

Northwest Minnesota

CAREER & TECHNICAL EDUCATION

Workforce Trends & Careers of Tomorrow

RealTime Talent

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December 7, 2022



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

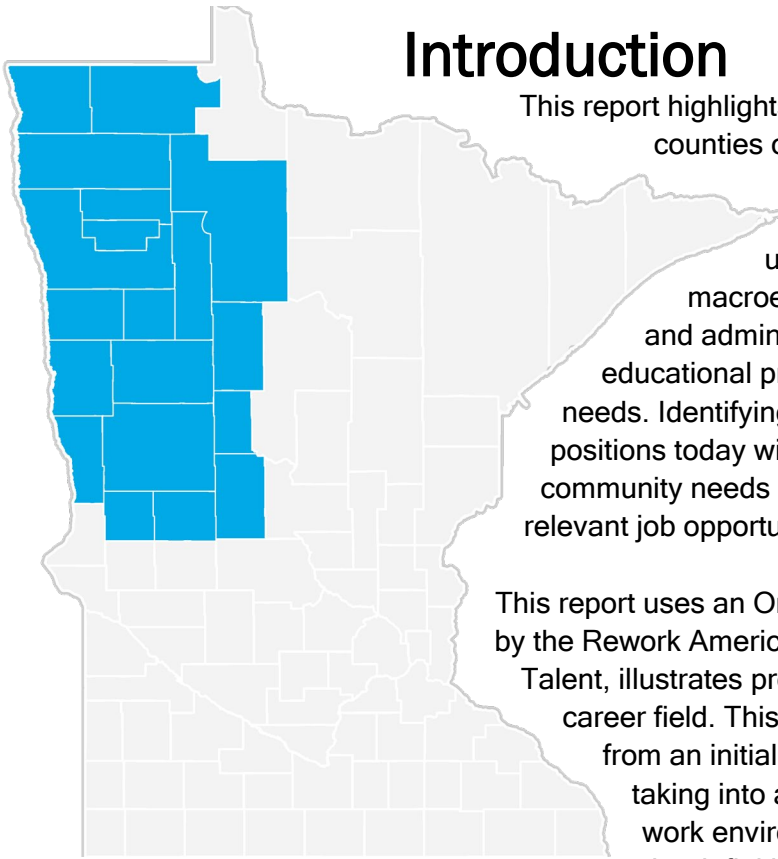
This report was developed by RealTime Talent for the Career and Technical Education Consortia of Minnesota with funding provided by Minnesota State. The contents of this publication were made possible through the Strengthening Career and Technical Education for the 21st Century Act (Perkins V) Federal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

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Northwest Minnesota

Introduction



This report highlights the current and future talent needs in the ten counties of Northwest Minnesota.³ Starting from the community demographics, unique opportunities, and the critical occupations and industries underpinning the regional economy, this macroeconomic overview is intended to support educators and administrators who aim to increase alignment between educational programming and local businesses' most pressing needs. Identifying the skills, certifications, and qualifications for positions today will help the education community anticipate community needs and ensure that curriculum prepares students for relevant job opportunities of the future here in Northwest Minnesota.

This report uses an Origin-to-Gateway-to-Target Occupation model, used by the Rework America Alliance and modified in this report by RealTime Talent, 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.

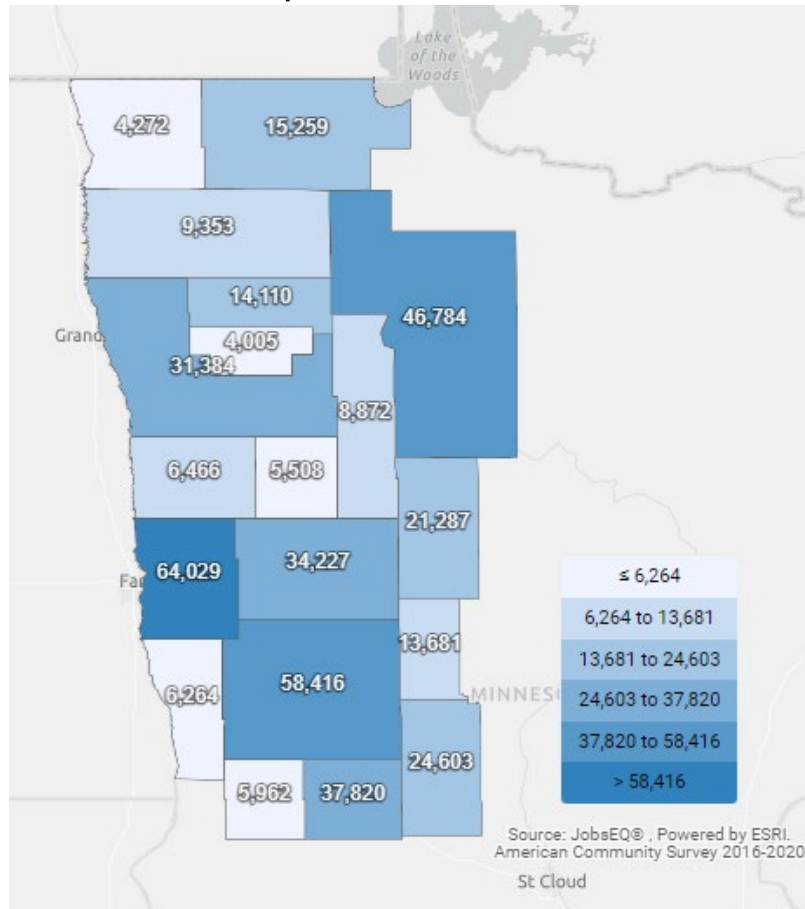
Origin-to-Gateway-to-Target (OGT) Model



³ Becker, Beltrami, Clay, Clearwater, Douglas, Grant, Hubbard, Kittson, Mahnomen, Marshall, Norman, Otter Tail, Pennington, Polk, Red Lake, Roseau, Todd, Wadena, and Wilkin Counties.

The cities of Bemidji, Alexandria, and Moorhead are home to the largest local concentrations of population, and are economic hubs for the region. In all, about 412,302 people live in Northwest Minnesota, according to 2016-2020 American Community Survey Estimates—an increase of about 1,700 people from the prior year's estimates. Based on year-over-year population growth, about 414,466 people are estimated to live in the region as of 2021. About 23.6% of Northwest Minnesota's population are minors under 18 years of age. Overall, the region's median age is nearly three years older (40.8 years) than the statewide median (38.1 years), mostly attributable to a larger share of adults over 55 years of age in the region.

Resident Population of Northwest Minnesota

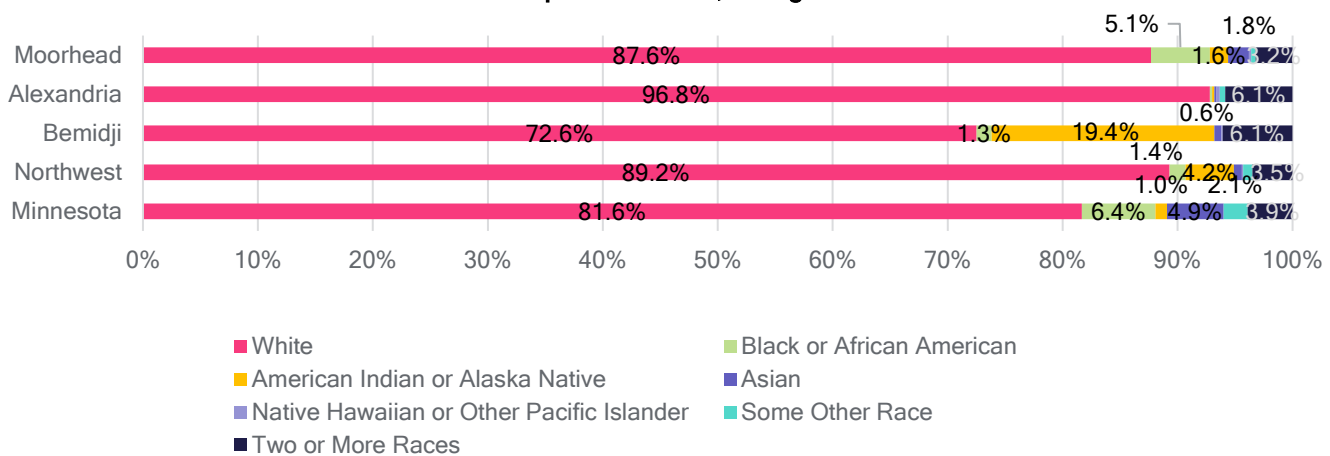


Community Profile

Demographics

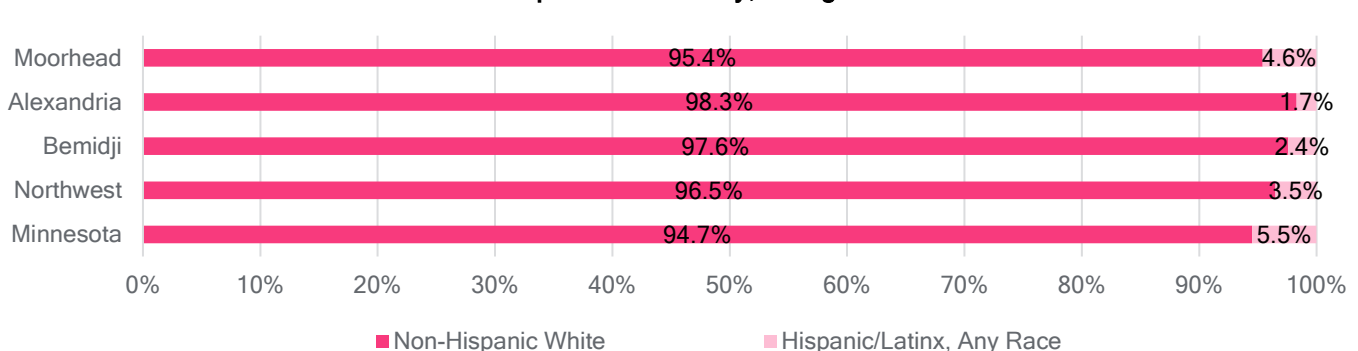
Population diversity increased between the two most recent population estimates statewide by half of a percentage point from 2018 to 2019 estimates, and by another 1.2 percentage points between 2019 and 2020 estimates. In the Northwest, the share of the population that is BIPOC increased by a full 1.1 percentage points (following an increase of just 0.2 points in the prior year's estimates), with the greatest increases in diversity happening in the Moorhead area, although Bemidji remains the most diverse of the regions' three largest economic hubs. Across the region overall, 10.8% of the population identify as Black, Asian, American Indian, Native Hawaiian, or some other race. The demographic makeup of communities across the Northwest look quite different from one another; nearly one in five people living in Bemidji identify as American Indian, compared to just 0.2% in Alexandria (share declined by 0.1 percentage point). Approximately 3.5% of Northwest Minnesota's residents are Hispanic or Latinx, double the share of the population that is Hispanic or Latinx in Northeast Minnesota. This was an increase of another 0.1 percentage point from last year's estimates. Alexandria's population became more diverse by 0.2 percentage points, but the share of the population that is Black or African American decreased from 0.5% in last year's estimates to just 0.2% in the 2016-2020 estimates. The increase in BIPOC residents in Alexandria was entirely due to rises in population identifying with two or more races (6.1%) or Native Hawaiian or Pacific Islander (0.3%). Moorhead continues to have a particularly high concentration of Hispanic and Latinx residents at 4.6% of the population, though this is still below share of the population observed in the 2014-2018 estimates (4.8%).

Population Race, All Ages



American Community Survey 2016-2020.

Population Ethnicity, All Ages



American Community Survey 2016-2020.

Community Demographics

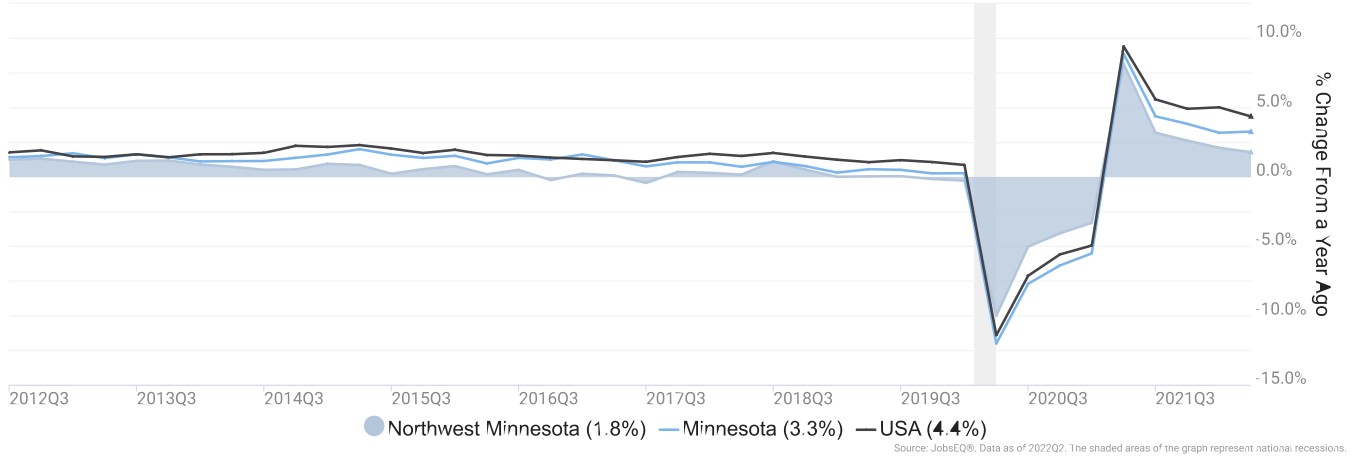
Demographics	Percent			Percent			Value		
	Bemidji, MN μSA	Alexandria, MN μSA	City of Moorhead, MN	Northwest Minnesota	Minnesota	USA	Northwest Minnesota	Minnesota	USA
Population (ACS)	–	–	–	–	–	–	412,302	5,600,166	326,569,308
Male	49.8%	50.2%	48.9%	50.2%	49.8%	49.2%	207,068	2,789,017	160,818,530
Female	50.2%	49.8%	51.1%	49.8%	50.2%	50.8%	205,234	2,811,149	165,750,778
Median Age ²	–	–	–	–	–	–	40.8	38.1	38.2
Under 18 Years	25.2%	21.4%	23.1%	23.6%	23.2%	22.4%	97,237	1,299,284	73,296,738
18 to 24 Years	13.2%	6.9%	19.2%	9.0%	8.9%	9.3%	37,027	498,444	30,435,736
25 to 34 Years	12.4%	11.6%	14.8%	11.3%	13.6%	13.9%	46,430	760,033	45,485,165
35 to 44 Years	10.9%	11.1%	12.0%	11.2%	12.7%	12.7%	46,137	710,985	41,346,677
45 to 54 Years	10.1%	11.1%	9.4%	11.2%	12.4%	12.7%	45,978	692,277	41,540,736
55 to 64 Years	12.3%	14.9%	9.9%	14.3%	13.4%	12.9%	58,786	751,567	42,101,439
65 to 74 Years	9.3%	12.3%	6.5%	10.8%	9.1%	9.4%	44,526	511,127	30,547,950
75 Years, and Over	6.6%	10.7%	5.2%	8.8%	6.7%	6.7%	36,181	376,449	21,814,867
Race: White	72.6%	96.8%	87.6%	89.2%	81.6%	70.4%	367,890	4,572,149	229,960,813
Race: Black or African American	1.3%	0.2%	5.1%	1.4%	6.4%	12.6%	5,752	359,817	41,227,384
Race: American Indian and Alaska Native	19.4%	0.2%	1.6%	4.2%	1.0%	0.8%	17,249	54,558	2,688,614
Race: Asian	0.6%	0.2%	1.8%	0.7%	4.9%	5.6%	3,089	275,242	18,421,637
Race: Native Hawaiian and Other Pacific Islander	0.1%	0.3%	0.2%	0.1%	0.0%	0.2%	304	2,201	611,404
Race: Some Other Race	0.0%	0.5%	0.4%	0.8%	2.1%	5.1%	3,450	118,748	16,783,914
Race: Two or More Races	6.1%	1.8%	3.2%	3.5%	3.9%	5.2%	14,568	217,451	16,875,542
Hispanic or Latino (of any race)	2.4%	1.7%	4.6%	3.5%	5.5%	18.2%	14,602	307,675	59,361,020

American Community Survey 2016-2020 unless noted otherwise.

Employment

As of 2020Q1, total employment in Northwest Minnesota was 179,070 (based on a four-quarter moving average). By 2021Q1, employment was hit hard by the COVID-19 pandemic and dropped to 168,863 (based on a four-quarter moving average). Over the year ending 2022Q2, employment rose by 1.8% in the region to 175,767 employed across Northwest Minnesota.

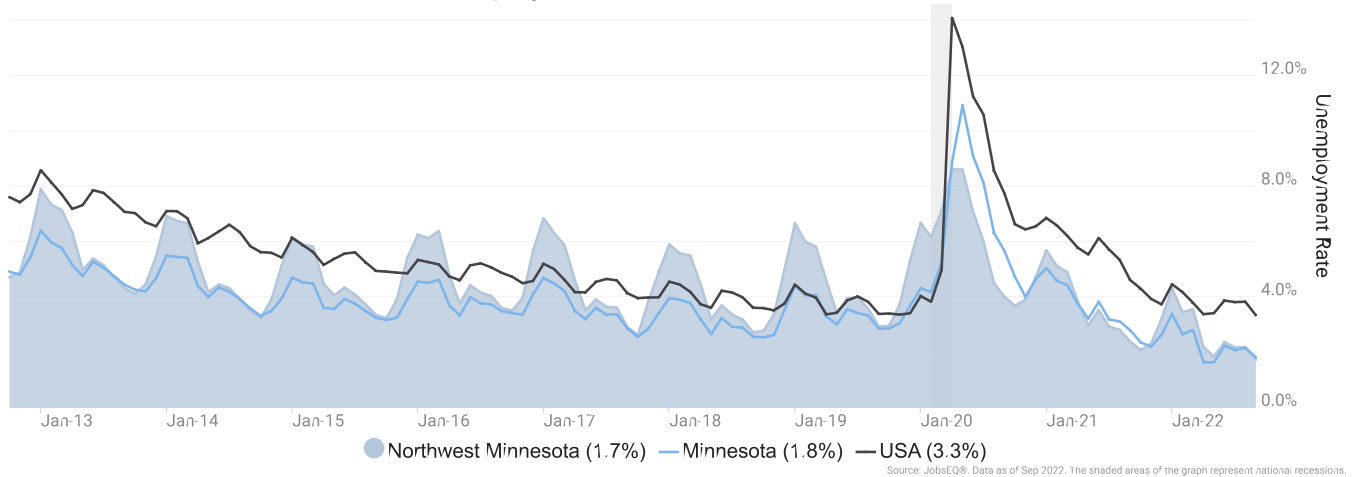
Employment for Northwest Minnesota



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

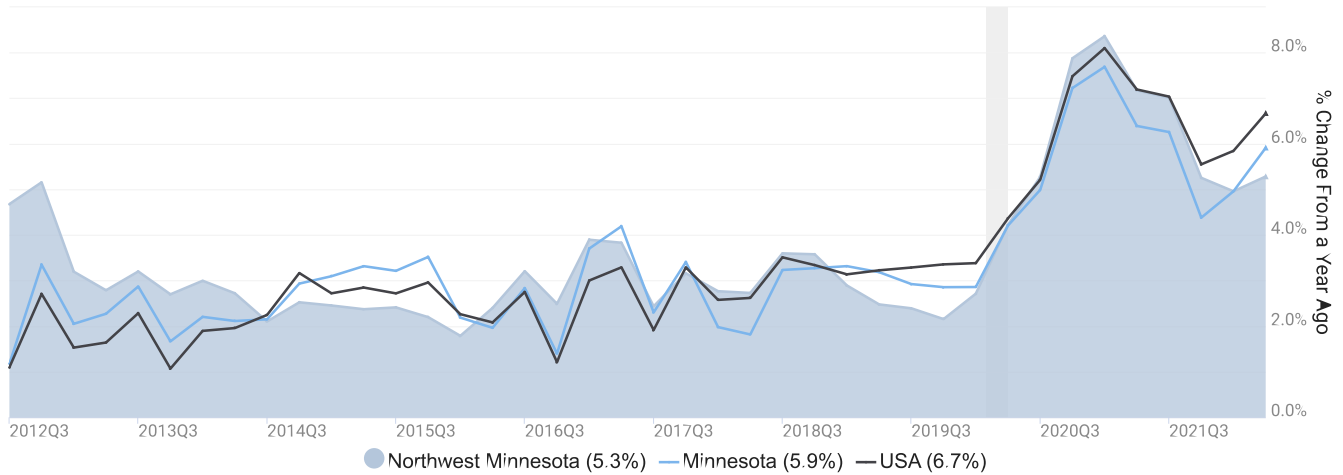
The unemployment rate in Northwest Minnesota was 1.7% as of September 2022. The regional unemployment rate was lower than the statewide rate (1.8%) and the national rate of 3.3%. One year earlier, in September 2021, the unemployment rate in Northwest Minnesota was 2.4%.

Unemployment for Northwest Minnesota



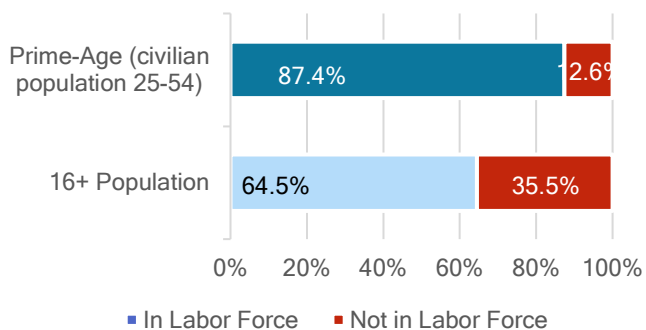
The average worker in Northwest Minnesota earned annual wages of \$48,214 as of 2022Q2, an increase of about \$2,600 from 2021Q1 (\$45,655) which follows an increase of about \$4,000 from one year prior, 2020Q1. Average annual wages per worker increased 5.3% in the region over the preceding four quarters. Wages rose similarly nationwide, where annual average wages were \$67,777 as of 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 Northwest 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 2021Q1 with preliminary estimates updated to 2022Q2.

Labor Force Participation Rate



The region has a civilian labor force of 209,722 (down by about 243 workers from the prior year's estimates) with a participation rate of 64.5%, which continues to lag Minnesota's labor force participation rate for the population over 16 by nearly 5 percentage points. This is due primarily to the older average age of residents in Northwest Minnesota. However, the participation rate of the prime working age population (between the ages of 25 and 64) also lags the statewide rate—87.4% compared to the statewide 88.3%. Minnesota, including the Northwest region of the state, have been fortunate in very moderate declines in overall labor force participation rates compared to

American Community Survey 2016-2020 unless noted otherwise.

experiences in other states during the COVID-19 pandemic. The Northwest area has a higher share of veterans in the region, at 4.3% of the regional population compared to 3.7% broadly across the state. Veteran labor force participation had been lower in this region, but rose by a surprising 2.1 percentage points in the most recent estimates to 79.9% of veterans between 18-64 years of age working or actively looking for work as of 2016-2020 estimates (compared to 80.9% statewide). The Northwest has a higher share of persons with a disability, 10.3% compared to 8.7% statewide, and a lower labor force participation rate for the population with a disability, 50.5% compared to 52.8% statewide. The Northwest region overall has a higher share of disconnected youth (2.4% of youth) compared to statewide (1.8%), closer to what is observed nationally (2.5%). While just 0.3% of Moorhead youth are disconnected from school, training, or work, in Bemidji about 5.0% are disconnected—on-trend with what was observed over the past three years' estimates.

Per-capita income rose in the Northwest by almost \$600 between the most recent American Community Survey estimates (to \$30,812 annually, while statewide and total US per-capita income rose by about \$1,200 (\$38,881 annually in Minnesota, \$35,384 nationally). The share of youth in single-parent households rose in the Northwest by about 0.4 percentage points, but other social characteristics of the regional population remained similar to the past year's estimates.

