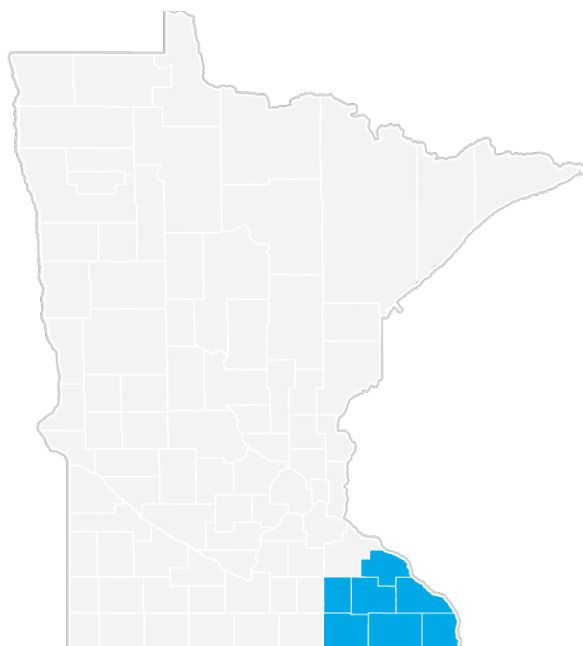


# Workforce Trends

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## CAREER & TECHNICAL EDUCATION



### Southeast Minnesota

#### **RealTime Talent**

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30 East 7<sup>th</sup> Street  
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# Overview

Recent years have brought seismic shifts in the world of work, driven forward by ongoing economic uncertainties, dramatic talent shortages, workforce misalignments, and rapidly evolving technology. These dynamics make forecasting future labor market needs and supply uniquely challenging. But despite the turbulence, several pivotal shifts have begun to materialize, illuminating the path ahead in inclusive workplaces, skills-based hiring, and the digital workplace. The continuing effects of the pandemic, domestic and international unrest, and shifting economic models have been felt in disparate ways across the nation. The job market is undoubtedly cooling but still experiencing significant talent shortages plaguing every industry and career cluster.

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.<sup>1</sup> Each report includes:

- 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
- An Origin-to-Gateway-to-Target model analysis for how to help move students from entry points into their field of interest into other aligned careers, taking into account automation, remote work, and the changing work environment
- A word on remote work and jobs of the future

## About This Report

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

<sup>1</sup> All labor market data in this report comes from Chmura Economics JobsEQ Dataset 2023Q2 unless otherwise noted. [www.jobseq.com](http://www.jobseq.com)



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# Southeast Minnesota

## Introduction

This report highlights the current and future talent needs in the nineteen counties of Southeast Minnesota.<sup>2</sup> 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 best prepares students for relevant job opportunities of the future here in Southeast 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, and illustrates promising, likely, and aligned pathways into each career field. This model supports students looking for entry points from an initial occupation of interest into other aligned careers, considering automation, remote work, and the changing work environment. The model itself is shown below, along with the definitions of each grouping of occupations.

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

#### Target Occupations

*High wage* (above regional average)

*High-skill* (require some credential)

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

\*Often also high occupation gap and award gap

#### Gateway Occupations

*Mid-wage* (\$45,000 – regional average)

*Low-middle skills* (HS diploma, some OJT)

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

#### Origin Occupations

*Low wage* (<\$45,000/year)

*Low skill* (no credential)

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

<sup>2</sup> Dodge, Fillmore, Houston, Mower, Olmsted, Wabasha, and Winona Counties.



Origin Occupations are roles that are low-wage (<\$37,000 per year) or mid-wage (\$37,000-\$45,000) that have high unemployment locally among workers without four-year degrees.

Gateway Occupations are good jobs that can lead to Target Occupations as skills and experience are developed. These typically offer between \$45,000 up to the regional average wage (\$68,000 in the Southeast). 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 (\$68,000 in the Southeast). These positions are also high-skill—meaning that they require an industry credential, certification, or higher education—and high-demand. Many of these Target Occupations are also facing Opportunity Gaps and Award Gaps locally, labeled below as “OG” and “AG” respectively.

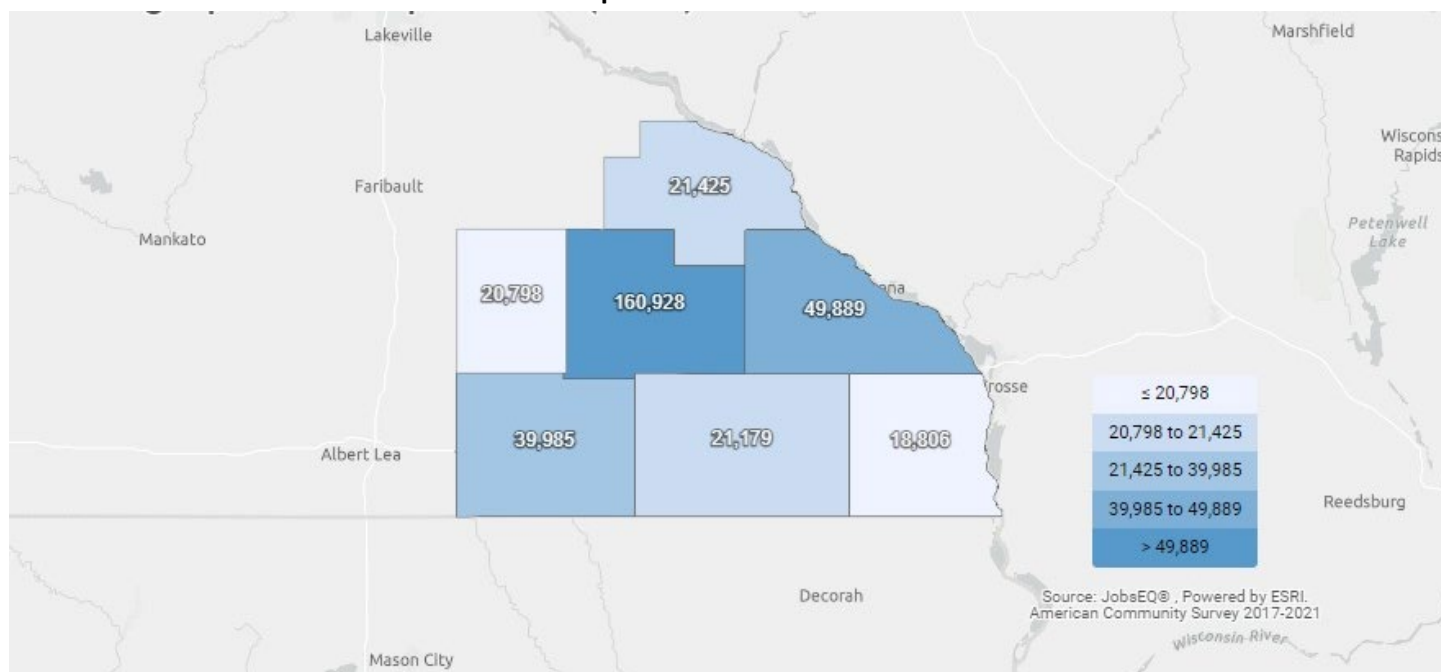


# Community Profile

## Demographics

The Southeast is home to about 5.8% of Minnesota’s total population. In all, about 333,010 people live in Southeast Minnesota, according to 2017-2021 American Community Survey Estimates—an increase of 3,817) people from the prior year’s estimates. About 23.5% of Southeast Minnesota’s population are minors under 18 years of age. Overall, the region’s median age is 2.4 years older (38.5 years) than the statewide median (38.2 years), mostly attributable to a larger share of adults over 55 years of age in the region. The cities of Rochester, Winona, Austin, Byron and Lake City are home to the largest local concentrations of population and are economic hubs for the region. Olmsted County is home to 48.3% of the region’s population.

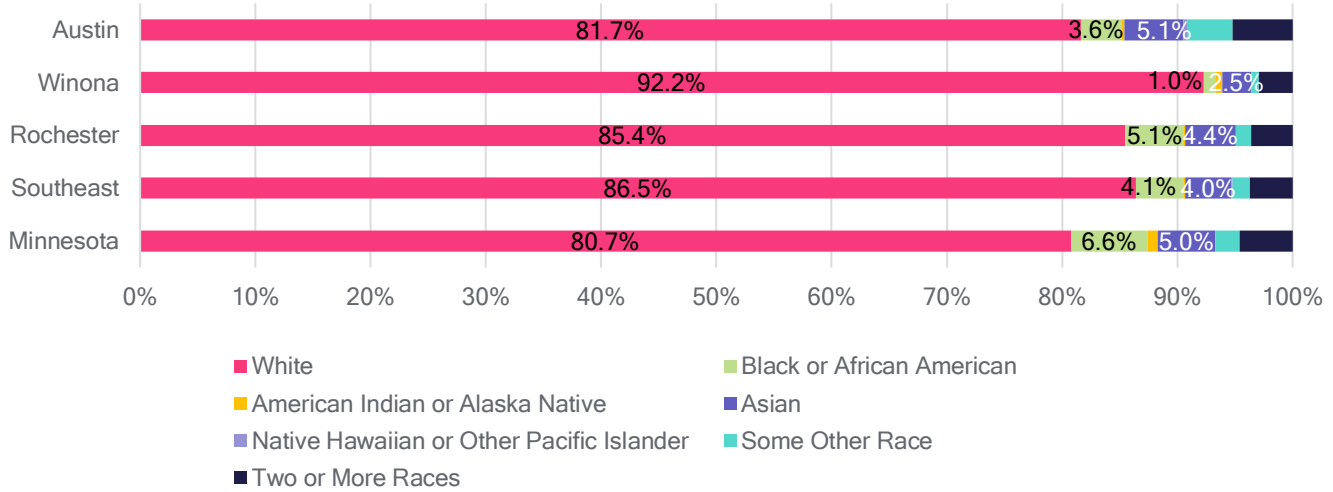
**Resident Population of Southeast Minnesota**



Population diversity increased between the two most recent population estimates statewide by 1.2 percentage points from 2019 to 2020 estimates, and by another 0.9 percentage points between 2020 and 2021 estimates. In the Southeast, the share of the population that is Black, Asian, American Indian, Native Hawaiian, or some other race (BIPOC) increased by 1.3 percentage points (following an increase of one percentage point in the prior year’s estimates). Across the region overall, 13.5% of the population identify as BIPOC. The demographic makeup of communities across the Southeast look quite different from one another; Austin remains the most diverse of the region’s economic hub, with 18.3% of the population identifying as BIPOC compared to 7.8% in Winona and 14.6% in Rochester. Austin has a larger share of residents who are Hispanic or Latinx (12.3%) compared to 5.6% statewide and 5.2% for the Southeast region.

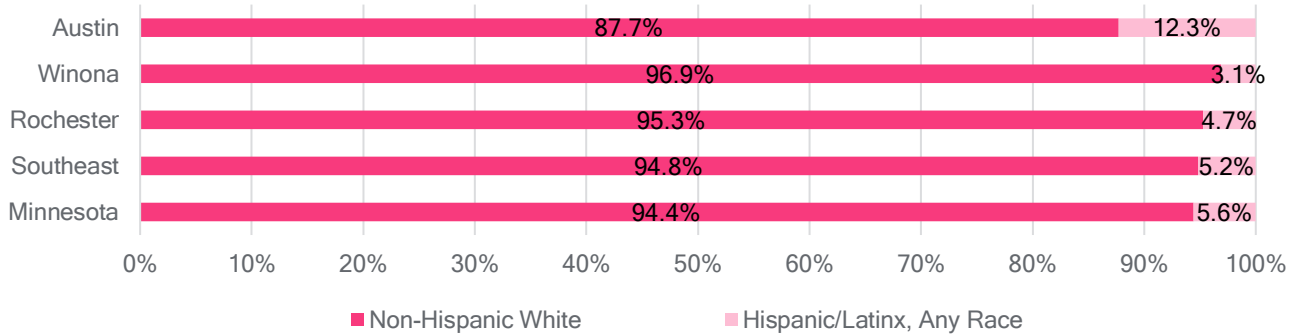


### Population Race, All Ages



American Community Survey 2017-2021.

### Population Ethnicity, All Ages



American Community Survey 2017-2021.





