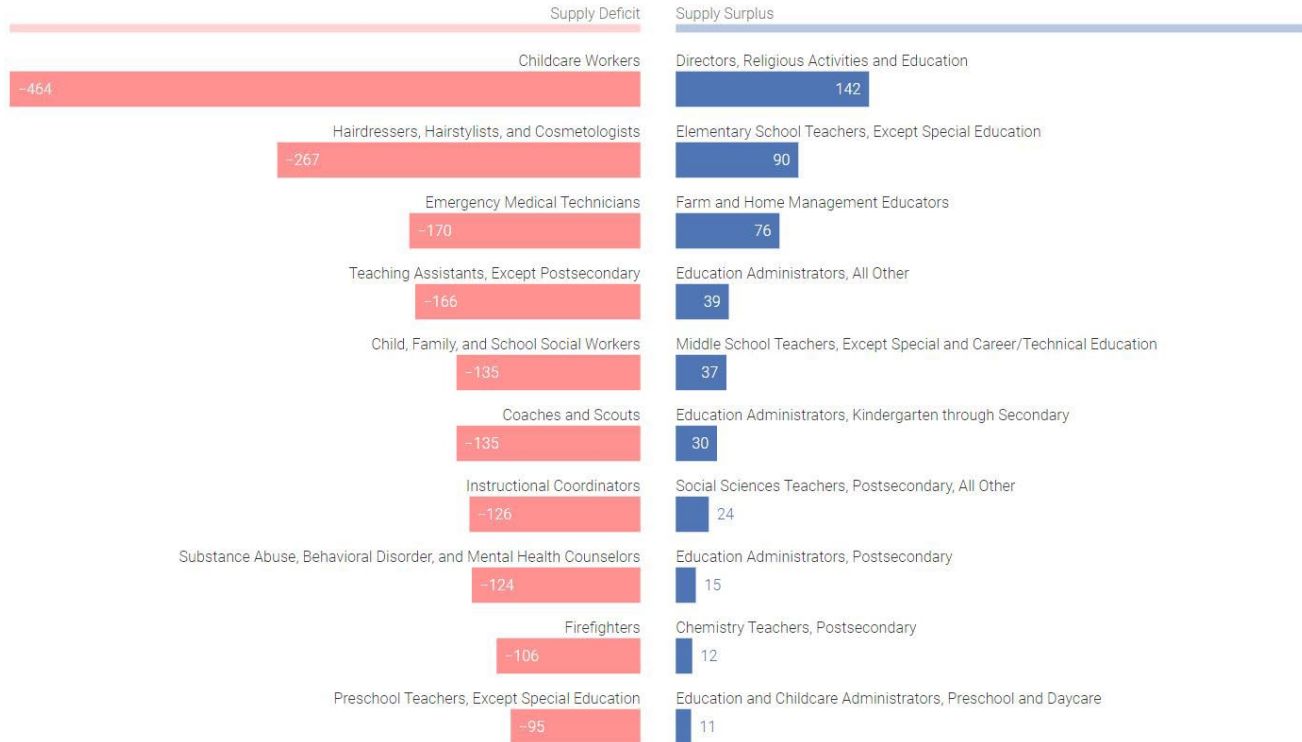
Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Human Services, Minnesota 2022Q2



Award Gaps

A comparison of the graduate talent pipeline through certificate and other postsecondary degree programs to the current estimated openings by occupation illuminate a number of shortages. Minnesota has several Human Services award gaps, with statewide talent pipelines not meeting local employer demand. Occupations that show higher awards given than what is currently needed in the local talent market are examples of programs that serve neighboring state workforces where talent demand is high but relevant programs may not exist. There has been a high degree of consistency in the top award gaps over the past three years.

Award Gaps in Human Services, Minnesota 2022Q2



Promising Pathways

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

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

Gateway Occupations are good jobs that can lead to Target Occupations as skills and experience are developed. These typically offer between \$42,000 up to the average wage statewide. Below are a few Gateway Occupations in Health Science Technology locally. Gateway occupations offer a wage uplift to those previously employed in Origin Occupations, and offer longer-term economic mobility and career advancement opportunities. These are most often best-suited for adult workforce programming and first postsecondary experiences.

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

Origin-to-Gateway-to-Target Occupations for Human Services, By Region 2022Q2

	MSP Metro	Northeast	Northwest	Central	Southwest	Southeast
Avg. Wage	Region: \$64,300 Field: \$57,600	Region: \$52,500 Field: \$50,900	Region: \$50,500 Field: \$50,300	Region: \$52,200 Field: \$49,700	Region: \$51,300 Field: \$51,100	Region: \$61,100 Field: \$51,000
Unempl Rate	Region: 2.4% Field: 1.9%	Region: 3.2% Field: 2.2%	Region: 2.8% Field: 2.0%	Region: 2.8% Field: 2.1%	Region: 2.5% Field: 1.8%	Region: 2.2% Field: 1.8%
Origin Occupations	<ul style="list-style-type: none"> Personal Care Aides Teaching Assistants Childcare Workers Security Guards Preschool Teachers 	<ul style="list-style-type: none"> Personal Care Aides Teaching Assistants Childcare Workers Security Guards Firefighters 	<ul style="list-style-type: none"> Personal Care Aides Teaching Assistants Childcare Workers Social & Human Service Assistants Firefighters 	<ul style="list-style-type: none"> Personal Care Aides Teaching Assistants Childcare Workers Preschool Teachers Social & Human Service Assistants 	<ul style="list-style-type: none"> Personal Care Aides Teaching Assistants Childcare Workers Preschool Teachers Hairdressers, Hairstylists, & Cosmetologists 	<ul style="list-style-type: none"> Personal Care Aides Teaching Assistants Childcare Workers Emergency Medical Technicians Preschool Teachers
Gateway Occupations	<ul style="list-style-type: none"> Social & Human Service Assistants Self-Enrichment Teachers Substance Abuse & Mental Health Counselors Child, Family, & School Social Workers Paralegals & Legal Assistants 	<ul style="list-style-type: none"> Social & Human Service Assistants Substance Abuse & Mental Health Counselors Court, Municipal, & License Clerks Self-Enrichment Teachers Clergy 	<ul style="list-style-type: none"> Court, Municipal, & License Clerks Clergy Substance Abuse & Mental Health Counselors Self-Enrichment Teachers Supervisors of Personal Service Workers 	<ul style="list-style-type: none"> Substance Abuse & Mental Health Counselors Court, Municipal, & License Clerks Clergy Coaches & Scouts Rehabilitation Counselors 	<ul style="list-style-type: none"> Social & Human Service Assistants Court, Municipal, & License Clerks Clergy Substitute Teachers Self-Enrichment Teachers 	<ul style="list-style-type: none"> Elementary School Teachers Middle School Teachers Social & Human Service Assistants Substance Abuse & Mental Health Counselors Child, Family, & School Social Workers
Target Occupations	<ul style="list-style-type: none"> Elementary School Teachers Lawyers Secondary School Teachers Middle School Teachers Compliance Officers 	<ul style="list-style-type: none"> Child, Family, & School Social Workers Social & Community Service Managers Mental Health Social Workers Educational, Guidance, & Career Counselors Education Administrators 	<ul style="list-style-type: none"> Secondary School Teachers Child, Family, & School Social Workers Educational, Guidance, & Career Counselors Secondary Special Ed Teachers Kindergarten Special Ed Teachers 	<ul style="list-style-type: none"> Child, Family, & School Social Workers Educational, Guidance, & Career Counselors Social & Community Service Managers Kindergarten Teachers Instructional Coordinators 	<ul style="list-style-type: none"> Child, Family, & School Social Workers Lawyers Substance Abuse & Mental Health Counselors Social & Community Service Managers Education Administrators 	<ul style="list-style-type: none"> Lawyers Healthcare Social Workers Social & Community Service Managers Education Administrators Counselors & Advisors

High Location Quotient (LQ) Occupations for Human Services, By Region 2022Q2

	MSP Metro	Northeast	Northwest	Central	Southwest	Southeast
LQ > 1.20	<ul style="list-style-type: none"> Preschool Special Ed Teachers Postsecondary Area Ethnic & Cultural Studies Teachers Court, Municipal, & License Clerks Postsecondary Social Work Teachers Social Workers, All Other 	<ul style="list-style-type: none"> Gambling Surveillance Officers Court, Municipal & License Clerks Residential Advisors Legislators Judicial Law Clerks 	<ul style="list-style-type: none"> Preschool Special Ed Teachers Court, Municipal, & License Clerks Gambling Surveillance Officers & Gambling Investigators Morticians, Undertakers, & Funeral Arrangers Sec. Special Ed Teachers 	<ul style="list-style-type: none"> Preschool Special Ed Teachers Court, Municipal, & License Clerks Secondary Special Ed Teachers Residential Advisors Teaching Assistants 	<ul style="list-style-type: none"> Preschool Special Ed Teachers Court, Municipal, & License Clerks Rehabilitation Counselors Morticians, Undertakers, & Funeral Arrangers Gambling Surveillance Officers & Gambling Investigators 	<ul style="list-style-type: none"> Emergency Medical Technicians Preschool Special Education Teachers Court, Municipal, & License Clerks Health Education Specialists Residential Advisors

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

- | | |
|--|---|
| <ol style="list-style-type: none"> 1) Special Education Teachers, Preschool (2.86) 2) Court, Municipal, and License Clerks (2.28) 3) Social Workers, All Other (1.87) | <ol style="list-style-type: none"> 4) Area, Ethnic, and Cultural Studies Teachers, Postsecondary (1.78) 5) Social Work Teachers, Postsecondary (1.71) |
|--|---|

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

2022Q2 Unemployment: 9,298
(2.0% unemployment rate)
30-Day Job Ads: 19,782
(compared to 182,561 across all occupations)
5-Year Ann Avg Employment Change: 0.5%
Forecast 5-Year Ann Employment Change: 1.2%
Total 5-Year Demand: 285,476

Target Occupations(all HW, HD, HS, OG)
Elementary School Teachers
Secondary School Teachers
Lawyers
Middle School Teachers
Child, Family, & School Social Workers (AG)
Paralegals & Legal Assistants (AG)

Gateway Occupations
Social & Human Service Assistants (HD, AG)
Substance Abuse, Behavioral Disorder & Mental Health Counselors (HS, HD, OG, AG)
Mental Health Counselors (HS, HD, OG)
Self-Enrichment Teachers (HD, OG)
Exercise Trainers & Group Fitness Instructors (HD, AG)

Origin Occupations *Likely*
Personal Care Aides (HD, AG)
Teaching Assistants (HS, HD, AG)
Childcare Workers (AG)
Security Guards (HD)
Preschool Teachers (HS, HD, OG, AG)

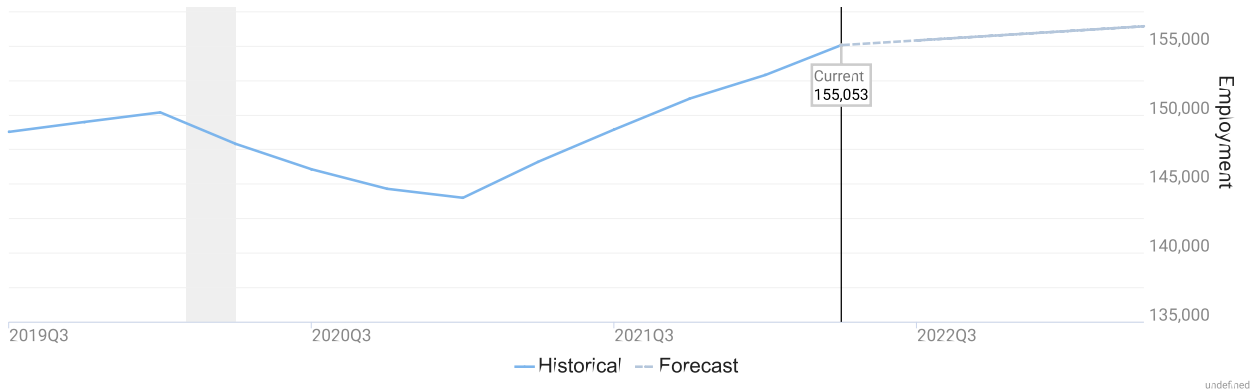
Top Ten Target Occupations in Human Services, Minnesota 2022Q2

SOC	Occupation	2022Q2 Empl	Mean Ann Wages ²	High-Wage	High-Skill	High-Demand	OG	AG
25-2021	Elementary School Teachers, Except Special Education	23,713	\$67,300	HW	HS	HD	OG	
25-2031	Secondary School Teachers, Except Special and Career/Technical Education	18,175	\$64,000	HW	HS	HD	OG	
23-1011	Lawyers	13,678	\$133,800	HW	HS	HD	OG	
25-2022	Middle School Teachers, Except Special and Career/Technical Education	9,712	\$65,600	HW	HS	HD	OG	
21-1021	Child, Family, and School Social Workers	8,197	\$60,900	HW	HS	HD	OG	AG
23-2011	Paralegals and Legal Assistants	5,980	\$61,800	HW	HS	HD	OG	AG
11-9151	Social and Community Service Managers	4,920	\$81,700	HW	HS	HD	OG	AG
11-9032	Education Administrators, Kindergarten through Secondary	4,229	\$107,800	HW	HS	HD	OG	
21-1022	Healthcare Social Workers	3,809	\$62,700	HW	HS	HD	OG	AG
25-9031	Instructional Coordinators	3,765	\$75,100	HW	HS	HD	OG	AG

ARTS, COMMUNICATIONS, AND INFORMATION SYSTEMS

Arts, Communications, and Information Systems is a diverse career field with artistic careers as well as Information Technology career paths, which experienced somewhat diverging trends during over the course of the COVID-19 pandemic. Following average annual employment growth of 2.0% over the past five years, Arts, Communications, and Information Systems employment is forecast to grow by 0.9% annually over the coming five years (0.8% over the first three). This was a significant increase from last year's estimated 0.4% average annual forecasted growth. The 155,053 Arts, Communications, and Information Systems careers statewide pay about \$85,100 annually on average, and are slightly more concentrated in Minnesota than other states (LQ 1.07). This field's roles comprise about 5.1% of Minnesota's workforce. As of 2022Q2, there are about 2,621 unemployed Arts, Communications, and Information Systems professionals in Minnesota, giving an unemployment rate of 1.8%. Total five-year demand for this talent is 70,949 new professionals needed to meet replacement and growth demand.

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



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

6-Digit Occupation	Empl	Avg Mean Wages	LQ	3-Year Empl Change	Annual Demand	Forecast Ann Growth
Software Developers	41,124	\$111,400	1.21	12,138	3,935	1.9%
Computer Systems Analysts	14,113	\$101,200	1.37	-877	1,014	0.2%
Computer User Support Specialists	12,767	\$58,000	0.97	125	1,008	0.6%
Computer Network Support Specialists	7,186	\$70,700	2.05	-338	556	0.4%
Computer Occupations, All Other	6,658	\$89,000	0.77	35	522	0.5%
Graphic Designers	6,051	\$61,000	1.16	-454	537	-0.1%
Printing Press Operators	6,006	\$44,200	2.06	-1,029	509	-1.6%
Network and Computer Systems Administrators	5,737	\$90,300	0.91	-538	384	0.2%
Computer Network Architects	3,500	\$121,200	1.02	14	218	0.3%
Writers and Authors	3,301	\$64,300	1.07	-53	344	0.7%
Remaining Component Occupations	48,609	\$73,200	0.96	-1,937	5,002	0.8%
Arts, Communications, & Information Systems (CTE Field)	155,053	\$85,100	1.07	7,084	14,026	0.8%

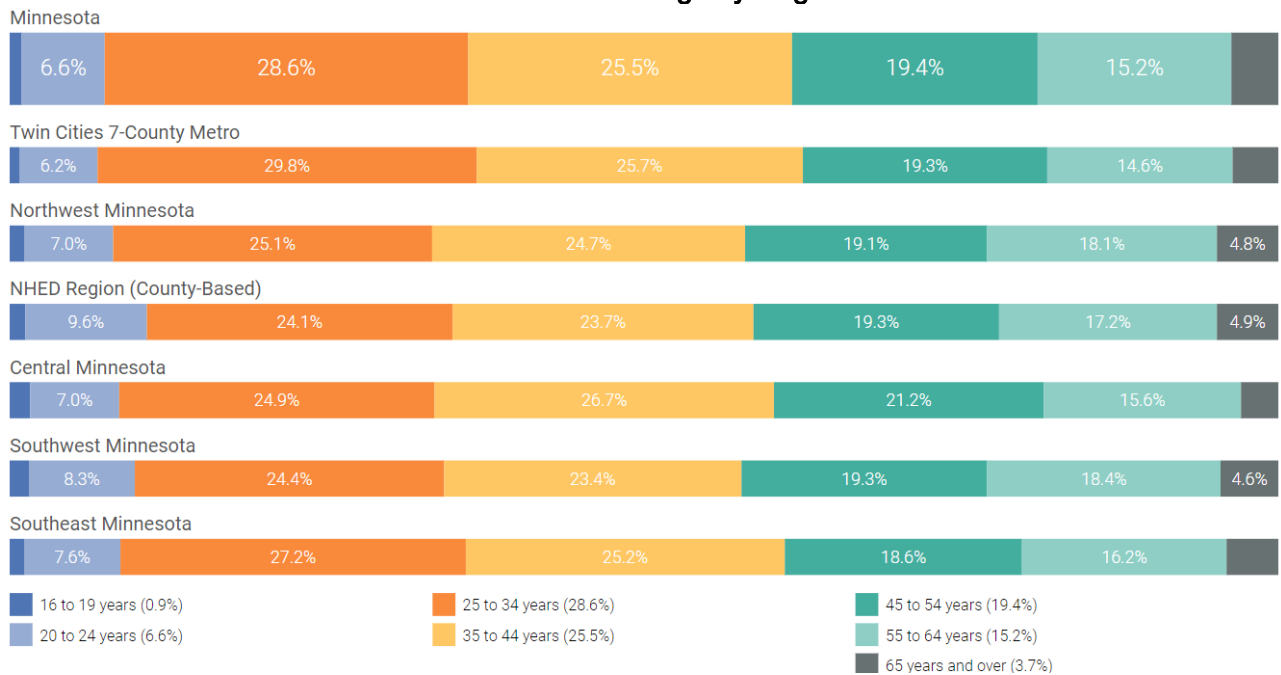
"Annual Demand" is the projected need for new entrants into an occupation. New entrants are needed due to expected growth and to replace workers who left the occupation due to factors such as retirement or switching careers.