Economic and Social Characteristics of Northwest Minnesota

Economic and Social Characteristics	Percent			Percent			Values		
	Bemidji, MN μSA	Alexandria, MN μSA	City of Moorhead, MN	Northwest Minnesota	Minnesota	USA	Northwest Minnesota	Minnesota	USA
Labor Force Participation Rate and Size (civilian population 16 years and over)	63.5%	65.5%	71.0%	64.5%	69.2%	63.2%	209,722	3,074,732	164,759,496
Prime-Age Labor Force Participation Rate and Size (civilian population 25-54)	84.3%	91.1%	88.1%	87.4%	88.3%	82.4%	120,847	1,908,423	105,137,520
Armed Forces Labor Force	0.0%	0.0%	0.2%	0.1%	0.1%	0.4%	283	3,607	1,143,342
Veterans, Age 18-64	4.7%	5.4%	3.2%	4.3%	3.7%	4.5%	10,038	125,683	8,920,267
Veterans Labor Force Participation Rate and Size, Age 18-64	75.8%	84.1%	84.7%	79.9%	80.9%	76.8%	8,022	101,620	6,853,673
Median Household Income ²	–	–	–	–	–	–	\$59,029	\$73,382	\$64,994
Per Capita Income	–	–	–	–	–	–	\$30,812	\$38,881	\$35,384
Poverty Level (of all people)	18.3%	7.9%	16.2%	11.7%	9.3%	12.8%	47,004	511,185	40,910,326
Households Receiving Food Stamps/SNAP	12.7%	4.2%	9.7%	8.7%	7.5%	11.4%	14,548	165,078	13,892,407
Enrolled in Grade 12 (% of total population)	1.5%	1.0%	1.2%	1.3%	1.4%	1.3%	5,507	78,075	4,358,865
Disconnected Youth ³	5.0%	1.8%	0.3%	2.5%	1.8%	2.5%	515	5,115	433,164
Children in Single Parent Families (% of all children)	47.1%	22.2%	29.0%	30.1%	28.4%	34.0%	27,756	354,664	23,628,508
Uninsured	8.5%	3.5%	4.4%	5.7%	4.5%	8.7%	23,307	251,900	28,058,903
With a Disability, Age 18-64	11.0%	7.4%	9.6%	10.3%	8.7%	10.3%	23,910	295,441	20,231,217
With a Disability, Age 18-64, Labor Force Participation Rate and Size	40.9%	55.9%	56.2%	50.5%	52.8%	43.2%	12,085	156,039	8,740,236
Foreign Born	1.7%	1.2%	6.3%	2.5%	8.4%	13.5%	10,198	470,687	44,125,628

American Community Survey 2016-2020 unless noted otherwise.

*Median values for certain aggregate regions (such as MSAs) may be estimated as the weighted averages of the median values from the composing counties. **Disconnected Youth are 16-19 year olds who are (1) not in school, (2) not high school graduates, and (3) either unemployed or not in the labor force.

Education



93.8% of prime working age adult residents have at least a high school diploma or GED.

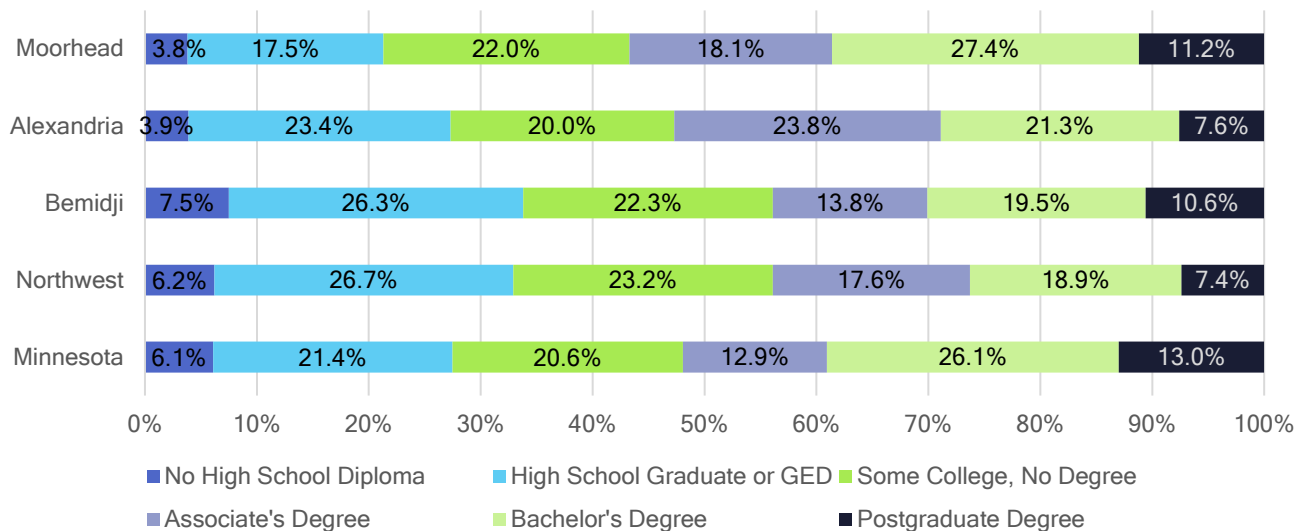
In Northwest Minnesota, 6.2% of adults between the ages of 25 and 64 do not have a high school diploma or equivalent, and 26.7% have a high school diploma as their highest level of education (down from 27.2% the year prior, and compared with 21.4% statewide). Nationwide, 10.5% of U.S. residents between the ages of 25 and 64 never completed high school or obtained an equivalent credential. The prime working age population of Bemidji has a larger share of residents with a high school diploma or less (7.5%), while Moorhead has the smallest share of residents with lower educational attainment (3.8%).

Educational Characteristics of Northwest Minnesota

Educational Characteristics	Percent			Percent			Values		
	Bemidji, MN μSA	Alexandria, MN μSA	City of Moorhead, MN	Northwest Minnesota	Minnesota	USA	Northwest Minnesota	Minnesota	USA
No High School Diploma	7.5%	3.9%	3.8%	6.2%	6.1%	10.5%	12,211	176,478	17,929,220
High School Graduate	26.3%	23.4%	17.5%	26.7%	21.4%	25.4%	52,750	622,379	43,289,555
Some College, No Degree	22.3%	20.0%	22.0%	23.2%	20.6%	20.5%	45,839	600,346	34,959,338
Associate's Degree	13.8%	23.8%	18.1%	17.6%	12.9%	9.3%	34,776	376,942	15,776,790
Bachelor's Degree	19.5%	21.3%	27.4%	18.9%	26.1%	21.6%	37,250	760,576	36,888,244
Postgraduate Degree	10.6%	7.6%	11.2%	7.4%	13.0%	12.7%	14,505	378,141	21,630,870

American Community Survey 2016-2020 unless noted otherwise.

Educational Attainment, Age 25-64



American Community Survey 2016-2020.

Regional Colleges and Universities

Northwest Minnesota has eleven institutions of higher education that offer non-degree awards, two-year degrees, four-year degrees, and higher. The table below shows these postsecondary institutions sorted by enrollment size in during the 2020-21 school year. There were a total of 6,613 awards conferred in the region.

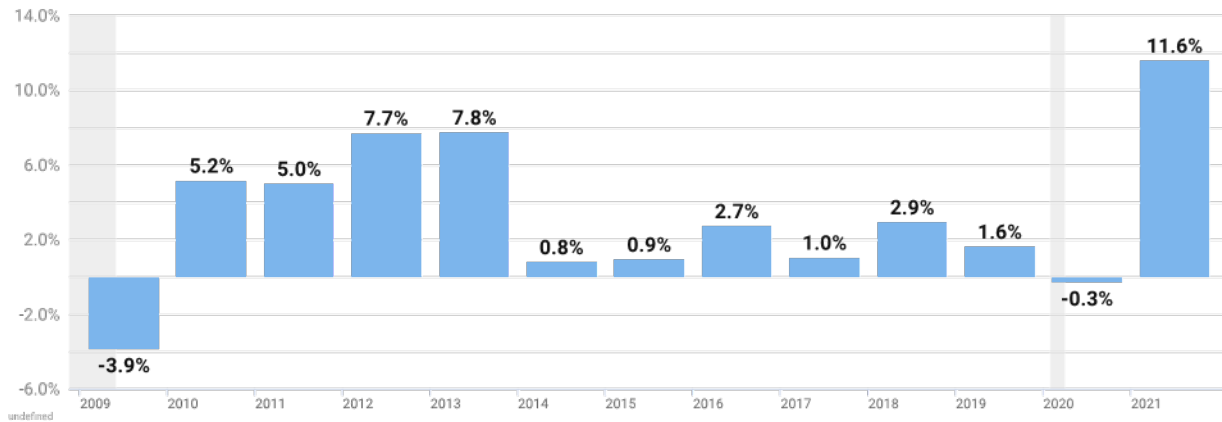
School	Certificate < 1 Yr	Certificate 1+ but < 2 Yr	Associate's	Certificate 2+ but < 4 Yr	Bachelor's	Post- Bacc	Master's	Post- Master's	Doctorate	Total Awards	Total School Enrollment	Avg Net Price ¹
Minnesota State Community and Technical College	38	278	766	70	0	0	0	0	0	1,152	5,757	\$10,233
Minnesota State University Moorhead	78	0	7	0	1,064	13	278	32	17	1,489	5,547	\$17,324
Bemidji State University	23	3	102	0	1,012	4	99	0	0	1,243	4,577	\$14,924
Northland Community and Technical College	187	214	422	35	0	0	0	0	0	858	2,962	\$10,243

Alexandria Technical & Community College	136	115	346	59	0	0	0	0	0	656	2,549	\$12,976
University of Minnesota-Crookston	10	0	0	0	457	0	0	0	0	467	2,530	\$12,010
Concordia College at Moorhead	0	0	0	0	475	0	9	0	0	484	1,973	\$24,096
Northwest Technical College	32	25	130	25	0	0	0	0	0	212	825	\$11,215
White Earth Tribal and Community College	0	0	21	0	0	0	0	0	0	21	141	\$8,191
Red Lake Nation College	0	0	13	0	0	0	0	0	0	13	106	\$11,715
Oak Hills Christian College	0	0	5	0	13	0	0	0	0	18	103	\$17,485
Total	504	635	1,812	189	3,021	17	386	32	17	6,613		

Economic Indicators

Gross Domestic Product (GDP) is the total value of goods and services produced by a region. In 2020, nominal GDP in the Northwest region expanded by 11.6%, following a contraction of about -0.3% (estimates provided one year ago have been updated). As of 2021, total GDP in the region was \$17,601,944,000, up about \$2 billion dollars from the year prior.

One-Year % Change in GDP, Northwest Minnesota

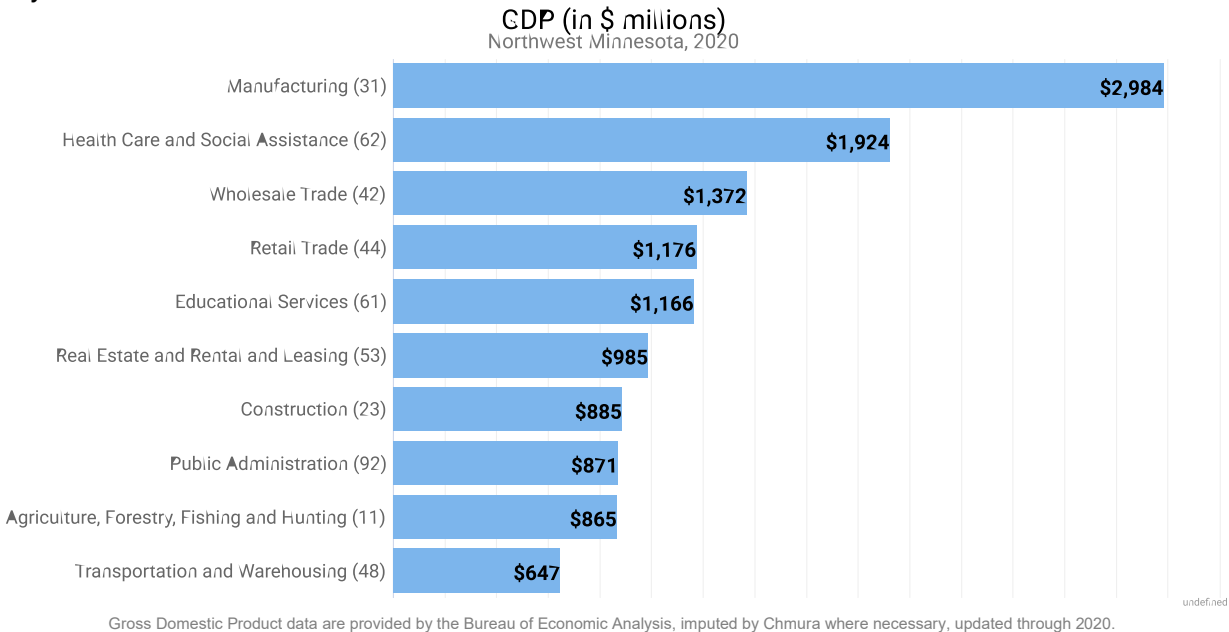


Gross Domestic Product data are provided by the Bureau of Economic Analysis, imputed by Chmura where necessary, updated through 2021.⁴

As was the case in years prior, Manufacturing contributed the largest portion of GDP in 2021 for Northwest Minnesota (\$3,115,525,000). The next-largest contributions came from Health Care and Social Assistance

⁴ GDP estimates by Chmura Economics. GDP data is revised every year, and there are typically small changes over time, with more recent years being more likely to be revised. Additionally, Chmura's detailed GDP estimates are modeled from industry employment and wage data, which is also subject to revision with each update. In general, with the exception of the most recent 2 or 3 years, historical revisions should be relatively small, only fractions of a percentage point.

(\$2,047,614,000). Overall, the industry mix contributing to regional GDP has not changed dramatically over the past three years.



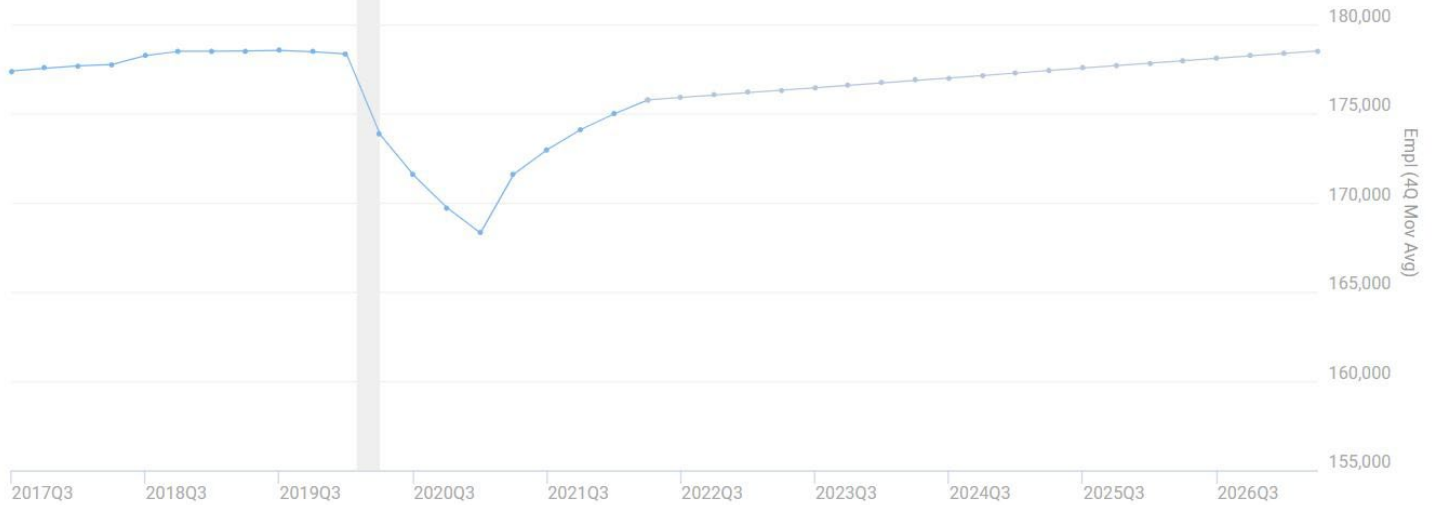
The Workforce of Today and Tomorrow

Workforce Forecast

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

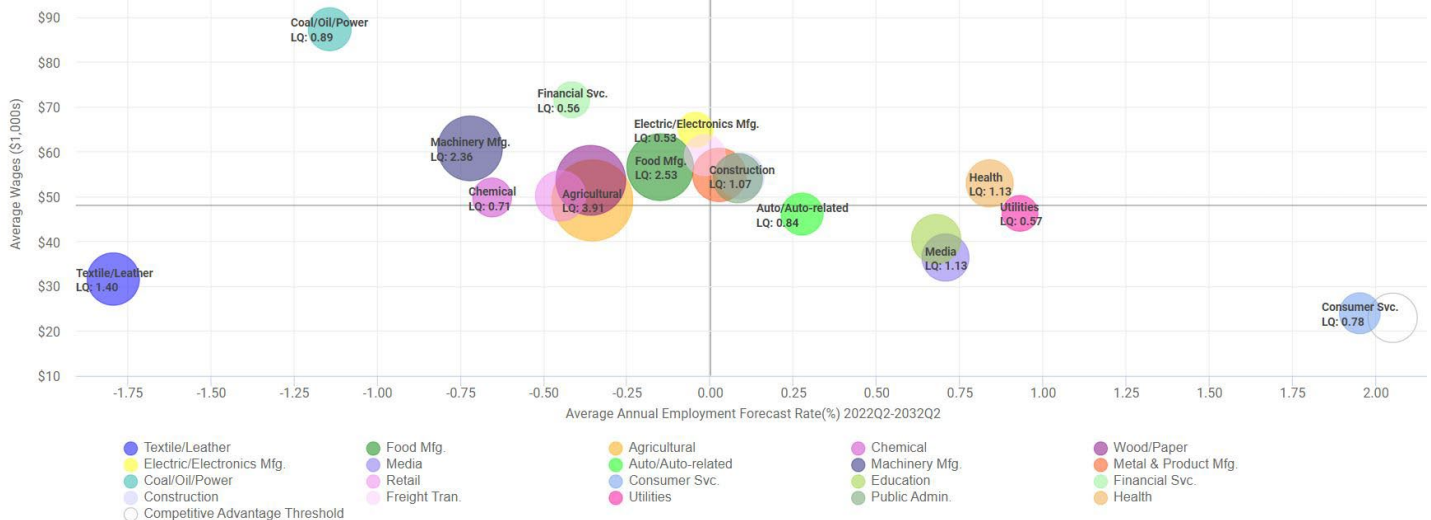
Employment rose by 2.4% in the region between 2021Q2 and 2022Q2, in line with estimates from one year prior, with an estimated 2.8% of the Northwest Minnesota workforce being unemployed by July 2022 (about 5,635 people). Future growth in jobs in the region is forecast at 0.3% averaged annually through 2027 in a baseline scenario.

5-Year Forecast in Northwest Minnesota



An industry cluster is a geographic concentration of interrelated industries or occupations. The industry cluster in the Northwest region with the highest relative concentration is Agricultural with a location quotient of 3.91. This cluster employs 9,741 workers in the region with an average wage of \$49,094. Employment in the Agricultural cluster is projected to contract in the region about -0.35% on average annually over the next ten years. Most industry clusters saw improvement in the overall employment growth outlook since estimates in 2021Q1, with the exceptions of Textile and Leather Manufacturing which is now forecast to decline by about -1.79% on average annually over the next ten years. Consumer Services, Utilities, Media, and the Auto Industry all saw the greatest turnaround in outlook from 2021, and the Health sector saw a continued, steady climb in forecasted employment growth.

Industry Clusters for Northwest Minnesota as of 2022Q2



Emerging Critical Needs

SECTORS AND OCCUPATIONS OF FOCUS

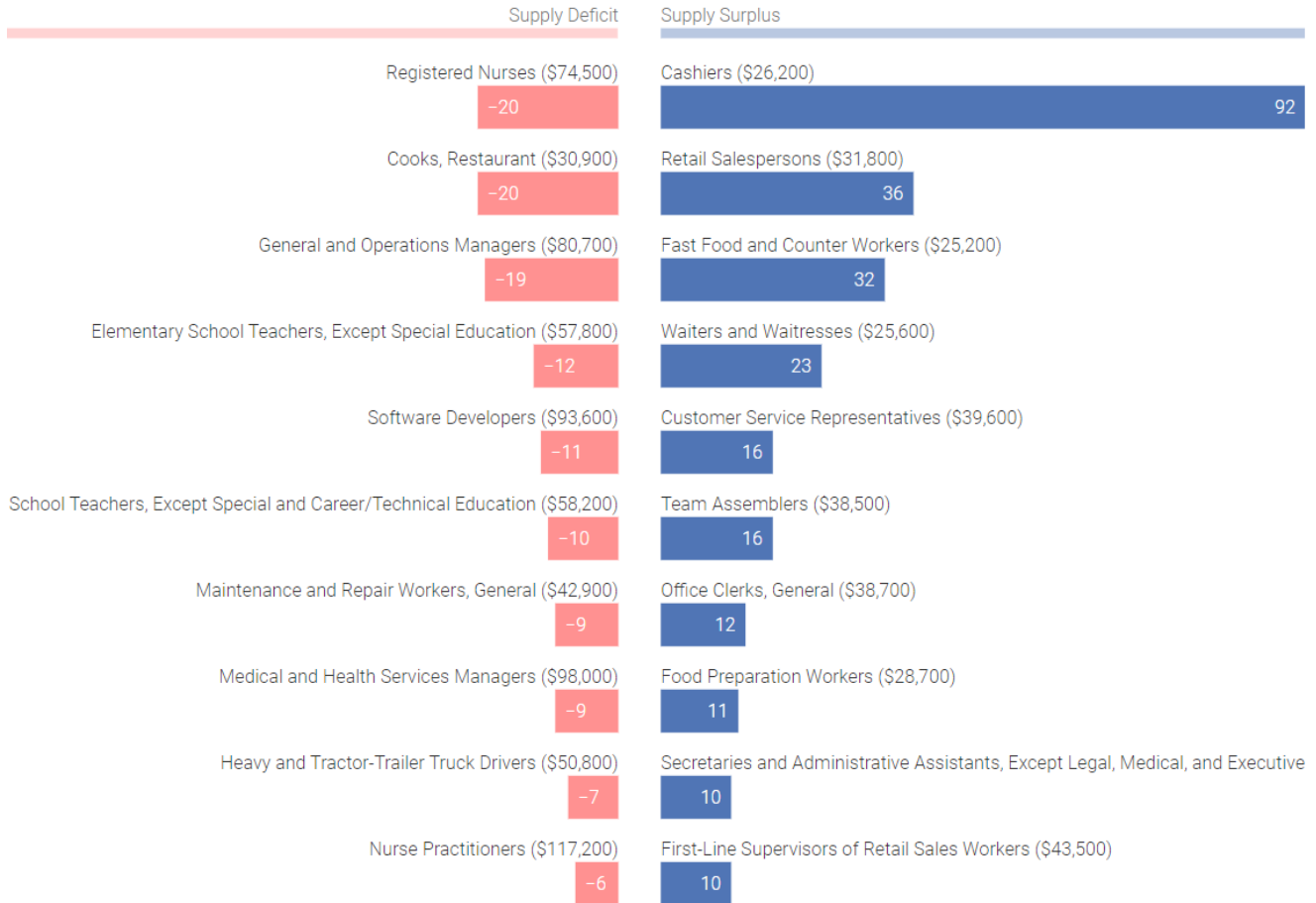
The pandemic's acceleration of critical talent shortages through shifts in demand, supply chains, and resource availability has resulted in dramatic upticks in demand for very specifically-trained talent with some college, an industry credential, a two year degree, or a bachelor's degree amidst a severe constriction of talent availability for these same middle-skill, middle-wage roles. Now over two years after the pandemic started, new and surprising talent shortage twists are emerging. This section highlights the most critical talent shortages now apparent in the Northwest 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, Retail Workers, Waiters and Waitresses, Office Clerks, and Customer Service Representatives. Talent surplus shrunk slightly between 2021 and 2022 for Team Assemblers but with moderate excess talent still forecast over the coming decade.

Estimation of mid-term and long-term recovery of critical local occupations is based on our most reasonable hypothesis given current conditions, and conditions have changed somewhat in Northwest Minnesota over the past twelve months. In Northwest Minnesota, an analysis of local labor market occupational gaps as of the first quarter of 2020 showed that there was a shortage of Nurses, Farmers and Agricultural Managers, Public Safety Officers, various types of Financial, General, Operations and Construction Managers, Teachers, Mental Health Counselors, and a range of talent in construction and carpentry. By the first quarter of 2021, forecasted talent gaps for each of these occupations remained, but with some changes to the volume of anticipated gaps; General and Operations Managers jumped up to second place and Farming shortages dropped out of the top ten. In 2022, Restaurant Cooks jumped from what was forecast as a low level of shortage previously to being the second highest occupation of regional forecasted shortage in 2022, and with Elementary School Teachers, Secondary School Teachers, Maintenance and Repair Workers, and Industrial Machinery Mechanics muscling out several Business, Management, and Administration Field roles. With the exception of Restaurant Cooks which pays an average wage of \$30,900 annually, the other new entrants to the top ten occupations of shortage are Target Occupations that typically pay between \$50,000-\$58,000 (the regional average annual wage is \$50,500). Based on forecasted growing demand for health, education, human services, and remote work-friendly information technology positions, these occupations of shortage are likely to rebound and grow in demand, possibly beyond initial forecasts. Most occupations of shortage require an Associate degree or higher.

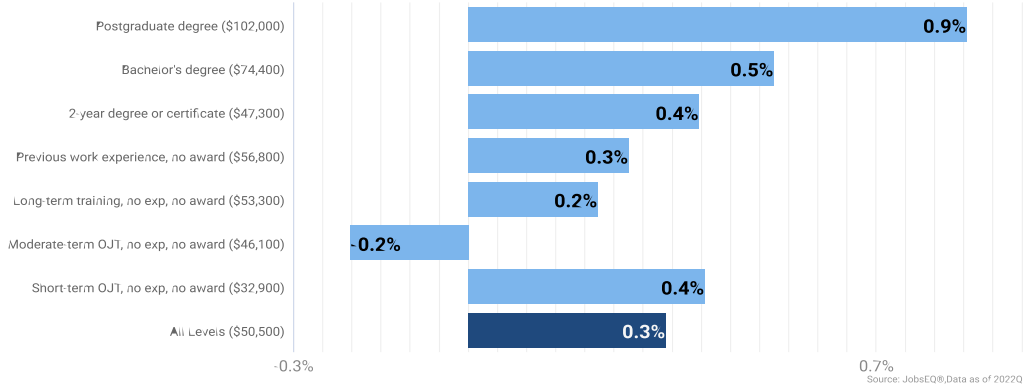
On the side of talent surplus, none of the ten positions forecast to have the highest surplus of talent in the Northwest as of the first quarter of 2020, 2021, or 2022 typically require an advanced degree, and none of them pay over \$44,000 on average. Seven out of ten of these positions typically cannot be done remotely, and the three positions of greatest talent surplus are considered high contact-intensity. Given the impacts of the COVID-19 pandemic on local industry, these occupations of anticipated high talent excess will likely decline in overall local demand and shift dramatically in how work is done on a daily basis.