### Community Demographics

Demographics	Percent						Value		
	Rochester, MN MSA	Winona, MN μSA	Austin, MN μSA	Southeast Minnesota	Minnesota	USA	Southeast Minnesota	Minnesota	USA
Population (ACS)	—	—	—	—	—	—	333,010	5,670,472	329,725,481
Male	49.5%	49.8%	50.8%	49.8%	50.1%	49.5%	165,795	2,839,135	163,206,615
Female	50.5%	50.2%	49.2%	50.2%	49.9%	50.5%	167,215	2,831,337	166,518,866
Median Age2	—	—	—	—	—	—	38.5	38.2	38.4
Under 18 Years	24.5%	18.1%	25.6%	23.5%	23.3%	22.5%	78,393	1,323,569	74,234,075
18 to 24 Years	7.5%	19.9%	7.5%	9.3%	8.8%	9.2%	31,020	499,402	30,339,089
25 to 34 Years	13.3%	11.5%	12.2%	12.7%	13.3%	13.8%	42,283	756,215	45,360,942
35 to 44 Years	13.2%	10.1%	12.7%	12.6%	13.0%	12.9%	41,869	738,714	42,441,883
45 to 54 Years	11.7%	10.3%	11.2%	11.5%	12.1%	12.6%	38,212	688,596	41,631,458
55 to 64 Years	13.4%	13.0%	12.6%	13.4%	13.4%	13.0%	44,689	762,459	42,829,413
65 to 74 Years	9.3%	9.9%	9.8%	9.7%	9.4%	9.6%	32,171	535,592	31,590,619
75 Years and Over	7.0%	7.1%	8.3%	7.3%	6.5%	6.5%	24,373	365,925	21,298,002
Race: White	85.4%	92.2%	81.7%	86.5%	80.7%	68.2%	288,125	4,576,758	224,789,109
Race: Black or African American	5.1%	1.0%	3.6%	4.1%	6.6%	12.6%	13,490	376,406	41,393,012
Race: American Indian and Alaska Native	0.1%	0.6%	0.2%	0.2%	0.9%	0.8%	717	52,695	2,722,661
Race: Asian	4.4%	2.5%	5.1%	4.0%	5.0%	5.7%	13,229	283,382	18,782,924
Race: Native Hawaiian and Other Pacific Islander	0.0%	0.0%	0.4%	0.1%	0.0%	0.2%	259	2,338	615,557
Race: Some Other Race	1.3%	0.7%	3.9%	1.5%	2.1%	5.6%	4,997	120,011	18,382,796
Race: Two or More Races	3.6%	2.9%	5.2%	3.7%	4.6%	7.0%	12,193	258,882	23,039,422
Hispanic or Latino (of any race)	4.7%	3.1%	12.3%	5.2%	5.6%	18.4%	17,222	319,828	60,806,969

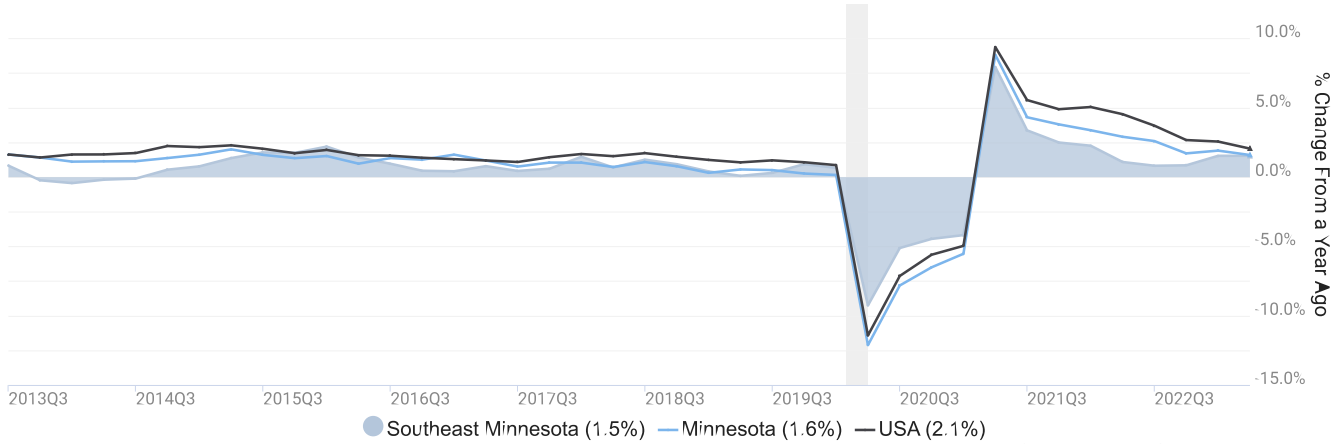
American Community Survey 2017-2021 unless noted otherwise.

## Employment

As of 2020Q1, total employment in Southeast Minnesota was 176,712 (based on a four-quarter moving average). By 2021Q1, employment in the region dropped to 167,326 (based on a four-quarter moving average). Over the year ending 2022Q2, employment rose again an average of 2.3% in the region to 174,848 (based on a four-quarter moving average). As of 2023Q2, total employment in Southeast Minnesota was 176,190, increasing by 1.5% from the prior year.



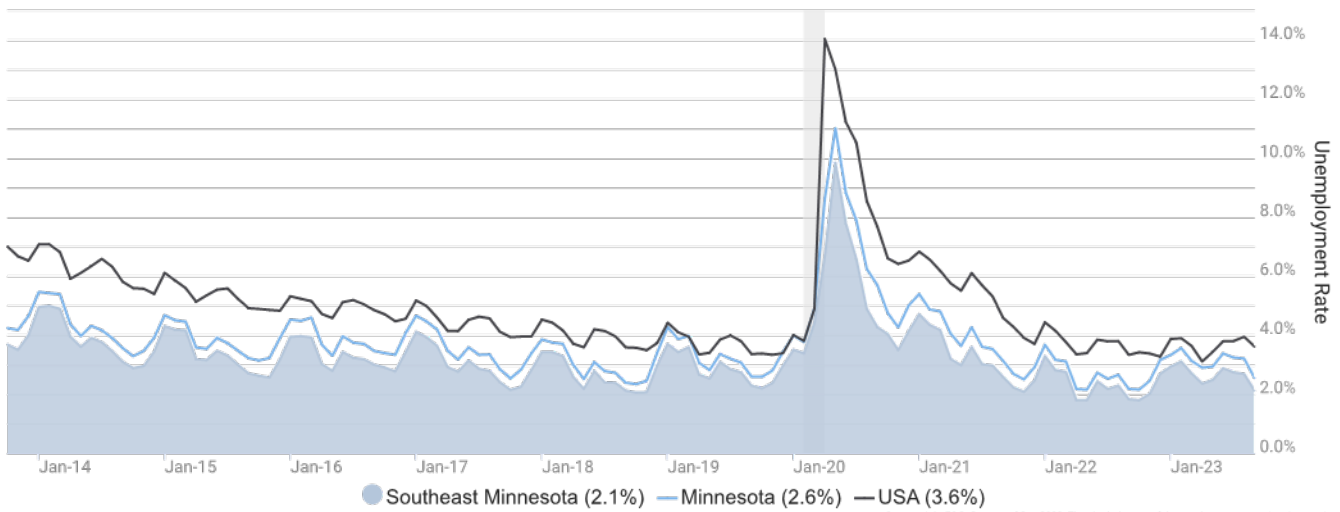
### Employment for Southeast Minnesota



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 2023Q1 with preliminary estimates updated to 2023Q2.

The unemployment rate for Southeast Minnesota was 2.1% as of September 2023. The regional unemployment rate was lower than both the statewide rate (2.6%) and the national rate of 3.6%. One year earlier, in September 2022, the unemployment rate in Southeast Minnesota was 1.8%.

### Unemployment for Southeast Minnesota

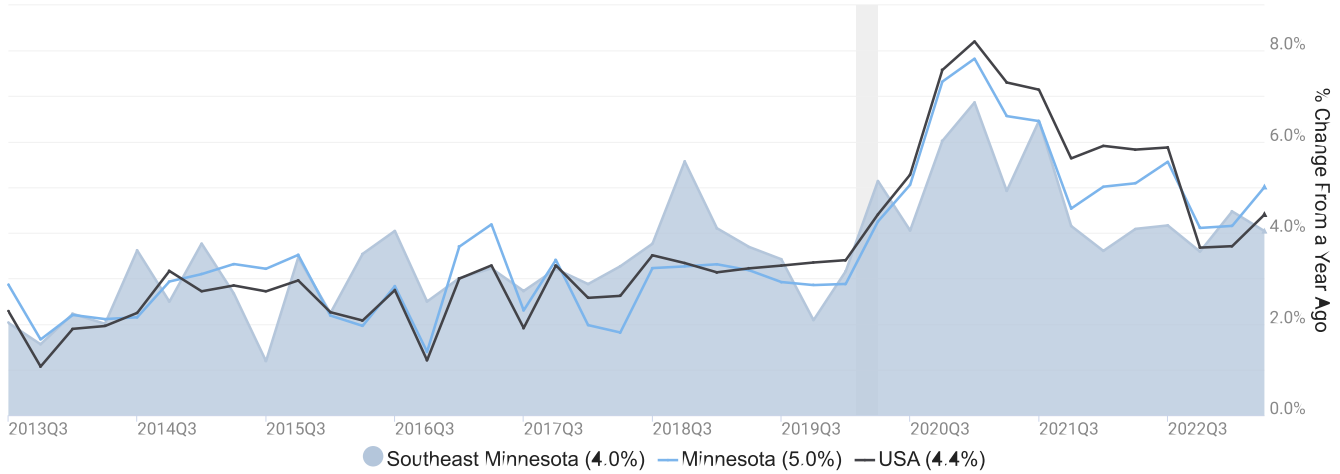


Unemployment rate data are from the Local Area Unemployment Statistics, provided by the Bureau of Labor Statistics and updated through September 2023.

The average worker in Southeast Minnesota earned annual wages of \$64,724 as of 2023Q2, an increase of about \$3,000 from 2022Q2 (\$61,684). Average annual wages per worker increased 4.0% in the region over the preceding four quarters. Wages rose similarly nationwide, where annual average wages were \$70,318 as of 2023Q2 (compared to \$67,777 as of 2022Q2 and \$63,393 as of 2021Q1).

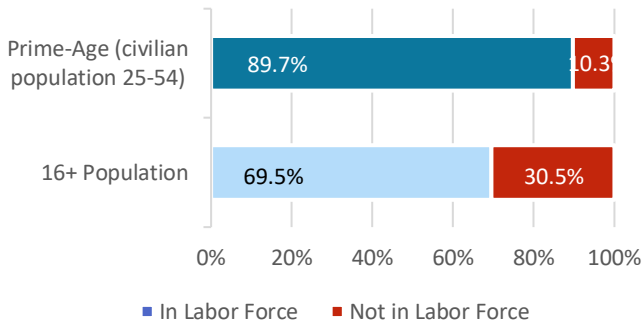


### Average Annual Wages for Southeast Minnesota



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 2023Q1 with preliminary estimates updated to 2023Q2.

### Labor Force Participation Rate



The region has a civilian labor force of 182,810 (an increase of about 1,436 workers from the prior year's estimates) with a participation rate of 69.5%, just above Minnesota's labor force participation rate for the population over 16 by 0.4 percentage points. The participation rate of the prime working age population (between the ages of 25 and 64) is also just above the statewide rate—89.7% compared to the statewide 88.4%.

American Community Survey 2017-2021 unless noted otherwise.

The Southeast region has a similar share of veterans than observed statewide, at 3.7% of the regional population compared to 3.6% broadly across the state. Veteran labor force participation is slightly lower in the region than observed statewide, 80.1% compared to Statewide veteran labor force participation at 80.6%. The Southeast has a lower share of people with disabilities, 7.9% compared to 9% statewide, but a higher labor force participation rate for the population with a disability 57.6% compared to 53.5% statewide. The Southeast region has a similar share of disconnected youth (1.6% of youth) compared to statewide (1.8%) and below national rates (2.5%), with variation between communities. While just 1% of Rochester youth are disconnected from school, training, or work, in Austin about 5% are disconnected.



## Economic and Social Characteristics of Southeast Minnesota

Economic and Social Characteristics	Percent			Percent			Values		
	Rochester, MN MSA	Winona, MN μSA	Austin, MN μSA	Southeast Minnesota	Minnesota	USA	Southeast Minnesota	Minnesota	USA
Labor Force Participation Rate and Size (civilian population 16 years and over)	70.5%	69.0%	65.3%	69.5%	69.1%	63.4%	182,810	3,105,784	166,672,597
Prime-Age Labor Force Participation Rate and Size (civilian population 25-54)	90.0%	91.6%	84.4%	89.7%	88.4%	82.5%	109,652	1,926,180	106,173,534
Armed Forces Labor Force	0.1%	0.1%	0.0%	0.0%	0.1%	0.5%	129	4,029	1,196,529
Veterans, Age 18-64	3.8%	3.8%	3.6%	3.7%	3.6%	4.4%	7,386	122,885	8,848,937
Veterans Labor Force Participation Rate and Size, Age 18-64	81.8%	73.2%	78.0%	80.1%	80.6%	77.0%	5,919	99,030	6,809,906
Median Household Income	—	—	—	—	—	—	\$74,969	\$77,706	\$69,021
Per Capita Income	—	—	—	—	—	—	\$39,570	\$41,204	\$37,638
Poverty Level (of all people)	7.4%	13.4%	12.7%	8.9%	9.2%	12.6%	28,949	512,312	40,661,636
Households Receiving Food Stamps/SNAP	6.6%	5.4%	10.9%	6.7%	7.5%	11.4%	8,985	167,348	14,105,231
Enrolled in Grade 12 (% of total population)	1.5%	0.6%	1.3%	1.3%	1.4%	1.3%	4,490	78,960	4,425,322
Disconnected Youth <sup>3</sup>	1.0%	2.1%	5.0%	1.6%	1.8%	2.5%	288	5,245	432,389
Children in Single Parent Families (% of all children)	25.7%	22.6%	33.5%	26.3%	28.4%	34.0%	19,667	361,209	23,909,672
Uninsured	4.3%	5.6%	5.2%	4.6%	4.6%	8.8%	15,131	258,292	28,489,142
With a Disability, Age 18-64	7.6%	8.3%	9.7%	7.9%	9.0%	10.3%	15,575	306,405	20,537,729
With a Disability, Age 18-64, Labor Force Participation Rate and Size	60.1%	54.8%	51.6%	57.6%	53.5%	44.2%	8,977	164,030	9,068,973
Foreign Born	8.5%	3.1%	10.9%	7.6%	8.5%	13.6%	25,328	479,231	44,844,808

American Community Survey 2017-2021 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

In Southeast Minnesota, 5.5% of adults between the ages of 25 and 64 do not have a high school diploma or equivalent, and about 22.5% have a high school diploma as their highest level of education (compared with 21.2% statewide). Nationwide, 10.3% 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 Austin has a larger share of residents with a high school diploma or less (10.9%), while Rochester has the smallest share of residents with lower educational attainment (4.8%).