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

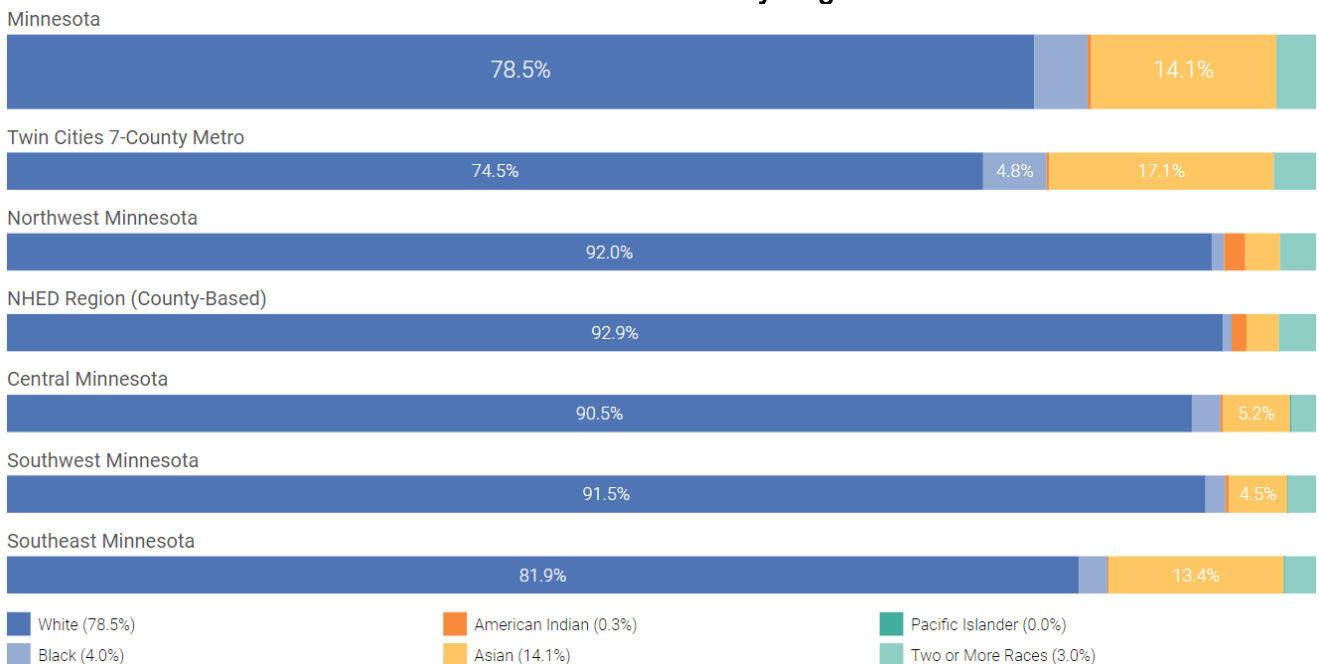
Career Field Demographics

The Arts, Communications, and Information Systems field statewide is predominantly male (72.9%) and white (78.5%), but with notably more diversity than other career fields and increasing in diversity relatively rapidly. While 19.7% of Arts, Communications, and Information Systems talent was BIPOC by race as of last year’s estimates, now 21.5% is—a full 1.8 percentage point increase. All regions saw racial diversity increase in this field, with the largest gains in the MSP Metro and Southeast where diversity was already greatest. The share of Hispanic and Latinx talent in Arts, Communications, and Information Systems roles remained unchanged at the statewide level, and the share of female talent shrunk by 0.5 percentage points. The age of the workforce in this field skews young, and has been getting younger over the past three years.

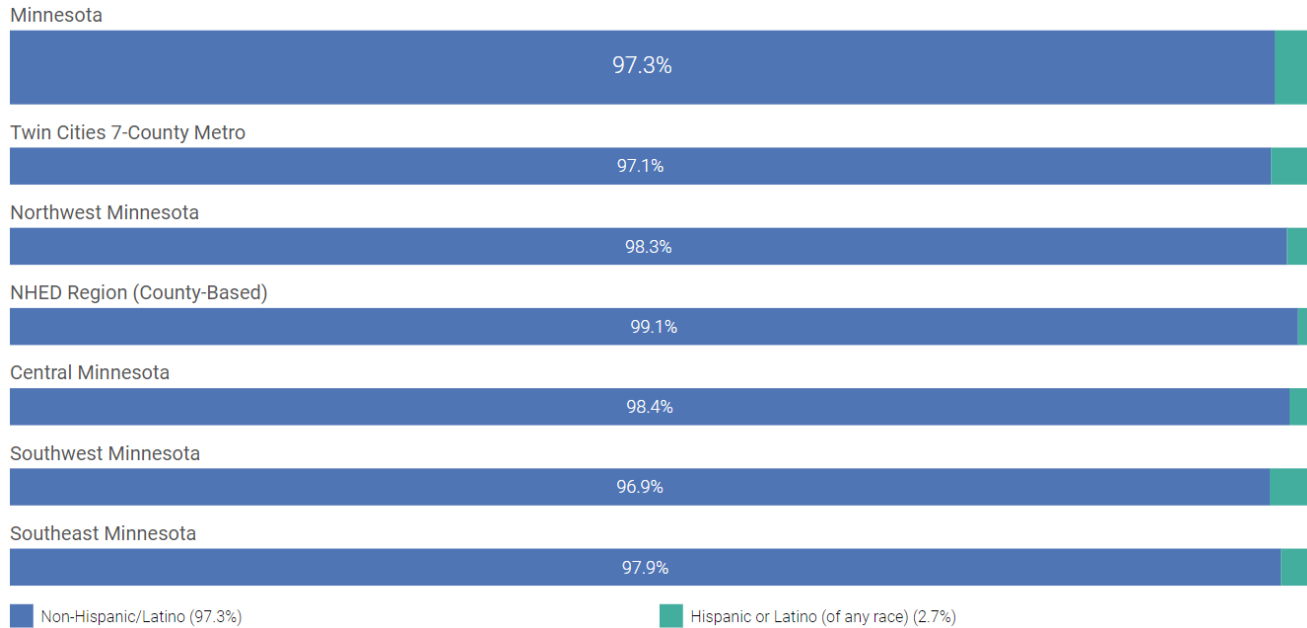
ACIS Workforce Age by Region



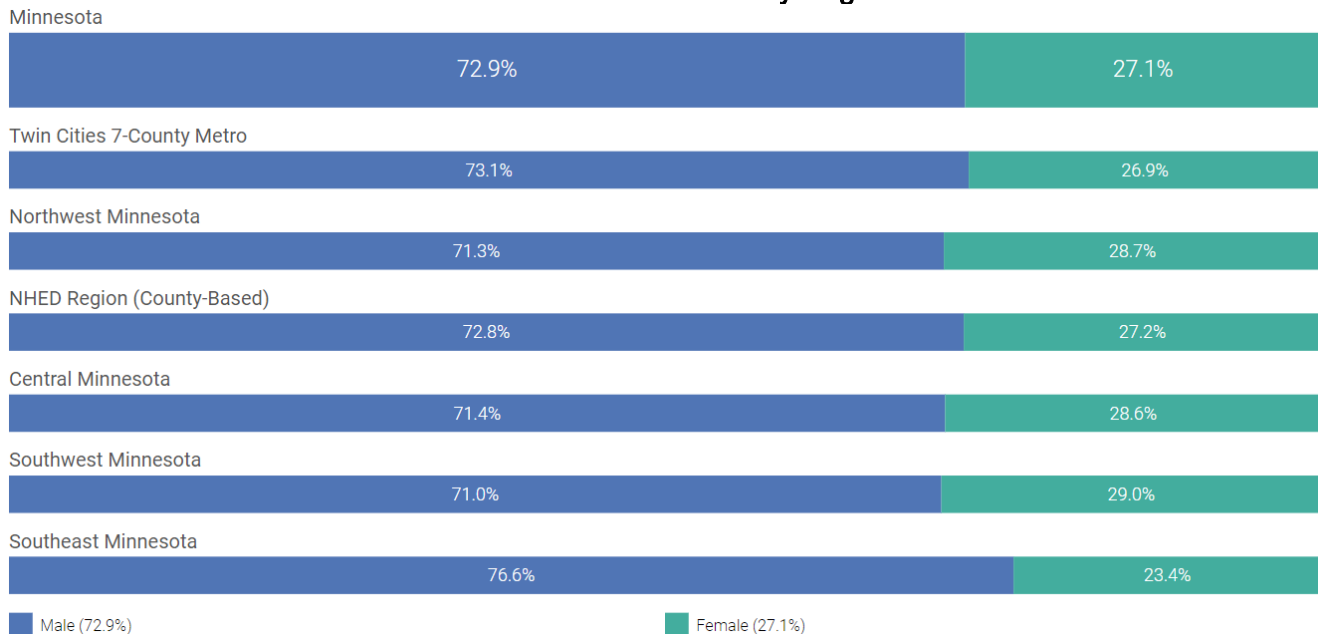
ACIS Workforce Race by Region



ACIS Workforce Ethnicity by Region



ACIS Workforce Gender by Region



Occupation Gaps

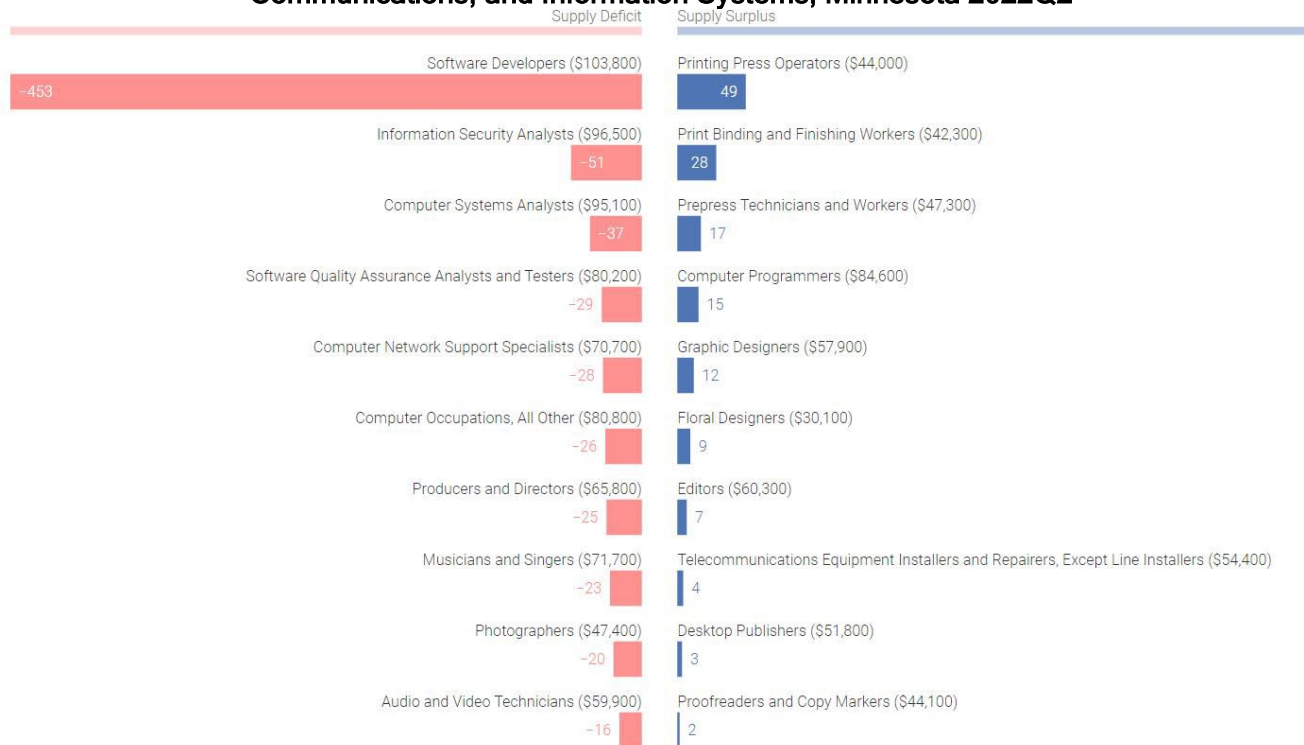
The chart below shows the potential average annual gaps over 10 years. Many variables go into this analysis, but at its core it is based on a forecast comparing occupation demand growth to the local population growth and the projected educational attainment of those residents, then matched to specific related programs offered locally. When an area, for example, has an occupation expected to grow quickly but the educational requirement for the occupation does not match well with the educational attainment of its residents, there is a high potential for an occupation shortfall in the region. Alternatively, slow-growing or contracting occupations often represent potential supply surpluses.

The potential supply shortfall is an underlying force that the market needs to resolve one way or another, such as by employers recruiting from further distances for these occupations, wages going

up to attract more candidates, and/or increased demand and wages enticing more local residents to get training for these occupations. While this an important analysis for determining local occupation needs, the occupation gap should be considered along with other regional data including growth and separation forecasts, unemployment rates, wage trends, and award and skill gap analyses.

In this field, Software Developers continues to rank as the occupation of highest shortage, and is ow the top occupation of shortage across all career fields. This critical talent shortage is due in large part to forecasted employment growth and expansion of the IT cluster talent needs; IT cluster careers dominate occupations of shortage broadly.

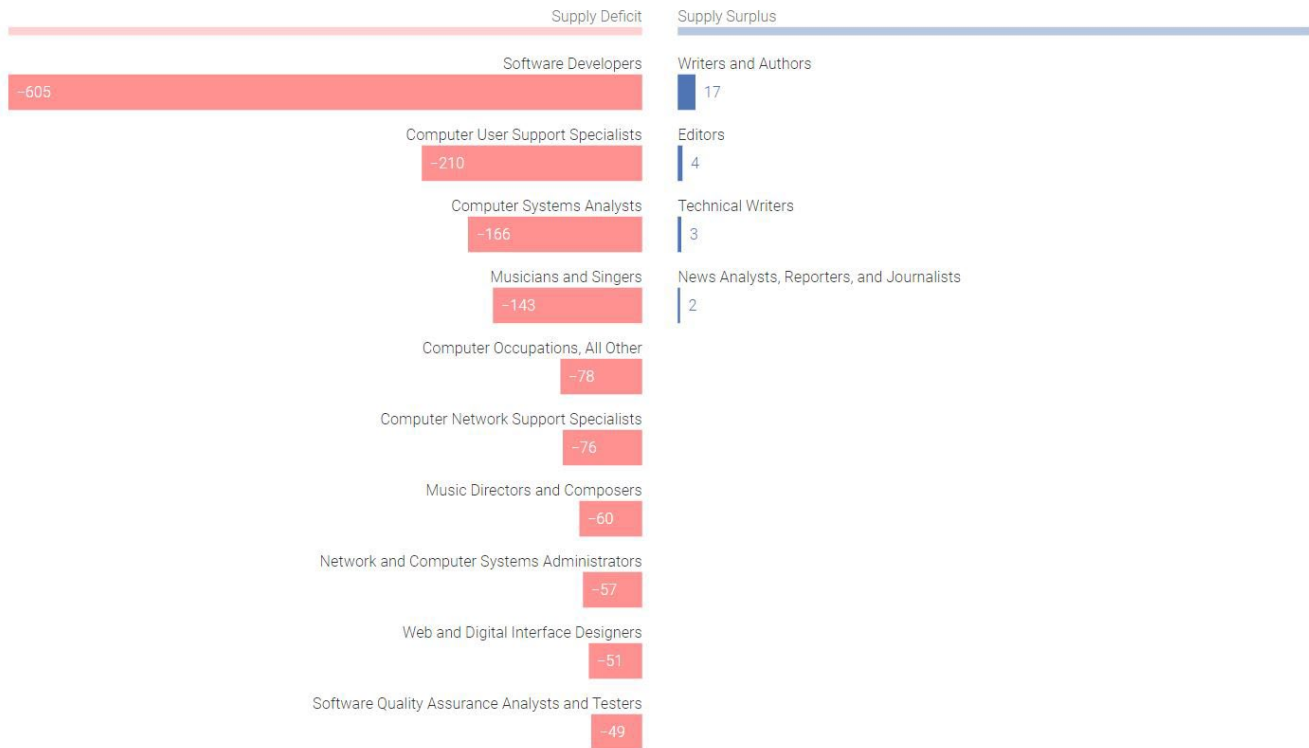
Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Arts, Communications, and Information Systems, Minnesota 2022Q2



Award Gaps

A comparison of the graduate talent pipeline through certificate and other postsecondary degree programs to the current estimated openings by occupation illuminate a number of shortages. Minnesota has several Arts, Communications, and Information Systems award gaps, with statewide talent pipelines not meeting local employer demand. Occupations that show higher awards given than what is currently needed in the local talent market are examples of programs that serve neighboring state workforces where talent demand is high but relevant programs may not exist. The award gaps identified as of 2022Q2 are consistent with what was observed in prior years, further emphasizing the importance of addressing these longstanding shortages in graduate talent pipelines. Information Technology in particular is the career cluster with the largest number and volumes of postsecondary award gaps in comparison to national benchmarks.