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



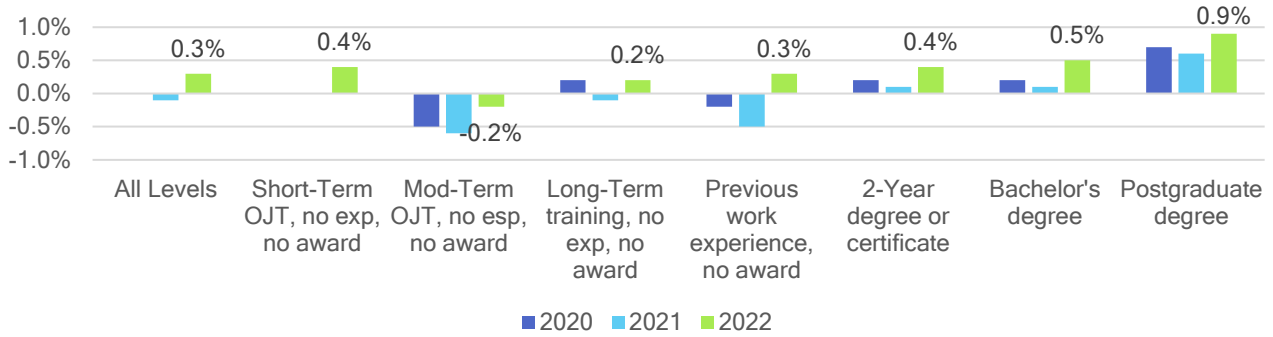
Expected growth rates for occupations vary by the education and training required. While all employment in Northwest Minnesota is now projected to grow by +0.3% over the next ten years under baseline estimates (compared to last year's estimates of -0.1% average annual contraction), occupations typically requiring a postgraduate degree are expected to grow the most at 0.9% per year, those requiring a bachelor's degree are forecast to grow 0.5% per year, and occupations typically needing a two-year degree or certificate are expected to grow 0.4% per year. Estimated wages dropped by \$100 between 2021 and 2022 estimates for roles that require a Postgraduate degree and dropped by almost \$4,000 annually for roles that require "previous work experience, but no degree award", while increasing for Bachelor's degree roles (from \$72,800 up to \$74,400), Associate's and certificate roles (from \$44,600 to \$47,300). Across all types of positions, the average role rose from about \$49,500 annually as of 2021 estimates to \$50,500 as of 2022 wage estimates.

Annual Average Projected Job Growth by Training Required for Northwest Minnesota



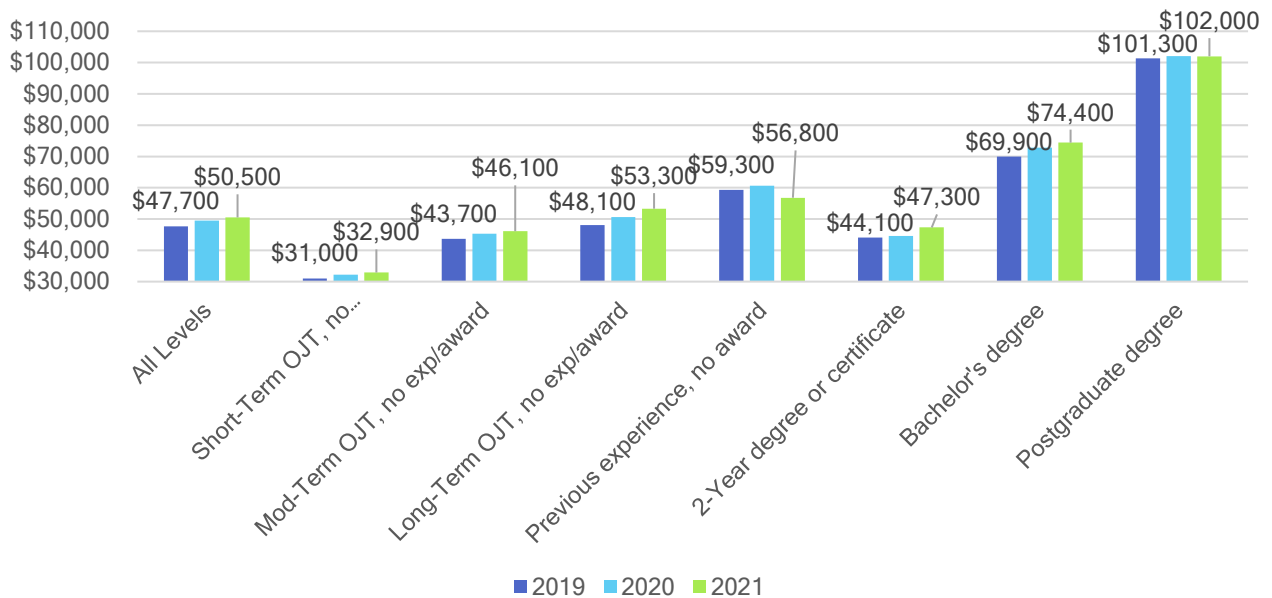
Employment by occupation data are estimates as of 2021Q1. Education levels of occupations are based on BLS assignments. Forecast employment growth uses national projections from the Bureau of Labor Statistics adapted for regional growth patterns.

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



SOURCE: Chmura JobsEQ 2022Q2.

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



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

The Northwest has a slightly higher unemployment rate overall than observed statewide, but the average unemployment rate across Gateway Occupations is quite low at 2.4%. Mean wage in the Northwest is nearly \$10,000 below the statewide average, making talent attraction and retention more difficult on the basis of wage. Wage growth has been lower in the region than in others statewide, and loss of talent in Health Science Technology is one key example of the impacts this can have on the local workforce. The Northwest is unique in its concentration of manufacturing sub-industries, such as Household Appliance Wholesaling, Wood Product Manufacturing, and General Purpose Machinery Manufacturing ranking in the highest-concentrated regional industries of note. In alignment with these industries are four of the five top gateway occupations forecasting regional shortages of talent: Maintenance and Repair Workers, Carpenters, Welders, and Machinists.

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*
Northwest	2.8%	\$50,500	2.4%	<ul style="list-style-type: none"> Household Appliances and Electrical and 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%)
Minnesota Statewide	2.5%	\$60,300	2.3%	<ul style="list-style-type: none"> Hog and Pig Farming (6.05) Metal Ore Mining (5.13) Other Residential Care Facilities (3.28) Farm Product Raw Material Merchant Wholesalers (3.18) 	<ul style="list-style-type: none"> Heavy Tractor-Trailer & Truck Drivers (OG, AG; 2.2%) Bookkeeping, Accounting, & Auditing Clerks (AG; 1.8%) Maintenance & Repair Workers (OG; 1.4%) Carpenters (OG; 3.2%) Light Truck Drivers (AG; 2.2%)

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

Several occupations have no unemployed talent in the Northwest as of 2022Q2 estimates, resulting in an estimated unemployment rate of 0%. The occupations listed below have nonexistent unemployed talent at the regional level and currently have over 75 people working in these positions locally. 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 of these roles are Target Occupations paying well over the regional average of \$50,500 annually.

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

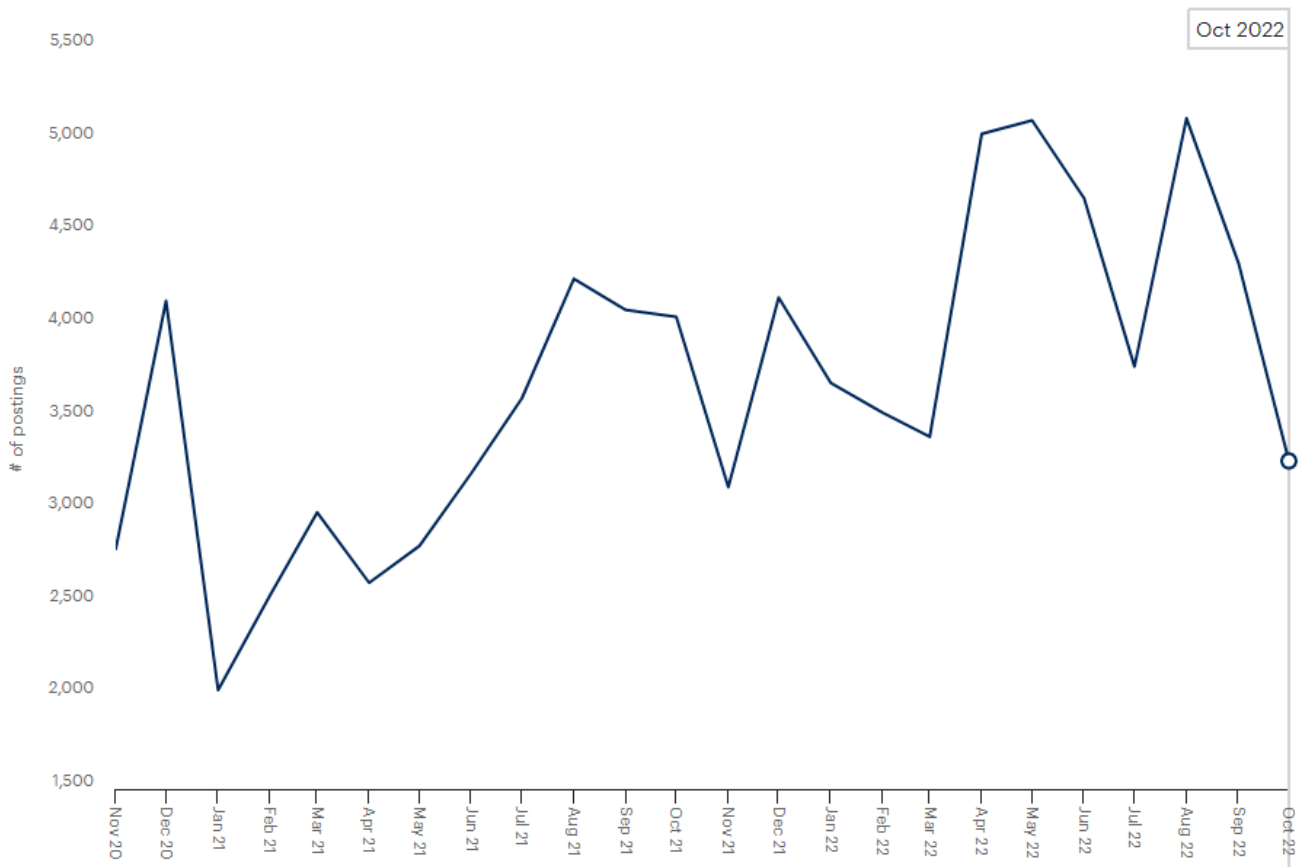
SOC	Occupation	Current						5-Year History		5-Year Forecast				
		Empl	Mean Ann Wages ²	LQ	Unempl	Unempl Rate	30-Day Online Job Ads ³	Empl Change	Ann %	Total Demand	Exits	Transfers	Empl Growth	Ann % Growth
21-2021	Directors, Religious Activities and Education	247	\$54,600	1.36	0	0.0%	2	-5	-0.4%	151	51	93	7	0.6%
29-1171	Nurse Practitioners	201	\$117,200	0.73	0	0.0%	18	36	4.0%	100	25	36	39	3.6%
29-1229	Physicians, All Other	188	\$262,700	0.60	0	0.0%	22	79	11.6%	29	15	10	3	0.3%
33-1012	First-Line Supervisors of Police and Detectives	157	\$88,100	1.15	0	0.0%	1	-12	-1.4%	53	18	33	3	0.4%
29-1021	Dentists, General	135	\$155,400	0.91	0	0.0%	24	16	2.5%	23	12	6	5	0.7%
21-1092	Probation Officers and Correctional Treatment Specialists	110	\$66,600	1.12	0	0.0%	n/a	-5	-0.9%	47	12	34	2	0.3%
19-1042	Medical Scientists, Except Epidemiologists	109	\$77,800	0.85	0	0.0%	1	-7	-1.2%	46	7	33	6	1.0%
33-3021	Detectives and Criminal Investigators	104	\$77,500	0.88	0	0.0%	3	-6	-1.2%	38	13	24	1	0.2%
19-3034	School Psychologists	95	\$72,700	1.42	0	0.0%	8	11	2.4%	34	13	19	2	0.5%
49-9043	Maintenance Workers, Machinery	95	\$52,500	1.43	0	0.0%	n/a	-4	-0.9%	45	16	27	2	0.5%
29-1215	Family Medicine Physicians	89	\$263,100	0.71	0	0.0%	23	-5	-1.2%	14	7	5	1	0.3%
25-2051	Special Education Teachers, Preschool	87	\$62,100	3.62	0	0.0%	n/a	9	2.1%	36	15	18	4	0.8%
00-0000	Total - All Occupations	175,767	\$50,500	1.00	5,635	2.8%	8,523	-1,816	-0.2%	100,634	39,036	58,902	2,697	0.3%

EMERGING CAREER PATHS

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

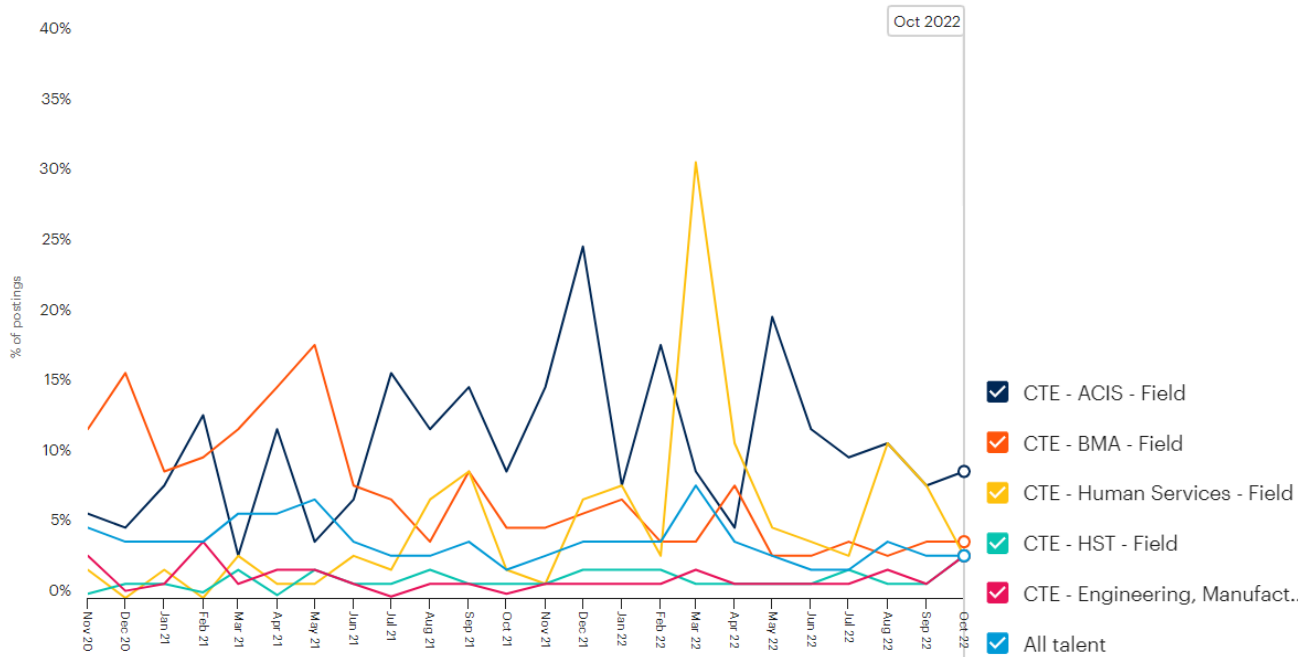
From November 1, 2021 through October 31, 2022 there were 49,864 unique job postings advertised online in Northwest Minnesota on job boards, according to analysis using Gartner TalentNeuron Plan (compared to 1,119,315 postings statewide). This was 23% higher than the 12 months prior. Only about 3% of all positions advertised were explicitly listed as remote or telecommute roles—either permanently or temporarily. Remote positions increased in prevalence by 18% from the 12 months prior. Information Technology careers have the highest share of remote positions at 26% of roles being fully or hybrid remote among jobs advertised online in Northwest Minnesota between November 2021 and October 2022—up 9 percentage points from the prior year (15% fully remote, 11% hybrid remote, and none temporarily remote).

Total Jobs Advertised Monthly in Northwest Minnesota, October 2020 - 2022



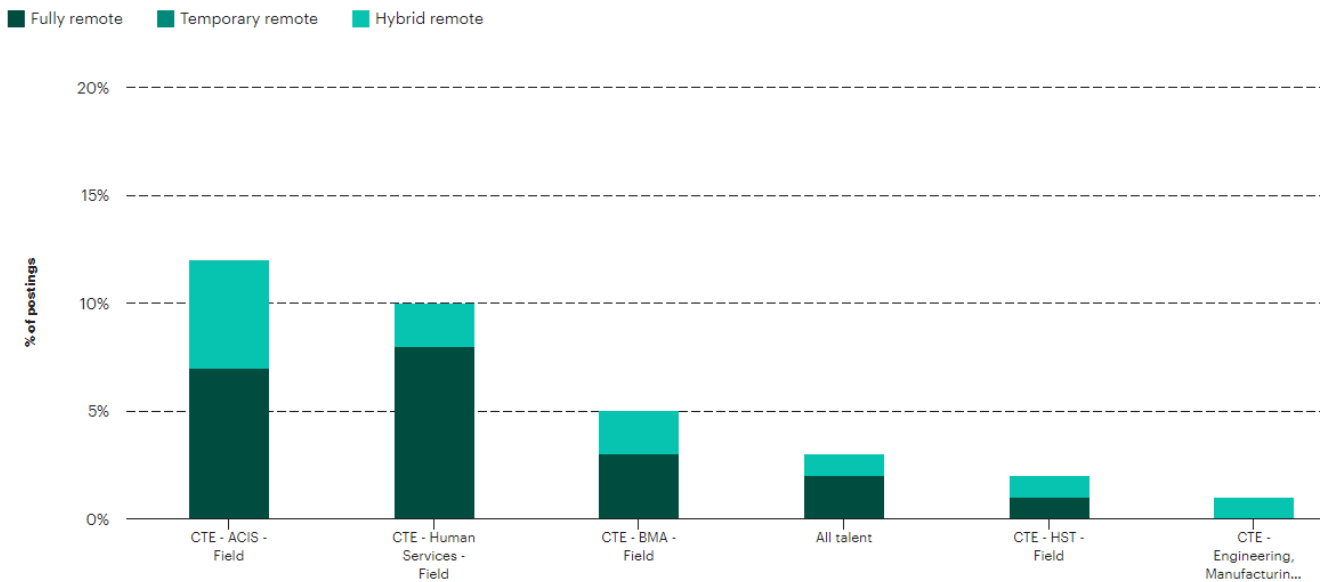
SOURCE: Gartner TalentNeuron Plan accessed 11/7/2022

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



SOURCE: Gartner TalentNeuron Plan accessed 11/7/2022

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



Talent Profile ▾	% of postings				
	Unspecified /Onsite ▾	Total remote ▾	Fully remote ▾	Temporary remote ▾	Hybrid remote ▾
CTE - ACIS - Field	88% ▼ -2 pp	12% ▲ 2 pp	7% ▲ 1 pp	0% ▼ -1 pp	5% ▲ 2 pp
CTE - Human Services - Field	90% ▼ -8 pp	10% ▲ 8 pp	8% ▲ 7 pp	0% ▲ 0 pp	2% ▲ 1 pp
CTE - BMA - Field	95% ▲ 5 pp	5% ▼ -5 pp	3% ▼ -5 pp	0% ▲ 0 pp	2% ▲ 0 pp
All talent	97% ▲ 1 pp	3% ▼ -1 pp	2% ▼ -1 pp	0% ▲ 0 pp	1% ▲ 0 pp
CTE - HST - Field	98% ▼ -1 pp	2% ▲ 1 pp	1% ▲ 0 pp	0% ▲ 0 pp	1% ▲ 1 pp
CTE - Engineering, Manufacturing, and Technology - Field	99% ▲ 1 pp	1% ▼ -1 pp	0% ▼ -1 pp	0% ▲ 0 pp	1% ▲ 0 pp

SOURCE: Gartner TalentNeuron Plan accessed 11/7/2022

Remote work opportunities continued to increase significantly among Human Services, Health Science, and Information Technology roles over the past 12 months compared to the 12 months prior. Last year, the volume of remote Office and Administrative Support Workers increased by 367% and for Human Resources Specialists by 323%. However, Business, Management, and Administration roles like these held steady with about 5% of postings overall being remote in 2022, while remote Teachers, Customer Service Representatives, Nurses, and Nursing Assistants saw high and growing volumes.

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

1. Customer Service Representatives (+85%)
2. Registered Nurses (+338%)
3. Teachers and Instructors, All Other (+8,800%)
4. Patrol Officers (Homeland Security) (+1,967%)
5. Software Developers- (+121%)

During the first six months of the COVID-19 pandemic,⁵ there were 29,608 new jobs advertised in the region—an increase of 17% from the same six months in 2019. The top three positions advertised by volume were for Heavy Truck Drivers, Registered Nurses, and Personal Care Aides. Several positions had new postings triple between 2020 and 2019, such as Sales Agents of Financial Services, Insurance Sales Agents, and Bus and Truck Mechanics and Diesel Engine Specialists. This reflects the sudden and growing local demand for Finance Cluster and Transportation, Distribution, and Logistics Cluster talent, particularly those with at least a two-year degree in a related area of study.

Throughout 2021, several of those occupations continued to see growth in postings, including Delivery Drivers, Registered Nurses, and Laborers. Overall, healthcare and shipping/logistics roles continued to spike in volume considerably, showing much higher demand since March 2021 compared to early months of the pandemic. These roles have remained in demand, while other emerging roles in Human Services, Sales, and Construction have shown some of the largest gains in total volume of postings as

⁵ March 15-June 15, 2020.

of October 2022. Registered Nurses remains the top occupation in demand by volume of job postings, increasing in volume of postings by 22% from 12 months prior (the volume of Registered Nurse job postings had only increased by 1% between 2020 and 2021). The top four occupations of highest volume of postings in the Northwest were identical to the top occupations posted in Northwest Minnesota during the same time frame.

Top Emerging and High Demand Growth Occupations in Northwest Minnesota, October 2021-2022 (by increase in total postings)

1. Teachers and Instructors, All Other, 469 (+561%)
2. Police and Sheriff's Patrol Officers, 135 (+419%)
3. Restaurant Cooks, 354 (+307%)
4. Highway Maintenance Workers, 62 (+288%)
5. Sales and Related Workers, All Other, 74 (+236%)

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

1. Registered Nurses (+22%)
2. Heavy and Tractor Trailer Truck Drivers (+1%)
3. Gig Economy Careers (+31%)
4. Customer Service Representatives (+30%)
5. Licensed Practical and Licensed Vocational Nurses (+49%)

Talent accumulates valuable skills in many different ways beyond just work and education, from self-study to apprenticeships/internships, as well as workforce training programs and general life experience all develop relevant skills. Assessing experience in terms of skills unearths a person's qualifications and more clearly identifies training needs. It also helps people recognize the abilities and knowledge they don't know they have.

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

Human skills and other competencies like communication, scheduling, supervision, and handling general healthcare needs were mentioned in job postings as required competencies for candidates in higher volumes from March through August in comparison to early 2020 or any point in 2019, declined moderately from September 2020 through August 2021, and rose to prominence again in 2022. Workplace and schedule flexibility has declined as a requirement in postings between October 2021 and November 2022. Over the past two years, most rising skills were focused in Health Science Technology and Business, Management, and Administration capacities, while the top rising skills over the past 12 months include a mix of transportation, construction, and virtual teaching skillsets.

Top Evolving Skills in Northwest Minnesota, October 2021-2022



New

1. Industrial trucks
2. Google Classroom
3. Electric meters

New skills whose future is uncertain.



Emerging

1. Forklifts

Relatively new skills that are becoming more prevalent.



Growing

There are no Growing skills in the market

Fast-growing skills that are becoming core skills.



Core

1. Nursing
2. Monitoring
3. Customer service

Skills that have been present in a high percentage of job postings for some time.