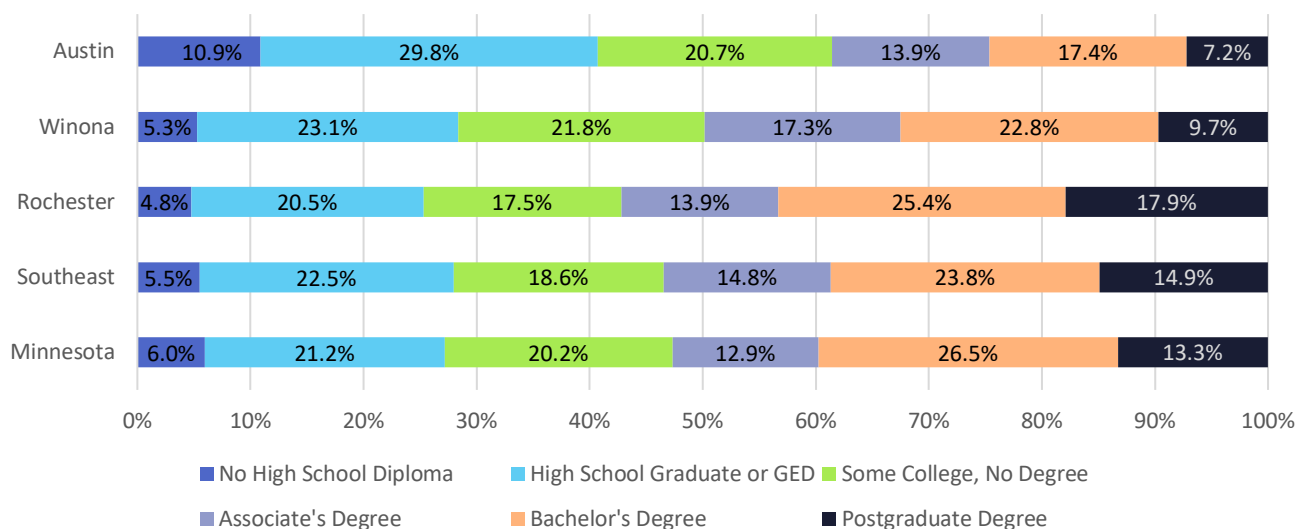


### Educational Characteristics of Southeast Minnesota

Educational Characteristics	Percent			Percent			Values		
	Rochester, MN MSA	Winona, MN μSA	Austin, MN μSA	Southeast Minnesota	Minnesota	USA	Southeast Minnesota	Minnesota	USA
No High School Diploma	4.8%	5.3%	10.9%	5.5%	6.0%	10.3%	9,161	176,696	17,756,046
High School Graduate	20.5%	23.1%	29.8%	22.5%	21.2%	25.3%	37,562	623,436	43,535,564
Some College, No Degree	17.5%	21.8%	20.7%	18.6%	20.2%	20.1%	31,028	593,618	34,637,141
Associate Degree	13.9%	17.3%	13.9%	14.8%	12.9%	9.3%	24,648	379,909	15,944,395
Bachelor's Degree	25.4%	22.8%	17.4%	23.8%	26.5%	22.0%	39,722	780,055	37,890,674
Postgraduate Degree	17.9%	9.7%	7.2%	14.9%	13.3%	13.1%	24,932	392,270	22,499,876

American Community Survey 2017-2021 unless noted otherwise.

### Educational Attainment, Age 25-64



American Community Survey 2017-2021.

### Regional Colleges and Universities

Southeast Minnesota has eight institutions of higher education that offer non-degree awards, two-year degrees, and four-year degrees. The table below shows these postsecondary institutions sorted by total awards conferred during the 2021-22 school year. There was a total of 6,300 awards conferred in the region, a decrease from the 2020-21 school year award count of 6,575.

School	Certificate < 1 Yr	Certificate 1+ but < 2 Yr	Associate	Certificate 2+ but < 4 Yr	Bachelor's	Post-Bacc	Master's	Post-Master's/Doctorate	Total Awards	Total School Enrollment	Avg Net Price*
Winona State University	0	0	53	0	1,483	54	191	53	1,834	6,545	\$17,283
Saint Mary's University of Minnesota	0	0	0	0	424	91	1,076	113	1,704	4,701	\$21,606
Rochester Community and Technical College	123	80	690	36	0	0	0	0	929	4,658	\$13,522
Riverland Community College	99	101	362	82	0	0	0	0	644	3,276	\$9,276
Mayo Clinic College of Medicine and Science	101	134	0	0	0	44	29	193	501	1,250	\$11,188

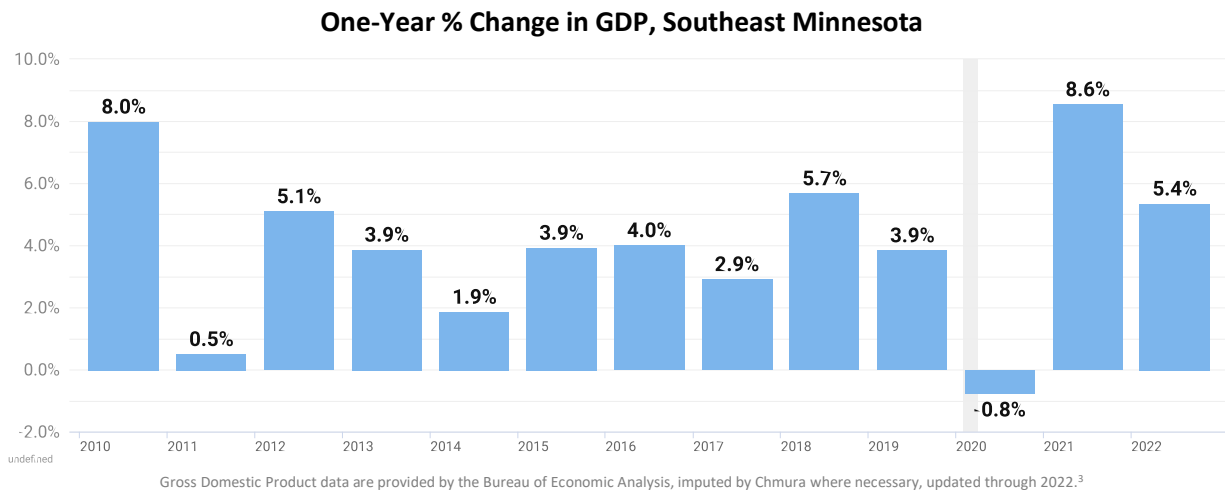


Minnesota State College Southeast	81	142	173	3	0	0	0	0	399	1,838	\$14,965
Nova Academy of Cosmetology	48	98	0	0	0	0	0	0	146	177	\$17,312
University of Minnesota-Rochester	0	0	0	0	143	0	0	0	143	646	\$14,198
<b>Total</b>	<b>452</b>	<b>555</b>	<b>1,278</b>	<b>121</b>	<b>2,050</b>	<b>189</b>	<b>1,296</b>	<b>359</b>	<b>6,300</b>		

\* Average net price represents full-time beginning undergraduate students who paid the in-state or in-district tuition rate and were awarded grant or scholarship aid from federal, state or local governments, or the institution. Data as of the 2020-2021 academic year.

## Economic Indicators

Gross Domestic Product (GDP) is the total value of goods and services produced by a region. In 2022, nominal GDP in the Southeast region expanded by 5.4%. This follows a growth of 8.6% in 2021. As of 2022, total GDP in the region was \$20,798,553,000.

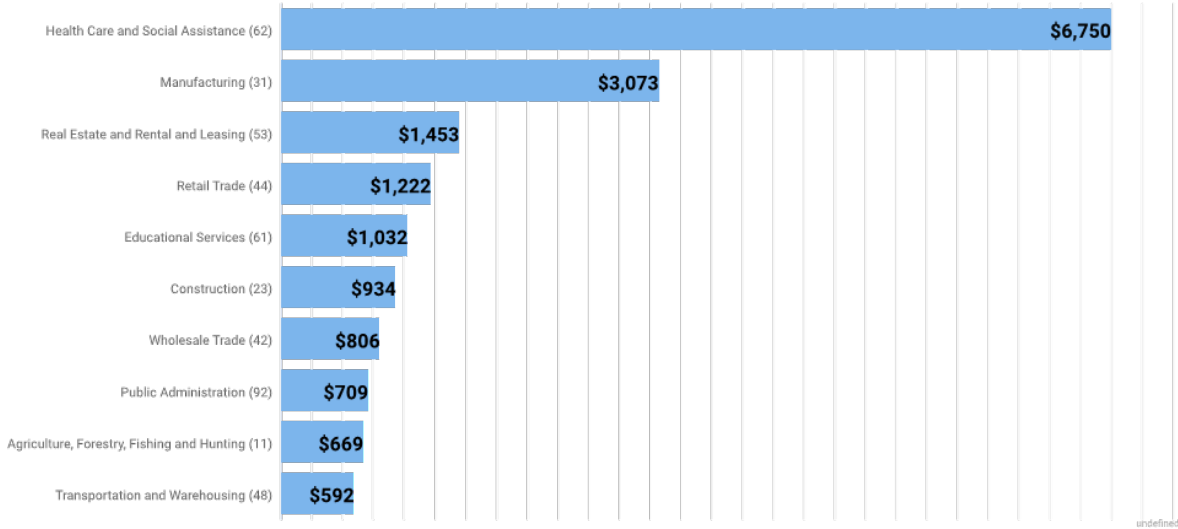


As was the case in years prior, Health Care and Social Assistance contributed the largest portion of GDP in 2022 for Southeast Minnesota \$6,750,274,000. The next-largest contributions came Manufacturing (\$3,072,895,000); Real Estate and Rental and Leasing (\$1,453,227,000); and Retail Trade (\$1,221,562,000). Overall, the industry mix contributing to regional GDP has not changed dramatically over the past three years.

<sup>3</sup> 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.



GDP (in \$ millions)  
Southeast Minnesota, 2022



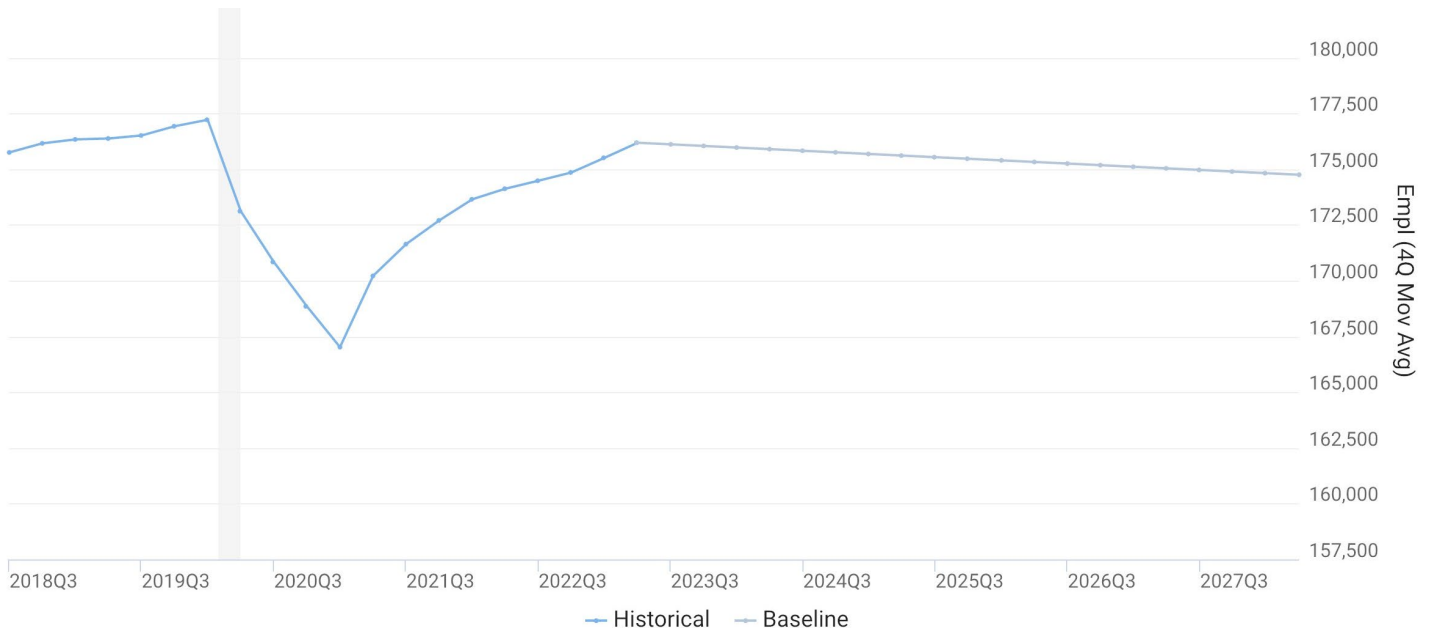
Gross Domestic Product data are provided by the Bureau of Economic Analysis, imputed by Chmura where necessary, updated through 2022.