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



Promising Pathways

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

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

Gateway Occupations are good jobs that can lead to Target Occupations as skills and experience are developed. These typically offer between \$42,000 up to the regional average wage. Below are a few Gateway Occupations in Health Science Technology locally. Gateway occupations offer a wage uplift to those previously employed in Origin Occupations, and offer longer-term economic mobility and career advancement opportunities. These are most often best-suited for adult workforce programming and first postsecondary experiences.

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

Origin-to-Gateway-to-Target Occupations for Arts, Communications, and Information Systems, By Region 2022Q2

	MSP Metro	Northeast	Northwest	Central	Southwest	Southeast
Avg. Wage	Region: \$64,300 Field: \$89,200	Region: \$52,500 Field: \$71,700	Region: \$50,500 Field: \$67,000	Region: \$52,200 Field: \$70,400	Region: \$51,300 Field: \$66,700	Region: \$61,100 Field: \$76,800
Unempl Rate	Region: 2.4% Field: 1.7%	Region: 3.2% Field: 2.4%	Region: 2.8% Field: 2.0%	Region: 2.8% Field: 2.1%	Region: 2.5% Field: 2.1%	Region: 2.2% Field: 1.6%
Origin Occupations	<ul style="list-style-type: none"> Floral Designers Broadcast Announcers & Radio Disc Jockeys Costume Attendants 	<ul style="list-style-type: none"> Printing Press Operators Photographers Broadcast Announcers Floral Designers Print Binding & Finishing Workers 	<ul style="list-style-type: none"> Printing Press Operators Floral Designers Print Binding & Finishing Workers Broadcast Announcers News Analysts, Reporters, & Journalists 	<ul style="list-style-type: none"> Printing Press Operators Print Binding & Finishing Workers Floral Designers Broadcast Announcers Disc Jockeys 	<ul style="list-style-type: none"> Print Binding & Finishing Workers Floral Designers Broadcast Announcers News Analysts, Reporters, & Journalists Broadcast Technicians 	<ul style="list-style-type: none"> Floral Designers Print Binding & Finishing Workers Broadcast Announcers Broadcast Technicians Fashion Designers
Gateway Occupations	<ul style="list-style-type: none"> Computer User Support Specialists Graphic Designers Printing Press Operators Photographers Telecommunications Equipment Installers 	<ul style="list-style-type: none"> Graphic Designers Producers & Directors Editors Music Directors & Composers Audio & Video Technicians 	<ul style="list-style-type: none"> Computer User Support Specialists Graphic Designers Photographers Audio & Video Technicians Actors 	<ul style="list-style-type: none"> Graphic Designers Photographers Telecommunications Line Installers Prepress Technicians News Analysts, Reporters, & Journalists 	<ul style="list-style-type: none"> Printing Press Operators Graphic Designers Photographers Prepress Technicians Telecommunications Line Installers & Repairers 	<ul style="list-style-type: none"> Computer User Support Specialists Telecommunications Equipment Installers Graphic Designers Printing Press Operators Writers & Authors
Target Occupations	<ul style="list-style-type: none"> Software Developers Computer Systems Analysts Computer Network Support Specialists Computer Occupations, All Other Network & Computer Systems Administrators 	<ul style="list-style-type: none"> Software Developers Computer Network Support Specialists Writers & Authors Software QA Analysts & Testers Art Directors 	<ul style="list-style-type: none"> Software Developers Computer Network Support Specialists Telecommunications Equipment Installers Writers & Authors Editors 	<ul style="list-style-type: none"> Software Developers Computer Network Support Specialists Writers & Authors Telecommunications Equipment Installers Software Quality Assurance Analysts 	<ul style="list-style-type: none"> Software Developers Computer Network Support Specialists Writers & Authors Software Quality Assurance Analysts & Testers Art Directors 	<ul style="list-style-type: none"> Software Developers Computer Network Support Specialists Software Quality Assurance Analysts & Testers Art Directors Special Effects Artists & Animators

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

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

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

- | | |
|--|---|
| 1) Print Binding & Finishing Workers (2.15) | 4) Prepress Technicians (2.02) |
| 2) Printing Press Operators (2.06) | 5) Sound Engineering Technicians (1.55) |
| 3) Computer Network Support Specialists (2.05) | |

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

2022Q2 Unemployment: 2,621
(1.8% unemployment rate)
30-Day Job Ads: 14,886
(compared to 182,561 across all occupations)
5-Year Ann Avg Employment Change: 2.0%
Forecast 5-Year Ann Employment Change: 0.9%
Total 5-Year Demand: 70,949

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

Gateway Occupations

Computer User Support Specialists (HS, HD, AG)
Printing Press Operators (AG)
Telecommunications Equipment Installers & Repairers (HS, HD, AG)
Photographers (HD, OG, AG)
Print Binding & Finishing Workers

Origin Occupations

Likely

Floral Designers
Broadcast Announcers & Radio Disc Jockeys (HS, OG, AG)
Broadcast Technicians (HS, HD, OG, AG)
Disc Jockeys, Except Radio (HS, OG, AG)
Choreographers (HD, OG, AG)

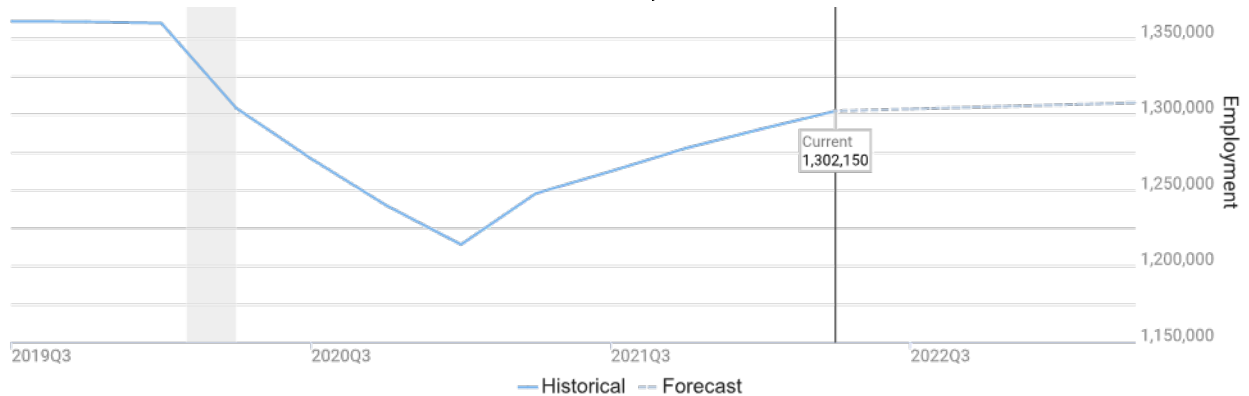
Top Ten Target Occupations in Arts, Communications, and Information Systems, Minnesota 2022Q2

SOC	Occupation	2022Q2 Empl	Mean Ann Wages ²	High-Wage	High-Skill	High-Demand	OG	AG
15-1252	Software Developers	41,124	\$111,400	HW	HS	HD	OG	AG
15-1211	Computer Systems Analysts	14,113	\$101,200	HW	HS	HD	OG	AG
15-1231	Computer Network Support Specialists	7,186	\$70,700	HW	HS	HD	OG	AG
15-1299	Computer Occupations, All Other	6,658	\$89,000	HW	HS	HD	OG	AG
15-1244	Network and Computer Systems Administrators	5,737	\$90,300	HW	HS	HD	OG	AG
27-3043	Writers and Authors	3,301	\$64,300	HW	HS	HD	OG	
15-1253	Software Quality Assurance Analysts and Testers	3,170	\$91,000	HW	HS	HD	OG	AG
15-1212	Information Security Analysts	2,915	\$106,300	HW	HS	HD	OG	AG
15-1254	Web Developers	2,124	\$88,200	HW	HS	HD	OG	
27-1011	Art Directors	2,122	\$112,700	HW	HS	HD	OG	AG

BUSINESS, MANAGEMENT, AND ADMINISTRATION

Business, Management, and Administration includes a wide variety of career paths, which experienced somewhat diverging trends during over the course of the COVID-19 pandemic thus far. Following average annual employment decline of -0.8% over the past five years, this field’s employment is forecast to grow by 0.4% annually over the coming five years—a marked improvement from the forecast one year prior set at -0.1% decline annually. The 1,302,150 Business, Management, and Administration careers statewide pay about \$57,400 annually on average, and are about as concentrated in Minnesota than other states (LQ 0.98). This is the most significant career field by total volume of employment, with Business, Management, and Administration roles employing about 34.1% of Minnesota’s workforce. As of 2022Q2, there are about 37,789 unemployed Business, Management, and Administration professionals in Minnesota, giving an unemployment rate of 2.9%. Total five-year demand for Business, Management, and Administration talent is 833,237 new professionals needed to meet replacement and growth demand. Most of the growth is attributable to potential recovery of career clusters like Hospitality and Tourism, which were hit hard during the COVID-19 pandemic.

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



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

6-Digit Occupation	Empl	Avg Mean Wages	LQ	3-Year Empl Change	Annual Demand	Forecast Ann Growth
Retail Salespersons	73,208	\$33,300	0.98	-6,579	9,887	-0.3%
Cashiers	64,782	\$27,900	0.99	-3,673	10,462	-1.2%
General and Operations Managers	64,609	\$104,100	1.07	3,330	5,929	0.8%
Fast Food and Counter Workers	55,209	\$27,600	0.88	-6,146	12,688	1.6%
Office Clerks, General	54,507	\$42,100	1.03	-3,955	5,933	-0.4%
Customer Service Representatives	53,422	\$43,600	0.97	-1,420	6,331	-0.5%
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	43,720	\$34,900	0.99	-2,492	6,100	0.5%
Stockers and Order Fillers	39,727	\$34,600	0.82	1,235	6,282	0.2%
Waiters and Waitresses	37,812	\$29,100	0.95	-6,606	8,320	1.7%
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	36,340	\$44,200	0.93	-1,831	3,442	-0.9%
Remaining Component Occupations	778,811	\$66,700	1.07	-30,920	90,117	0.5%
Business, Management, & Administration (CTE Field)	1,302,150	\$57,400	0.98	-59,056	165,487	0.4%

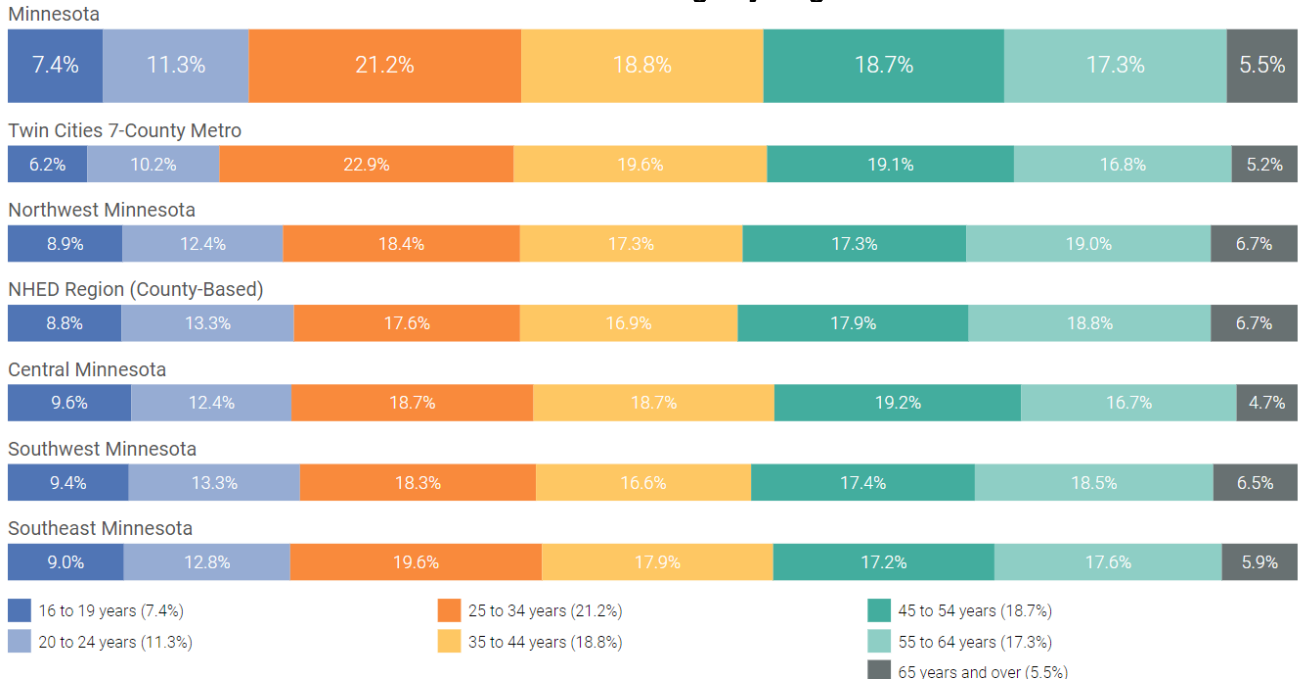
“Annual Demand” is the projected need for new entrants into an occupation. New entrants are needed due to expected growth and to replace workers who left the occupation due to factors such as retirement or switching careers.

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

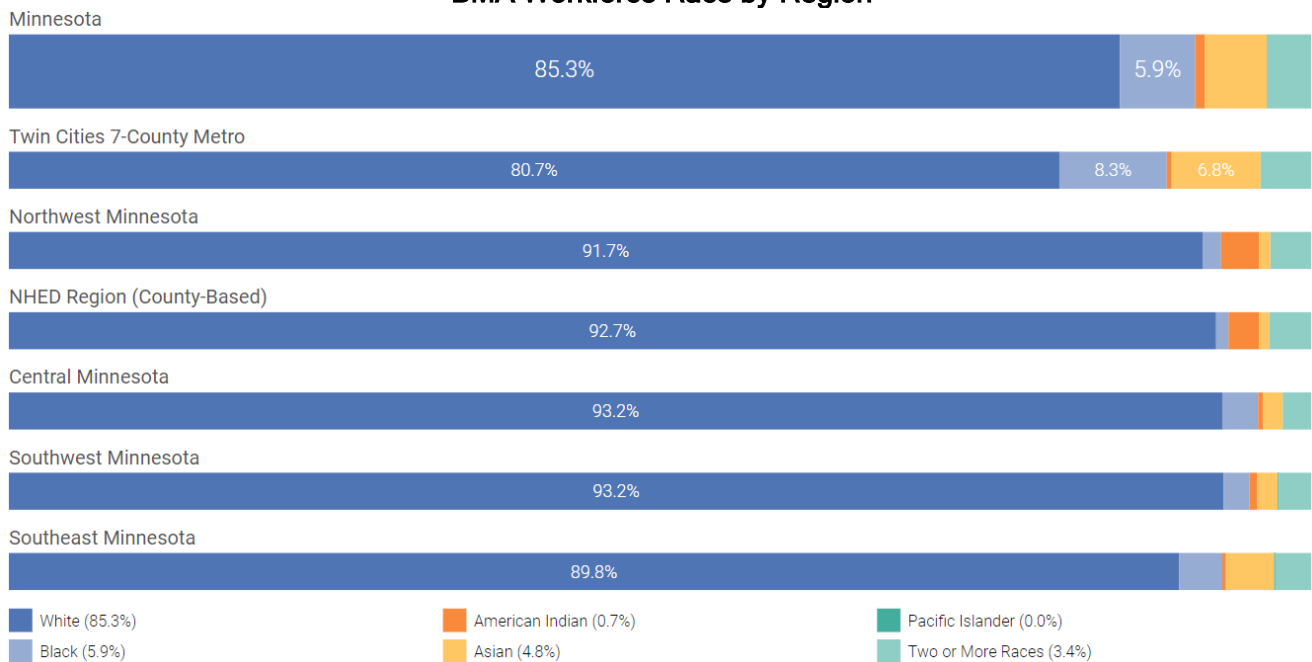
Career Field Demographics

The Business, Management, and Administration field statewide is slightly more female (55.6%) and white (85.3%), varying by career cluster and pathway. The share of the workforce that is BIPOC by race increased by 1.2 percentage points from the prior years' estimates, almost fully attributable to growth in the field's talent identifying with two or more races and the Black and African American workforce. The share of Business, Management, and Administration talent that is Hispanic or Latinx increased by 0.2 percentage points to 5.1% as of 2022Q2. The age of the workforce in this field skews slightly young, with 21.2% between the ages of 25 and 34, and 18.7% more under 25 years old (though the share in this lowest age cohort declined over the past year).