Declining

There are no Declining skills in the market

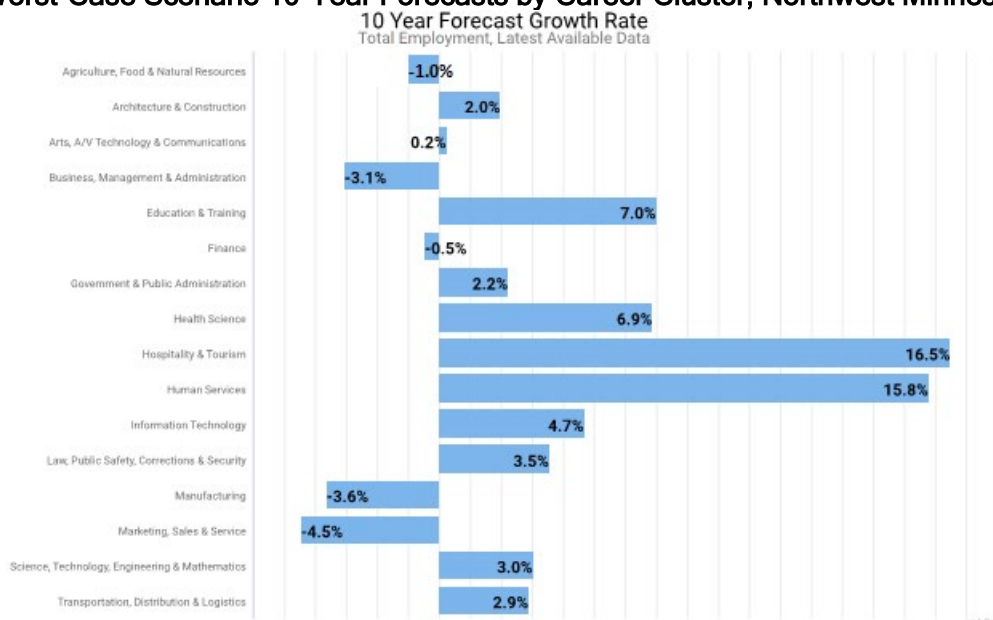
Skills that used to be essential but are becoming obsolete.

Career Field Insights

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

Of sixteen career clusters used by Career and Technical Education (CTE), eleven are forecast in a to grow in overall employment over the next ten years (compared to eight in last year's estimates). The clusters forecasting highest growth are Hospitality and Tourism (16.5%), Human Services (15.8%) and Education and Training (7.0%). All clusters saw improvement in overall forecasted outlook from the prior year's estimates.

Baseline Worst-Case Scenario 10-Year Forecasts by Career Cluster, Northwest 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. In the Northwest, Hospitality & Tourism, Business, Management, and Administration, and Marketing, Sales, and Service clusters are expected to have the highest annual job demand by volume of opportunities—due to retirements and job changes.

Science, Technology, Engineering & Mathematics has the highest wages of the Career Clusters followed by the Information Technology and Finance clusters. Total demand is highest in Hospitality and Tourism in addition to being highest-growth in the region, given the significant declines in overall employment this cluster experienced during the early days of the pandemic. Health Science has the highest volumes of monthly job postings, at a staggering 1,817 regional postings live during the month of October 2022. This signals high employer demand for talent; compared to the gradually declining employment numbers since 2019, small gains to hiring, and declining regional graduate volumes, this is the sector with the largest and most impactful talent shortages in the Northwest.

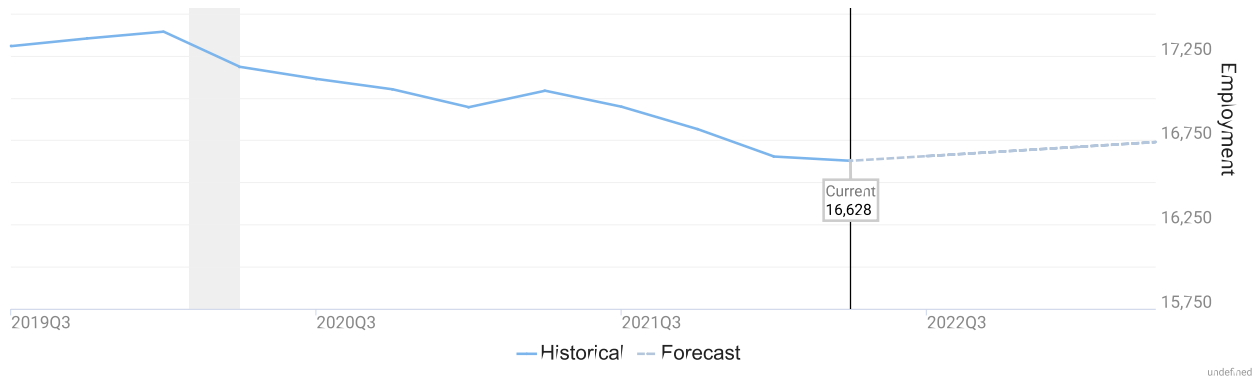
Career Cluster	Employment	Avg Ann Wages	Job Ads	Baseline 10-Year Forecasted Empl Change	Ann Empl Growth	Ann Total Demand
Science, Technology, Engineering & Mathematics	1,888	\$86,700	192	3.0% (+)	5	135
Information Technology	2,980	\$80,100	111	4.7% (+)	13	226
Finance	4,010	\$71,900	169	-0.5% (+)	-2	334
Health Science	16,628	\$67,800	1,817	6.9% (+)	109	1,419
Law, Public Safety, Corrections & Security	4,462	\$58,900	153	3.5% (+)	15	425
Government & Public Administration	1,521	\$58,300	42	2.2% (+)	3	140
Business, Management & Administration	25,737	\$56,500	814	-3.1% (+)	-82	2,554
Architecture & Construction	12,916	\$54,300	236	2.0% (+)	24	1,310
Education & Training	13,066	\$53,900	276	7.0% (+)	88	1,234
Agriculture, Food & Natural Resources	9,133	\$53,800	90	-1.0% (+)	-23	1,044
Arts, A/V Technology & Communications	2,304	\$50,200	66	0.2% (+)	0	234
Manufacturing	18,489	\$44,500	718	-3.6% (+)	-71	1,856
Transportation, Distribution & Logistics	13,390	\$44,000	906	2.9% (+)	37	1,569
Marketing, Sales & Service	18,582	\$43,100	995	-4.5% (+)	-86	2,290
Human Services	10,103	\$40,800	854	15.8% (+)	147	1,405
Hospitality & Tourism	20,558	\$29,900	1,056	16.5% (+)	315	3,835
Total - All Occupations	175,767	\$50,500	8,496	3.0%	528	20,047

*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 2020Q1 estimates.

HEALTH SCIENCE TECHNOLOGY

Health Science Technology is a critical Career Field to secure the public health of the entire state. The COVID-19 pandemic has made this reality even more clear, and further strained the workforce challenges faced in this sector. Demand remains high, but the region has seen a drop in employment in this field over the past three years to the detriment of the regional economy. Employment dropped by an average of -0.1% annually over the past five years due to limited local talent supply. Unemployment is very low at 1.4%, or 269 trained Health Science Technology professionals available regionally. Over the next three years, Health Science Technology employment is forecast to grow by about 0.7% on average annually.

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



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

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year			Baseline Forecast
				Year Empl Change	Annual Demand	Ann Growth	
Registered Nurses	4,029	\$74,500	1.17	-247	225	0.3%	
Nursing Assistants	2,379	\$34,200	1.63	-177	289	0.1%	
Licensed Practical and Licensed Vocational Nurses	1,089	\$47,700	1.53	-102	84	0.1%	
Home Health Aides	991	\$29,700	0.95	-321	142	2.2%	
Medical Secretaries and Administrative Assistants	687	\$40,700	0.93	2	79	0.6%	
Medical and Health Services Managers	500	\$98,000	0.99	-3	53	2.3%	
Pharmacy Technicians	491	\$38,000	1.01	42	35	0.1%	
Medical Assistants	443	\$39,500	0.53	9	59	1.3%	
Pharmacists	386	\$123,400	1.08	14	12	-0.6%	
Dental Assistants	371	\$47,900	0.93	39	47	0.8%	
Remaining Component Occupations	5,265	\$92,400	0.91	96	388	0.8%	
Health Science (CTE Cluster)	16,628	\$67,800	1.04	-647	1,419	0.7%	

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

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

About one-third of talent in Northwest Minnesota that is working in Health Science Technology roles are employed by General Medical and Surgical Hospitals (35.1%) or Nursing Care Facilities (19.0%).

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

Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Growth	10-Year Total Demand
General Medical and Surgical Hospitals	35.1%	5,837	3,946	264	4,210
Nursing Care Facilities (Skilled Nursing Facilities)	19.0%	3,159	2,932	-91	2,841
Offices of Physicians	8.7%	1,445	1,046	132	1,178
Offices of Dentists	5.4%	895	775	77	852
Offices of Other Health Practitioners	3.4%	571	416	108	524
Individual and Family Services	3.4%	558	681	224	905
Health and Personal Care Retailers	2.8%	473	275	-18	257
Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	2.7%	448	498	104	601
Home Health Care Services	2.6%	426	394	85	478
Outpatient Care Centers	2.3%	380	296	87	382
Psychiatric and Substance Abuse Hospitals	2.1%	355	271	-18	253
Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities	1.9%	319	324	45	369
Elementary and Secondary Schools	1.9%	317	209	28	237
Other Professional, Scientific, and Technical Services	1.7%	286	243	33	277
Executive, Legislative, and Other General Government Support	1.0%	173	133	10	143
Colleges, Universities, and Professional Schools	0.7%	119	86	14	100
Other Ambulatory Health Care Services	0.7%	115	107	43	150
Warehouse Clubs, Supercenters, and Other General Merchandise Retailers	0.6%	92	56	-8	48
All Others	4.0%	662	509	26	534

Career Field Demographics

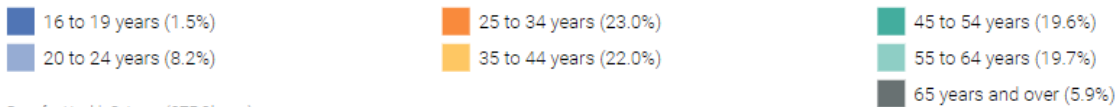
The Health Science Technology field is heavily female (80.7%, unchanged from prior year) and white (91.4%), though the share of Health Science Technology talent that are BIPOC by race increased by one percentage point from the prior years' estimates, and 0.2 percentage points by ethnicity. The age distribution of talent in Health Science Technology is relatively even from age 25 through 64, but with the largest proportion of talent between the ages of 25 and 34 years (23.0% of talent). The share of talent 65 or older increased by 0.5 percentage points from the prior years' estimates.

Age

Northwest Minnesota

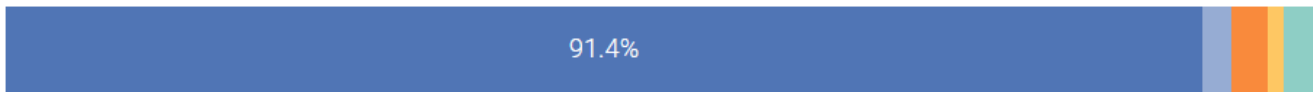


Minnesota

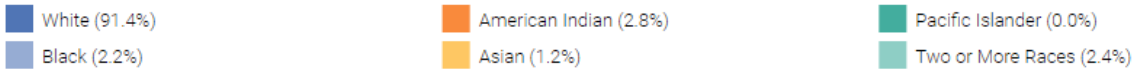


Race

Northwest Minnesota

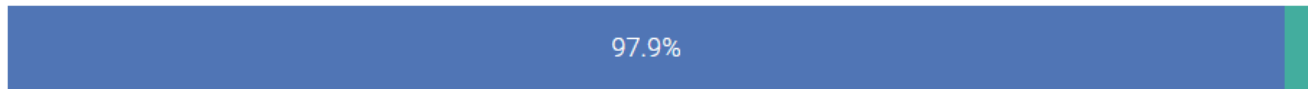


Minnesota

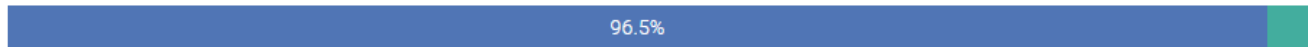


Ethnicity

Northwest Minnesota



Minnesota



Gender

Northwest Minnesota



Minnesota

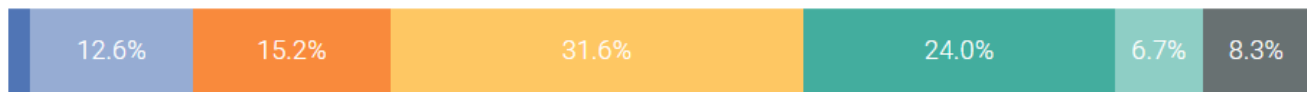


Educational Attainment and Requirements

The stacked bar chart here illustrates the estimated mix of educational attainment of the workers in this career field in aggregate. In general, the Northwest Minnesota Health Science Technology workforce has a close match to the education and training required for existing roles. For example, just 16.4% of Health Science Technology positions require no educational award (up 1.1 percentage points from the prior year), and about 14.2% of the workforce holds a high school diploma or less. About 31.6% of the Health Science Technology workforce hold a two-year degree and 15.2% completed some college (such as a certificate), or 46.8% in all, compared to about 37.6% of local jobs in Health Science Technology that typically require a certificate two-year degree (down 2.1 percentage points from the prior year). The share of positions regionally that require a postgraduate degree increased from 14.6% to 15.5% as of 2022Q2.

Educational Attainment :

Northwest Minnesota



Minnesota



< High School (1.6%)

Some College (15.2%)

Four-Year (24.0%)

High School (12.6%)

Two-Year (31.6%)

Master's (6.7%)

PhD (8.3%)

Education and Training Requirements :

Northwest Minnesota



Minnesota



Short-term OJT, no exp, no award (8.2%)

Long-term training, no exp, no award (0.6%)

2-year degree or certificate (37.6%)

Moderate-term OJT, no exp, no award (7.6%)

Previous work experience, no award (0.0%)

Bachelor's degree (30.5%)

Postgraduate degree (15.5%)

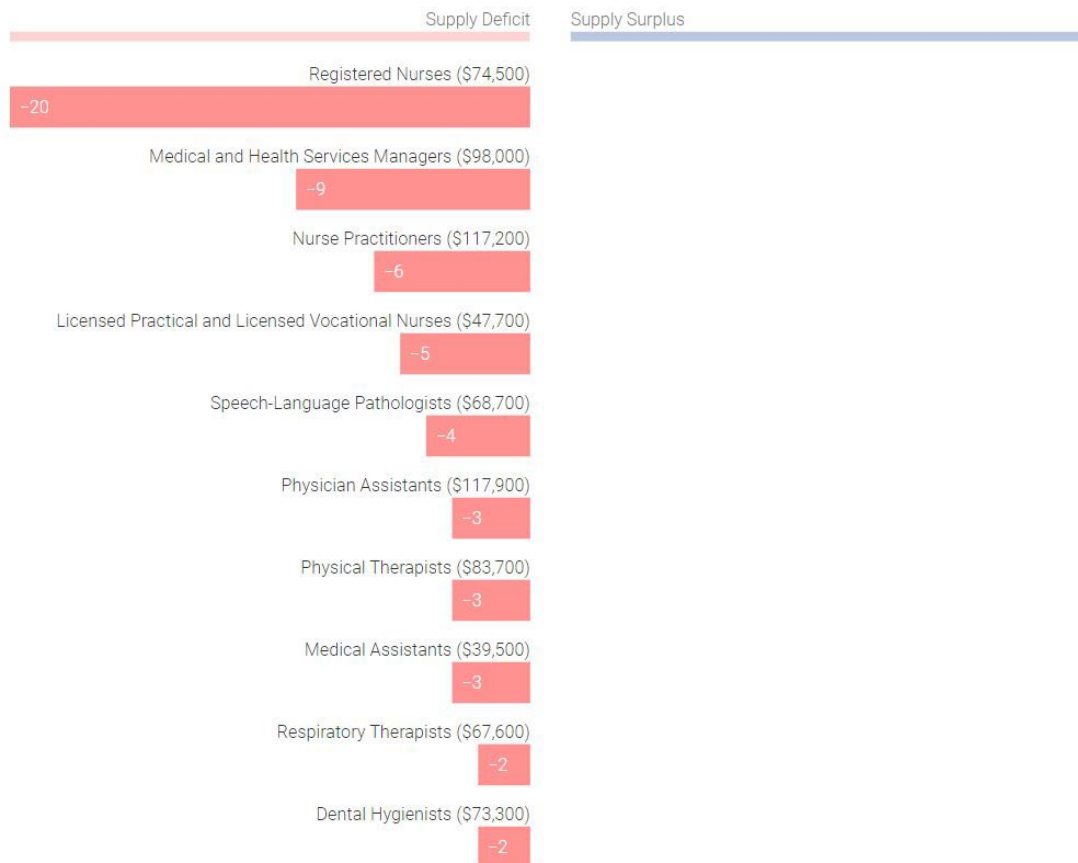
Occupation Gaps

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

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

In Health Science Technology, Registered Nurses remains the occupation with the greatest annual shortages in the Northwest. This critical talent shortage is due in large part to forecasted employment growth and replacement demand needs due to retirements combined with insufficient talent coming through Registered Nursing programs at both the two-year and four-year levels. There are no Health Science Technology occupations in talent surplus in the Northwest.

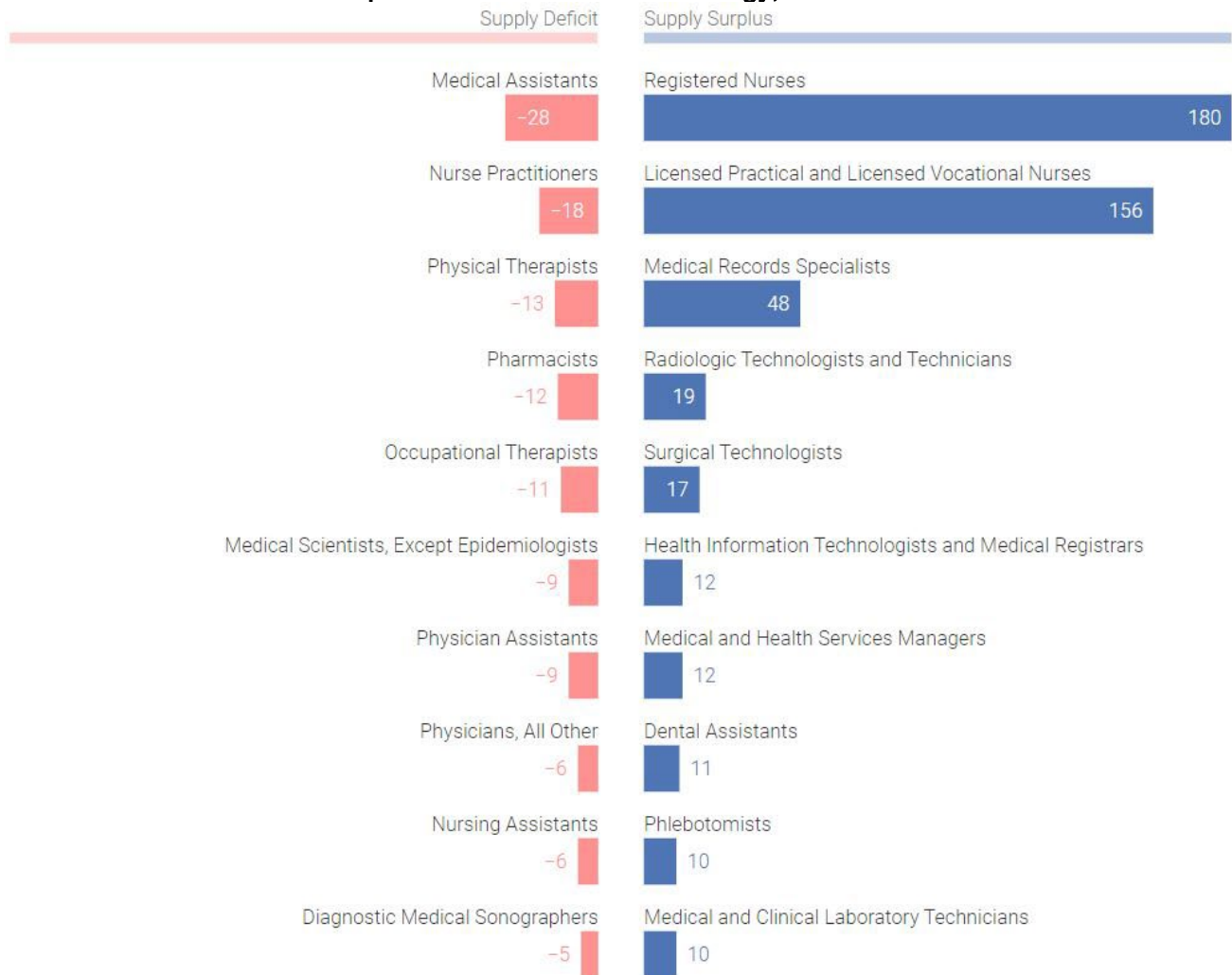
Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Health Science Technology, Northwest Minnesota 2022Q2



Award Gaps

A comparison of the graduate talent pipeline through certificate and other postsecondary degree programs to the current estimated openings by occupation illuminate a few moderate shortages and some general misalignments. The Northwest continues to have several critical Health Science Technology award gaps, meaning that the region is underproducing local talent in relation to employer demand. For instance, Northwest colleges and universities are underproducing about 28 graduates annually that are needed to fill Medical Assistant positions open with employers in the region. Several important occupations that require advanced education, including doctorates also have local award gaps, such as Nurse Practitioners, Pharmacists, and Physical Therapists. Occupations that show higher awards given than what is currently needed in the local talent market are examples of programs that serve other parts of the state where talent demand is high but relevant programs may not exist, such as Registered Nurses. The oversupply of graduates in the Northwest is likely helping to meet award gaps found in the 7-county MSP Metro and elsewhere.

Award Gaps in Health Science Technology, Northwest 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 (\$50,500 in the Northwest). 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 (\$50,500 in the Northwest). 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, Northwest Minnesota 2022Q2

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

Gateway Occupations
Licensed Practical Nurses (HS, OG)
Dental Assistants (HS, HD, OG)
Medical Records Specialists (HS)
Ophthalmic Technicians (HS, HD, OG)
Recreational Therapists (HS, AG)

Origin Occupations	Likely	Aligned
	Nursing Assistants (HS, HD, OG, AG)	Childcare Workers
	Home Health Aides (HD)	Customer Service Reps
	Medical Secretaries & Administrative Assistants (HD, OG)	Secretaries
	Pharmacy Technicians (OG, AG)	Cashiers
	Medical Assistants (HS, HD, OG, AG)	

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

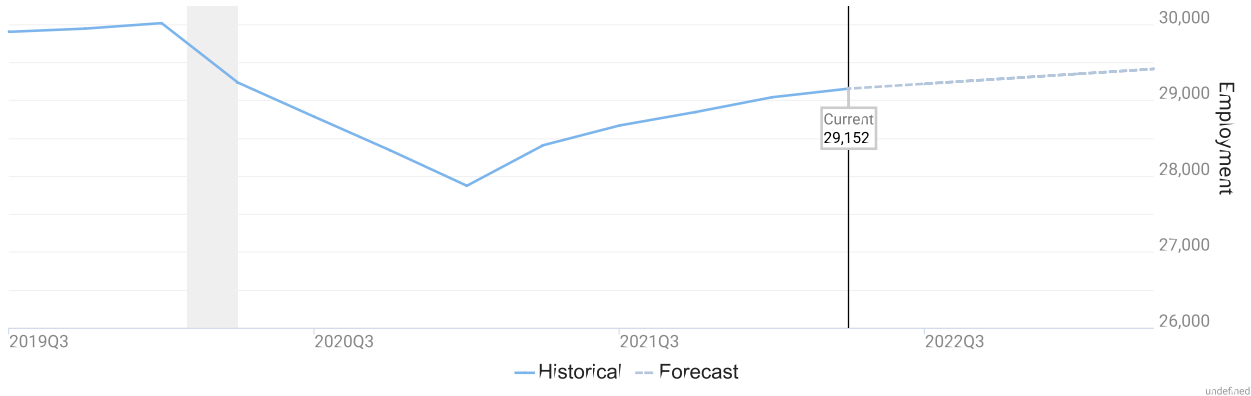
High Location Quotient (LQ) Occupations for Health Science Technology, Northwest Minnesota 2022Q2

- 1) Recreational Therapists (2.32)
- 2) Psychiatric Aides (1.98)
- 3) Genetic Counselors (1.87)
- 4) Nursing Assistants (1.63)
- 5) Epidemiologists (1.58)

HUMAN SERVICES

Human Services is the career field forecast to grow the most over the next ten years. Over the next three years, Human Services employment is forecast to grow by 0.8% annually—an increase of 0.3 percentage points from the estimate one year prior. Total employment sits at about 29,152 Human Services workers in the Northwest region as of 2022Q2, representing 16.6% of all employment across the region. There are about 614 unemployed Human Services workers in the region, about a 2.0% unemployment rate.

Baseline Worst-Case Scenario 3-Year Forecast for Human Services Careers, Northwest Minnesota 2022Q2



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

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Growth
Personal Care Aides	2,812	\$29,700	0.95	98	484	2.2%
Teaching Assistants, Except Postsecondary	2,528	\$32,800	1.90	33	250	0.5%
Elementary School Teachers, Except Special Education	2,072	\$57,800	1.39	34	158	0.4%
Secondary School Teachers, Except Special and Career/Technical Education	1,539	\$58,200	1.35	30	113	0.5%
Childcare Workers	1,279	\$26,600	1.40	-95	175	0.0%
Police and Sheriff's Patrol Officers	881	\$65,000	1.23	-121	71	0.4%
Middle School Teachers, Except Special and Career/Technical Education	842	\$61,600	1.28	14	64	0.4%
Lawyers	625	\$100,300	0.67	-5	31	0.2%
Social and Human Service Assistants	620	\$40,100	1.34	-14	85	1.6%
Preschool Teachers, Except Special Education	530	\$37,700	1.02	-3	62	1.3%
Remaining Component Occupations	15,427	\$54,500	0.99	-669	1,709	0.8%
Human Services (CTE Field)	29,152	\$50,300	1.07	-697	3,198	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).