## Labor Market

### Workforce Forecast

Employment rose by 1.2% in the region between 2022Q2 and 2023Q2, lower than the previous estimates. An estimated 2.4% of the Southeast Minnesota workforce are unemployed by September 2023 (about 4,460 people). Employment in the region is forecast to decline by -0.2% on average annually through 2028 in a baseline scenario.

5-Year Forecast in Southeast Minnesota

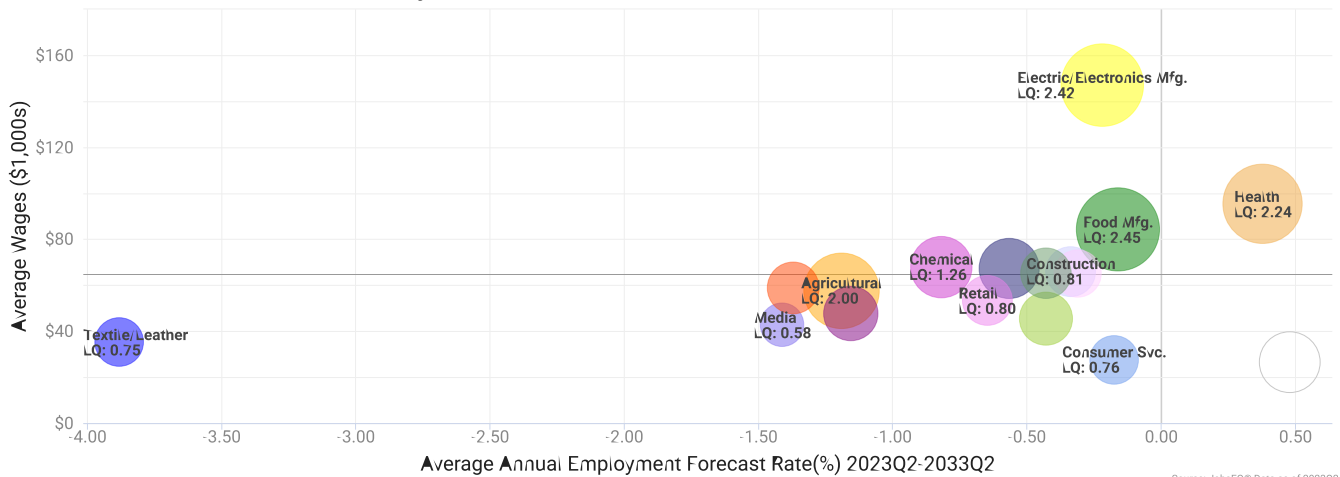


Source: JobsEQ®, Data as of 2023Q2



Employment forecasts vary considerably by industry. An industry cluster is a geographic concentration of interrelated industries or occupations. The industry cluster in the Southeast region with the highest relative concentration is Food Manufacturing with a location quotient (LQ) of 2.45 (last year Electric/Electronics Manufacturing was the industry with highest relative concentration). This cluster employs 5,160 workers in the region with an average wage of \$84,194. Employment in the Food Manufacturing cluster is projected to contract in the region by about -0.2% on average annually over the next ten years. Between 2022Q2 and 2023Q2 estimates, many industries saw decline in forecasted employment change – notably, there is now only one industry with a positive value of average employment growth forecasted (there were five industries in 2022 estimates).

**Industry Clusters for Southeast Minnesota as of 2023Q2**





# Quantifying Talent Shortages

## *Occupation Gaps*

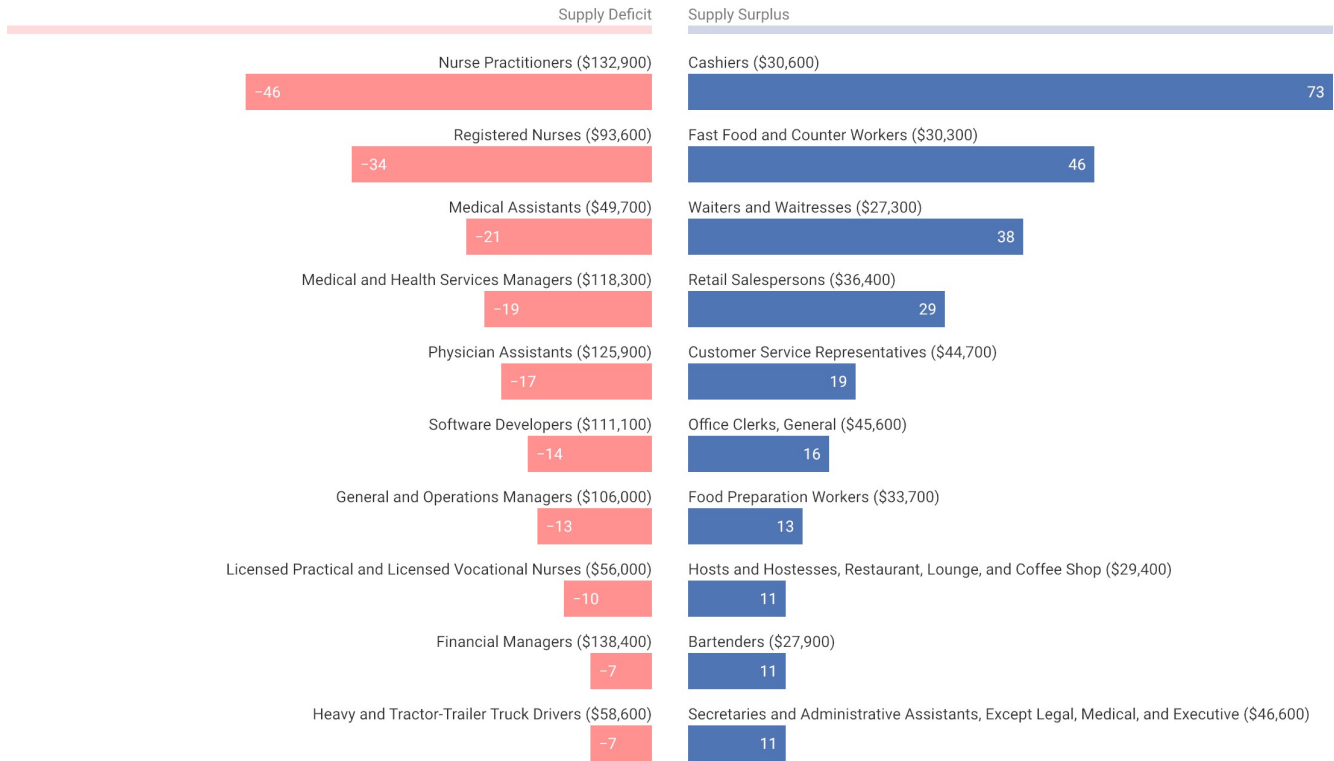
The pandemic's acceleration of critical talent shortages through shifts in demand, supply chains, and resource availability resulted in dramatic upticks in demand for very specifically trained talent with some college, an industry credential, a two year degree, or a bachelor's degree amidst a severe constriction of talent available for these same middle-skill, middle-wage roles. This section highlights the most critical talent shortages now apparent statewide, the industries that define each region of Minnesota, and the top Gateway Occupations that are in high demand and low talent supply regionally.

The chart below shows the potential average annual talent 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. 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 the October 2022 analysis, five out of ten occupations in highest shortages are in Health Science Technology. Registered Nurses ranked as the occupation with highest forecasted shortages in the region, and several occupations in Manufacturing and Hospitality and Tourism clusters rejoined the top-ranked occupations of shortage. As of 2023Q2, six out of the ten occupations in highest shortages in the Southeast are in Health Science Technology. Nurse Practitioners is now the top-ranked occupation of forecasted shortages in the Southeast region, with Registered Nurses ranking second. Seven of the top ten occupations are Target occupations, meaning that they pay at or above the wage of \$68,000. The other occupations of highest forecasted shortage in the Southeast had some shifts with Cooks and Maintenance Repair Workers dropping out of the top ten and Financial Managers and Heavy and Tractor-Trailer Truck Drivers replaced these occupations. Otherwise for both the Southeast region (and statewide) top occupations of forecasted shortage have remained relatively consistent since the last analysis in October 2022, still showing that there is a shortage of local Nurses and Maintenance Workers, among other critical healthcare, information technology, and management occupations. Hospitality and Tourism roles are largely forecast to have a surplus of talent.



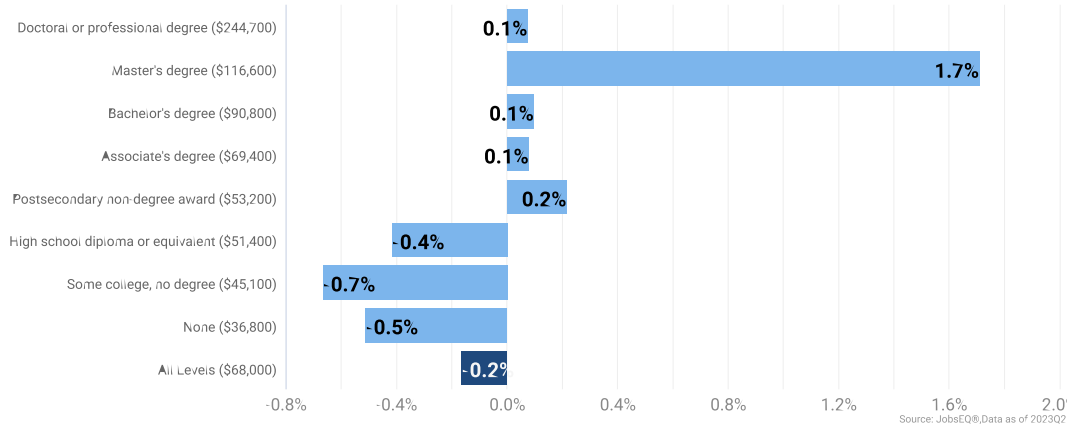
### Average Annual Occupation Gaps (i.e. Talent Shortage), 2023Q2 through 2033Q2



## Award Gaps

Expected growth rates for occupations vary by the education and training required. The employment outlook declined for the Southeast region from 2022 estimates, contracting -0.2% over the next ten years. Occupations typically requiring a doctoral degree are now expected to grow 0.1%, whereas those requiring a master’s degree are expected to grow by 1.7%. Those requiring either a bachelor’s degree or a two-year degree are forecast to grow 0.1% per year. Estimated wages have increased across careers at each education level requirement.

### Annual Average Projected Job Growth by Training Required for Southeast Minnesota, 2023Q2

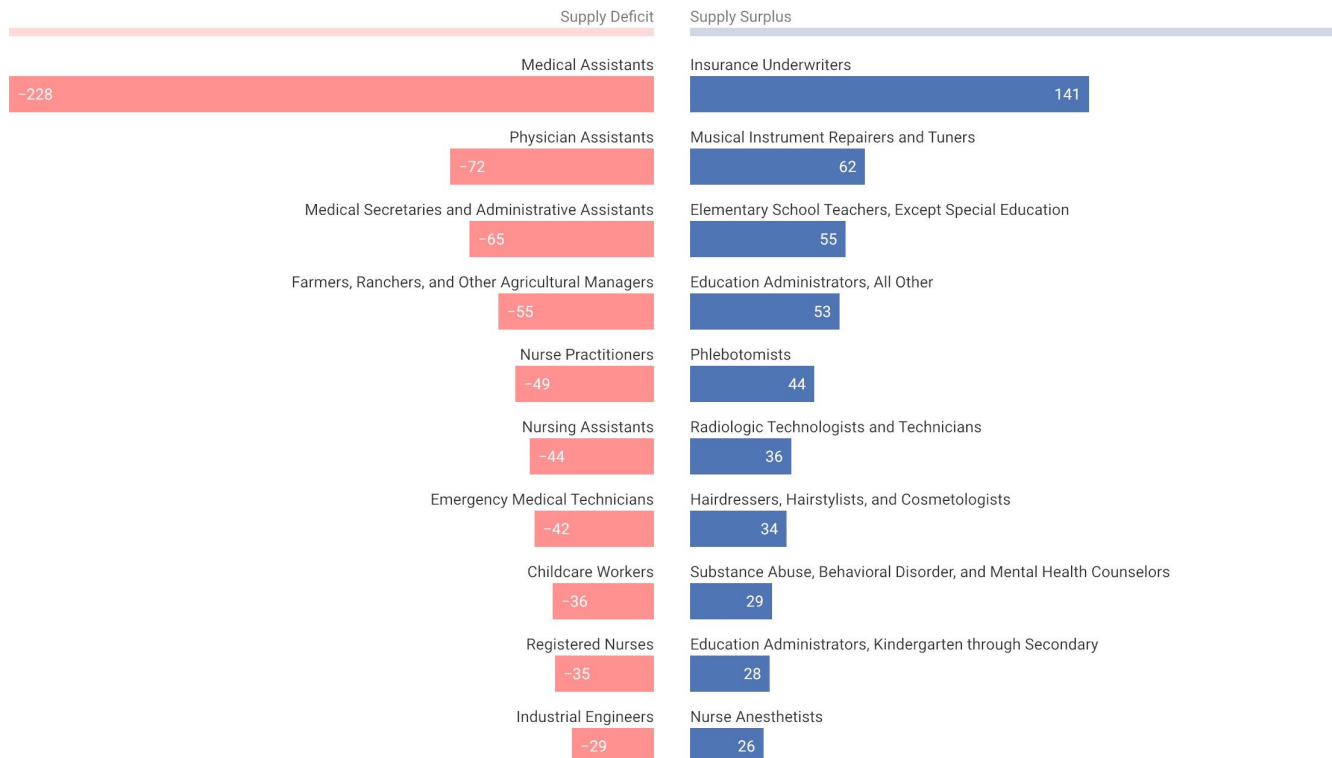


Employment by occupation data are estimates as of 2023Q2. Education levels of occupations are based on BLS assignments. Forecast employment growth uses national projections from the Bureau of Labor Statistics adapted for regional growth patterns.