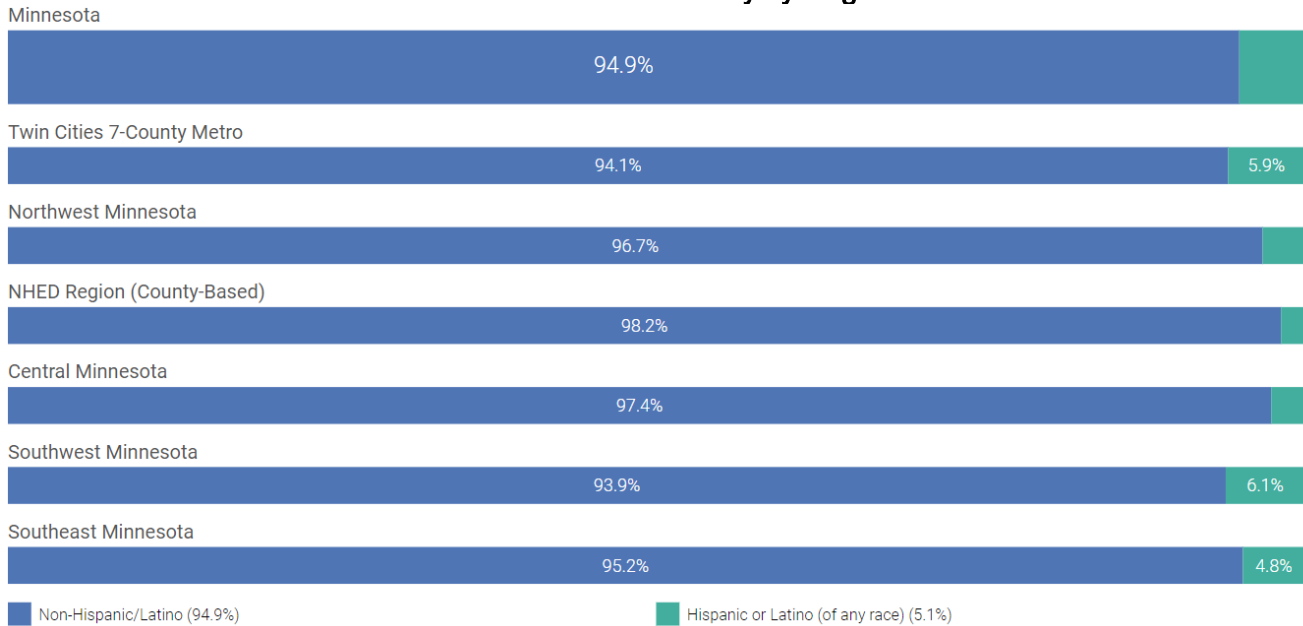
BMA Workforce Age by Region



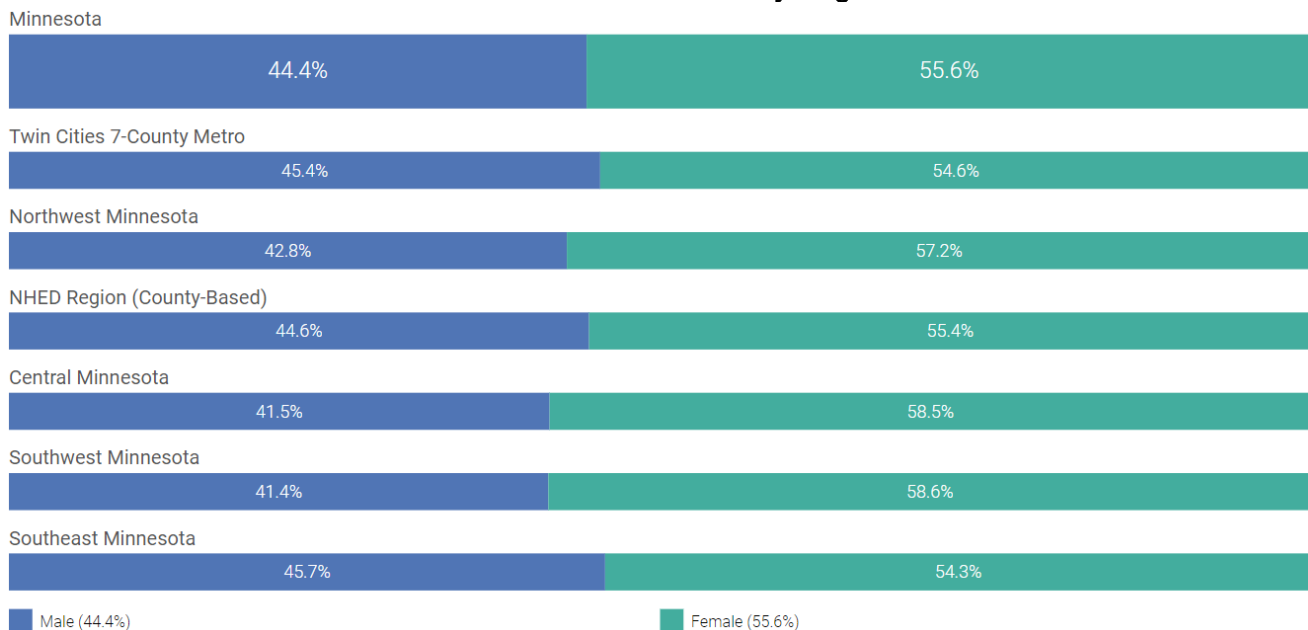
BMA Workforce Race by Region



BMA Workforce Ethnicity by Region



BMA Workforce Gender by Region



Occupation Gaps

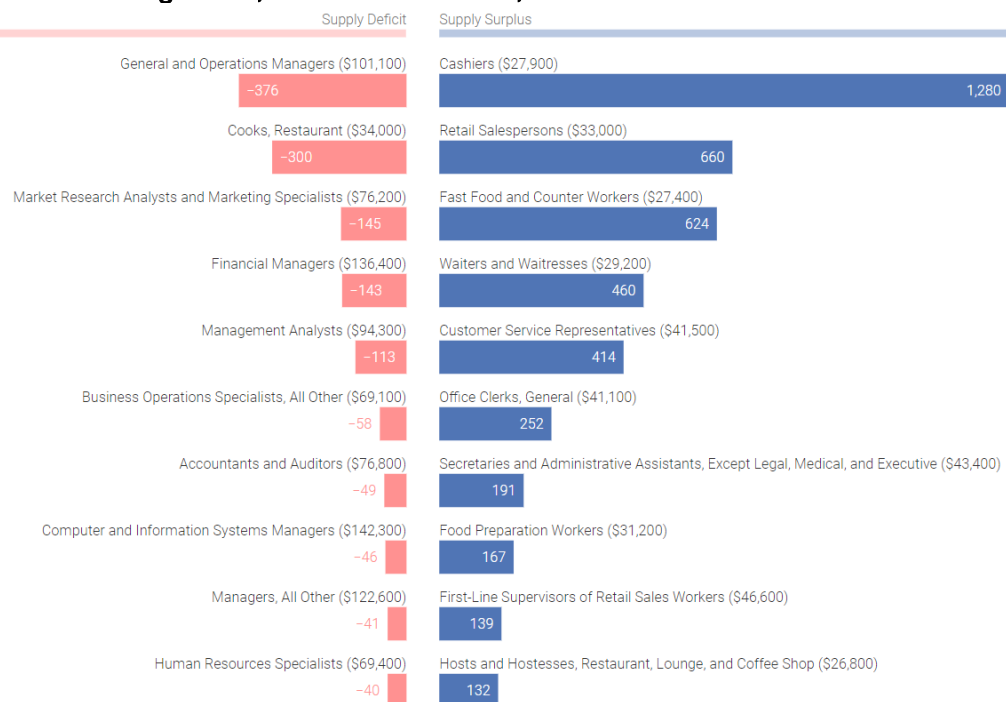
The chart below shows the potential average annual gaps over 10 years. Many variables go into this analysis, but at its core it is based on a forecast comparing occupation demand growth to the local population growth and the projected educational attainment of those residents, then matched to specific related programs offered locally. When an area, for example, has an occupation expected to grow quickly but the educational requirement for the occupation does not match well with the educational attainment of its residents, there is a high potential for an occupation shortfall in the region. Alternatively, slow-growing or contracting occupations often represent potential supply surpluses.

The potential supply shortfall is an underlying force that the market needs to resolve one way or another, such as by employers recruiting from further distances for these occupations, wages going

up to attract more candidates, and/or increased demand and wages enticing more local residents to get training for these occupations. While this an important analysis for determining local occupation needs, the occupation gap should be considered along with other regional data including growth and separation forecasts, unemployment rates, wage trends, and award and skill gap analyses.

In this field, General and Operations Managers, Restaurant Cooks, Market Research Analysts, and Financial Managers are the occupations of highest anticipated shortage. Project Management Specialists, which previously ranked third highest shortage, has dropped out of the top ten list of occupations of shortage making space for the emergence of Cooks in shortage in the Hospitality and Tourism Cluster. These shortages vary by region due to retirements, projected growth, and turnover rates.

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

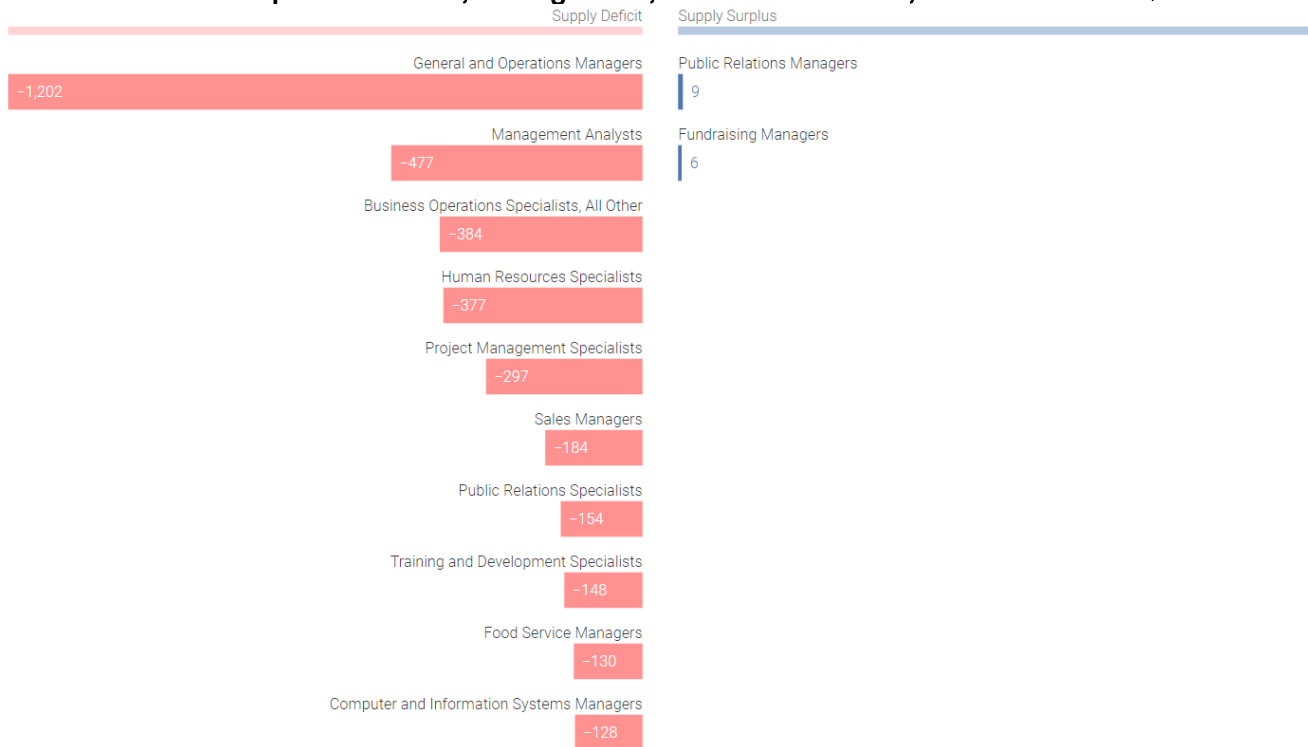


Award Gaps

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

In addition to being the top occupation in talent shortage in Minnesota, local postsecondary programs are underproducing new graduates with degrees aligned to General and Operations Management compared to national benchmarks. This is consistent with observations over the past three years.

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



Promising Pathways

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

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

Gateway Occupations are good jobs that can lead to Target Occupations as skills and experience are developed. These typically offer between \$42,000 up to the regional average wage. Below are a few Gateway Occupations in Health Science Technology locally. Gateway occupations offer a wage uplift to those previously employed in Origin Occupations, and offer longer-term economic mobility and career advancement opportunities. These are most often best-suited for adult workforce programming and first postsecondary experiences.

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

Origin-to-Gateway-to-Target Occupations for Business, Management, and Administration, By Region 2022Q2

	MSP Metro	Northeast	Northwest	Central	Southwest	Southeast
Avg. Wage	Region: \$64,300 Field: \$62,400	Region: \$52,500 Field: \$45,100	Region: \$50,500 Field: \$45,100	Region: \$52,200 Field: \$47,400	Region: \$51,300 Field: \$47,600	Region: \$61,100 Field: \$49,300
Unempl Rate	Region: 2.4% Field: 2.7%	Region: 3.2% Field: 3.9%	Region: 2.8% Field: 3.3%	Region: 2.8% Field: 3.3%	Region: 2.5% Field: 2.9%	Region: 2.2% Field: 2.8%
Origin Occupations	<ul style="list-style-type: none"> Retail Salespersons Cashiers Fast Food & Counter Workers Janitors & Cleaners Stockers & Order Fillers 	<ul style="list-style-type: none"> Cashiers Retail Salespersons Fast Food & Counter Workers Waiters & Waitresses Office Clerks, General 	<ul style="list-style-type: none"> Cashiers Retail Salespersons Fast Food & Counter Workers Office Clerks, General Stockers & Order Fillers 	<ul style="list-style-type: none"> Cashiers Retail Salespersons Fast Food & Counter Workers Office Clerks, General Janitors & Cleaners 	<ul style="list-style-type: none"> Cashiers Retail Salespersons Fast Food & Counter Workers Office Clerks, General Stockers & Order Fillers 	<ul style="list-style-type: none"> Cashiers Retail Salespersons Fast Food & Counter Workers Office Clerks, General Customer Service Reps
Gateway Occupations	<ul style="list-style-type: none"> Customer Service Representatives Office Clerks, General Secretaries & Administrative Assistants Bookkeeping Clerks Supervisors of Retail Workers 	<ul style="list-style-type: none"> Supervisors of Retail Workers Bookkeeping, Accounting, & Auditing Workers Real Estate Sales Agents Billing & Posting Clerks Supervisors of Housekeeping & Janitorial Workers 	<ul style="list-style-type: none"> Supervisors of Retail Workers Bookkeeping, Accounting, & Auditing Clerks Real Estate Agents Billing & Posting Clerks Supervisors of Housekeeping & Janitorial Workers 	<ul style="list-style-type: none"> Supervisors of Retail Workers Bookkeeping, Accounting, & Auditing Clerks Real Estate Sales Agents Supervisors of Housekeeping & Janitorial Workers Loan Interviewers & Clerks 	<ul style="list-style-type: none"> Supervisors of Retail Workers Bookkeeping, Accounting, & Auditing Clerks Billing & Posting Clerks Real Estate Sales Agents Supervisors of Housekeeping & Janitorial Workers 	<ul style="list-style-type: none"> Secretaries & Administrative Assistants Supervisors of Retail Sales Workers Bookkeeping, Clerks Billing & Posting Clerks Executive Secretaries & Executive Administrative Assistants
Target Occupations	<ul style="list-style-type: none"> General & Operations Managers Accountants & Auditors Business Operations Specialists Management Analysts Market Research Analysts 	<ul style="list-style-type: none"> General & Operations Managers Project Mgmt Specialists Management Analysts Market Research Analysts & Marketing Specialists Financial Managers 	<ul style="list-style-type: none"> Business Operations Specialists Project Mgmt Specialists Market Research Analysts Management Analysts Financial Managers 	<ul style="list-style-type: none"> General & Operations Managers Project Mgmt Specialists Market Research Analysts Human Resource Specialists Management Analysts 	<ul style="list-style-type: none"> General & Operations Managers Business Operations Specialists Human Resources Specialists Project Mgmt Specialists Market Research Analysts 	<ul style="list-style-type: none"> General & Operations Managers Human Resource Specialists Market Research Analysts Project Management Specialists Financial Managers