Most talent in the Northwest that is working in Human Services roles are employed by Elementary and Secondary Schools (34.1%) or Executive, Legislative, and Other General Government Support (11.6%) However, Individual and Family Services is forecasted to grow at a higher rate and have more replacement demand needs.

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

Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Growth	10-Year Total Demand
Elementary and Secondary Schools	34.1%	9,955	8,458	470	8,928
Executive, Legislative, and Other General Government Support	11.6%	3,385	3,013	111	3,124
Individual and Family Services	7.9%	2,301	3,230	903	4,132
Religious Organizations	4.4%	1,272	1,387	70	1,457
Colleges, Universities, and Professional Schools	4.1%	1,182	1,157	129	1,286
Child Care Services	3.7%	1,088	1,306	-23	1,284
Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities	2.8%	829	1,083	108	1,191
Personal Care Services	2.3%	665	782	145	927
Junior Colleges	2.2%	643	622	53	675
Justice, Public Order, and Safety Activities	2.0%	578	510	-6	504
Legal Services	1.6%	455	337	6	342
General Medical and Surgical Hospitals	1.5%	429	420	13	433
Home Health Care Services	1.5%	425	628	90	718
Nursing Care Facilities (Skilled Nursing Facilities)	1.3%	382	463	-13	451
Civic and Social Organizations	1.3%	368	596	139	735
Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	1.1%	333	502	90	592
Administration of Environmental Quality Programs	1.1%	322	278	-7	272
Vocational Rehabilitation Services	1.1%	320	346	-10	336
Other Schools and Instruction	1.0%	295	383	72	455
Administration of Human Resource Programs	1.0%	294	257	-1	257
All Others	12.5%	3,634	4,067	359	4,426

Career Field Demographics

The Human Services field is predominantly female (66.0%) and white (91.2%). The share of BIPOC Human Services talent increased by 0.6 percentage points from the prior years' estimates. The age of the workforce is evenly distributed between 25 and 64 years of age, but the share that is 65 and older increased by 0.6 percentage points from the prior years' estimates.

Age :

Northwest Minnesota



Minnesota



16 to 19 years (2.3%)

25 to 34 years (19.5%)

45 to 54 years (20.4%)

20 to 24 years (8.8%)

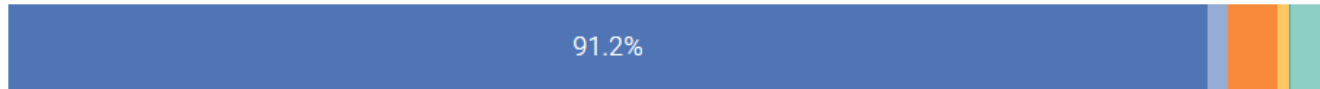
35 to 44 years (21.3%)

55 to 64 years (20.1%)

65 years and over (7.7%)

Race :

Northwest Minnesota



Minnesota



White (91.2%)

American Indian (3.8%)

Pacific Islander (0.0%)

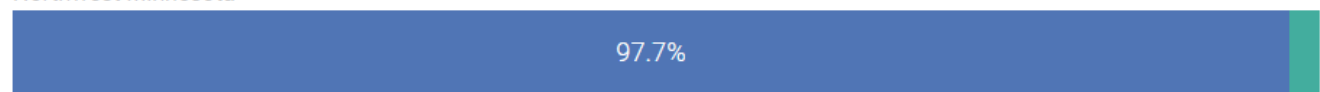
Black (1.6%)

Asian (0.9%)

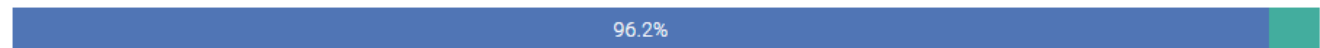
Two or More Races (2.5%)

Ethnicity :

Northwest Minnesota



Minnesota



Non-Hispanic/Latino (97.7%)

Hispanic or Latino (of any race) (2.3%)

Gender :

Northwest Minnesota



Minnesota



Male (34.0%)

Female (66.0%)

Educational Attainment and Requirements

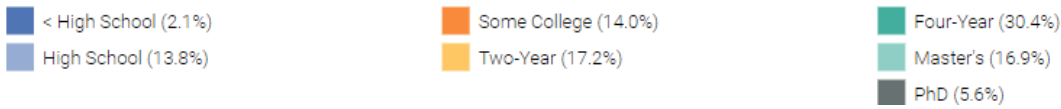
The stacked bar chart here illustrates the estimated mix of educational attainment of the workers in this career field in aggregate. For example, 2.1% of the Human Services workforce has no diploma at all, and 13.8% hold a high school diploma as their highest credential. In contrast, about 41.6% of positions in this field do not require any kind of postsecondary award. The share of Human Services roles requiring a Bachelor's degree increased by 1.8 percentage points, and a Postgraduate degree increased by 0.7 percentage points. Educational attainment of talent is lagging these changes moderately, with regional Human Services talent holding a four-year degree increasing by 0.8 percentage points and a PhD increased by 0.5 percentage points.

Educational Attainment :

Northwest Minnesota

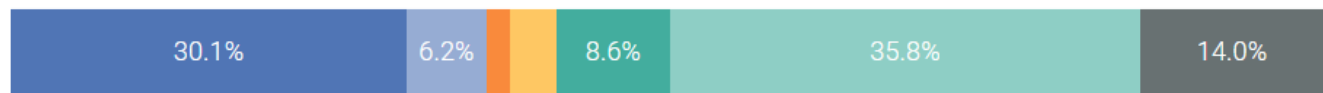


Minnesota

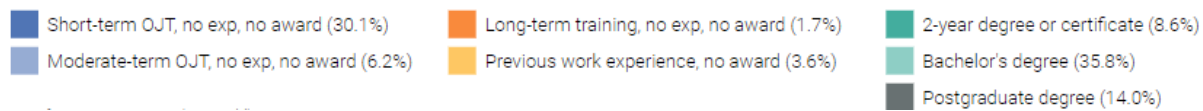
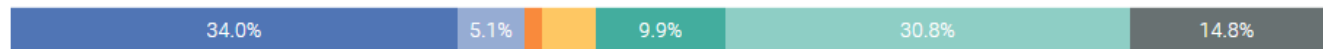


Education and Training Requirements :

Northwest Minnesota



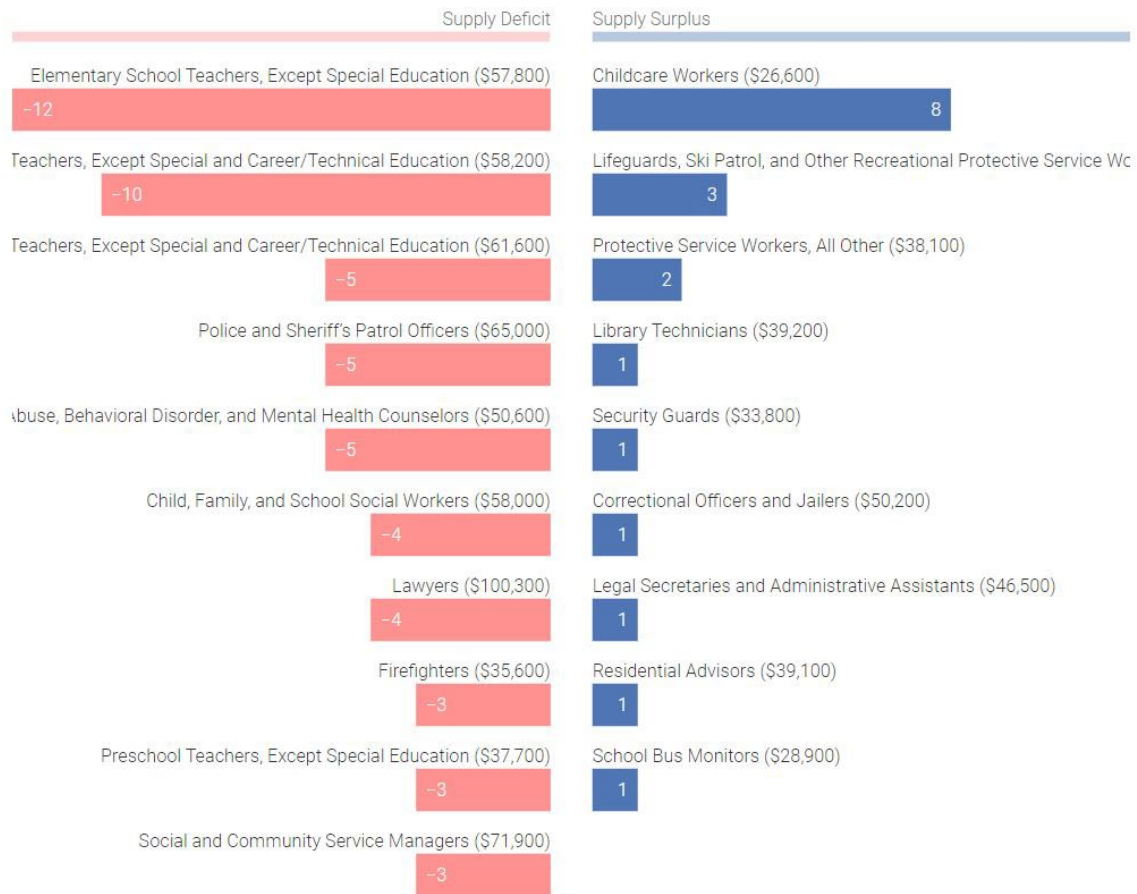
Minnesota



Occupation Gaps

The chart below shows the potential average annual gaps over ten years. In Human Services, Teachers are the top occupations of shortage in the region. Police Officers dropped from being the top occupation of shortage due to the rise in Teaching occupation openings going unfilled. These critical talent shortages due in large part to forecasted employment growth and replacement demand needs due to retirements combined with insufficient talent coming into these careers, and with the increased exits from teaching careers during the pandemic.

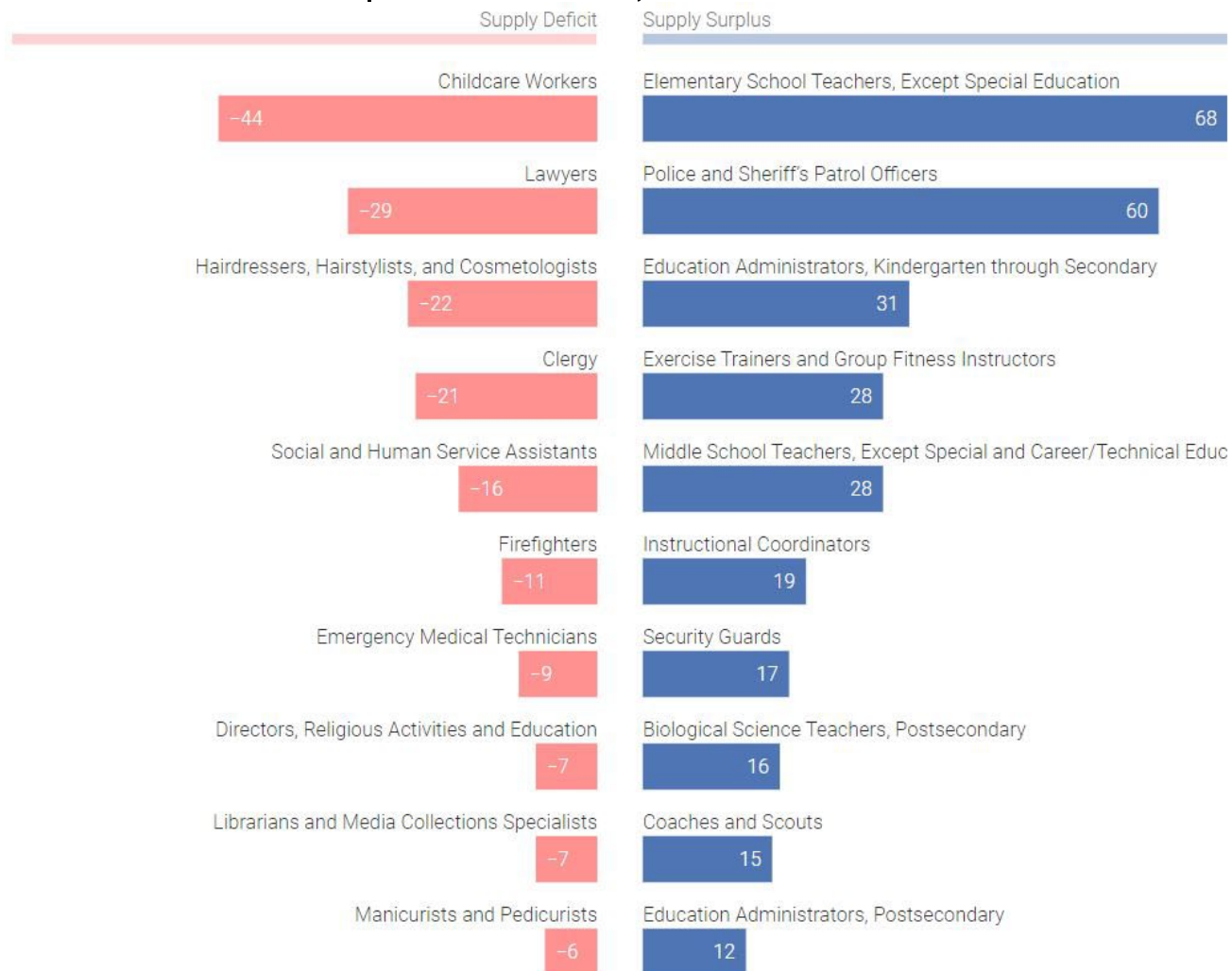
Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Human Services, Northwest Minnesota 2022Q2



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. Northwest Minnesota faces several moderate Human Services award gaps, meaning that the region is underproducing local talent in relation to employer demand. Northwest colleges and universities are underproducing about 23 graduates annually that are needed to fill Lawyer positions open with employers based in the region. Several occupations that typically require a certificate or industry credential also have local award gaps, including childcare workers, hairdressers, clergy, and human service assistant roles. Occupations that show higher awards given than what is currently needed in the local talent market are examples of programs that serve other parts of the state where talent demand is high but relevant programs may not exist.

Award Gaps in Human Services, Northwest 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 Human Services locally, or aligned opportunities that share a large number of skillsets in-demand in Human Services.

Gateway Occupations are good jobs that can lead to Target Occupations as skills and experience are developed. These typically offer between \$42,000 up to the regional average wage (\$50,500 in the Northwest). Below are a few Gateway Occupations in Human Services locally. Gateway occupations offer a wage uplift to those previously employed in Origin Occupations, and offer longer-term economic mobility and career advancement opportunities. These are most often best-suited for adult workforce programming and first postsecondary experiences.

Target Occupations refer to high-wage occupations that pay at or above the region's average wage (\$50,500 in the Northwest). These positions are also high-skill—meaning that they require an industry credential, certification, or higher education—and high-demand. Many of these Target Occupations

are also facing Opportunity Gaps and Award Gaps locally, labeled below as “OG” and “AG” respectively. The majority of target occupations in this career field are in the education career cluster.

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

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

Elementary School Teachers
 Secondary School Teachers
 Middle School Teachers
 Special & CTE Teachers
 Child, Family, & School Social Workers

Gateway Occupations

Court, Municipal, & License Clerks (HD, OG)
 Clergy (HS, HD, OG, AG)
 Correctional Officers (AG)
 Self-Enrichment Teachers (HD, OG, AG)
 Paralegals & Legal Assistants (HS, HD, OG)

Origin Occupations

Likely

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

Aligned

Tellers
 Retail Sales Workers
 Waiters and Waitresses
 Cashiers
 Cooks

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

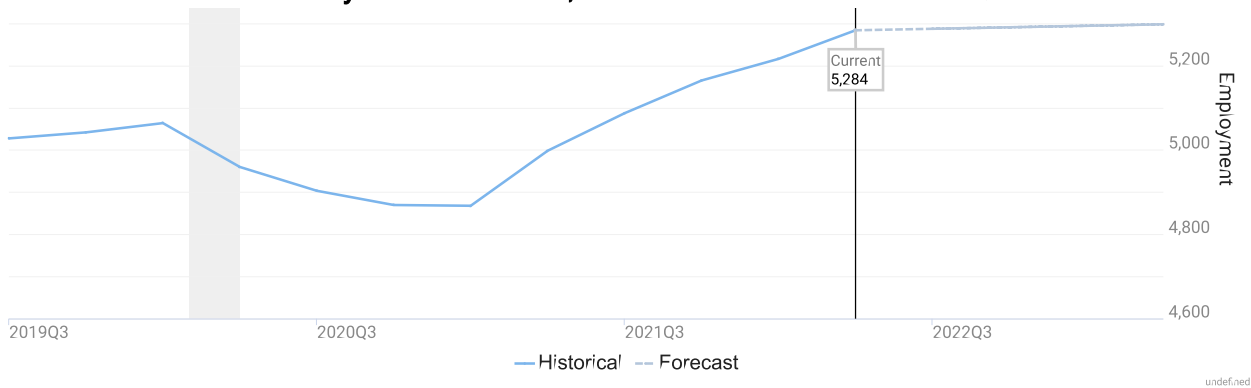
High Location Quotient (LQ) Occupations for Human Services, Northwest Minnesota 2022Q2

- 1) Special Education Teachers, Preschool (3.62)
- 2) Court, Municipal, & License Clerks (3.10)
- 3) Gambling Surveillance Officers & Gambling Investigators (2.77)
- 4) Morticians, Undertakers, & Funeral Arrangers (2.65)
- 5) Special Education Teachers, Secondary School (2.03)

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 over the course of the COVID-19 pandemic. Over the next three years, Arts, Communications, and Information Systems Field employment is forecast to grow by 0.2% annually—coming in midway between the pessimistic and optimistic forecasts provided in 2021Q1 (-0.4% to 0.8% range). Overall, There are only 116 individuals trained in careers in this field that are currently unemployed, an unemployment rate of 2.0%. A total of 2,302 new professionals in this field will be needed over the next five years to meet growth, replacement, and turnover demand. Wage gains were significant in this field, jumping from \$60,500 in 2021Q1 to \$67,000 on average in 2022Q2.

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



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

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Growth
Software Developers	1,033	\$93,600	0.52	305	90	1.2%
Computer User Support Specialists	395	\$50,100	0.52	6	28	0.0%
Computer Systems Analysts	343	\$80,100	0.57	-13	23	-0.3%
Computer Network Support Specialists	270	\$63,300	1.33	4	19	-0.1%
Printing Press Operators	255	\$39,300	1.51	-25	21	-1.7%
Graphic Designers	244	\$46,700	0.81	4	20	-0.5%
Computer Occupations, All Other	209	\$79,800	0.42	9	15	0.0%
Network and Computer Systems Administrators	192	\$73,400	0.52	-12	12	-0.2%
Telecommunications Equipment Installers and Repairers, Except Line Installers	181	\$58,700	0.91	3	19	-0.6%
Musicians and Singers	176	\$59,000	1.04	-16	23	1.1%
Remaining Component Occupations	1,985	\$60,400	0.73	2	190	0.2%
Arts, Communications, & Information Systems (CTE Field)	5,284	\$67,000	0.63	265	458	0.2%

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

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

The largest share of talent in the Northwest that is working in Arts, Communications, and Information Systems roles are employed by the Printing Industry (6.7%) and Telecommunications Carriers (6.7%). Overall, employment is relatively spread out across many different industries.

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

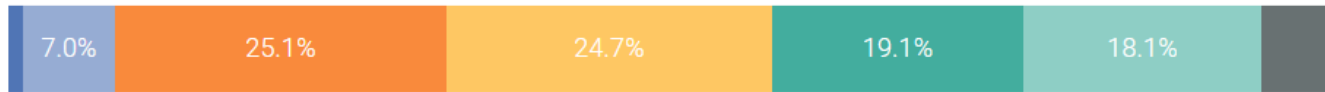
Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Growth	10-Year Total Demand
Printing and Related Support Activities	6.7%	353	336	-74	262
Wired and Wireless Telecommunications (except Satellite)	6.7%	352	305	-47	257
Independent Artists, Writers, and Performers	5.4%	285	291	23	314
Religious Organizations	5.0%	266	290	18	308
Other Professional, Scientific, and Technical Services	4.8%	255	212	21	232
Web Search Portals, Libraries, Archives, and Other Information Services	4.4%	234	200	70	270
Newspaper, Periodical, Book, and Directory Publishers	3.8%	200	180	-18	162
Computer Systems Design and Related Services	3.6%	192	148	34	181
Depository Credit Intermediation	3.5%	187	133	4	136
Executive, Legislative, and Other General Government Support	2.7%	140	104	5	109
Elementary and Secondary Schools	2.6%	137	102	3	105
Household Appliances and Electrical and Electronic Goods Merchant Wholesalers	2.6%	137	110	3	113
Colleges, Universities, and Professional Schools	2.1%	113	89	8	97
General Medical and Surgical Hospitals	2.1%	109	77	2	79
Radio and Television Broadcasting Stations	2.0%	107	102	6	108
Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	1.7%	90	67	7	74
Crop Production (Proprietors)	1.5%	79	55	-6	49
Management of Companies and Enterprises	1.4%	76	55	1	56
Management, Scientific, and Technical Consulting Services	1.3%	69	50	1	52
Florists	1.2%	65	51	-17	34
All Others	34.8%	1,838	1,523	101	1,624

Career Field Demographics

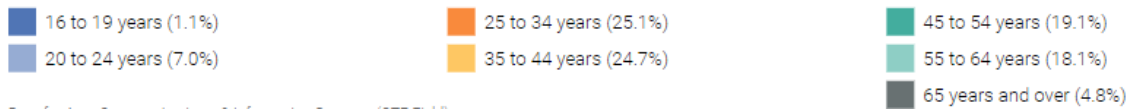
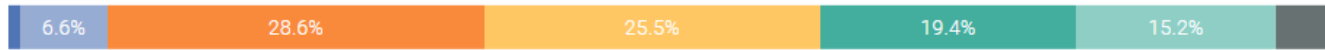
The Arts, Communications, and Information Systems field is predominantly male (71.3%, up 1.1 percentage points from the prior years' estimates) and white (92.0%). The share of talent that is BIPOC by race increased by 1.2 percentage points from the prior year's estimates. Over half of the Arts, Communications, and Information Systems workforce in the region is under 45 years of age (57.9%) and getting younger each year.

Age :

Northwest Minnesota

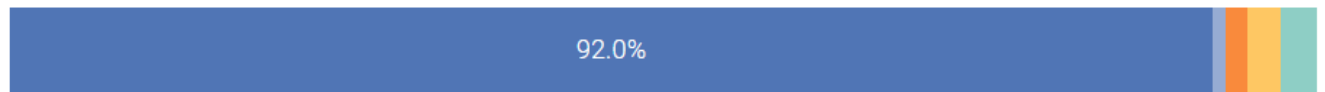


Minnesota

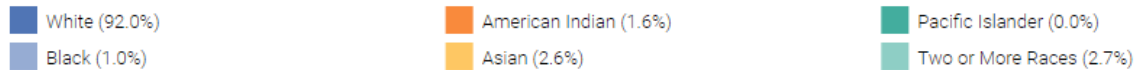


Race :

Northwest Minnesota

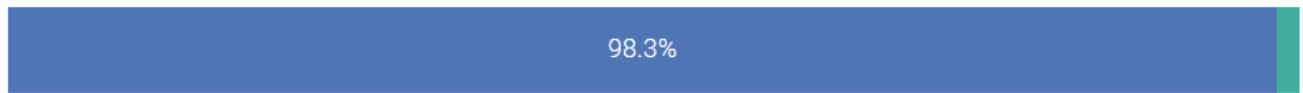


Minnesota



Ethnicity :

Northwest Minnesota



Minnesota



Gender :

Northwest Minnesota



Minnesota



Educational Attainment and Requirements

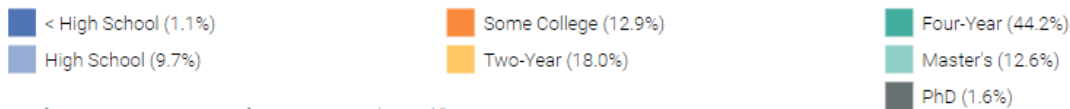
The stacked bar chart here illustrates the estimated mix of educational attainment of the workers in this career field in aggregate. Nearly two-thirds (61.2%, up 3.5 percentage points from the prior years' estimates) of all occupations in this field require a Bachelor's degree, while 44.2% of the workforce hold a four-year degree as their highest credential. Another 14.2% hold a Master's or PhD.