Award gaps quantify the total number of postsecondary award completions in a region tied to an occupation benchmarked against national rates. In the Southeast region, local postsecondary programs are likely underproducing Medical Assistants, Physician Assistants, Medical and Administrative Assistants, Farmers, Ranchers, and Other Agricultural Managers, and Nurse Practitioners completing local postsecondary programs compared to national volumes.

### Award Gaps, All Occupations, Southeast Minnesota, 2023Q2



Several occupations have zero unemployed talent in the Southeast as of 2023Q2 estimates, resulting in an estimated unemployment rate of 0%. The occupations listed below have nonexistent unemployed talent at the regional level and 75 people or more working in these positions locally. Some of these roles have low volumes of online job postings due to unique methods of recruiting talent for specialty roles, while others show high posting volumes which indicates unmet demand and significant likely shortages. Seven out of the thirteen roles pay at or above the regional average of \$68,000 annually.

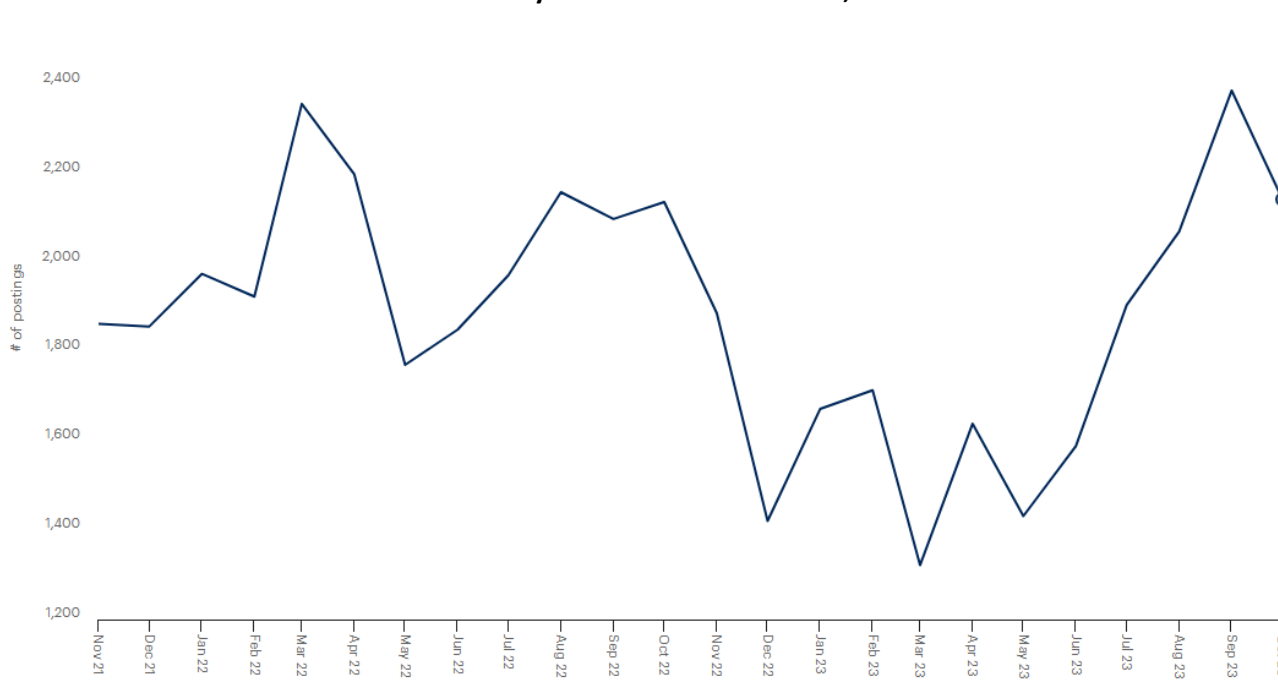
**Occupations with No Unemployed Workforce and Employing over 75 Workers, Southeast Minnesota 2023Q2**

SOC	Occupation	Current						5-Year History		5-Year Forecast				
		Empl	Mean Ann Wages <sup>2</sup>	LQ	Unempl	Unempl Rate	30-Day Online Job Ads <sup>3</sup>	Empl Change	Ann %	Total Demand	Exits	Transfers	Empl Change	Ann % Change
11-3012	Administrative Services Managers	296	\$117,600	1.13	0	n/a	1	90	7.5%	124	49	74	1	0.1%
21-2021	Directors, Religious Activities and Education	212	\$62,700	1.19	0	n/a	1	4	0.4%	105	44	65	-4	-0.4%
29-1218	Obstetricians and Gynecologists	196	\$260,000	7.61	0	n/a	7	3	0.3%	26	19	9	-1	-0.1%
43-3051	Payroll and Timekeeping Clerks	149	\$54,800	0.83	0	n/a	4	-18	-2.3%	61	35	41	-15	-2.1%
51-8031	Water and Wastewater Treatment Plant and System Operators	124	\$68,000	0.91	0	n/a	5	7	1.1%	50	22	35	-7	-1.2%
29-1041	Optometrists	106	\$154,500	2.23	0	n/a	8	12	2.5%	22	11	5	6	1.1%
29-1223	Psychiatrists	99	\$301,800	3.25	0	n/a	10	5	0.9%	15	9	4	1	0.2%
19-3033	Clinical and Counseling Psychologists	98	\$140,400	1.28	0	n/a	9	23	5.3%	34	15	17	2	0.4%
43-5031	Public Safety Telecommunicators	94	\$61,700	0.95	0	n/a	12	11	2.6%	47	20	29	-1	-0.2%
43-5051	Postal Service Clerks	94	\$57,100	1.12	0	n/a	2	22	5.5%	34	23	18	-6	-1.3%
21-2099	Religious Workers, All Other	86	\$44,100	0.95	0	n/a	n/a	3	0.7%	53	27	27	-1	-0.3%
29-1131	Veterinarians	83	\$109,000	0.85	0	n/a	8	3	0.7%	20	9	6	5	1.3%
49-9043	Maintenance Workers, Machinery	79	\$58,900	1.14	0	n/a	n/a	-9	-2.1%	41	19	22	0	-0.1%
<b>00-0000</b>	<b>Total - All Occupations</b>	<b>176,190</b>	<b>\$68,000</b>	<b>1.00</b>	<b>4,460</b>	<b>2.4%</b>	<b>8,573</b>	<b>1,424</b>	<b>0.2%</b>	<b>95,677</b>	<b>41,523</b>	<b>55,640</b>	<b>-1,486</b>	<b>-0.2%</b>

# Job Posting Trends in Southeast Minnesota

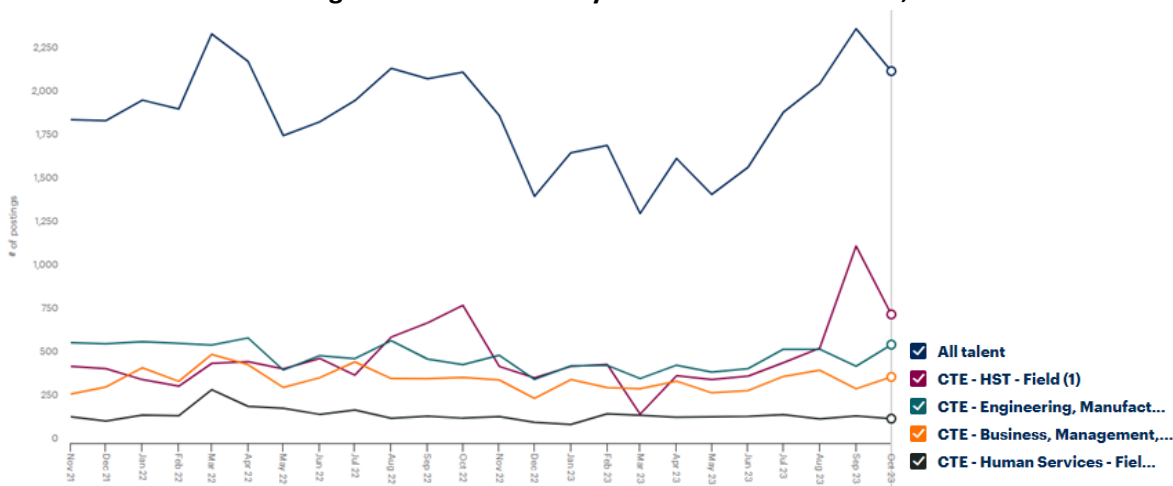
Online job posting data reveals much about employer demand for certain skills, certifications, qualifications, and occupational competencies. From November 1, 2022, through October 31, 2023, there were 21,179 unique job postings advertised online in Southeast Minnesota on job boards, according to analysis using Gartner TalentNeuron Plan (compared to 512,054 postings statewide). This was 12% lower than the 12 months prior. About 5% of all positions advertised were explicitly listed as remote or telecommute roles—either permanently or temporarily—a decrease of three percentage points from the prior year. The share of remote work opportunities has either increased or remained flat except for Human Services, which saw a rise from the prior year.

**Total Jobs Advertised Monthly in Southeast Minnesota, October 2022-2023**



SOURCE: Gartner TalentNeuron Plan accessed 11/28/2023

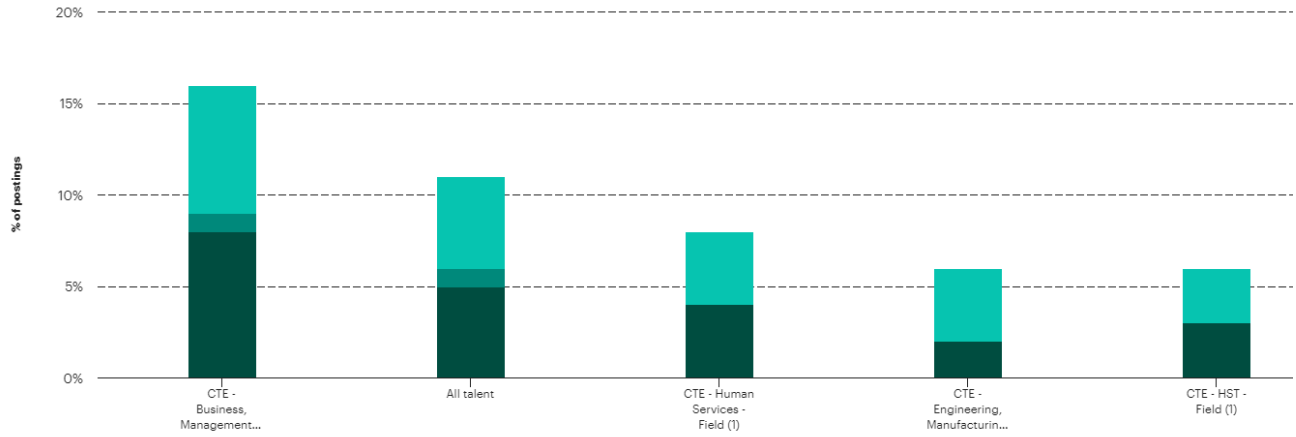
**Total Remote Job Postings Advertised Monthly in Southeast Minnesota, October 2022-2023**



SOURCE: Gartner TalentNeuron Plan accessed 11/28/2023

### Remote Job Postings by Career Field Advertised in Southeast Minnesota, October 2022-2023

■ Fully remote ■ Temporary remote ■ Hybrid remote



Talent Profile	% of postings				
	Unspecified /Onsite	Total remote	Fully remote	Temporary remote	Hybrid remote
CTE - Business, Management, and Administration - Field	84% ▼ -1 pp	16% ▲ +1 pp	8% ▼ -3 pp	1% ▲ +1 pp	7% ▲ +3 pp
All talent	89% ▲ +0 pp	11% ▲ +0 pp	5% ▼ -3 pp	1% ▲ +1 pp	5% ▲ +2 pp
CTE - Human Services - Field (1)	92% ▲ +3 pp	8% ▼ -3 pp	4% ▼ -3 pp	0% ▼ -1 pp	4% ▲ +1 pp
CTE - Engineering, Manufacturing, and Technology - Field (1)	94% ▼ -1 pp	6% ▲ +1 pp	2% ▼ -1 pp	0% ▲ +0 pp	4% ▲ +2 pp
CTE - HST - Field (1)	94% ▲ +0 pp	6% ▲ +0 pp	3% ▼ -1 pp	0% ▲ +0 pp	3% ▲ +1 pp

SOURCE: Gartner TalentNeuron Plan accessed 11/28/2023

Talent accumulates valuable skills in many different ways beyond just work and education, from self-study to apprenticeships and internships, workforce training programs, as well as general life experiences, which 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 may not know they have. This kind of gap analysis is possible at the occupation level and supports postsecondary planning, workforce development, and employer talent strategy. Most of the newest skills on the rise in regional job postings include specialized technical skills. Core skills have remained relatively consistent with human skills such as communication and relationship management ranking in high importance.