High Location Quotient (LQ) Occupations for Business, Management, and Administration, By Region 2022Q2

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

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

- | | | |
|--|---|---------------------------------------|
| 1) Gambling & Sports Book Writers & Runners (5.56) | 2) Gambling Service Workers, All Other (5.12) | 4) Brokerage Clerks (1.77) |
| | 3) Food Servers, Nonrestaurant (1.88) | 5) Labor Relations Specialists (1.70) |

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

2022Q2 Unemployment: 37,789
(2.9% unemployment rate)
30-Day Job Ads: 81,650
(compared to 182,561 across all occupations)
5-Year Ann Avg Employment Change: -0.8%
Forecast 5-Year Ann Employment Change: 0.4%
Total 5-Year Demand: 833,237

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

Gateway Occupations

Office Clerks, General (HD, AG)
Customer Service Representatives (HD, AG)
Secretaries & Administrative Assistants (HD)
Bookkeeping, Accounting, & Auditing Clerks (HS, HD, AG)
Supervisors of Retail Workers (HD)
Billing & Posting Clerks (HD)

Origin Occupations

Likely

Retail Salespersons (HD)
Cashiers (HD)
Fast Food & Counter Workers (HD)
Janitors & Cleaners (HD)
Stockers & Order Fillers (HD)

Aligned

Library Technicians
Eligibility Interviewers
Childcare Workers

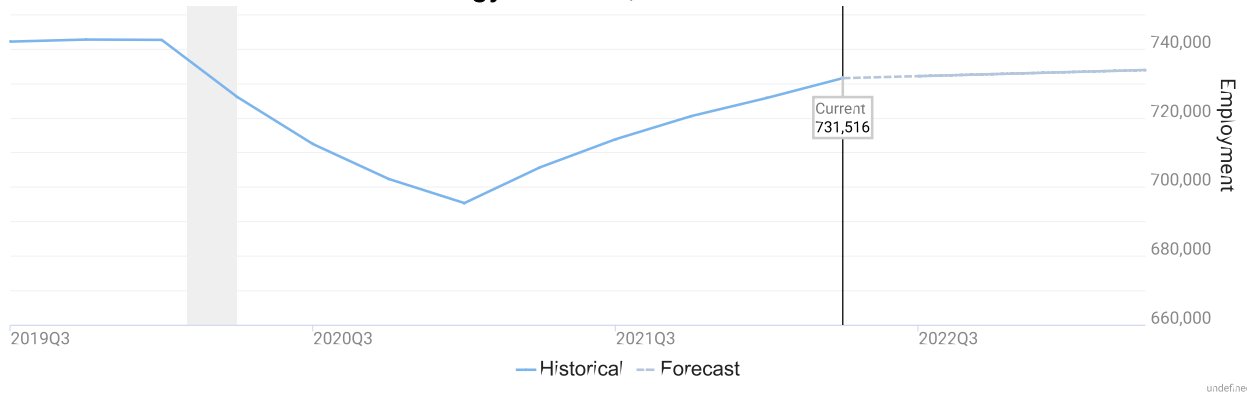
Top Ten Target Occupations in Business, Management, and Administration, Minnesota 2022Q2

SOC	Occupation	2022Q2 Empl	Mean Ann Wages ²	High-Wage	High-Skill	High-Demand	OG	AG
11-1021	General and Operations Managers	64,609	\$104,100	HW	HS	HD	OG	AG
13-2011	Accountants and Auditors	28,873	\$79,900	HW	HS	HD	OG	AG
13-1199	Business Operations Specialists, All Other	22,447	\$72,100	HW	HS	HD	OG	AG
13-1161	Market Research Analysts and Marketing Specialists	20,023	\$81,400	HW	HS	HD	OG	AG
13-1111	Management Analysts	20,006	\$100,100	HW	HS	HD	OG	AG
13-1082	Project Management Specialists	16,657	\$94,800	HW	HS	HD	OG	AG
13-1071	Human Resources Specialists	16,312	\$73,000	HW	HS	HD	OG	AG
11-3031	Financial Managers	15,090	\$142,700	HW	HS	HD	OG	AG
11-3021	Computer and Information Systems Managers	10,188	\$154,800	HW	HS	HD	OG	AG
11-2022	Sales Managers	9,598	\$141,700	HW	HS	HD	OG	AG

ENGINEERING, MANUFACTURING, AND TECHNOLOGY

Engineering, Manufacturing, and Technology is a wide career field with transportation, logistics, STEM, architecture, construction, manufacturing, and machining careers, which all experienced somewhat diverging trends during early days of the COVID-19 pandemic, but have seen notable recovery in the past year. Following average annual employment growth of 0.1% over the past five years, Engineering, Manufacturing, and Technology employment is forecast to grow by 0.3% annually over the coming five years. The 731,516 Engineering, Manufacturing, and Technology careers statewide pay about \$56,000 annually on average up by \$1,300 from the prior year), and are about as concentrated in Minnesota than other states (LQ 0.99). Engineering, Manufacturing, and Technology roles employ about 24.2% of Minnesota’s workforce. As of 2022Q2, there are about 21,029 unemployed Engineering, Manufacturing, and Technology professionals in Minnesota, giving an unemployment rate of 2.9%. Total five-year demand for Engineering, Manufacturing, and Technology talent is 395,526 new professionals needed to meet replacement and growth demand. Most of the growth is attributable to engineering and trades careers in this field.

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



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

6-Digit Occupation	Empl	Avg Mean Wages	LQ	3-Year Empl Change	Annual Demand	Forecast Ann Growth
Laborers and Freight, Stock, and Material Movers, Hand	49,873	\$39,200	0.90	725	6,998	0.7%
Heavy and Tractor-Trailer Truck Drivers	39,792	\$54,800	0.97	233	4,521	0.3%
Maintenance and Repair Workers, General	28,129	\$49,100	0.95	-1,005	2,863	0.7%
Team Assemblers	25,750	\$38,900	1.15	1	2,538	-1.3%
Construction Laborers	23,878	\$50,100	0.92	1,098	2,539	0.6%
Carpenters	20,113	\$57,500	1.12	-152	1,853	0.1%
Light Truck Drivers	19,789	\$46,000	0.92	-45	2,364	0.8%
Landscaping and Groundskeeping Workers	19,561	\$38,300	0.87	367	2,743	0.8%
First-Line Supervisors of Production and Operating Workers	13,714	\$68,700	1.08	-261	1,332	0.0%
Automotive Service Technicians and Mechanics	13,616	\$51,700	0.97	-962	1,304	-0.2%
Remaining Component Occupations	477,304	\$60,300	0.98	-9,293	49,725	0.3%
Engineering, Manufacturing, & Technology (CTE Field)	731,516	\$56,000	0.99	-9,293	78,774	0.3%

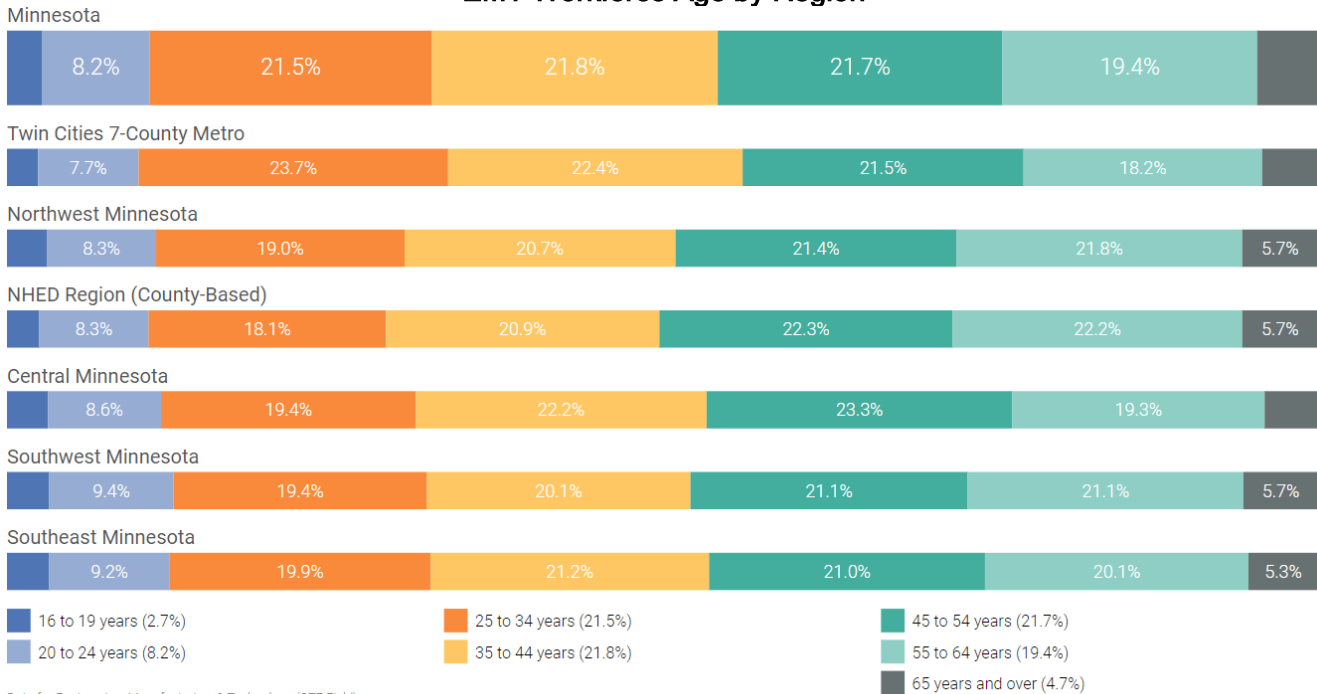
“Annual Demand” is the projected need for new entrants into an occupation. New entrants are needed due to expected growth and to replace workers who left the occupation due to factors such as retirement or switching careers.

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

Career Field Demographics

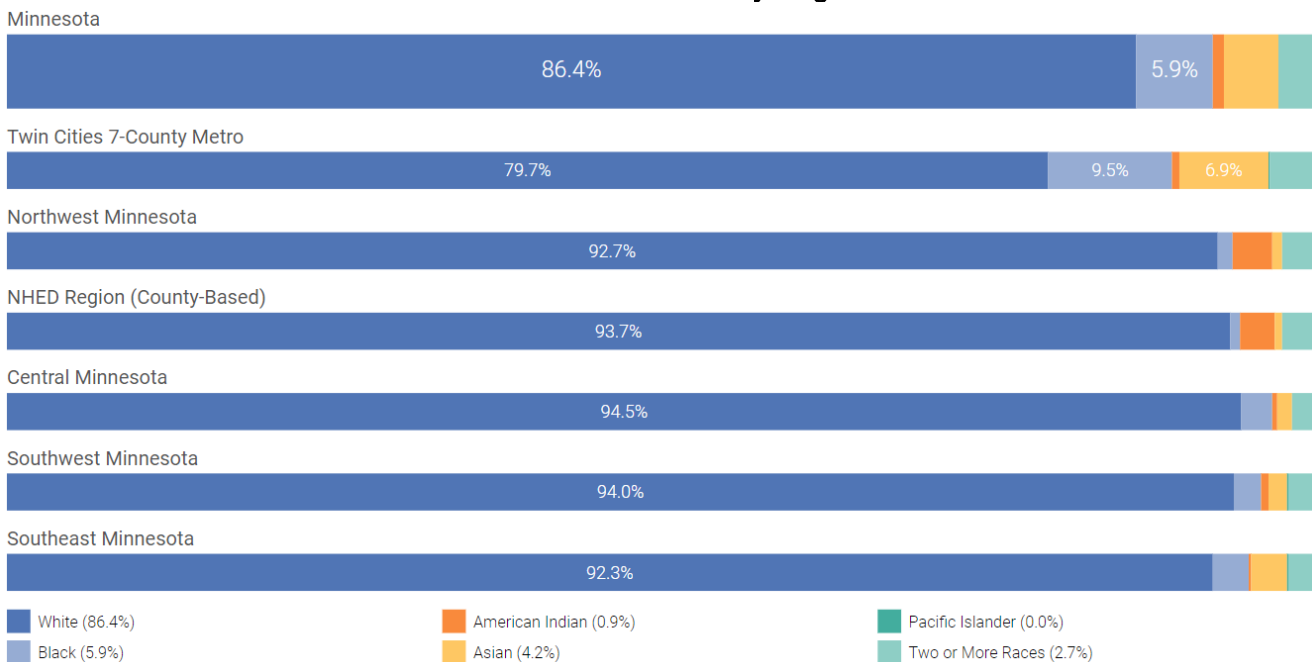
Engineering, Manufacturing, and Technology field is heavily male (82.1%) and White (86.4%). Female representation increased by 0.1 percentage points, and the share of talent that is BIPOC by race increased by 0.9 percentage points from the prior years' estimates, almost exclusively due to more talent identifying with two or more races entering the field's workforce. The share of talent that is Hispanic or Latinx increased by 0.2 percentage points, with the Southeast region seeing an increase of 0.8 percentage points. Over 23.6% of the workforce is over 55 years old—signaling potential exacerbation of the talent shortage due to impending retirements.

EMT Workforce Age by Region

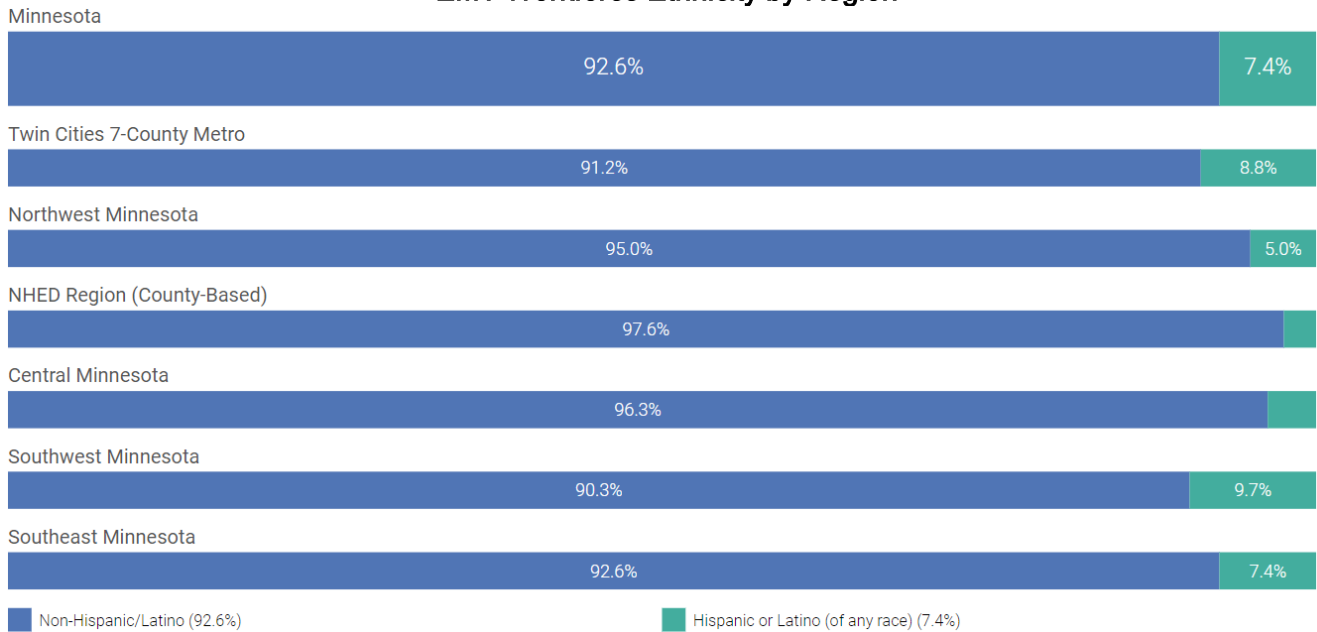


Data for Engineering, Manufacturing, & Technology (OTE Field)
Source: JobsEQ®, Data as of 2022Q2.