Educational Attainment :

Northwest Minnesota



Minnesota

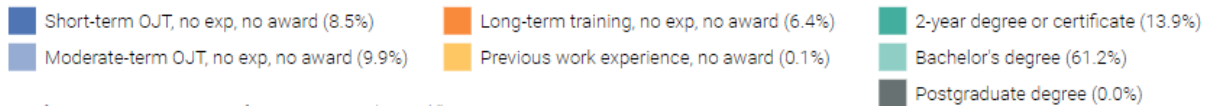


Education and Training Requirements :

Northwest Minnesota



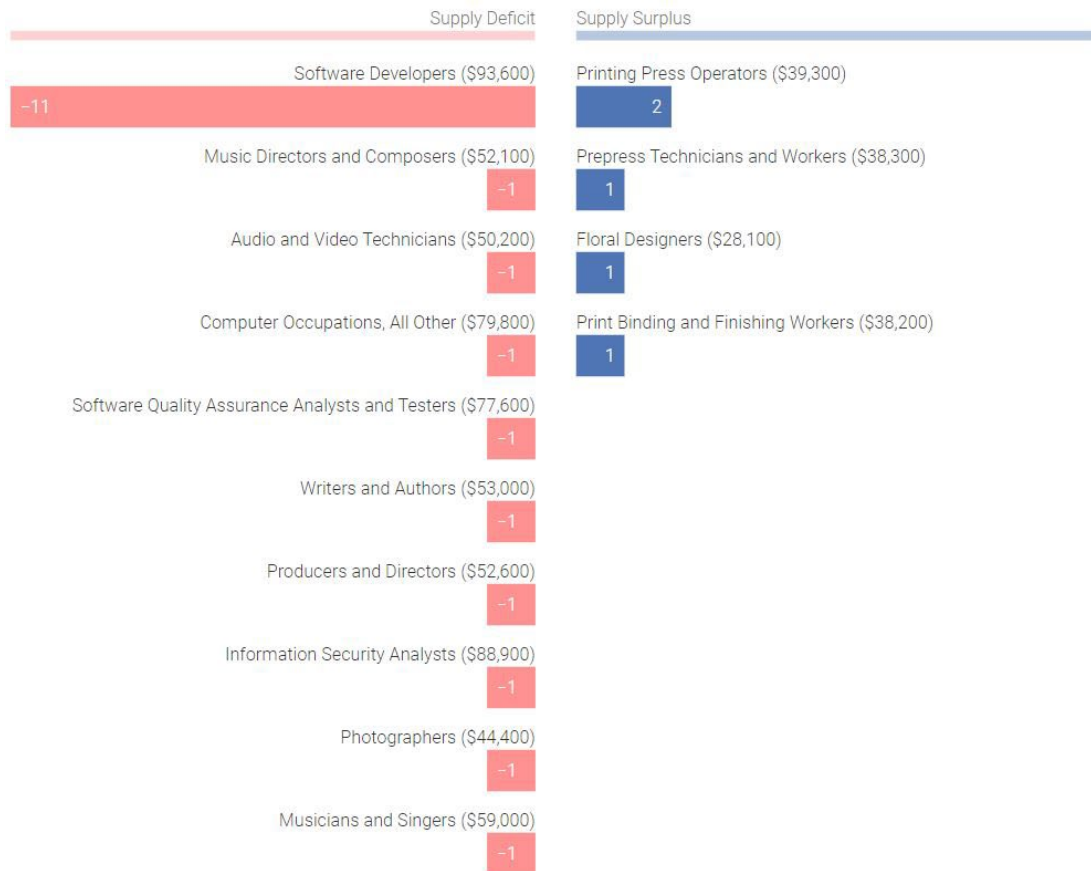
Minnesota



Occupation Gaps

The chart below shows the potential average annual gaps over ten years. Software Developers are the top occupation of shortage in this field, falling short at least seven skilled workers needed annually (averaged over the next ten years) to meet employer demand. This moderate talent shortage is primarily due to employment growth which is outpacing the growth in supply of trained software professionals in this region. Software Developers remained ranked number one occupation of shortage in this field, but all other shortages shrunk moderately to significantly from 2021Q1.

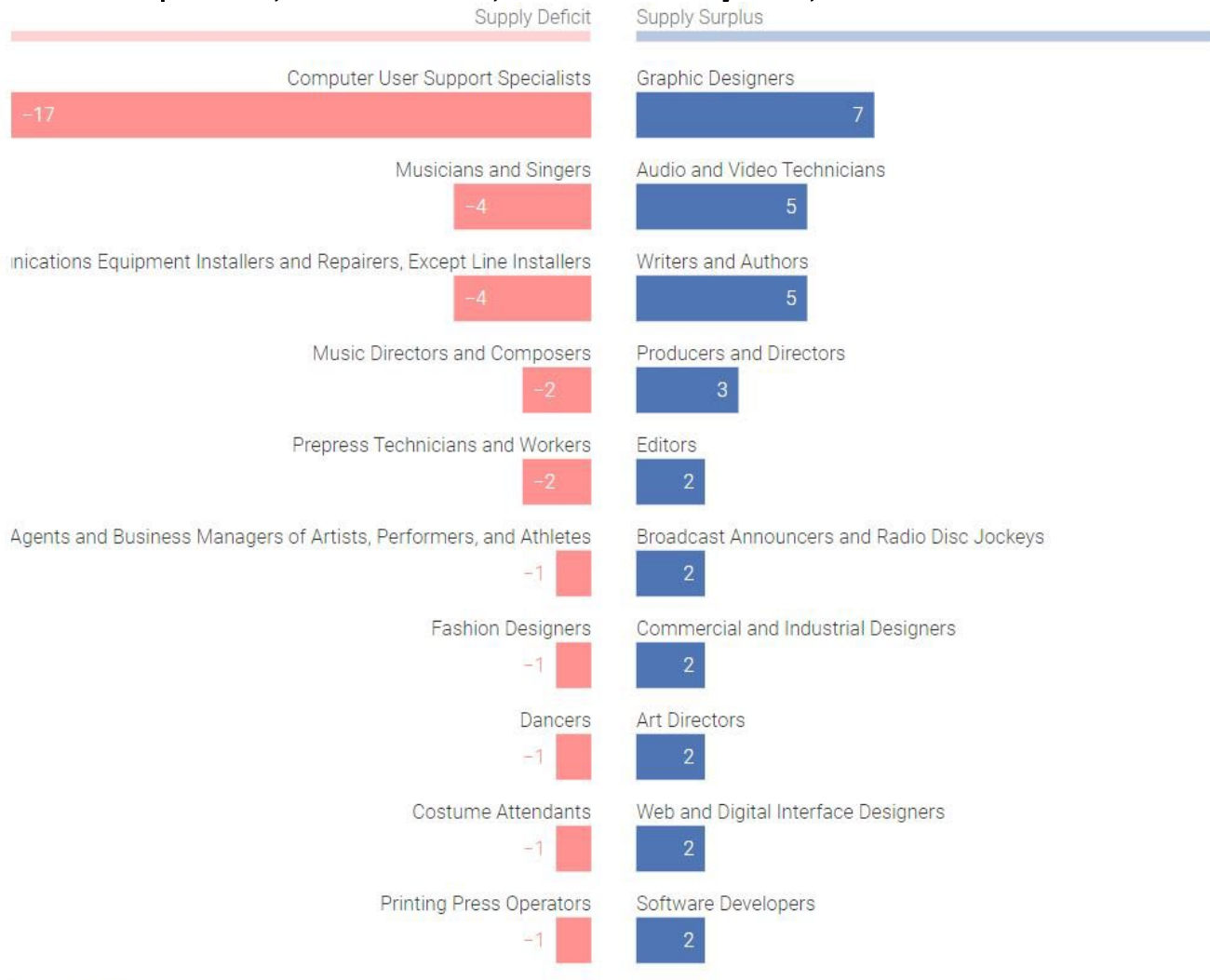
Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Arts, Communications. And Information Systems, Northwest Minnesota 2022Q2



Award Gaps

A comparison of the graduate talent pipeline obtaining a certificate or postsecondary degree to the current estimated openings by occupation illuminate a number of regional shortages. The Northwest is underproducing graduates in several Arts, Communications, and Information Systems programs in comparison to national benchmarks, meaning that the region is underproducing local talent in relation to what a typical community with a similar local mix of job opportunities would have. Northwest Minnesota colleges and universities are underproducing trained Computer User Support Specialists (certifications), Telecommunications Equipment Installers, and Musicians against national benchmarks—consistent with gaps identified in 2021Q1. Very few Information Technology careers make the list of award gaps or surpluses. Occupations that show higher awards given than what is currently needed in the local talent market are examples of programs that serve other parts of the state where talent demand is high but relevant programs may not exist.

Award Gaps in Arts, Communications, and Information Systems, Northwest 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 Arts, Communications, and Information Systems careers locally, or aligned opportunities that share a large number of skillsets in-demand in the field.

Gateway Occupations are good jobs that can lead to Target Occupations as skills and experience are developed. These typically offer between \$42,000 up to the regional average wage (\$50,500 in the Northwest). Below are a few Gateway Occupations in Arts, Communications, and Information Systems locally. Gateway occupations offer a wage uplift to those previously employed in Origin Occupations, and offer longer-term economic mobility and career advancement opportunities. These are most often best-suited for adult workforce programming and first postsecondary experiences.

Target Occupations refer to high-wage occupations that pay at or above the region's average wage (\$50,500 in the Northwest). 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, Northwest Minnesota 2022Q2

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

Gateway Occupations

Computer User Support Specialists (HS, AG)
 Graphic Designers (HS)
 Photographers (HD, OG)
 Audio & Video Technicians (HS, HD, OG)
 Actors (HS, HD)

Origin Occupations

Likely

Printing Press Operators (AG)
 Floral Designers
 Print Binding & Finishing Workers
 Broadcast Announcers & Radio Disc Jockeys(HS, HD)
 News Analysts, Reports, & Journalists (HS)

Aligned

Library Technicians
 Recreation Attendants
 Hosts and Hostesses
 Customer Service Reps
 Machine Operators

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

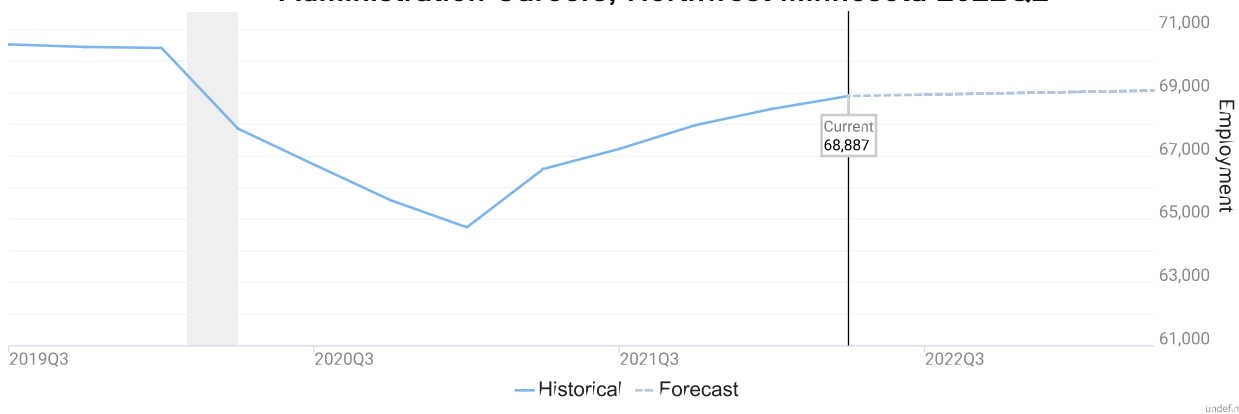
High Location Quotient (LQ) Occupations for Arts, Communications, and Information Systems, Northwest Minnesota 2022Q2

- 1) Broadcast Announcers & Radio Disc Jockeys (1.93)
- 2) Commercial & Industrial Designers (1.57)
- 3) Floral Designers (1.53)
- 4) Printing Press Operators (1.51)
- 5) Print Binding & Finishing Workers (1.49)

BUSINESS, MANAGEMENT, AND ADMINISTRATION

Business, Management, and Administration is a diverse career field with Hospitality and Tourism, Finance, Administration, Human Resources, and Marketing careers, which all experienced somewhat diverging trends during over the course of the COVID-19 pandemic. As of 2022Q2, employment in occupations aligned to this career field sits at about 68,887 workers in the Northwest, with an estimated unemployment rate of 3.3%. Over the next three years, Business, Management, and Administration Field employment is forecast to grow by 0.2% on average annually. Most of the growth is attributable to the Hospitality and Tourism Cluster careers in this field. Wages average \$45,800 annually, compared to \$50,500 across all career fields.

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



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

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Growth
Cashiers	4,901	\$26,200	1.29	-275	787	-1.3%
Retail Salespersons	4,233	\$31,800	0.98	-106	558	-0.5%
General and Operations Managers	3,181	\$80,700	0.90	256	280	0.5%
Fast Food and Counter Workers	3,167	\$25,200	0.87	-304	720	1.4%
Office Clerks, General	2,950	\$38,700	0.96	-107	313	-0.6%
Stockers and Order Fillers	2,487	\$31,600	0.89	95	386	0.0%
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	2,356	\$33,400	0.92	-85	326	0.4%
Waiters and Waitresses	2,249	\$25,600	0.98	-275	497	1.7%
Customer Service Representatives	2,106	\$39,600	0.66	42	236	-1.0%
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	2,100	\$62,700	1.41	40	203	-0.1%
Remaining Component Occupations	39,153	\$51,400	1.04	-974	4,683	0.3%
Business, Management, & Administration (CTE Field)	68,887	\$45,800	0.89	-1,686	8,990	0.2%

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

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

Employment in Business, Management, and Administration careers is spread out across a number of different industries. In the Northwest, the industries with the greatest share of Business, Management, and Administration talent are Restaurants (12.9%, up 0.9 percentage points from 2021Q1) and Warehouse Clubs (4.5%). These two industries account for a substantial amount of talent demand over the next ten years (restaurants alone accounts for nearly half of future positions needing to be filled in this field), but overall both current employment and future growth are relatively spread out over many different industries. Gasoline Station ten-year demand exceeds that of both Grocery and Convenience Retailers and Warehouse Clubs in the Northwest.

Business, Management, and Administration Field Employment by Industry, 2022Q2, Northwest Minnesota

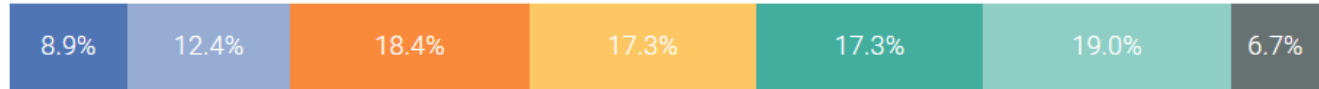
Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Growth	10-Year Total Demand
Restaurants and Other Eating Places	12.9%	8,860	16,780	1,914	18,694
Warehouse Clubs, Supercenters, and Other General Merchandise Retailers	4.5%	3,086	4,256	-288	3,968
Grocery and Convenience Retailers	4.0%	2,725	4,038	-305	3,733
Gasoline Stations	3.9%	2,658	4,249	-221	4,028
Household Appliances and Electrical and Electronic Goods Merchant Wholesalers	3.3%	2,256	2,299	-64	2,235
Traveler Accommodation	3.2%	2,190	3,388	439	3,827
Elementary and Secondary Schools	3.0%	2,087	2,663	-33	2,630
Depository Credit Intermediation	2.7%	1,845	1,608	-176	1,432
Executive, Legislative, and Other General Government Support	2.5%	1,715	1,908	-35	1,873
Building Material and Supplies Dealers	2.4%	1,621	2,118	-114	2,004
Nursing Care Facilities (Skilled Nursing Facilities)	2.2%	1,487	1,976	-105	1,871
General Medical and Surgical Hospitals	2.1%	1,418	1,665	-40	1,626
Religious Organizations	1.6%	1,073	1,175	-5	1,170
Drinking Places (Alcoholic Beverages)	1.5%	1,032	1,962	412	2,374
Agencies, Brokerages, and Other Insurance Related Activities	1.4%	976	916	13	929
Services to Buildings and Dwellings	1.2%	854	1,044	-16	1,028
Other Amusement and Recreation Industries	1.2%	838	1,528	275	1,802
Civic and Social Organizations	1.2%	829	1,319	301	1,620
Grocery and Related Product Merchant Wholesalers	1.2%	801	869	7	877
Automobile Dealers	1.1%	729	866	1	866
All Others	43.3%	29,807	32,363	-207	32,155

Career Field Demographics

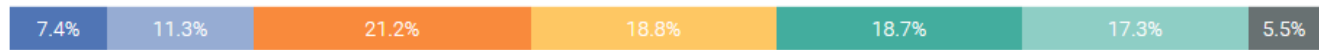
The Business, Management, and Administration field has a slightly higher concentration of female workers (57.2%, up 0.3 percentage points) and is 91.7% White—reflecting a significant 1.2 percentage point increase in the share of field talent that are BIPOC by race. About 3.3% of the workforce is Hispanic or Latinx. Now 43% of workers in Business, Management, and Administration roles are 45 years or older, trending older overall than the field's talent at the statewide level.

Age :

Northwest Minnesota



Minnesota



16 to 19 years (8.9%)

25 to 34 years (18.4%)

45 to 54 years (17.3%)

20 to 24 years (12.4%)

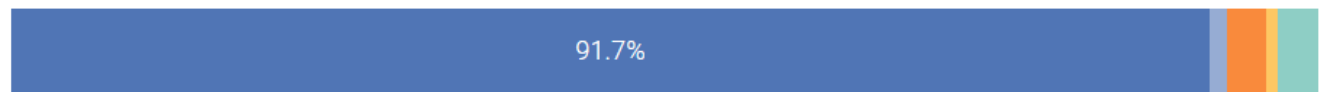
35 to 44 years (17.3%)

55 to 64 years (19.0%)

65 years and over (6.7%)

Race :

Northwest Minnesota



Minnesota



White (91.7%)

American Indian (3.0%)

Pacific Islander (0.0%)

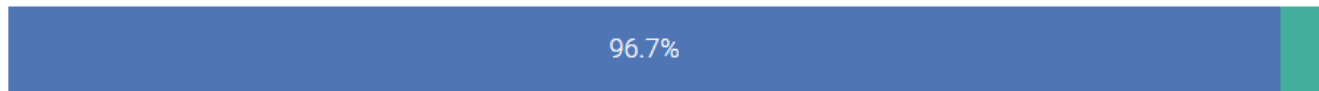
Black (1.4%)

Asian (0.8%)

Two or More Races (3.1%)

Ethnicity :

Northwest Minnesota



Minnesota



Non-Hispanic/Latino (96.7%)

Hispanic or Latino (of any race) (3.3%)

Gender :

Northwest Minnesota



Minnesota



Male (42.8%)

Female (57.2%)

Educational Attainment and Requirements

The stacked bar charts here illustrate the estimated mix of educational attainment of the workers in this career field in aggregate, next to the typical education and training requirements in the field overall. In general, the Northwest Minnesota Business, Management, and Administration workforce is more likely to have a two-year degree than what is in demand. While 18.8% of the workforce holds a two-year degree, just 0.2% of the occupations in this field require a two-year degree. Nearly two-thirds of all positions in this field (59.0%) require no degree, no experience, and only short-term on-the-job training. Another 21.0% require experience or some on-the-job training, but still no degree. In contrast,

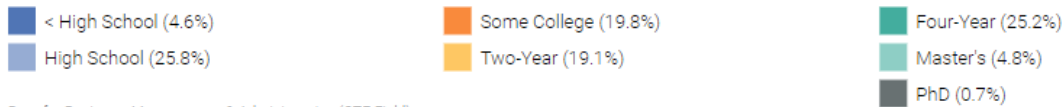
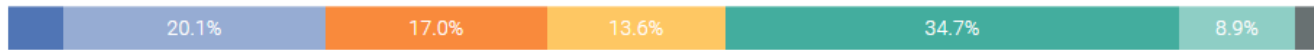
only 4.6% of the workforce in this field has no degree at all, and 26.0% hold a high school diploma as their highest credential. The educational attainment of Business, Management, and Administration talent locally is overall lower than what is observed at the statewide level, and similarly roles in the region generally require lower educational attainment or training levels.

Educational Attainment :

Northwest Minnesota



Minnesota

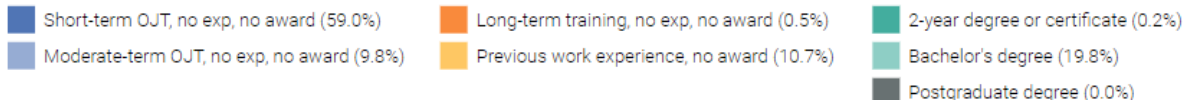


Education and Training Requirements :

Northwest Minnesota



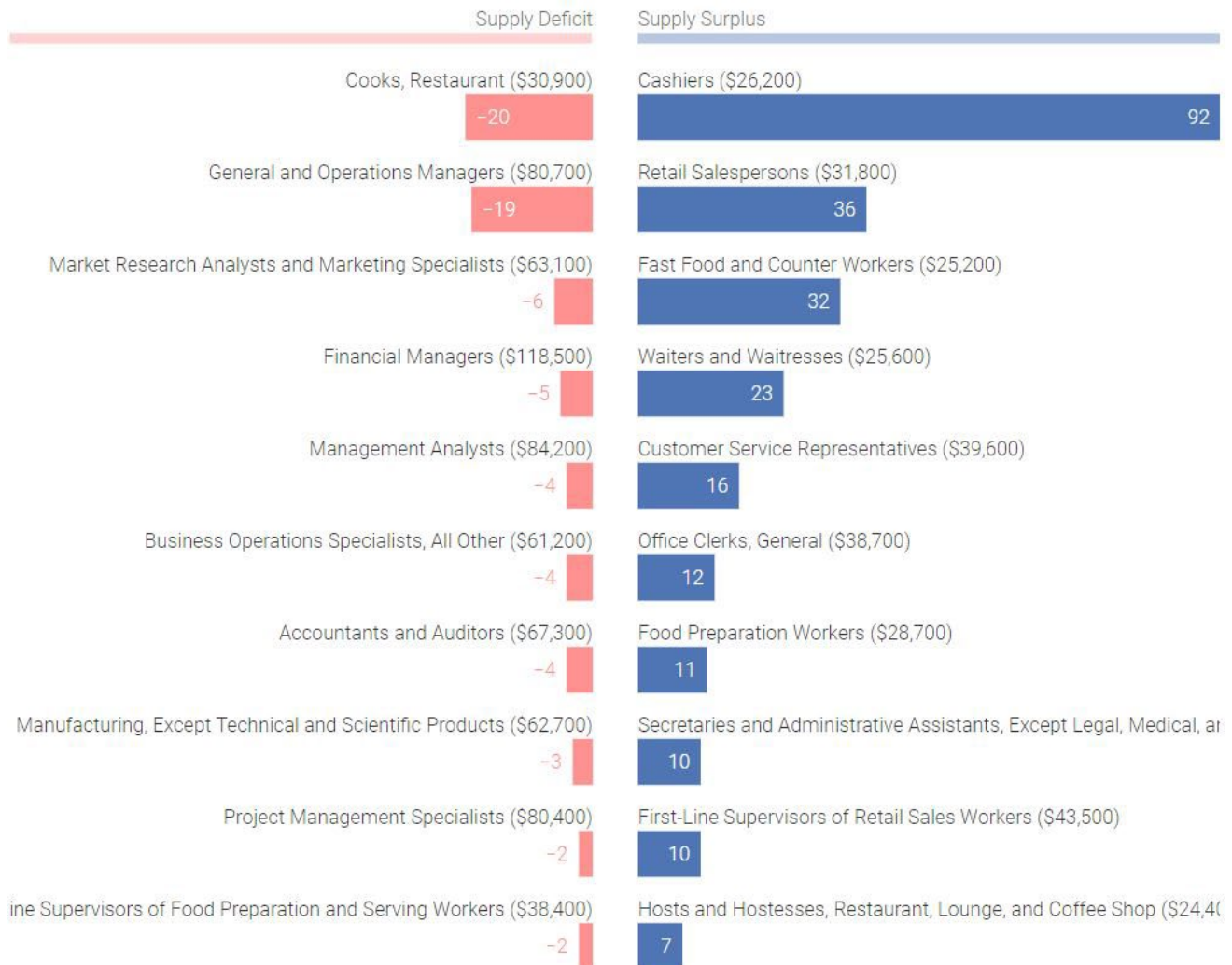
Minnesota



Occupation Gaps

The chart below shows the potential average annual gaps over ten years. Restaurant Cooks leapt up into the first place occupation of shortage as of 2022Q2, while Project Managers dropped from second place to ninth place. A number of management roles indicate significant shortages in the years ahead, with the General and Operations Manager talent pool likely falling short at least 19 skilled workers needed annually (averaged over the next ten years) to meet employer demand—rising from 2021Q1 estimates. This critical talent shortage is primarily due to moderate growth and retirements which far outpace demand.