### Top Evolving Skills in Southeast Minnesota, October 2022-2023

<p><b>New</b></p> <ol style="list-style-type: none"> <li>1. Red blood cells</li> <li>2. Microscope slides</li> </ol> <p>New skills whose future is uncertain.</p>	<p><b>Emerging</b></p> <ol style="list-style-type: none"> <li>1. Defibrillators</li> <li>2. Electronic Medical Record (EMR...)</li> <li>3. Quality control</li> </ol> <p>Relatively new skills that are becoming more prevalent.</p>	<p><b>Growing</b></p> <p>There are no Growing skills in the market</p> <p>Fast-growing skills that are becoming core skills.</p>	<p><b>Core</b></p> <ol style="list-style-type: none"> <li>1. Scheduling</li> <li>2. Innovation</li> <li>3. Customer service</li> </ol> <p>Skills that have been present in a high percentage of job postings for some time.</p>	<p><b>Declining</b></p> <ol style="list-style-type: none"> <li>1. Servers</li> <li>2. Programming</li> <li>3. Compassion</li> </ol> <p>Skills that used to be essential but are becoming obsolete.</p>
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## Career Fields

The Engineering, Manufacturing, and Technology field accounts for the largest share of employment by career field in the Southeast region yet are no more concentrated locally than found nationally on average. Followed closely by Health Science Technology which is more concentrated locally than found nationally on average with a LQ of 2.27. Agriculture, Food, and Natural Resources careers are also more concentrated in the Southeast region than what is typically observed nationwide (LQ of 1.12). Arts, Communications, and Information Systems careers are smallest in local employment volume, but offer the highest average entry-level wages. Health Science Technology careers offer the highest average annual wages across all experience levels.

Unemployment is high in Engineering, Manufacturing, and Technology, Business, Management, and Administration, and Agriculture, Food, and Natural Resources careers overall as of 2023Q2, at 2.9%, 2.3%, and 2.3% respectively. This is largely due to high unemployment in the Hospitality and Tourism as well as the Architecture and Construction career pathways.

### CTE Field Employment and Wages in Southeast Minnesota, 2023Q2<sup>1</sup>

CTE Field	Current 2023Q2 Estimates							5-Year History	
	2023Q2 Empl	2023 Avg Entry-Level Wages	2023 Avg Ann Wages	LQ	Unempl	Unempl Rate	Online Job Ads	Empl Change	Ann %
							10/29/2023-11/29/2023 <sup>3</sup>		
Health Science Technology	36,517	\$32,600	\$110,700	2.27	499	1.4%	1,894	2,123	1.2%
Human Services	25,887	\$41,300	\$55,500	0.94	548	2.0%	971	634	0.5%
Arts, Communications, and Information Systems	5,072	\$56,600	\$84,500	0.62	103	1.9%	402	-349	-1.3%
Business, Management, and Administration	67,009	\$37,800	\$55,100	0.86	2,061	2.9%	3,470	-28	0.0%
Engineering, Manufacturing, and Technology	36,858	\$42,200	\$56,700	0.85	1,146	2.9%	1,584	-642	-0.3%
Agriculture, Food, and Natural Resources*	10,302	\$39,500	\$58,400	1.12	247	2.3%	296	-424	-0.8%
<b>Total - All Occupations</b>	<b>176,190</b>	<b>\$32,600</b>	<b>\$68,000</b>	<b>1.00</b>	<b>4,460</b>	<b>2.4%</b>	<b>8,595</b>	<b>1,424</b>	<b>0.2%</b>

Data as of 2023Q2 unless noted otherwise

Note: Figures may not sum due to rounding.

1. Data based on a four-quarter moving average unless noted otherwise.

2. Wage data represent the average for all Covered Employment

3. Data represent found online ads active within the last thirty days in the selected region. Due to alternative county-assignment algorithms, ad counts in this analytic may not match that shown in RTI (nor in the popup window ad list). Ad counts for ZCTA-based regions are estimates.

### CTE Field Baseline Employment Forecast for Southeast Minnesota, 2028Q2

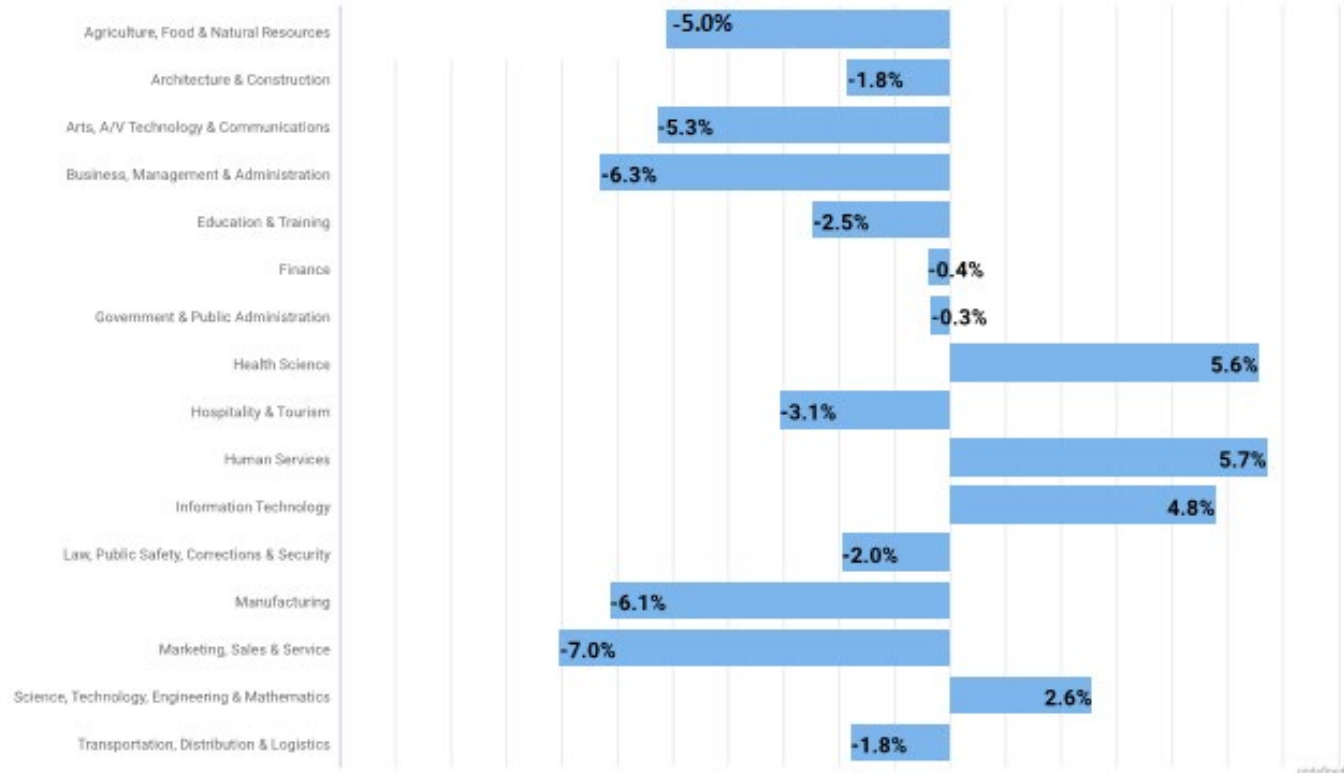
CTE Field (occupation overlap exists, will not sum)	Current 2023Q2 Empl (Place of Work)	5-Year Growth 2028Q2				Empl Change	Ann % Change
		Total Demand	Exits	Transfers			
Health Science Technology	36,517	15,707	6,735	7,974	998	0.5%	
Human Services	25,887	13,905	6,371	7,424	110	0.1%	
Arts, Communications, and Information Systems	5,072	2,116	729	1,369	18	0.1%	
Business, Management, and Administration	67,009	41,972	18,836	24,963	-1,827	-0.6%	
Engineering, Manufacturing, and Technology	36,858	19,236	7,496	12,377	-637	-0.3%	
Agriculture, Food, and Natural Resources*	10,302	5,796	2,492	3,580	-276	-0.5%	
<b>Total - All Occupations</b>	<b>176,190</b>	<b>95,677</b>	<b>41,523</b>	<b>55,640</b>	<b>-1,486</b>	<b>-0.2%</b>	

\*Supply gaps in parentheses indicate the number of trained workers we expect to fall short of the baseline talent needed to see the employment growth officially forecasted by the Bureau of Labor Statistics (BLS) and MN DEED. Represents skill mismatch in the region. Positive number indicates likely unemployment due to talent surplus. \*\* This focused, or narrow definition of Agriculture, Food, and Natural Resources (AFNR) aligns with classic definitions of the sector by MN DEED and BLS Agriculture, Fishing, and Forestry specific roles. The sector analysis found further in this report highlights a broader, more inclusive definition of AFNR, which is reflected in the sub-industry definition of AFNR included here.

## Career Cluster Detail

Of the sixteen career clusters used by Career and Technical Education (CTE), twelve are forecast to decline in overall employment over the next ten years as of 2023Q2 estimates (last year's estimates showed four facing forecasted growth). The four clusters forecasting growth are Human Services (5.7%), Health Science (5.6%), Information Technology (4.8%), and Science Technology, Engineering, and Mathematics (2.6%). All clusters saw fairly substantial declines in forecast employment outlook. Five of the sixteen career clusters have average wages above the average occupation wage in the region (\$68,000 in 2023—an increase of \$6,900 from 2022).<sup>4</sup>

**Baseline 10-Year Forecasts by Career Cluster, Southeast Minnesota, 2023Q2**



Cluster forecasts estimated using Chmura, JobsEQ, based on 2023Q2 employment data. All clusters are distinct occupations except for Agriculture, Food, and Natural Resources, which overlaps with other clusters.

An accurate assessment of future occupation demand requires that future growth, retirements, and other job exits be considered. In the Southeast, Hospitality and Tourism, Health Science, and Business, Management, and Administration have the highest annual job demand by volume of opportunities—due to retirements and job changes.

The Health Science cluster has the highest wages of the Career Clusters followed by the Science, Technology, Engineering and Mathematics and Information Technology clusters.

<sup>4</sup> Clusters paying an average salary higher than the regional average occupation wage include Health Science, Science, Technology, Engineering & Mathematics, Information Technology, Finance, and Government & Public Administration.





## Employment, Wages, and Forecast by Career Cluster, 2023Q2

Career Cluster	Employment	Avg Ann Wages	Job Ads	Baseline 10-Year Forecasted Empl Change	Ann Empl Change	Ann Total Demand
Health Science	36,517	\$110,700	1,893	5.6%	197	3,123
Science, Technology, Engineering & Mathematics	2,011	\$100,100	240	2.6%	5	141
Information Technology	3,167	\$96,600	323	4.8%	15	240
Finance	4,013	\$87,000	311	-0.4%	-2	344
Government & Public Administration	1,159	\$70,400	65	-0.3%	0	112
Business, Management & Administration	29,118	\$66,100	1,189	-6.3%	-191	3,069
Architecture & Construction	9,137	\$65,000	233	-1.8%	-18	882
Arts, A/V Technology & Communications	1,905	\$64,600	82	-5.3%	-10	184
Law, Public Safety, Corrections & Security	3,926	\$63,700	193	-2.0%	-8	349
Education & Training	10,297	\$59,200	325	-2.5%	-27	908
Agriculture, Food & Natural Resources*	10,302	\$58,400	289	-5.0%	-53	1,161
Marketing, Sales & Service	15,310	\$51,500	819	-7.0%	-112	1,898
Manufacturing	14,756	\$50,900	624	-6.1%	-95	1,516
Transportation, Distribution & Logistics	10,955	\$49,700	484	-1.8%	-20	1,323
Human Services	10,504	\$47,200	390	5.7%	57	1,409
Hospitality & Tourism	18,568	\$34,100	1,315	-3.1%	-59	3,135
<b>Total - All Occupations</b>	<b>176,190</b>	<b>\$68,000</b>	<b>8,573</b>	<b>0.0%</b>	<b>-306</b>	<b>19,177</b>

\*Cluster forecasts estimated using Chmura, JobsEQ, based on 2023Q2 employment data. All clusters are distinct occupations except for Agriculture, Food, and Natural Resources, which overlaps with other clusters. (+) indicates an improved forecast from 2022Q2 estimates.