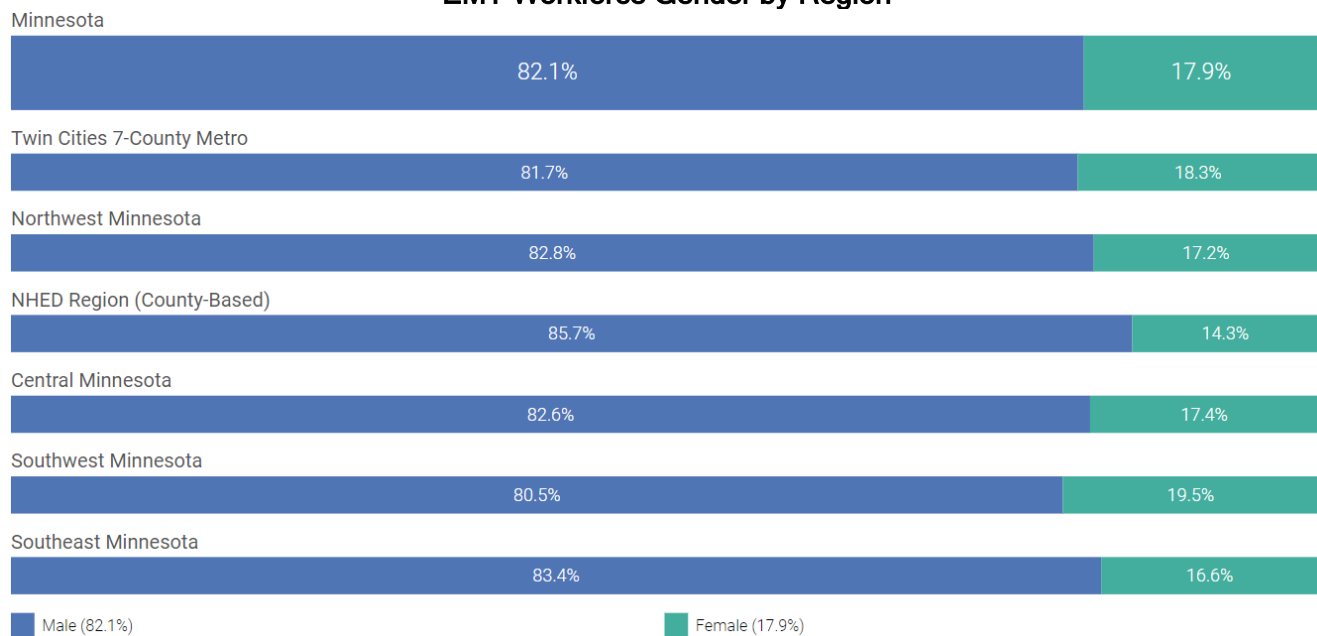
EMT Workforce Race by Region



EMT Workforce Ethnicity by Region



EMT Workforce Gender by Region



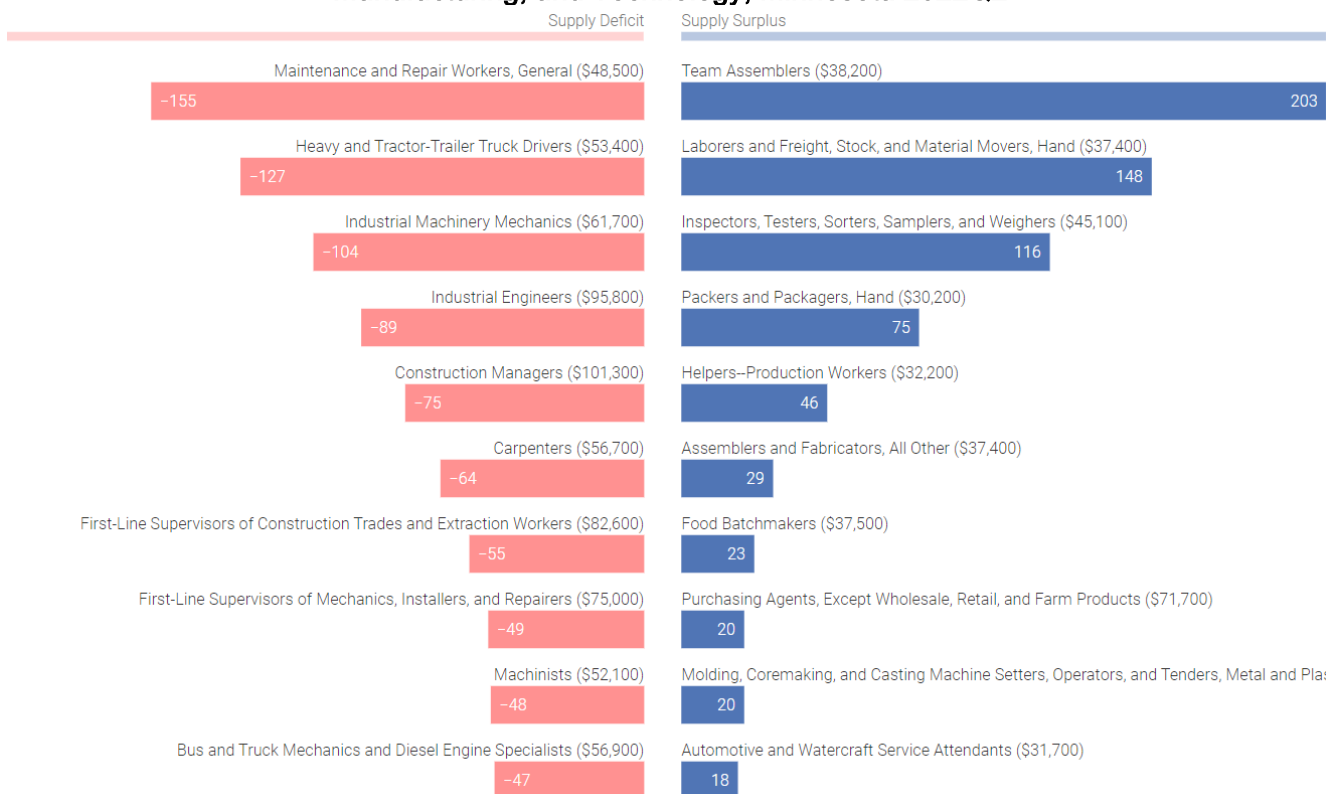
Occupation Gaps

The chart below shows the potential average annual gaps over 10 years. Many variables go into this analysis, but at its core it is based on a forecast comparing occupation demand growth to the local population growth and the projected educational attainment of those residents, then matched to specific related programs offered locally. When an area, for example, has an occupation expected to grow quickly but the educational requirement for the occupation does not match well with the educational attainment of its residents, there is a high potential for an occupation shortfall in the region. Alternatively, slow-growing or contracting occupations often represent potential supply surpluses.

The potential supply shortfall is an underlying force that the market needs to resolve one way or another, such as by employers recruiting from further distances for these occupations, wages going up to attract more candidates, and/or increased demand and wages enticing more local residents to get training for these occupations. While this an important analysis for determining local occupation needs, the occupation gap should be considered along with other regional data including growth and separation forecasts, unemployment rates, wage trends, and award and skill gap analyses.

In Engineering, Manufacturing, and Technology, Maintenance and Repair Workers continues to be the occupation of highest shortage. Heavy and Tractor-Trailer Truck Drivers rose from 6th highest shortage to second in the most recent estimates, with all other top forecast talent shortages remaining in-line with what was observed in the prior year. The top critical shortages in this field are due in large part to forecasted replacement demand needs and retirements in the field.

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

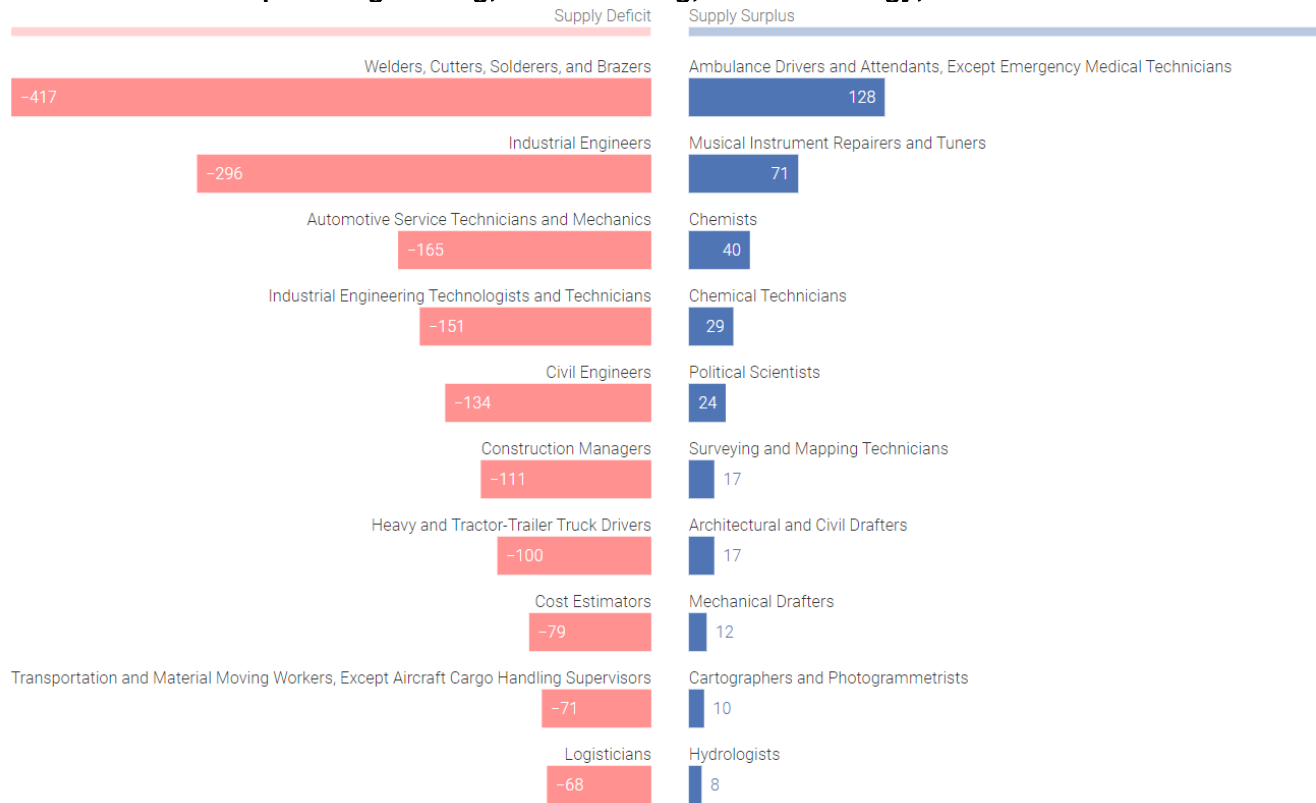


Award Gaps

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

The shortage of welding graduates worsened by about 50 graduates to a total annual shortfall of 417 graduates of welding programs compared to national benchmarks. Industrial Engineering graduate pipelines also worsened by about 50 graduates along with Industrial Engineering Technicians by about 30, while other gaps lessened for Automotive Service Technicians, Construction Managers, and others.

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



Promising Pathways

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

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

Gateway Occupations are good jobs that can lead to Target Occupations as skills and experience are developed. These typically offer between \$42,000 up to the regional average wage. Below are a few Gateway Occupations in Health Science Technology locally. Gateway occupations offer a wage uplift to those previously employed in Origin Occupations, and offer longer-term economic mobility and career advancement opportunities. These are most often best-suited for adult workforce programming and first postsecondary experiences.

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

Origin-to-Gateway-to-Target Occupations for Engineering, Manufacturing, and Technology, By Region 2022Q2

	MSP Metro	Northeast	Northwest	Central	Southwest	Southeast
Avg. Wage	Region: \$64,300 Field: \$60,200	Region: \$52,500 Field: \$55,900	Region: \$50,500 Field: \$48,800	Region: \$52,200 Field: \$51,200	Region: \$51,300 Field: \$48,500	Region: \$61,100 Field: \$51,500
Unempl Rate	Region: 2.4% Field: 2.8%	Region: 3.2% Field: 3.5%	Region: 2.8% Field: 3.0%	Region: 2.8% Field: 2.9%	Region: 2.5% Field: 2.7%	Region: 2.2% Field: 2.5%
Origin Occupations	<ul style="list-style-type: none"> Laborers & Stock Movers Team Assemblers Landscaping & Groundskeeping Workers Packers & Packagers Packaging & Filling Machine Operators 	<ul style="list-style-type: none"> Laborers & Stock Movers Landscaping & Groundskeeping Workers Team Assemblers School Bus Drivers Cleaners of Vehicles & Equipment 	<ul style="list-style-type: none"> Laborers & Stock Movers Team Assemblers Landscaping & Groundskeeping Workers Slaughterers & Meat Packers Packaging & Filling Machine Operators 	<ul style="list-style-type: none"> Laborers & Stock Movers Team Assemblers Landscaping & Groundskeeping Workers School Bus Drivers Packaging & Filling Machine Operators & Tenders 	<ul style="list-style-type: none"> Laborers & Stock Movers Slaughterers & Meat Packers Team Assemblers Packaging & Filling Machine Operators Landscaping & Groundskeeping Workers 	<ul style="list-style-type: none"> Laborers & Stock Movers Slaughterers & Meat Packers Team Assemblers Landscaping & Groundskeeping Workers School Bus Drivers
Gateway Occupations	<ul style="list-style-type: none"> Heavy & Tractor Trailer Drivers Maintenance & Repair Workers, General Light Truck Drivers Construction Laborers Carpenters 	<ul style="list-style-type: none"> Maintenance & Repair Workers, General Construction Laborers Carpenters Light Truck Drivers Highway Maintenance Workers 	<ul style="list-style-type: none"> Construction Laborers Maintenance & Repair Workers, General Carpenters Light Truck Drivers Welders, Cutters, Solderers, & Brazers 	<ul style="list-style-type: none"> Construction Laborers Maintenance & Repair Workers, All Other Light Truck Drivers Automotive Service Techs Welders, Cutters, Solderers, & Brazers 	<ul style="list-style-type: none"> Heavy & Tractor Trailer Drivers Maintenance & Repair Workers, All Other Construction Laborers Carpenters Light Truck Drivers 	<ul style="list-style-type: none"> Heavy & Tractor Trailer Drivers Maintenance & Repair Workers, General Construction Laborers Carpenters Automotive Service Techs
Target Occupations	<ul style="list-style-type: none"> Industrial Engineers Purchasing Agents Construction Managers Mechanical Engineers Architectural & Engineering Managers 	<ul style="list-style-type: none"> Heavy & Tractor Trailer Truck Drivers Construction Managers Industrial Engineers Chemical Technicians Logisticians 	<ul style="list-style-type: none"> Construction Managers Industrial Engineers Civil Engineers Logisticians CNC Tool Programmers 	<ul style="list-style-type: none"> Heavy & Tractor Trailer Truck Drivers Construction Managers Industrial Engineers HVAC Mechanics Mechanical Engineers 	<ul style="list-style-type: none"> Industrial Engineers Construction Managers Mechanical Engineers Civil Engineers Logisticians 	<ul style="list-style-type: none"> Logisticians Chemists Aircraft Mechanics CNC Programmers Conservation Scientists

High Location Quotient (LQ) Occupations for Engineering, Manufacturing, and Technology, By Region 2022Q2

	MSP Metro	Northeast	Northwest	Central	Southwest	Southeast
LQ > 1.20	<ul style="list-style-type: none"> Timing Device Assemblers & Adjusters Photographic Process Workers & Processing Machine Operators Industrial Engineering Techs Airline Pilots, Copilots, & Flight Engineers Hydrologists 	<ul style="list-style-type: none"> Underground Mining Machine Operators, All Other Loading & Moving Machine Operators, Underground Mining Mining & Geological Engineers, Including Mining Safety Engineers Other Extraction Workers Mining Machine Operators 	<ul style="list-style-type: none"> Slaughterers & Meat Packers Woodworking Machine Setters & Operators Food & Tobacco Machine Operators Fiberglass Laminators & Fabricators Food Cooking Machine Operators 	<ul style="list-style-type: none"> Nuclear Power Reactor Operators Nuclear Technicians Slaughterers & Meat Packers Nuclear Engineers Motorcycle Mechanics 	<ul style="list-style-type: none"> Shoe Machine Operators Slaughterers & Meat Packers Food & Tobacco Machine Operators & Tenders Cooling & Freezing Equipment Operators Food Cooking Machine Operators & Tenders Shoe & Leather Workers & Repairers 	<ul style="list-style-type: none"> Slaughterers & Meat Packers Ambulance Drivers & Attendants Cooling & Freezing Equipment Operators Meat, Poultry, & Fish Cutters Food & Tobacco Machine Operators & Tenders

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

- | | |
|---|---|
| 1) Slaughterers & Meat Packers (4.16) | 4) Industrial Engineering Technologists & Technicians (2.56) |
| 2) Underground Mining Machine Operators, All Other (3.45) | 5) Photographic Process Workers and Processing Machine Operators (2.45) |
| 3) Shoe Machine Operators & Tenders (3.12) | |

Origin-to-Gateway-to-Target Occupations for Engineering, Manufacturing, and Technology, Statewide 2022Q2

2022Q2 Unemployment: 21,029
(2.9% unemployment rate)
30-Day Job Ads: 32,895
(compared to 182,561 across all occupations)
5-Year Ann Avg Employment Change: 0.1%
Forecast 5-Year Ann Employment Change: 0.3%
Total 5-Year Demand: 395,526

Target Occupations(all HW, HD, HS, OG)
Industrial Engineers (AG)
Construction Managers (AG)
Mechanical Engineers (AG)
Electrical Engineers (AG)
Architectural & Engineering Managers
Airline Pilots, Copilots, & Flight Engineers (AG)

Gateway Occupations
Heavy and Tractor Trailer Drivers (HS, HD, OG, AG)
Maintenance and Repair Workers, General (HD, OG)
Construction Laborers
Carpenters (OG)
Light Truck Drivers (HD, AG)
Automotive Service Technicians (HS, HD, OG, AG)