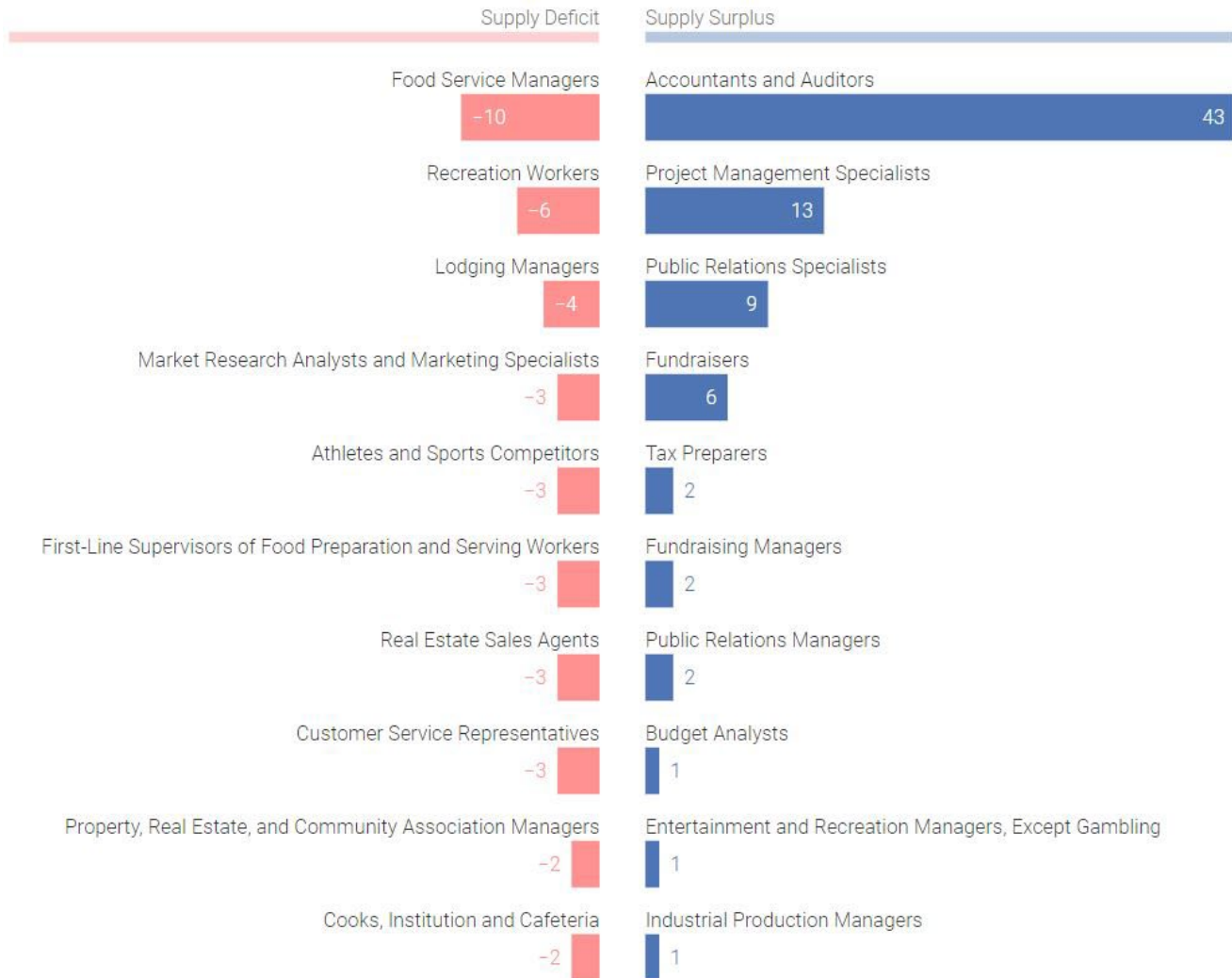
Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Business, Management, and Administration, Northwest Minnesota 2022Q2



Award Gaps

A comparison of the graduate talent pipeline through certificate and other postsecondary degree programs to the current estimated openings by occupation illuminate a few shortfalls in graduate awards needed to meet local demand for credentialed talent. Colleges and universities in the Northwest currently under-train talent in some important Business, Management, and Administration roles when compared to national benchmarks. Most of the roles with shortages of awards require industry credentials in food service and hospitality.

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



Promising Pathways

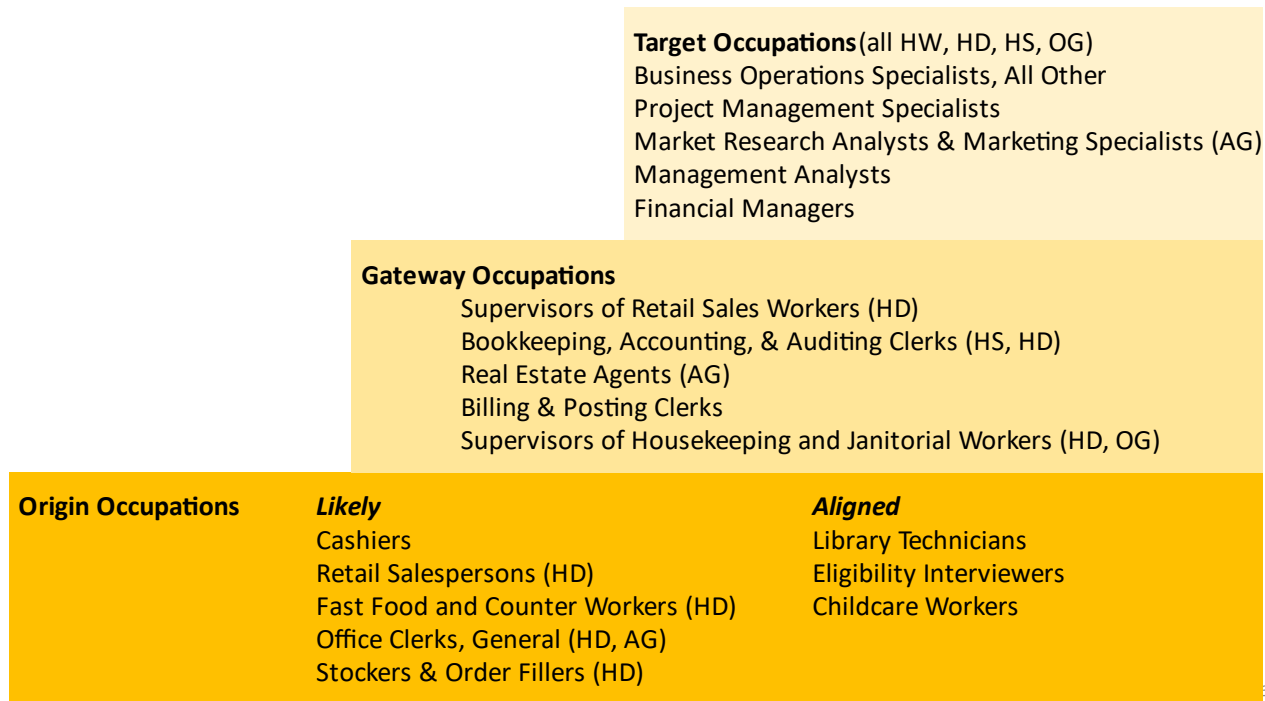
This section offers an origin-to-gateway-to-target model analysis for how to help move students from entrypoints into their field of interest into both likely and other aligned careers, taking into account automation, remote work, and the changing work environment.

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 Business, Management, and Administration roles locally, or aligned opportunities that share a large number of skillsets in-demand in the field.

Gateway Occupations are good jobs that can lead to Target Occupations as skills and experience are developed. These typically offer between \$42,000 up to the regional average wage (\$50,500 in the Northwest). Below are a few Gateway Occupations in Business, Management, and Administration locally. Gateway occupations offer a wage uplift to those previously employed in Origin Occupations, and offer longer-term economic mobility and career advancement opportunities. These are most often best-suited for adult workforce programming and first postsecondary experiences. None of the gateway occupations in this career field are considered high-skill, meaning that the majority of roles listed here would be accessible to an individual without formal education or training.

Target Occupations refer to high-wage occupations that pay at or above the region’s average wage (\$50,500 in the Northwest). 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, Northwest Minnesota 2022Q2



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

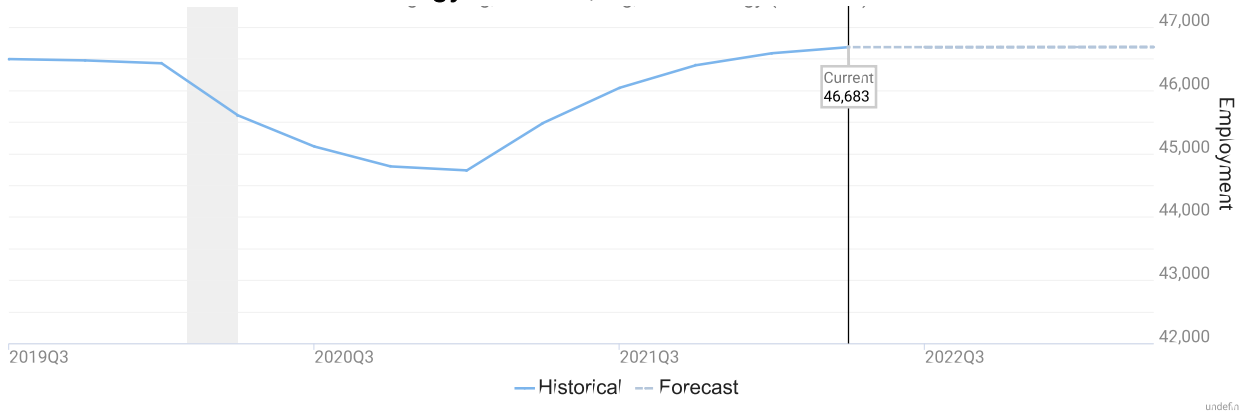
High Location Quotient (LQ) Occupations for Business, Management, and Administration, Northwest Minnesota 2022Q2

- 1) Gambling & Sports Book Writers & Runners (13.04)
- 2) Gambling Service Workers, All Other (11.73)
- 3) Gambling Cage Workers (3.65)
- 4) Supervisors of Gambling Services Workers (3.58)
- 5) Gambling Change Persons & Booth Cashiers (2.90)

ENGINEERING, MANUFACTURING, AND TECHNOLOGY

Engineering, Manufacturing, and Technology is a wide career field with transportation, logistics, STEM, architecture, construction, manufacturing, and machining careers. Over the next three years, this career field's employment is forecast to remain flat (0.0% annual growth). Most possible growth is attributable to transportation, automotive, and renewable energy occupations.

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



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

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Growth
Heavy and Tractor-Trailer Truck Drivers	2,833	\$50,800	1.19	-22	312	0.1%
Laborers and Freight, Stock, and Material Movers, Hand	2,701	\$35,900	0.84	85	357	0.1%
Team Assemblers	2,095	\$38,500	1.61	-3	191	-1.8%
Construction Laborers	1,909	\$44,800	1.26	177	197	0.4%
Maintenance and Repair Workers, General	1,731	\$42,900	1.00	-48	173	0.5%
Landscaping and Groundskeeping Workers	1,511	\$33,600	1.16	118	205	0.5%
Carpenters	1,440	\$47,900	1.37	-7	130	-0.1%
Light Truck Drivers	1,102	\$43,100	0.88	6	125	0.4%
First-Line Supervisors of Production and Operating Workers	961	\$63,200	1.31	-4	90	-0.2%
Welders, Cutters, Solderers, and Brazers	915	\$46,400	1.89	45	94	-0.1%
Remaining Component Occupations	29,481	\$51,800	1.00	-146	2,984	0.0%
Engineering, Manufacturing, & Technology (CTE Field)	46,683	\$48,800	1.08	205	4,859	0.0%

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

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

Many different industries employ Engineering, Manufacturing, and Technology talent in the Northwest. Locally, the industries with the greatest share of this field's talent are Wood Product Manufacturing (4.5%) and Transportation Equipment Manufacturing (4.2%), the same two industries highlighted in 2021Q1. Most industries employing talent in this field only touch less than 1% of total talent skilled in this field, suggesting that education and training programs will need to build broad strategies that cross each of these sectors.

Engineering, Manufacturing, and Technology Field Employment by Industry, 2022Q2, Northwest Minnesota

Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Growth	10-Year Total Demand
Other Wood Product Manufacturing	4.5%	2,096	2,170	-131	2,039
Other Transportation Equipment Manufacturing	4.2%	1,982	1,854	-376	1,478
Animal Slaughtering and Processing	4.1%	1,933	2,218	-22	2,196
Building Equipment Contractors	3.8%	1,786	1,788	51	1,840
Highway, Street, and Bridge Construction	3.3%	1,520	1,504	25	1,529
Household Appliances and Electrical and Electronic Goods Merchant Wholesalers	3.1%	1,455	1,580	-18	1,561
Executive, Legislative, and Other General Government Support	3.1%	1,443	1,483	51	1,534
Other General Purpose Machinery Manufacturing	2.9%	1,336	1,340	28	1,368
General Freight Trucking	2.7%	1,266	1,375	6	1,381
Residential Building Construction	2.7%	1,246	1,124	26	1,150
Other Specialty Trade Contractors	2.4%	1,113	1,114	17	1,131
Building Finishing Contractors	2.3%	1,059	948	20	968
Automotive Repair and Maintenance	2.2%	1,040	1,109	8	1,116
Foundation, Structure, and Building Exterior Contractors	2.2%	1,013	969	20	989
Services to Buildings and Dwellings	2.1%	965	1,197	21	1,218
Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	2.0%	922	936	-21	915
Utility System Construction	1.7%	801	791	9	800
Sugar and Confectionery Product Manufacturing	1.6%	728	804	-75	729
Couriers and Express Delivery Services	1.2%	577	708	75	783
Other Food Manufacturing	1.2%	576	689	61	750
All Others	46.8%	21,826	23,015	248	23,263

Career Field Demographics

Engineering, Manufacturing, and Technology field is heavily male (82.8%, the same as the prior years' estimates) and White (92.7%), with the share of talent that is BIPOC by race in this region increasing by one percentage point from the prior years' estimates (the share Hispanic or Latinx increased by 0.3 percentage points in the same period). Just under half of workers in this field are 45 years or older (48.9%) signaling potential exacerbation of the talent shortage due to impending retirements—although the share of talent in this age cohort declined slightly from one year ago.

Age

Northwest Minnesota



Minnesota



16 to 19 years (3.0%)

25 to 34 years (19.0%)

45 to 54 years (21.4%)

20 to 24 years (8.3%)

35 to 44 years (20.7%)

55 to 64 years (21.8%)

65 years and over (5.7%)

Race :

Northwest Minnesota



Minnesota



White (92.7%)

American Indian (3.1%)

Pacific Islander (0.0%)

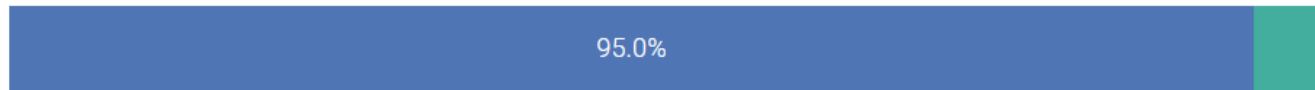
Black (1.1%)

Asian (0.8%)

Two or More Races (2.3%)

Ethnicity :

Northwest Minnesota



Minnesota



Non-Hispanic/Latino (95.0%)

Hispanic or Latino (of any race) (5.0%)

Gender :

Northwest Minnesota



Minnesota



Male (82.8%)

Female (17.2%)

Educational Attainment and Requirements

The stacked bar chart here illustrates the estimated mix of educational attainment of the workers in this career field in aggregate. In general, the Northwest Minnesota Engineering, Manufacturing, and Technology workforce is well-aligned for the typical credentials of entry-level positions. Over 1 in 4 of all positions in this field (27.5%) require no degree, no experience, and only short-term on-the-job training. About 53.6% require experience or some on-the-job training, but still no degree. Almost 1 in 10 of the workforce in this field has no degree at all (9.1%), and almost 2 in 5 (39.3%) hold a high school diploma as their highest credential. In all, 67.5% of the Engineering, Manufacturing, and Technology workforce have not completed a postsecondary credential.

Educational Attainment :

Northwest Minnesota



Minnesota



- < High School (9.1%)
- Some College (19.1%)
- Four-Year (11.8%)
- High School (39.3%)
- Two-Year (18.3%)
- Master's (1.9%)
- PhD (0.4%)

Education and Training Requirements :

Northwest Minnesota



Minnesota

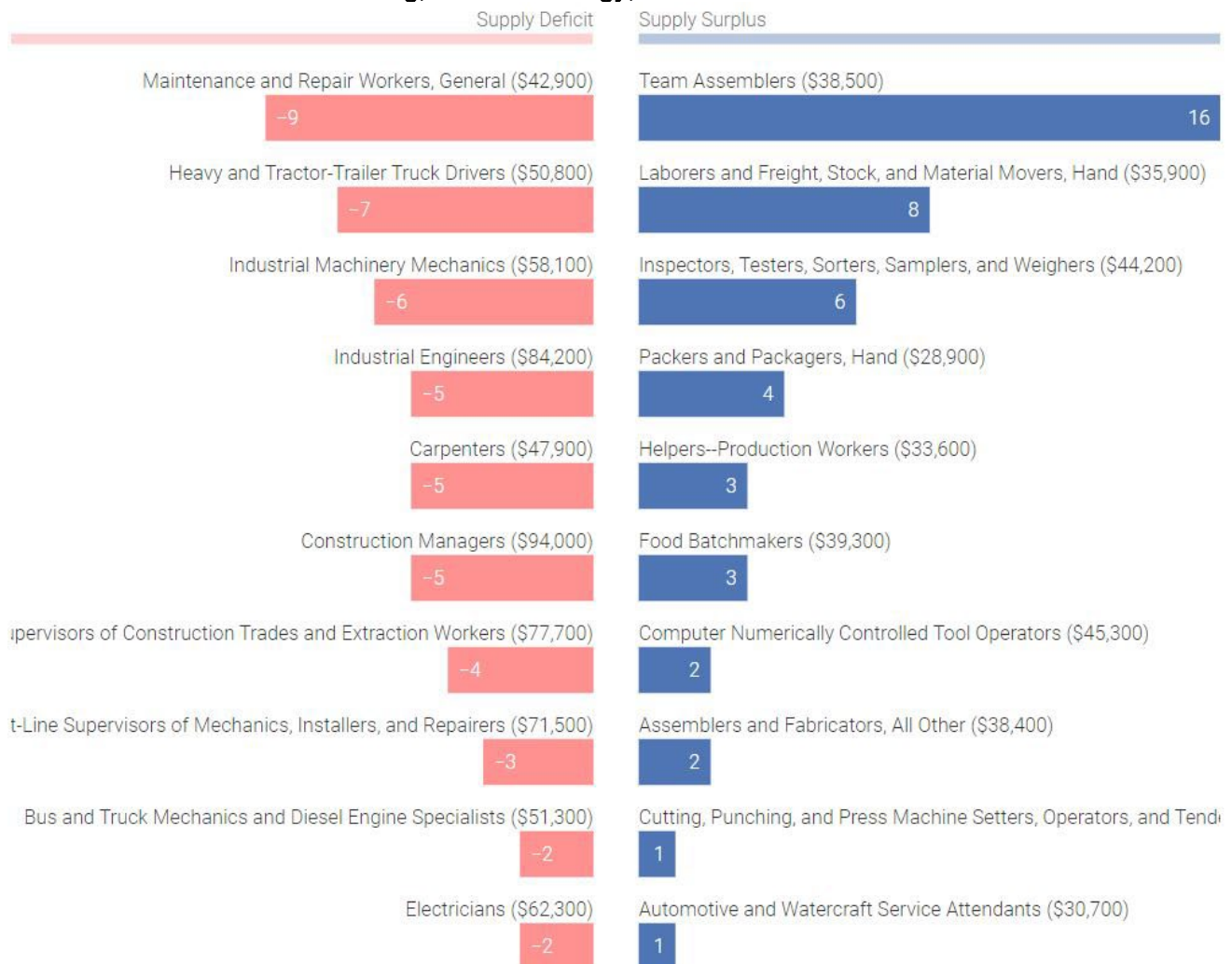


- Short-term OJT, no exp, no award (27.5%)
- Long-term training, no exp, no award (13.2%)
- 2-year degree or certificate (11.3%)
- Moderate-term OJT, no exp, no award (32.8%)
- Previous work experience, no award (7.6%)
- Bachelor's degree (7.5%)
- Postgraduate degree (0.2%)

Occupation Gaps

The chart below shows the potential average annual gaps over ten years. A number of management, maintenance, construction, and automotive roles indicate shortages in the years ahead, with the Maintenance and Repair Worker talent pool likely falling short at least 9 skilled workers needed annually (averaged over the next ten years) to meet employer demand. This talent shortage is primarily due to growth in demand and retirements which far outpace the talent pipeline.

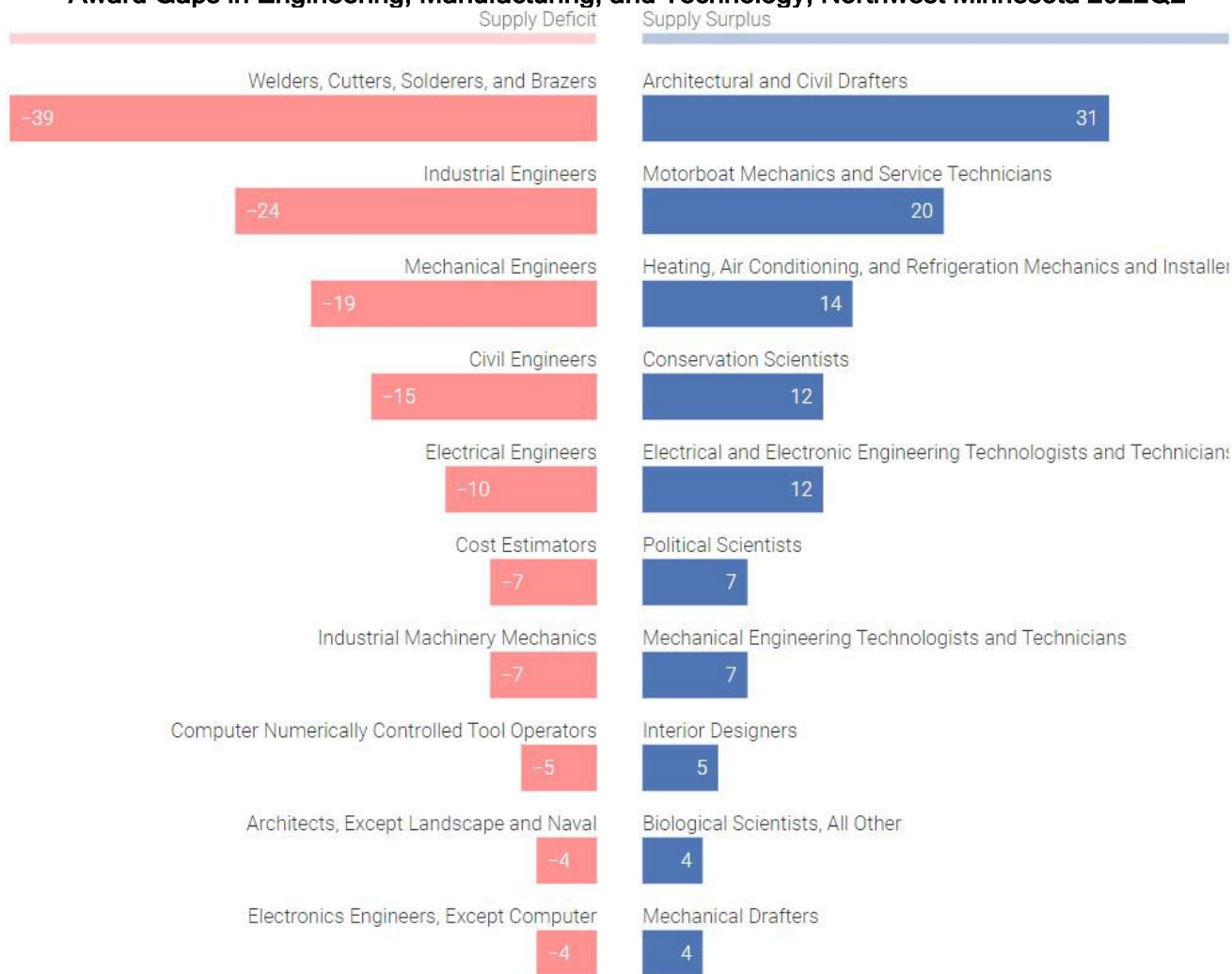
Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Engineering, Manufacturing, and Technology, Northwest Minnesota 2022Q2



Award Gaps

A comparison of the graduate talent pipeline through certificate and other postsecondary degree programs to the current estimated openings by occupation illuminates important graduate talent shortages. The Northwest currently under-trains some talent in Engineering, Manufacturing, and Technology when compared to national benchmarks. Northwest Minnesota colleges and universities are underproducing around 39 graduates annually that are needed to fill welding and soldering positions open with employers based in this region alone, a slight improvement over the prior years' estimates. Beyond this first occupation of shortage, it is a long string of "Engineers" that the region is underproducing for local talent in demand. There are at least 24 fewer Industrial Engineers and 19 fewer Mechanical Engineers graduating locally annually than what employers currently need to support demand, worsening from shortages observed approximately one year ago.

Award Gaps in Engineering, Manufacturing, and Technology, Northwest 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.