Origin Occupations	Likely	Aligned
	Laborers & Freight, Stock Movers (HD)	Parking Lot Attendants
	Team Assemblers	Retail Sales Workers
	Landscaping & Groundskeeping Workers (HD, AG)	Stockers and Order Fillers
	School Bus Drivers (HD, AG)	Janitors and Cleaners
	Packers & Packagers, Hand	Personal Services Managers

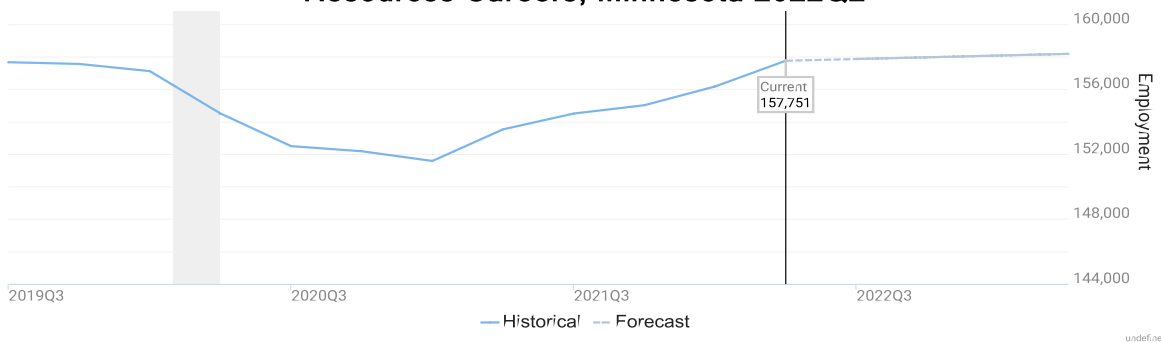
Top Ten Target Occupations in Engineering, Manufacturing, and Technology, Minnesota 2022Q2

SOC	Occupation	2022Q2 Empl	Mean Ann Wages ²	High-Wage	High-Skill	High-Demand	OG	AG
17-2112	Industrial Engineers	12,203	\$97,700	HW	HS	HD	OG	AG
11-9021	Construction Managers	7,706	\$104,200	HW	HS	HD	OG	AG
17-2141	Mechanical Engineers	6,256	\$88,200	HW	HS	HD	OG	AG
17-2071	Electrical Engineers	4,179	\$101,900	HW	HS	HD	OG	AG
11-9041	Architectural and Engineering Managers	4,132	\$157,200	HW	HS	HD	OG	
53-2011	Airline Pilots, Copilots, and Flight Engineers	2,943	\$125,900	HW	HS	HD	OG	AG
13-1081	Logisticians	2,914	\$84,900	HW	HS	HD	OG	AG
49-3011	Aircraft Mechanics and Service Technicians	1,985	\$78,100	HW	HS	HD	OG	AG
15-2051	Data Scientists	1,675	\$106,100	HW	HS	HD	OG	
19-2041	Environmental Scientists and Specialists, Including Health	1,516	\$82,400	HW	HS	HD	OG	AG

AGRICULTURE, FOOD, AND NATURAL RESOURCES

There are eight career pathways within Agriculture, Food, and Natural Resources: 1) Food Products and Processing Systems, 2) Plant Systems, 3) Animal Systems, 4) Natural Resources Systems, 5) Agribusiness Systems, 6) Environmental Services Systems, 7) Power, Structural and Technical Systems, and 8) Biotechnology Systems. Following average annual employment decline of -0.2% over the past five years, Agriculture, Food, and Natural Resources employment is forecast to grow by 0.2% annually over the coming five years. The 157,751 Agriculture, Food, and Natural Resources careers statewide pay about \$58,200 annually on average, and are about as concentrated in Minnesota as in other states (LQ 0.98). About 5.2% of Minnesota’s workforce works in Agriculture, Food, and Natural Resources occupations (note that other support roles, such as finance, management, and other particularly specialized roles are not fully counted in these estimates). As of 2022Q2, there are about 3,687 unemployed Agriculture, Food, and Natural Resources professionals in Minnesota, giving an unemployment rate of 2.3%. Total five-year demand for Agriculture, Food, and Natural Resources talent is 92,362 new professionals needed to meet replacement and growth demand. Most of the growth is attributable to trades careers, Power, Structural, and Technical Systems, and Biotechnology Systems.

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



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

6-Digit Occupation	Empl	Avg Mean Wages	LQ	3-Year Empl Change	Annual Demand	Forecast Ann Growth
Farmers, Ranchers, and Other Agricultural Managers	25,181	\$80,700	1.68	-674	2,179	-0.8%
Landscaping and Groundskeeping Workers	19,561	\$38,300	0.87	367	2,743	0.8%
Plumbers, Pipefitters, and Steamfitters	8,671	\$78,000	0.94	397	909	0.3%
Farmworkers and Laborers, Crop, Nursery, and Greenhouse	7,203	\$35,900	0.62	558	1,157	0.3%
Farmworkers, Farm, Ranch, and Aquacultural Animals	6,348	\$32,200	2.02	-96	872	-1.2%
Animal Caretakers	5,666	\$31,500	0.88	299	1,087	2.9%
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	5,653	\$64,200	0.73	594	553	0.3%
Food Batchmakers	4,592	\$36,900	1.44	202	563	0.1%
Bakers	3,268	\$35,200	0.81	-10	462	0.7%
First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	3,232	\$55,000	0.83	81	351	0.4%
Remaining Component Occupations	68,374	\$62,200	1.01	-1,532	7,507	0.3%
Agriculture, Food, and Natural Resources Field	157,751	\$58,200	0.98	182	18,385	0.2%

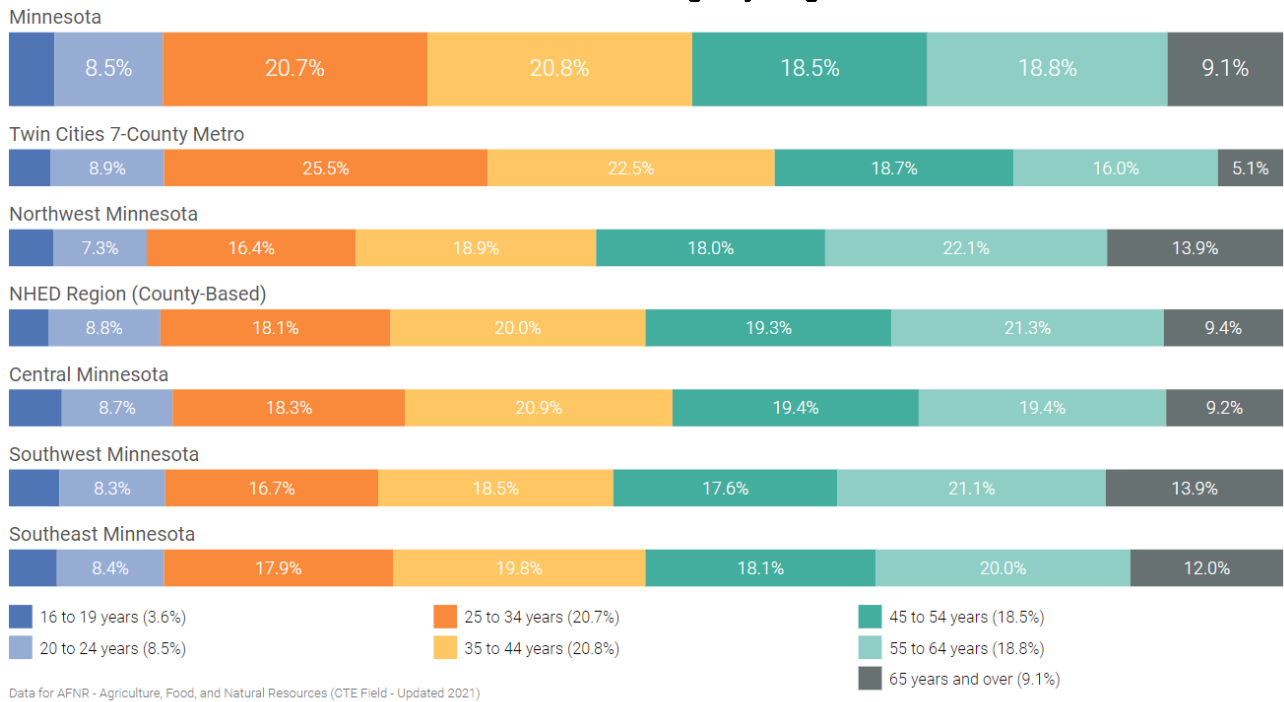
“Annual Demand” is the projected need for new entrants into an occupation. New entrants are needed due to expected growth and to replace workers who left the occupation due to factors such as retirement or switching careers.

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

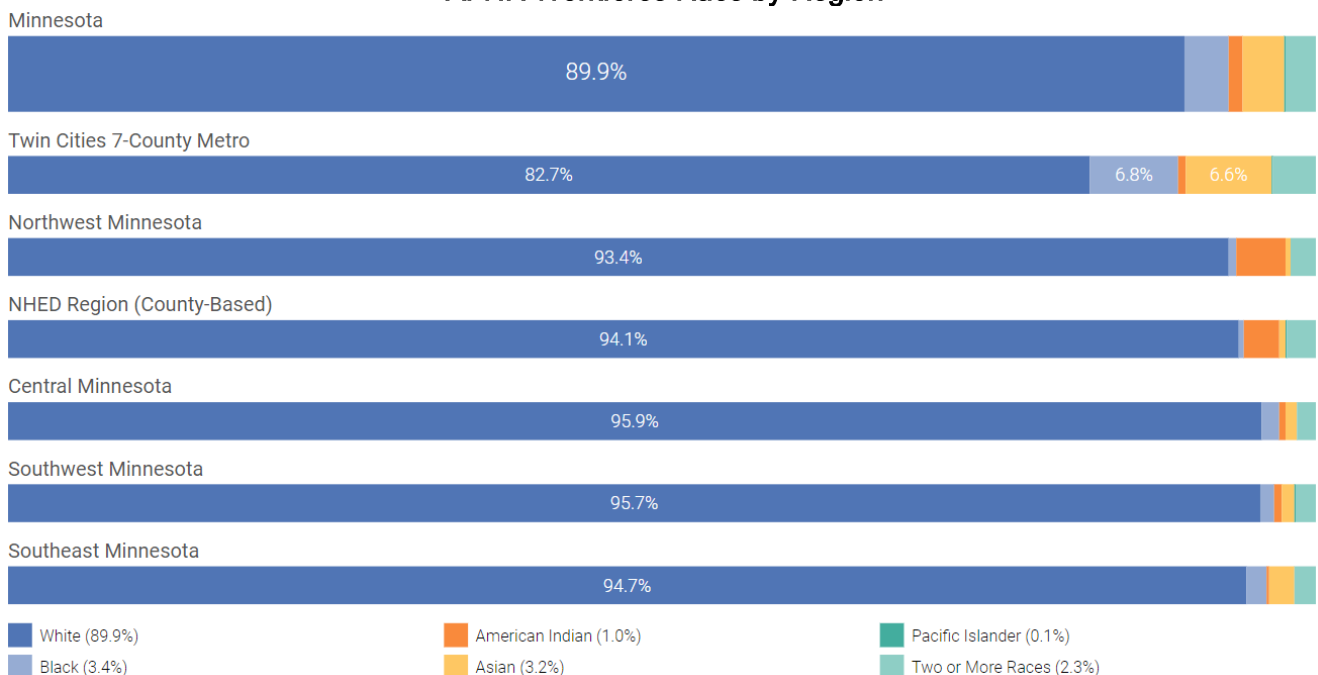
Career Field Demographics

The Agriculture, Food, and Natural Resources field is predominantly male (73.2%) and White (89.9%), but with variation by career pathway. The share of talent that is BIPOC increased by 0.9 percentage points from the prior years' estimates. About 7.9% of the workforce is Hispanic or Latinx, up by half of a percentage point from the prior year. Female talent in the field increased by 1.3 percentage points between the two most recent estimates. The share of workers 65 years of age and older increased by 0.3 percentage points from the prior years' estimates, and key career pathways in Animal Systems and Food Products and Processing Systems in particular have a rapidly aging workforce with an insufficient pipeline of new talent entering. Overall, 27.9% of the field's workforce is 55 or older.