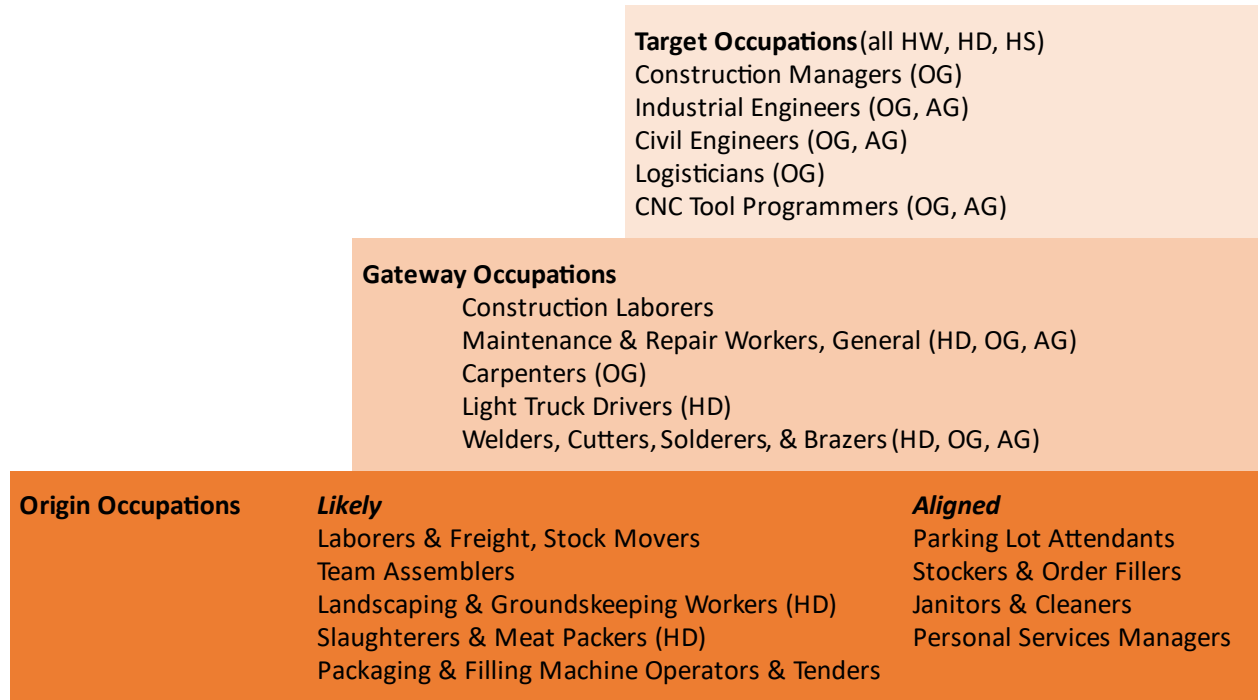
Origin Occupations are roles that are low-wage (<\$37,000 per year) or mid-wage (\$37,000-\$42,000) that have high unemployment locally among workers without four-year degrees. Below are a few Origin Occupations that are likely entrypoints into Engineering, Manufacturing, and Technology roles locally,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

Gateway Occupations are good jobs that can lead to Target Occupations as skills and experience are developed. These typically offer between \$42,000 up to the regional average wage (\$50,500 in the Northwest). Below are a few Gateway Occupations in Engineering, Manufacturing, and Technology locally. Gateway occupations offer a wage uplift to those previously employed in Origin Occupations, and offer longer-term economic mobility and career advancement opportunities. These are most often best-suited for adult workforce programming and first postsecondary experiences.

Target Occupations refer to high-wage occupations that pay at or above the region's average wage (\$50,500 in the Northwest). 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, Northwest Minnesota Metro 2022Q2



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

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

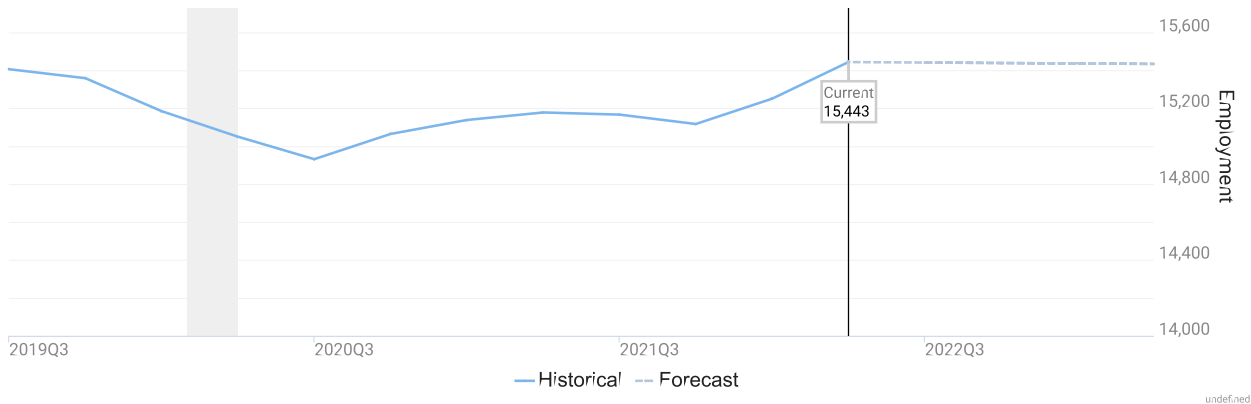
- 1) Slaughterers & Meat Packers (8.51)
- 2) Woodworking Machine Setters, Operators, & Tenders (4.89)
- 3) Food & Tobacco Roasting, Baking, & Drying Machine Operators & Tenders (4.18)
- 4) Fiberglass Laminators & Fabricators (4.02)
- 5) Food Cooking Machine Operators & Tenders (3.94)

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. The roles identified here as Agriculture, Food, and Natural Resources careers are specific to these pathways, but also do not include some specific occupations in the Agriculture Industry if they did not represent employment of over half of all talent in those roles. For instance, Ag Loan Officers are a subset of the Loan Officer Occupation, but since less than 50% of total Loan Officer employment is in Agriculture, Food, and Natural Resources Industry employers, that broad occupation is not shown in this analysis. RealTime Talent's job posting analysis is a useful resource for a deeper look at industry-based demand.

Total employment in Agriculture, Food, and Natural Resources focused careers was 15,443 as of 2022Q2 (8.8% of total regional employment), following five year average annual decline of -1.0%. Unemployment is low at 2.4% across these roles (399 professionals) and job postings are average in volume (277 in a 30-day period). Agriculture, Food, and Natural Resources occupations are uniquely concentrated in the Northwest, with a location quotient of 1.66. Over the next three years, this career field's employment is forecast to decline by about -0.1% in the Northwest. About 8,821 professionals will be needed to fill replacement demand due to job changes and retirements in Agriculture, Food, and Natural Resources roles over this five-year period.

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



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

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Growth
Farmers, Ranchers, and Other Agricultural Managers	4,793	\$66,300	5.50	-257	416	-0.8%
Farmworkers and Laborers, Crop, Nursery, and Greenhouse	1,611	\$33,900	2.40	53	256	0.2%
Landscaping and Groundskeeping Workers	1,511	\$33,600	1.16	118	205	0.5%
Plumbers, Pipefitters, and Steamfitters	557	\$62,800	1.03	64	58	0.2%
Food Batchmakers	556	\$39,300	3.00	26	65	-0.3%

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Growth
Farmworkers, Farm, Ranch, and Aquacultural Animals	458	\$31,700	2.51	-15	64	-1.1%
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	366	\$57,700	0.82	56	35	0.2%
Meat, Poultry, and Fish Cutters and Trimmers	319	\$34,100	2.13	25	36	-0.1%
Animal Caretakers	311	\$27,800	0.84	48	58	2.7%
First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	286	\$53,300	1.27	17	30	0.0%
Remaining Component Occupations	4,675	\$52,000	1.19	-90	538	0.1%
Agriculture, Food, and Natural Resources (CTE Field)	15,443	\$51,400	1.66	40	1,761	-0.1%

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

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

Many different industries employ Agriculture, Food, and Natural Resources talent in the Northwest. Locally, the industries with the greatest share of this field’s talent are Crop Production (15.7%, down 1.1 percentage points) and Animal Production (15.5%, the same as 2021Q1 estimates). Most industries employing talent in this field only touch less than 1% of total talent skilled in this field, and span from grocery to ranching to electric power generation.

Agriculture, Food, and Natural Resources Field Employment by Industry, 2022Q2, Northwest Minnesota

Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Growth	10-Year Total Demand
Crop Production (Proprietors)	15.7%	2,432	2,467	-223	2,244
Animal Production (Proprietors)	15.5%	2,388	2,260	-168	2,091
Services to Buildings and Dwellings	6.2%	952	1,200	21	1,221
Building Equipment Contractors	4.8%	742	748	23	771
Oilseed and Grain Farming	4.5%	692	966	10	976
Support Activities for Crop Production	3.7%	567	930	96	1,026
Executive, Legislative, and Other General Government Support	3.3%	517	556	18	574
Animal Slaughtering and Processing	2.8%	426	505	-5	500
Other Crop Farming	2.4%	367	512	6	518
Cattle Ranching and Farming	2.1%	330	422	-41	381
Sugar and Confectionery Product Manufacturing	2.1%	322	385	-35	351
Other Professional, Scientific, and Technical Services	2.0%	311	284	36	320
Vegetable and Melon Farming	2.0%	306	434	16	449
Other Personal Services	1.7%	258	405	88	493
Electric Power Generation, Transmission and Distribution	1.5%	236	189	-53	136
Machinery, Equipment, and Supplies Merchant Wholesalers	1.5%	225	226	7	233
Grocery and Convenience Retailers	1.4%	221	250	-24	226
Wired and Wireless Telecommunications (except Satellite)	1.3%	198	207	-18	189
Other Amusement and Recreation Industries	1.3%	195	274	49	323
Poultry and Egg Production	1.2%	190	245	-21	224
All Others	23.1%	3,569	4,304	121	4,426

Career Field Demographics

The Agriculture, Food, and Natural Resources field is predominantly male (74.8%) and White (93.4%), but with variation by career pathway. Talent that identifies as BIPOC by race increased by 1.3 percentage points from 2021Q1, and that identifies as Hispanic or Latinx by 0.7 percentage points. Female representation in Agriculture, Food, and Natural Resources careers in the Northwest increased by 0.5 percentage points. Overall, the age of the workforce in this field trends older—the oldest of all of the career fields. Overall, 13.9% of the Agriculture, Food, and Natural Resources workforce is 65 years or older, up 0.6 percentage points from 2021Q1 estimates. Key careers in Animal Systems, Power, Structural, and Technical Systems, and Biotechnology Systems in particular have a rapidly aging workforce with limited new talent entering.

Age :

Northwest Minnesota



Minnesota



16 to 19 years (3.5%)

25 to 34 years (16.4%)

45 to 54 years (18.0%)

20 to 24 years (7.3%)

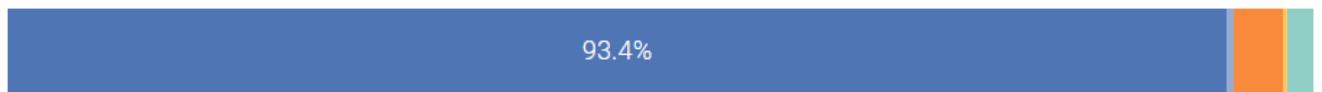
35 to 44 years (18.9%)

55 to 64 years (22.1%)

65 years and over (13.9%)

Race :

Northwest Minnesota



Minnesota



White (93.4%)

American Indian (3.7%)

Pacific Islander (0.0%)

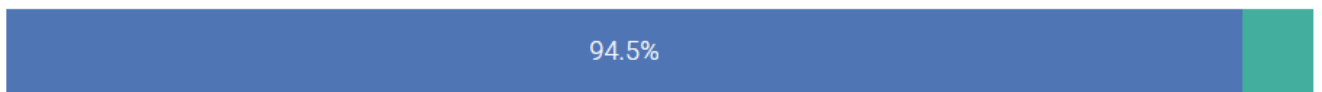
Black (0.5%)

Asian (0.4%)

Two or More Races (2.0%)

Ethnicity :

Northwest Minnesota



Minnesota



Non-Hispanic/Latino (94.5%)

Hispanic or Latino (of any race) (5.5%)

Gender :

Northwest Minnesota



Minnesota



Male (74.8%)

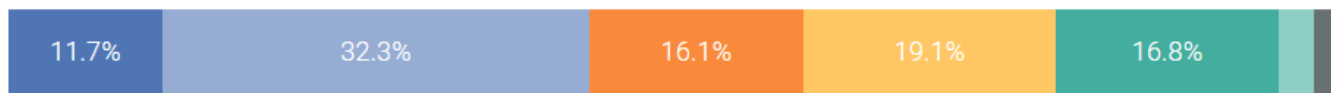
Female (25.2%)

Educational Attainment and Requirements

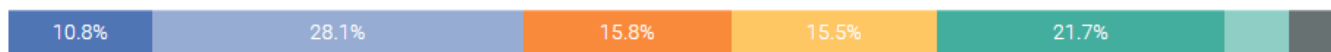
The stacked bar charts here illustrates the estimated mix of educational attainment of the workers in the career field in aggregate, and the typically-required education of positions in the field. Nearly one in three positions in this field regionally (30.6%) require no degree, no experience, and only short-term on-the-job training—similar to the share of jobs statewide with no requirements (30.5%). Almost two out of three (58.0%) require experience or some on-the-job training, but still no degree; in all, 88.5% of positions require no formal education (down 1.0 percentage point from the prior year). The share of positions requiring a two-year degree declined by 4.6 percentage points from 2021Q1. About 11.7% of the workforce in this field has no degree at all, and about one in three workers in this field (32.3%) hold a high school diploma as their highest credential. In all, 60.1% of the Agriculture, Food, and Natural Resources workforce have not completed a postsecondary credential (up 0.2 percentage points). The table below indicates typical education and training requirements rather than the mix of attainment of workers in some key positions in this field.

Educational Attainment :

Northwest Minnesota



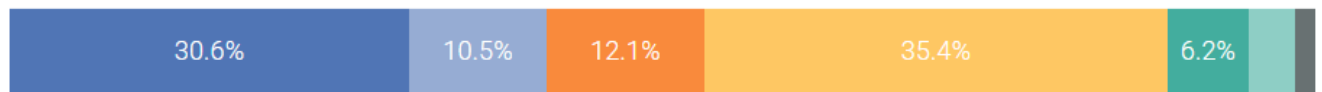
Minnesota



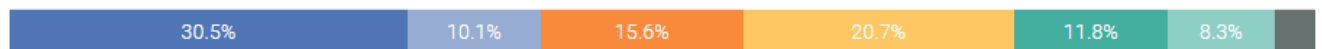
- < High School (11.7%)
- High School (32.3%)
- Some College (16.1%)
- Two-Year (19.1%)
- Four-Year (16.8%)
- Master's (2.6%)
- PhD (1.4%)

Education and Training Requirements :

Northwest Minnesota



Minnesota

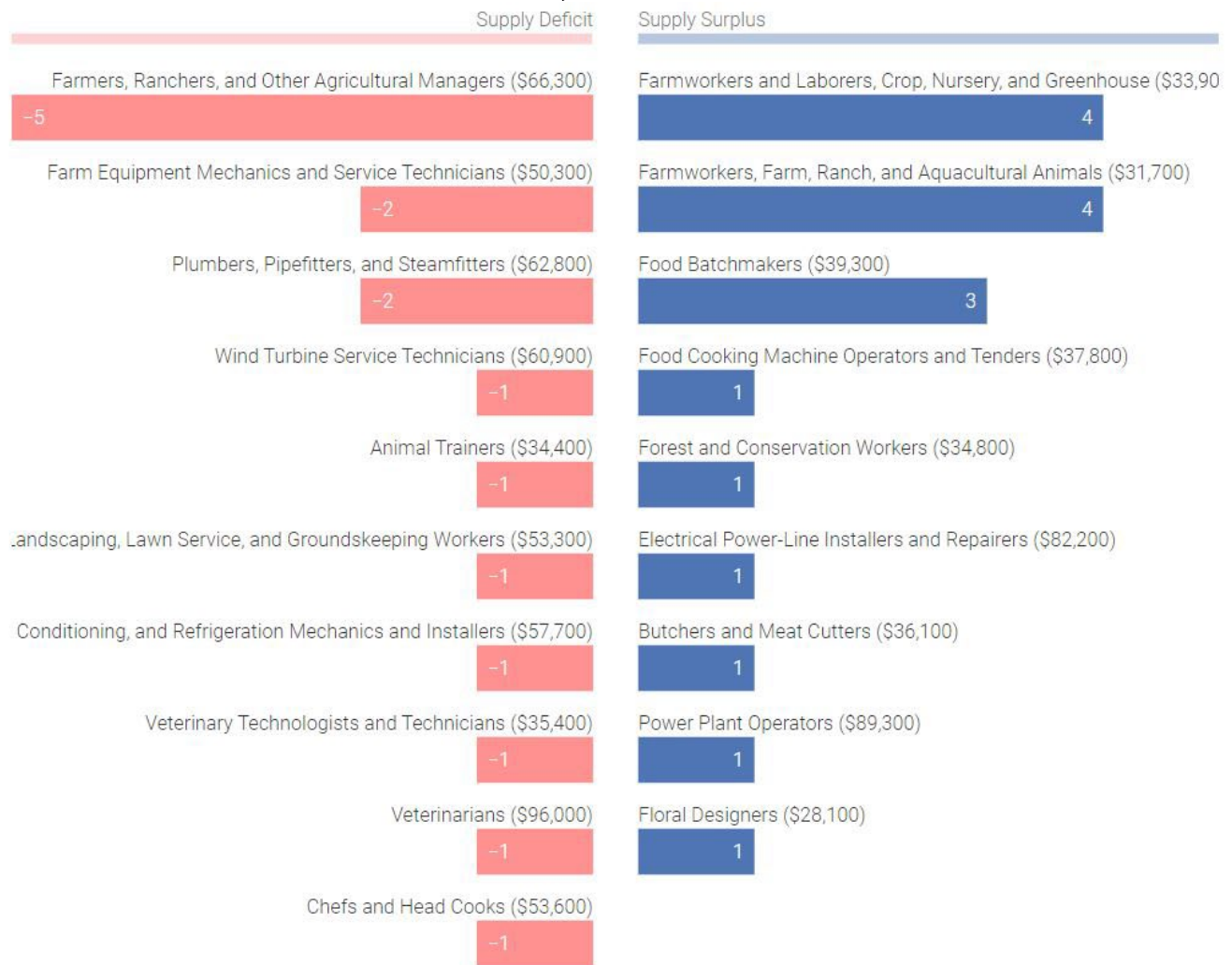


- Short-term OJT, no exp, no award (30.6%)
- Moderate-term OJT, no exp, no award (10.5%)
- Long-term training, no exp, no award (12.1%)
- Previous work experience, no award (35.4%)
- 2-year degree or certificate (6.2%)
- Bachelor's degree (3.5%)
- Postgraduate degree (1.6%)

Occupation Gaps

The chart below shows the potential average annual gaps over ten years. A number of crucial trades, animal science, environmental services, and natural science roles indicate shortages in the years ahead, with Landscaper, Veterinarian, Plumber, and Wind Turbine Service Technician talent pools likely falling behind demand. Farmers, Ranchers, and Aquacultural Managers rose to being the region's top occupation of shortage in Agriculture, Food, and Natural Resources as of 2022Q2. Retirements and growing demand unmet by the local talent supply chain are both contributing factors.

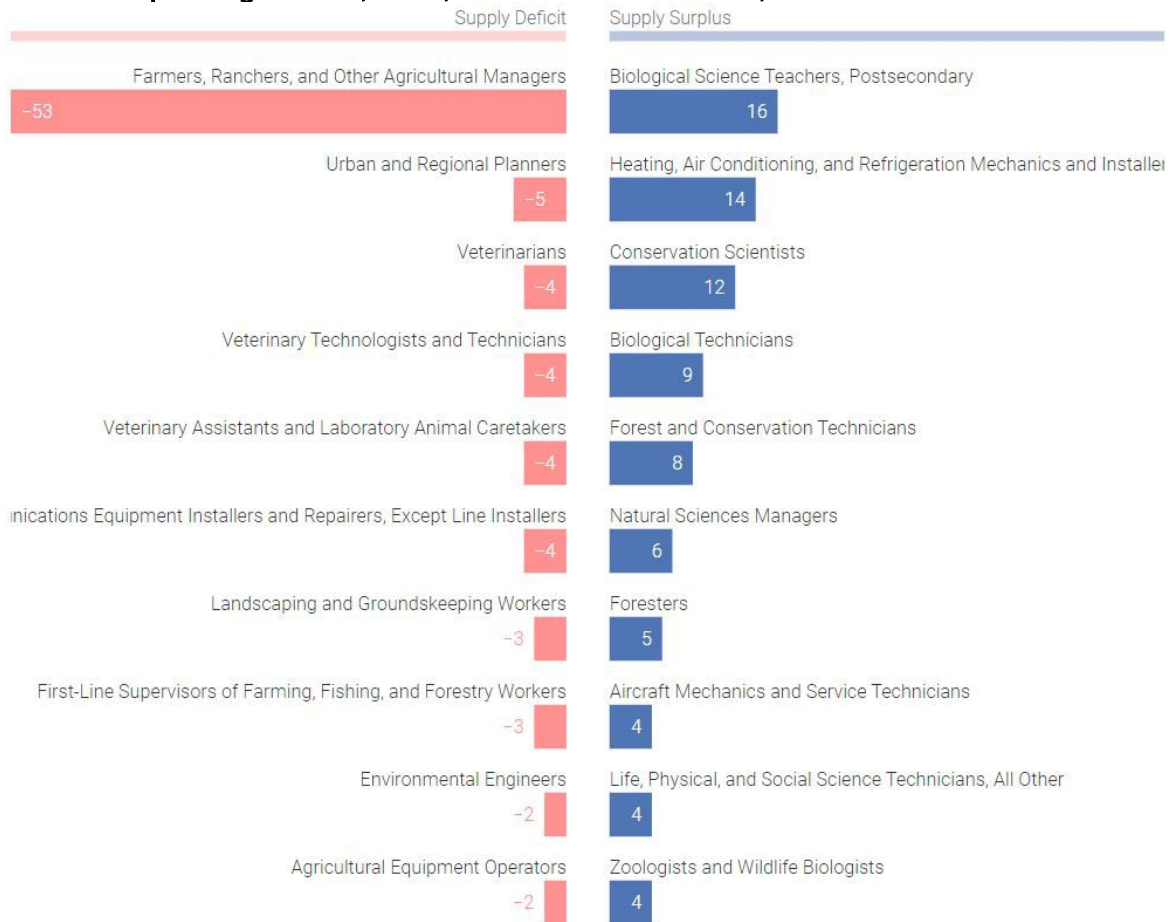
Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Agriculture, Food, and Natural Resources, Northwest Minnesota 2022Q2



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 moderate shortages. The Northwest currently under-trains some talent in Agriculture, Food, and Natural Resources when compared to national benchmarks. Northwest Minnesota colleges and universities are underproducing at least 53 graduates annually that are needed to fill farming and agricultural management positions open with employers based in the Northwest. Planner, Food Scientist, Veterinarian, and Vet Tech roles are also lagging in local graduate awards, as the majority of Animal Systems and Urban/Regional Planning completions are made in the MSP Metro.

Award Gaps in Agriculture, Food, and Natural Resources, Northwest 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 Agriculture, Food, and Natural Resources roles locally, or aligned opportunities that share a large number of skillsets in-demand in the field.

Gateway Occupations are good jobs that can lead to Target Occupations as skills and experience are developed. These typically offer between \$42,000 up to the regional average wage (\$50,500 in the Northwest). Below are a few Gateway Occupations in Agriculture, Food, and Natural Resources locally. Gateway occupations offer a wage uplift to those previously employed in Origin Occupations, and offer longer-term economic mobility and career advancement opportunities. These are most often best-suited for adult workforce programming and first postsecondary experiences.

Target Occupations refer to high-wage occupations that pay at or above the region's average wage (\$50,500 in the Northwest). 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, Northwest Minnesota 2022Q2

Target Occupations(all HW, HD, HS)
 Veterinarians (OG, AG)
 Urban & Regional Planners (AG)
 Food Scientists & Technologists
 Biological Science Teachers, Postsecondary
 Aircraft Mechanics & Service Technicians (OG)

Gateway Occupations

Farm Equipment Mechanics & Service Technicians (HD, OG)
 Supervisors of Farming, Fishing, & Forestry Workers (HD, AG)
 Refuse & Recyclable Material Collectors (HD)
 Tree Trimmers & Pruners
 Logging Equipment Operators (HD)

Origin Occupations

Likely

Farmworkers & Laborers, Crop & Nursery
 Landscaping & Groundskeeping Workers (HD, AG)
 Food Batchmakers (HD)
 Farmworkers, Farm, Ranch, & Aquacultural Animals
 Meat, Poultry, & Fish Cutters & Trimmers (HD)

Aligned

Compliance Officers
 Laborers and Freight Movers
 Stockers and Order Fillers

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

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

- 1) Farmers, Ranchers, & Agricultural Managers (5.50)
- 2) Farm Equipment Mechanics (5.40)
- 3) Food & Tobacco Machine Operators (4.18)
- 4) Animal Scientists (4.06)
- 5) Food Cooking Machine Operators (3.94)

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.

The region is poised to see changes in demand for talent over the next five years and beyond as the region continues to recover from the impacts of the pandemic, wrestle with deepening talent shortages, and face the possibility of recession as interest rates continue to rise. Unemployment has dropped while employer demand for talent remains high in the Northwest. There is urgency to address these talent shortages now by leveraging new ways of working remotely and leveraging new technologies wherever possible.