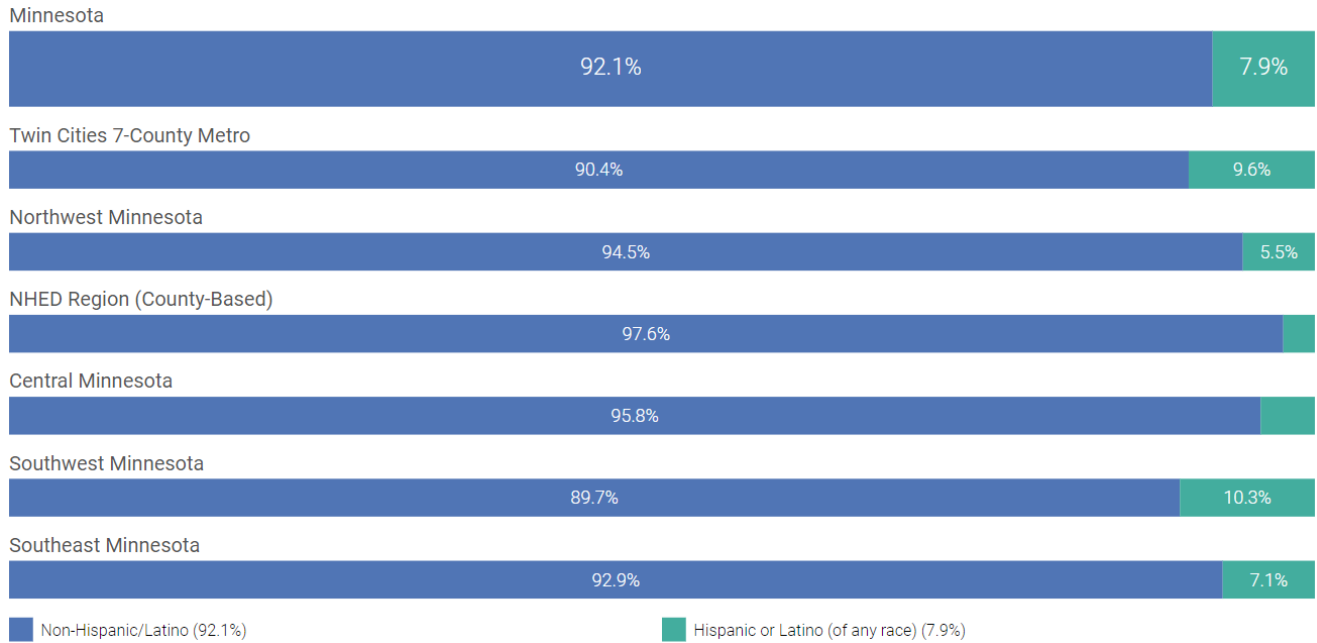
AFNR Workforce Age by Region



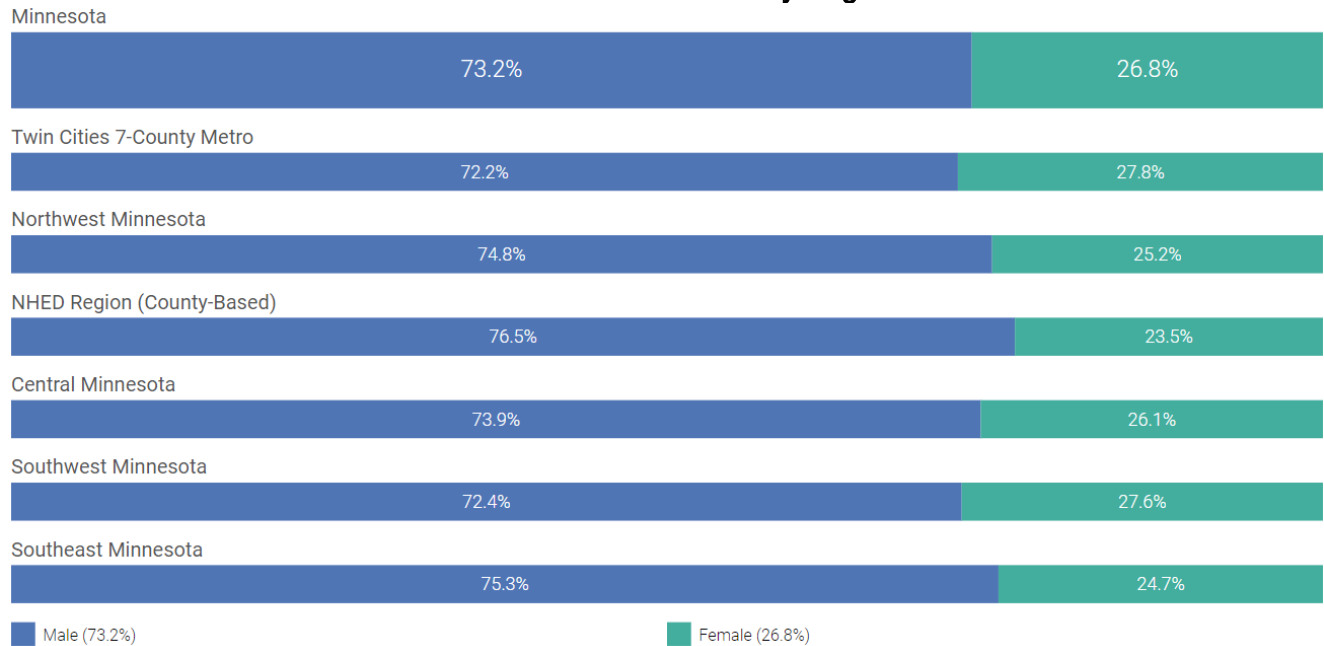
AFNR Workforce Race by Region



AFNR Workforce Ethnicity by Region



AFNR Workforce Gender by Region



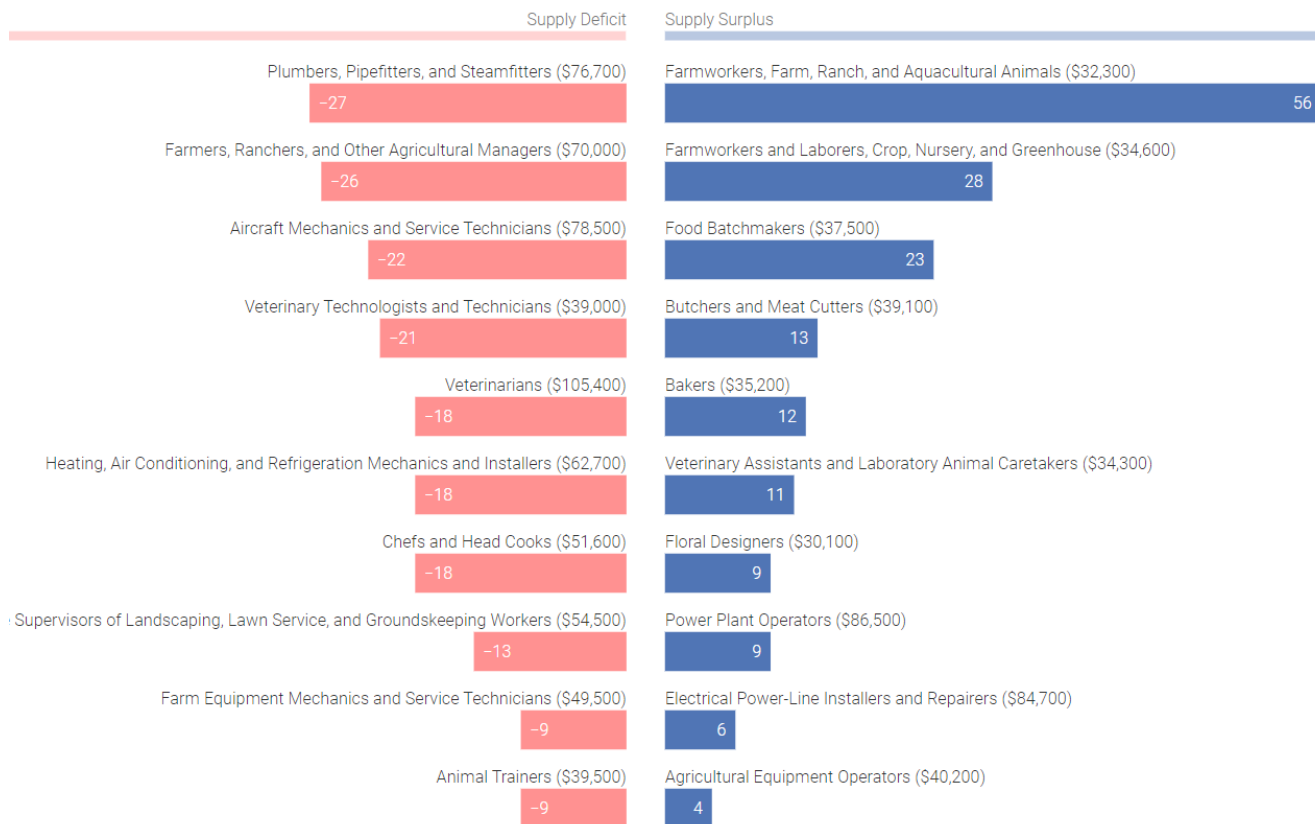
Occupation Gaps

The chart below shows the potential average annual gaps over 10 years. Many variables go into this analysis, but at its core it is based on a forecast comparing occupation demand growth to the local population growth and the projected educational attainment of those residents, then matched to specific related programs offered locally. When an area, for example, has an occupation expected to grow quickly but the educational requirement for the occupation does not match well with the educational attainment of its residents, there is a high potential for an occupation shortfall in the region. Alternatively, slow-growing or contracting occupations often represent potential supply surpluses.

The potential supply shortfall is an underlying force that the market needs to resolve one way or another, such as by employers recruiting from further distances for these occupations, wages going up to attract more candidates, and/or increased demand and wages enticing more local residents to get training for these occupations. While this an important analysis for determining local occupation needs, the occupation gap should be considered along with other regional data including growth and separation forecasts, unemployment rates, wage trends, and award and skill gap analyses.

Several trade careers rank with the highest statewide talent shortages possible over the next ten years, consistent with analysis in prior years. Farmers, Ranchers, and Agricultural Managers leapt into second place among occupations of highest shortage, followed by Aircraft Mechanics. Veterinarians and Veterinary Technologists continue to see troubling forecasted shortages, particularly for large animal medicine.

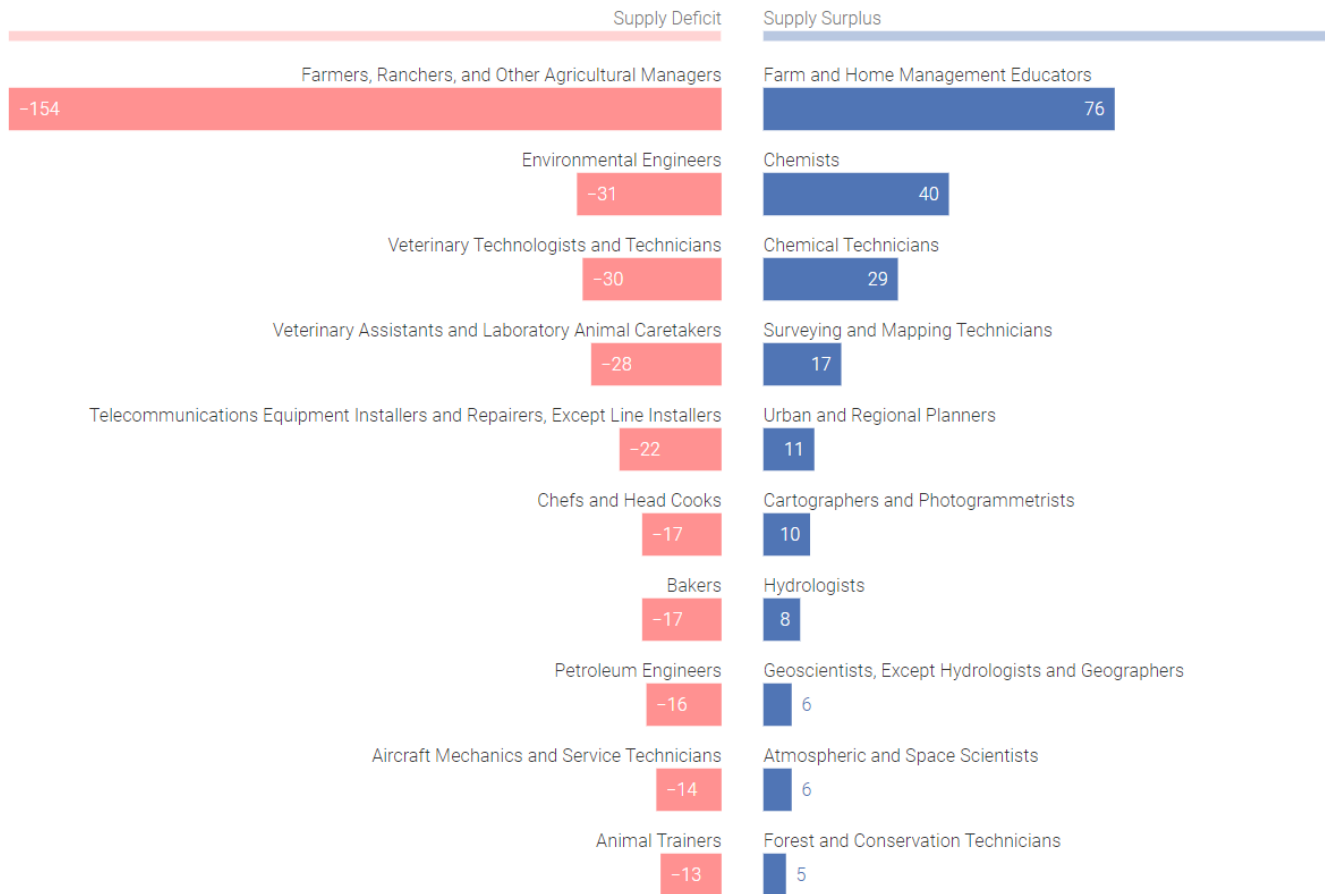
Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Agriculture, Food, and Natural Resources, Minnesota 2022Q2



Award Gaps

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

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



Promising Pathways

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

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

Gateway Occupations are good jobs that can lead to Target Occupations as skills and experience are developed. These typically offer between \$42,000 up to the regional average wage. Below are a few Gateway Occupations in Health Science Technology locally. Gateway occupations offer a wage uplift to those previously employed in Origin Occupations, and offer longer-term economic mobility and career advancement opportunities. These are most often best-suited for adult workforce programming and first postsecondary experiences.

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

Origin-to-Gateway-to-Target Occupations for Agriculture, Food, and Natural Resources, By Region 2022Q2

	MSP Metro	Northeast	Northwest	Central	Southwest	Southeast
Avg. Wage	Region: \$64,300 Field: \$61,700	Region: \$52,500 Field: \$55,200	Region: \$50,500 Field: \$51,400	Region: \$52,200 Field: \$54,000	Region: \$51,300 Field: \$52,000	Region: \$61,100 Field: \$55,600
Unempl Rate	Region: 2.4% Field: 2.4%	Region: 3.2% Field: 2.9%	Region: 2.8% Field: 2.4%	Region: 2.8% Field: 2.3%	Region: 2.5% Field: 2.1%	Region: 2.2% Field: 1.9%
Origin Occupations	<ul style="list-style-type: none"> Landscaping & Groundskeeping Workers Animal Caretakers Bakers Farmworkers & Laborers, Crop, Nursery, & Greenhouse Veterinary Technicians 	<ul style="list-style-type: none"> Landscaping & Groundskeeping Workers Animal Caretakers Veterinary Technicians Bakers Farmworkers & Laborers, Crop, Nursery, & Greenhouse 	<ul style="list-style-type: none"> Farmworkers & Laborers Landscaping & Groundskeeping Workers Food Batchmakers Farmworkers, Farm, Ranch & Aquacultural Animals Meat, Poultry, & Fish Cutters 	<ul style="list-style-type: none"> Landscaping & Groundskeeping Workers Farmworkers, Farm, Ranch, & Aquacultural Animals Farmworkers & Laborers Animal Caretakers Food Batchmakers 	<ul style="list-style-type: none"> Farmworkers, Farm, Ranch, & Aquacultural Animals Landscaping & Groundskeeping Workers Farmworkers & Laborers Food Batchmakers Meat, Poultry, & Fish Cutters 	<ul style="list-style-type: none"> Landscaping & Groundskeeping Workers Farmworkers, Farm, Ranch, & Aquacultural Animals Meat, Poultry, & Fish Cutters Farmworkers & Laborers Animal Caretakers
Gateway Occupations	<ul style="list-style-type: none"> Supervisors of Groundskeeping Workers Telecommunications Equipment Installers Chefs & Head Cooks Refuse & Recyclable Material Collectors Chemical Technicians 	<ul style="list-style-type: none"> Refuse & Recyclable Material Collectors Logging Equipment Operators Chefs & Head Cooks Tree Trimmers & Pruners Forest & Conservation Technicians 	<ul style="list-style-type: none"> Farm Equipment Mechanics Supervisors of Farming, Fishing, & Forestry Workers Refuse & Recyclable Material Collectors Tree Trimmers & Pruners Logging Equipment Operators 	<ul style="list-style-type: none"> Supervisors of Landscaping & Lawn Service Workers Refuse & Recyclable Material Collectors Farm Equipment Mechanics Chefs & Head Cooks Tree Trimmers & Pruners 	<ul style="list-style-type: none"> Farm Equipment Mechanics & Service Technicians Food & Tobacco Machine Operators & Tenders Chefs & Head Cooks Telecommunications Line Installers Food Science Technicians 	<ul style="list-style-type: none"> HVAC Mechanics Food Batchmakers Telecommunications Equipment Installers Supervisors of Landscaping Workers Chefs & Head Cooks
Target Occupations	<ul style="list-style-type: none"> Aircraft Mechanics & Service Technicians Environmental Scientists Veterinarians Life, Physical, & Social Science Technicians Biological Science Teachers, Postsecondary 	<ul style="list-style-type: none"> Chemical Technicians Veterinarians Biological Science Teachers, Postsecondary Life, Physical, & Social Science Technicians Biochemists & Biophysicists 	<ul style="list-style-type: none"> Veterinarians Urban & Regional Planners Food Scientists & Technologists Biological Science Teachers, Postsecondary Aircraft Mechanics & Service Technicians 	<ul style="list-style-type: none"> HVAC Mechanics Veterinarians Telecommunications Equipment Installers & Repairers Conservation Scientists Food Scientists 	<ul style="list-style-type: none"> Veterinarians Food Scientists & Technicians Chemists Biological Science Teachers, Postsecondary Wind Turbine Service Technicians 	<ul style="list-style-type: none"> Veterinarians Chemists Aircraft Mechanics Food Scientists & Technologists Biological Science Teachers, Postsecondary

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

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

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

- | | |
|---|---|
| 1) Animal Scientists (3.44) | 4) Stationary Engineers & Boiler Operators (2.24) |
| 2) Food Scientists & Technologists (2.29) | 5) Food & Tobacco Roasting, Baking, & Drying Machine Operators (2.23) |
| 3) Hydrologists (2.27) | |

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

2022Q2 Unemployment: 3,687
(2.3% unemployment rate)
30-Day Job Ads: 30,561
(compared to 182,561 across all occupations)
5-Year Ann Avg Employment Change: -0.2%
Forecast 5-Year Ann Employment Change: 0.2%
Total 5-Year Demand: 92,362

Target Occupations(all HW, HD, HS)
Aircraft Mechanics & Service Technicians (OG, AG)
Veterinarians (OG)
Environmental Scientists & Specialists (OG, AG)
Biological Sciences Teachers, Postsecondary (OG)
Food Scientists & Technologists (AG)

Gateway Occupations

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

Origin Occupations

Likely

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

Top Ten Target Occupations in Agriculture, Food, and Natural Resources, Minnesota 2022Q2

SOC	Occupation	2022Q2 Empl	Mean Ann Wages ²	High-Wage	High-Skill	High-Demand	OG	AG
49-3011	Aircraft Mechanics and Service Technicians	1,985	\$78,100	HW	HS	HD	OG	AG
29-1131	Veterinarians	1,738	\$107,100	HW	HS	HD	OG	
19-2041	Environmental Scientists and Specialists, Including Health	1,516	\$82,400	HW	HS	HD	OG	AG
25-1042	Biological Science Teachers, Postsecondary	867	\$94,900	HW	HS	HD	OG	
19-1012	Food Scientists and Technologists	668	\$96,200	HW	HS	HD		AG
19-1013	Soil and Plant Scientists	450	\$61,300	HW	HS	HD	OG	AG
17-2171	Petroleum Engineers	313	\$145,800	HW	HS	HD	OG	AG
49-9081	Wind Turbine Service Technicians	256	\$67,900	HW	HS	HD	OG	AG
19-1011	Animal Scientists	246	\$67,500	HW	HS	HD		AG
53-5021	Captains, Mates, and Pilots of Water Vessels	170	\$83,600	HW	HS	HD	OG	AG

Conclusion

Some noticeable shifts have occurred in the talent landscape, with employers continuing to recruit heavily over the past twelve months. Some new occupations of need have emerged, signaling some rebounding of the Hospitality and Tourism industry, and reflecting the tight labor market across all levels of experience and education requirements, and through each industry sector. What continues to be true is that the most in-demand occupations of the future typically require a two-year degree or higher, offer high average wages, and will likely experience talent shortages within the next three years and beyond due to low qualified talent pool located within the region.

As the talent pool has tightened, Minnesota employers are struggling to find talent for Origin, Gateway, and Target roles across the spectrum, but with Gateway occupations posing the greatest opportunities for skills-based hiring innovations and workforce system strategies. Overall, digital skills, human skills, and business enablers will be the foundational skills of the future both in Minnesota and nationwide. Remote work opportunities are proving to be a more permanent change to the landscape of work in Minnesota.