# Priorities by Career Field

## Health Science Technology

### Critical Issues:

- Career field with highest local concentration (LQ 2.27)
- All top ten occupations by employment volume are highly concentrated locally
- Continued shortage of nurses
- Award gaps in critical nursing roles (shortage of at least 228 graduates to fill Medical Assistant, 72 graduates to fill Physician Assistant roles. One of the only regions to have an award gap for Registered Nurses (short 35 graduates)
- Lowest unemployment rate of career fields (1.4%)

## Human Services

### Critical Issues:

- High share of workforce over-credentialed for the roles they currently hold
- High replacement demand needs in this career field
- Critical occupations of shortage include Mental Health Counselors and Teachers
- Shortage of at least 42 graduates needed annually to fill Emergency Medical Technician and 36 graduates needed annually to fill Childcare Worker roles regionally

## Arts, Communications, and Information Technology

### Critical Issues:

- Increase in unemployment rate from previous year
- High demand for new professionals in this field over the next five years (need 5,072 new professionals in this field alone)
- Continued shortage of software developers expected (at least 14) – employment growth continues to outpace demand
- An award gap of at least 22 graduates needed to fill Computer User Support Specialist roles

## Business, Management, and Administration

### Critical Issues:

- Career field with the greatest annual average forecasted decline in employment (-0.7%)
- All but one of the ten top occupations by employment volume have forecasted declines over the next ten years
- Shortage of graduates needed to fill Bookkeeping, Accounting, and Auditing Clerk roles

## Engineering, Manufacturing, and Technology

### Critical Issues:

- Largest share of employment by career field
- Field with highest unemployment (2.9%)
- Exacerbation of talent shortage due to upcoming retirements with 46.3% of workers in this field 45 years or older
- Award gap for Industrial Engineers

## Agriculture, Food, and Natural Resources

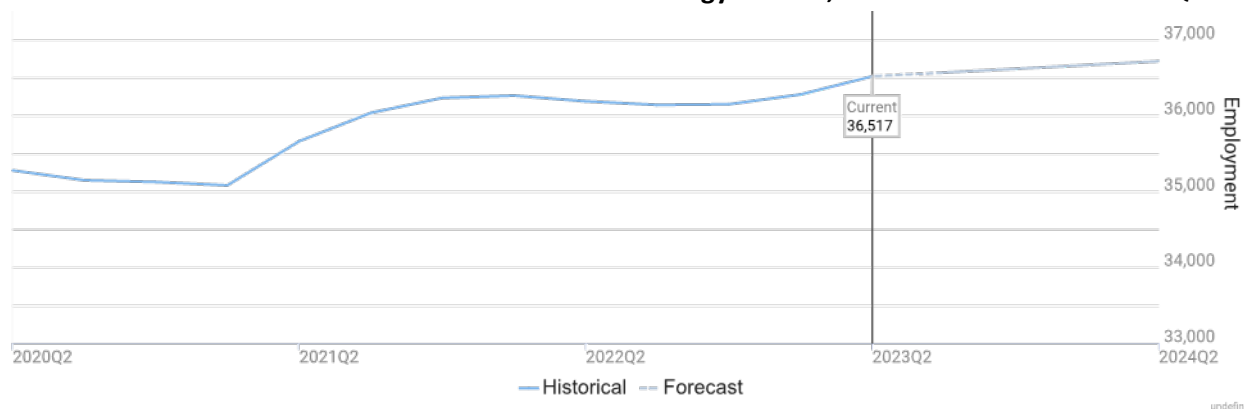
### Critical Issues:

- Zero unemployed Veterinarians
- Dramatic award gap for Farmers, Ranchers, and Other Agricultural Managers (shortage of 55 graduates)
- High local concentration of Meat, Poultry, and Fish Cutters and Trimmers (LQ. 4.67)

## Health Science Technology

Over the next three years, Health Science Technology employment is forecast to increase by 0.5% on average annually, a slight drop from last year's projected 1% growth.

**Baseline 3-Year Forecast for Health Science Technology Careers, Southeast Minnesota 2023Q2**



### Top Ten Health Science Technology Occupations by Employment Volume in Southeast Minnesota, 2023Q2

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Change
Registered Nurses	7,226	\$93,600	2.10	376	417	0.1%
Medical Assistants	3,403	\$49,700	4.04	238	519	1.0%
Medical Secretaries and Administrative Assistants	2,925	\$51,300	3.87	165	340	0.1%
Nursing Assistants	2,050	\$40,600	1.39	-135	304	-0.1%
Licensed Practical and Licensed Vocational Nurses	1,545	\$56,000	2.19	-139	124	0.0%
Nurse Practitioners	1,342	\$132,900	4.58	198	137	4.3%
Physicians, All Other	1,222	\$313,200	3.57	110	35	0.0%
Medical and Health Services Managers	1,198	\$118,300	2.17	113	123	2.0%
Home Health Aides	1,175	\$33,500	1.11	-324	151	1.2%
Physician Assistants	892	\$125,900	5.57	96	73	2.3%
Remaining Component Occupations	13,541	\$149,300	2.95	544	880	0.2%
<b>Health Science (CTE Field)</b>	<b>36,517</b>	<b>\$110,700</b>	<b>2.27</b>	<b>1,239</b>	<b>3,123</b>	<b>0.5%</b>

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

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

Most individuals in Southeast Minnesota that are working in Health Science Technology roles are employed by Office of Physicians (53.2%) or General Medical and Surgical Hospitals (27.1%).

### Health Science Technology Field Employment by Industry, Southeast Minnesota, 2023Q2

Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Change	10-Year Total Demand
Offices of Physicians	53.2%	19,433	15,165	1,421	16,586
General Medical and Surgical Hospitals	27.1%	9,909	7,274	255	7,529
Nursing Care Facilities (Skilled Nursing Facilities)	3.6%	1,312	1,402	-91	1,311
Offices of Dentists	2.3%	841	826	19	845



Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Change	10-Year Total Demand
Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	1.8%	643	770	63	833
Individual and Family Services	1.6%	597	715	154	869
Offices of Other Health Practitioners	1.3%	460	372	58	430
Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities	1.1%	411	420	-6	414
Home Health Care Services	1.0%	367	361	59	420
Health and Personal Care Retailers	0.9%	324	244	-11	233
Other Professional, Scientific, and Technical Services	0.8%	289	310	43	354
Elementary and Secondary Schools	0.6%	227	161	0	162
All Others	4.7%	1,702	1,412	65	1,476

### Career Field Demographics

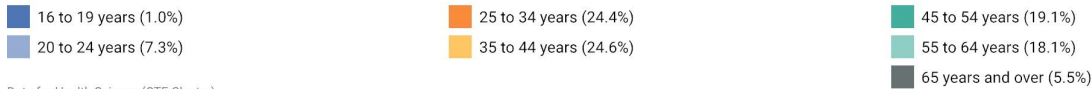
The Health Science Technology field is predominantly female (73.0%) and white (83.9%), but racial diversity grew by 1.1 percentage points from the prior years' estimates. The age distribution of talent in Health Science Technology skews slightly young with the largest proportion of talent between the ages of 35 and 44 years (24.6%), followed closely by 25 and 34 years (24.4% of talent).

#### Age

Southeast Minnesota



Minnesota



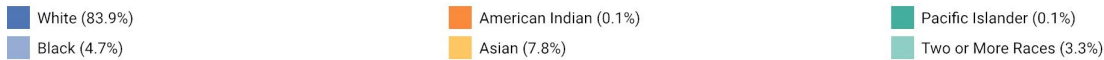
Data for Health Science (CTE Cluster)  
Source: JobsEQ®. Data as of 2023Q2.

#### Race

Southeast Minnesota



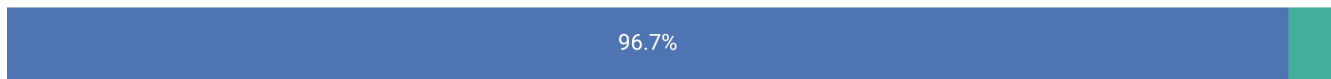
Minnesota



Data for Health Science (CTE Cluster)  
Source: JobsEQ®. Data as of 2023Q2.

#### Ethnicity

Southeast Minnesota



Minnesota



Data for Health Science (CTE Cluster)  
Source: JobsEQ®. Data as of 2023Q2.



Gender

Southeast Minnesota



Minnesota



Male (27.0%) Female (73.0%)

Data for Health Science (CTE Cluster)  
Source: JobsEQ®. Data as of 2023Q2.

**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 Southeast Minnesota Health Science Technology workforce has a close match to the education and training required for existing roles. For example, just 15.1% of Health Science Technology positions require no educational award (a decrease of 0.4 percentage points from the previous year), and about 10.2% of the workforce holds a high school diploma or less. About 20.6% of the Health Science Technology workforce hold a two-year degree and 10.5% completed some college (such as a certificate), or 31.1% in all, compared to about 32.0% of local jobs in Health Science Technology that typically require a certificate two-year degree.

Educational Attainment

Southeast Minnesota



Minnesota



< High School (1.2%) High School (9.0%) Some College (10.5%) Two-Year (20.6%) Four-Year (27.0%) Master's (11.9%) PhD (19.9%)

Data for Health Science (CTE Cluster)  
Source: JobsEQ®. Data as of 2023Q2.

Education and Training Requirements

Southeast Minnesota



Minnesota



Short-term OJT, no exp, no award (4.7%) Moderate-term OJT, no exp, no award (9.9%) Long-term training, no exp, no award (0.5%) Previous work experience, no award (0.0%) 2-year degree or certificate (32.0%) Bachelor's degree (25.9%) Postgraduate degree (27.0%)

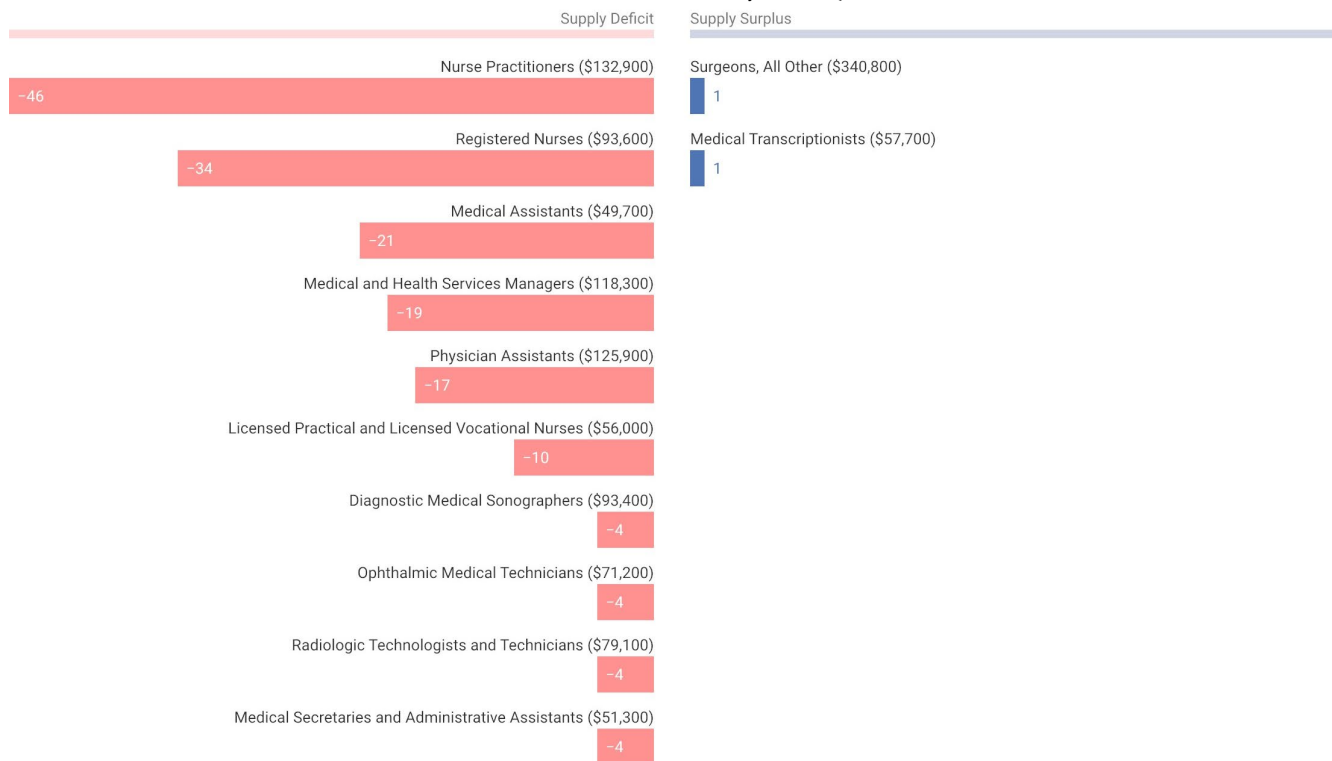
Data for Health Science (CTE Cluster)  
Source: JobsEQ®. Data as of 2023Q2.

**Occupation Gaps**

In Health Science Technology, Nurse Practitioners and Registered Nurses are the two occupations with the greatest annual shortages in the Southeast, Registered Nurses was the top occupation of shortage in the previous year. Other occupations of high shortage have mostly remained consistent with prior estimates, with the addition of Ophthalmic Medical Technicians and Medical Secretaries and Administrative Assistants.



## Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Health Science Technology, Southeast Minnesota, 2023Q2

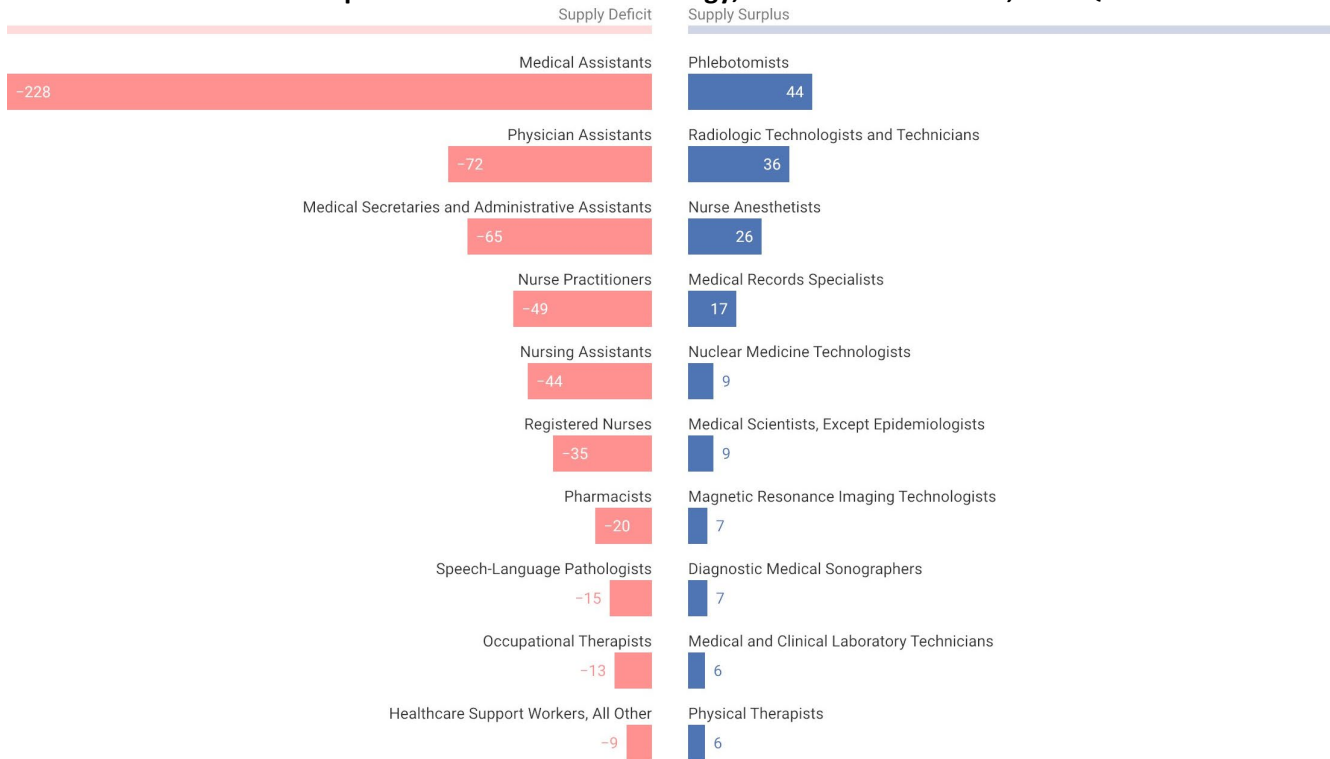


### Award Gaps

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 Southeast has several Health Science Technology award gaps, meaning that the region is underproducing local talent in relation to employer demand. Southeast colleges and universities are underproducing about 228 Medical Assistants and 72 Physician Assistants graduates annually that are needed to fill positions open with employers in the region. 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. The Southeast region uniquely has an award gap for Registered Nurses. The oversupply of graduates in the Southeast is likely helping to meet award gaps found in the 7-county MSP Metro and elsewhere.



## Award Gaps in Health Science Technology, Southeast Minnesota, 2023Q2



### Origin, Gateway, and Target Occupations

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



## Origin-to-Gateway-to-Target Occupations for Health Science Technology, Southeast Minnesota, 2023Q2

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

Registered Nurses (AG)  
Nurse Practitioners (AG)  
Physicians, All Other (AG)  
Medical & Health Services Managers  
Physician Assistants (AG)

### Gateway Occupations (all HD, OG)

Medical Assistants (HS, AG)  
Medical Secretaries & Administrative Assistants (AG)  
Licensed Practical Nurses (HS, AG)  
Pharmacy Technicians  
Medical Records Specialists (HS)

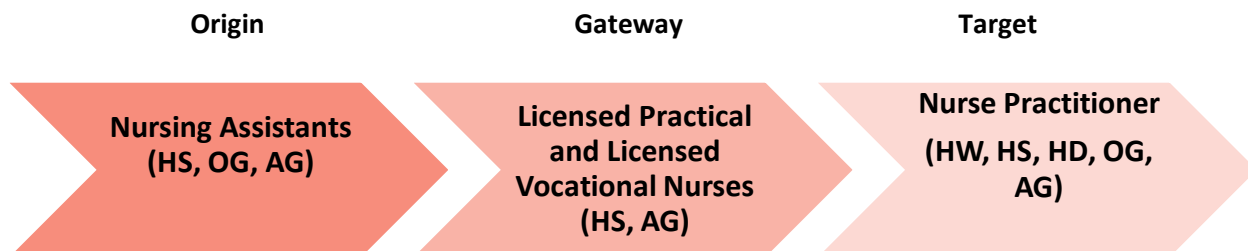
### Origin Occupations (all HD)

Nursing Assistants (HS, OG, AG)  
Home Health Aides  
Healthcare Support Workers, All Other (AG)  
Phlebotomists (HS)  
Veterinary Technologists & Technicians (HS, OG)

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

### Featured Pathway

A promising Health Science Technology pathway in the Southeast region is the pathway to become a Nurse Practitioner. The Target occupation of Nurse Practitioner is very highly concentrated in the Southeast region with a location quotient of 4.58. This role is in high demand and is experiencing both an occupation and award gap. Southeast colleges and universities are underproducing at least 49 graduates annually to fill this role. The Gateway occupation of Licensed Practical and Licensed Vocational Nurses is also extremely concentrated locally (LQ 2.19) and also faces an award gap. The Origin Occupation of Nursing Assistants is facing an occupation and an award gap and is locally concentrated (LQ 1.39). This is an example of a potential feeder occupation into these roles, given overlapping foundational skillsets and training required. Stackability of credentials is vital to building viable career pathways up to Nurse Practitioner positions at the AS, BSN, or MSN levels.





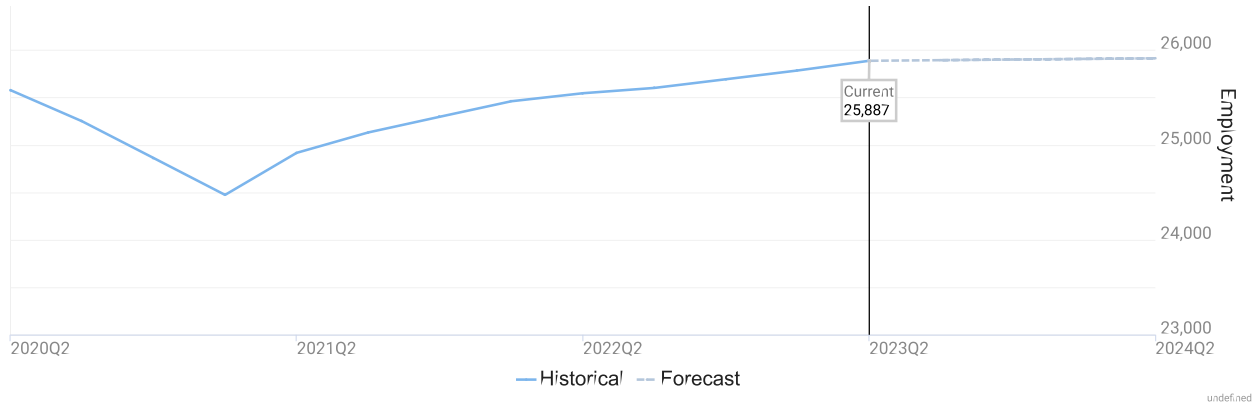
**OGT Wages and Experience Level Requirements, Health Science, Southeast Minnesota, 2023Q2**

SOC	Occupation	Empl Count	Mean	Entry Level	Experienced	10%	25%	50% (Median)	75%	90%	Typical Entry-Level Education	Previous Work Experience	Typical On-the-Job Training
29-1141	Registered Nurses	7,226	\$93,600	\$81,900	\$99,500	\$80,400	\$84,600	\$87,800	\$102,900	\$109,700	BA	None	None
29-1171	Nurse Practitioners	1,342	\$132,900	\$107,800	\$145,500	\$109,500	\$110,000	\$135,000	\$135,100	\$162,700	MA	None	None
29-1229	Physicians, All Other	1,222	\$313,200	\$88,200	\$425,600	\$87,400	\$105,100	\$297,300	\$350,700	\$421,200	PhD	None	Internship/residency
11-9111	Medical and Health Services Managers	1,198	\$118,300	\$90,800	\$132,100	\$83,600	\$101,700	\$104,000	\$133,500	\$168,200	BA	Less than 5 years	None
29-1071	Physician Assistants	892	\$125,900	\$105,100	\$136,200	\$105,400	\$108,800	\$129,800	\$129,900	\$154,900	MA	None	None
31-9092	Medical Assistants	3,403	\$49,700	\$48,800	\$50,200	\$48,300	\$49,400	\$49,600	\$49,700	\$57,800	Certificate	None	None
43-6013	Medical Secretaries and Administrative Assistants	2,925	\$51,300	\$44,300	\$54,900	\$41,400	\$48,400	\$48,500	\$53,700	\$66,500	HS/GED	None	Mod-term OJT
29-2061	Licensed Practical and Licensed Vocational Nurses	1,545	\$56,000	\$50,800	\$58,600	\$50,900	\$51,200	\$54,100	\$61,300	\$62,000	Certificate	None	None
29-2052	Pharmacy Technicians	522	\$46,100	\$38,700	\$49,800	\$38,000	\$40,700	\$45,300	\$51,800	\$55,500	HS/GED	None	Mod-term OJT
29-2072	Medical Records Specialists	498	\$54,000	\$45,400	\$58,300	\$44,400	\$47,000	\$47,500	\$59,700	\$68,500	Certificate	None	None
31-1131	Nursing Assistants	2,050	\$40,600	\$35,400	\$43,300	\$34,200	\$37,600	\$40,200	\$43,500	\$50,500	Certificate	None	None
31-1121	Home Health Aides	1,175	\$33,500	\$29,600	\$35,500	\$29,200	\$30,400	\$32,600	\$36,400	\$38,900	HS/GED	None	Short-term OJT
31-9099	Healthcare Support Workers, All Other	361	\$44,400	\$38,500	\$47,400	\$37,800	\$40,300	\$45,000	\$46,100	\$48,500	HS/GED	None	None
31-9097	Phlebotomists	161	\$42,300	\$34,800	\$46,000	\$35,000	\$35,700	\$41,400	\$47,700	\$50,500	Certificate	None	None
29-2056	Veterinary Technologists and Technicians	156	\$42,800	\$35,900	\$46,300	\$34,100	\$38,900	\$40,900	\$45,200	\$51,000	AS	None	None

# Human Services

A total of 25,887 people are employed in Human Services roles regionally, accounting for 14.6% of all regional employment. Over the next three years, Human Services employment is forecast to grow by 0.1% annually. The field’s average wage is \$55,500 somewhat below the regional average across all occupations (\$68,000).

**Baseline 3-Year Forecast for Human Services Careers, Southeast Minnesota, 2023Q2**



**Top Ten Human Services Occupations by Employment Volume in Southeast Minnesota, 2023Q2**

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Change
Personal Care Aides	3,330	\$33,500	1.10	173	520	1.2%
Teaching Assistants, Except Postsecondary	1,965	\$36,600	1.44	-25	220	-0.4%
Elementary School Teachers, Except Special Education	1,503	\$64,800	1.01	-1	104	-0.3%
Secondary School Teachers, Except Special and Career/Technical Education	1,147	\$67,600	1.02	9	74	-0.3%
Childcare Workers	1,056	\$30,200	1.20	-71	167	-0.5%
Preschool Teachers, Except Special Education	713	\$38,200	1.32	-32	75	-0.1%
Emergency Medical Technicians	668	\$43,400	3.63	58	52	0.2%
Middle School Teachers, Except Special and Career/Technical Education	636	\$62,900	0.98	0	44	-0.3%
Social and Human Service Assistants	587	\$44,400	1.30	-7	71	0.6%
Police and Sheriff’s Patrol Officers	560	\$71,600	0.80	3	44	-0.2%
Remaining Component Occupations	13,720	\$64,400	0.84	205	1,400	0.0%
<b>Human Services (CTE Field)</b>	<b>25,887</b>	<b>\$55,500</b>	<b>0.94</b>	<b>309</b>	<b>2,773</b>	<b>0.1%</b>

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

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

The largest share of regional Human Services talent in the Southeast are employed by Elementary and Secondary Schools (28.5%, a slight increase from last year’s 27.5%) or Individual and Family Services (8.4%). The diversity of industries that employ Human Services talent is reflective of the wide range of career pathways in this field.



## Human Services Field Employment by Industry, Southeast Minnesota, 2023Q2

Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Change	10-Year Total Demand
Elementary and Secondary Schools	28.5%	7,385	6,558	-213	6,345
Individual and Family Services	8.4%	2,181	3,019	539	3,558
Executive, Legislative, and Other General Government Support	8.2%	2,121	1,954	-70	1,884
Child Care Services	4.7%	1,218	1,585	-75	1,509
Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities	4.3%	1,107	1,414	-22	1,392
Colleges, Universities, and Professional Schools	3.6%	937	807	-44	764
Religious Organizations	3.4%	873	918	-35	884
Other Ambulatory Health Care Services	3.1%	794	558	20	578
Offices of Physicians	2.9%	763	765	7	771
Personal Care Services	2.9%	741	1,016	41	1,057
Other Residential Care Facilities	2.7%	689	854	-19	835
General Medical and Surgical Hospitals	2.4%	633	624	3	627
Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	1.9%	487	711	80	791
Other Amusement and Recreation Industries	1.8%	471	808	36	845
Justice, Public Order, and Safety Activities	1.8%	457	413	-17	396
Junior Colleges	1.6%	405	352	-11	341
Administration of Human Resource Programs	1.6%	401	372	-6	366
Home Health Care Services	1.5%	390	561	59	621
Other Schools and Instruction	1.5%	376	461	2	463
Legal Services	1.1%	295	220	-6	214
All Others	12.2%	3,164	3,617	-4	3,613

## Career Field Demographics

The Human Services field is predominantly female (61.8%) and white (88.6%). The share of BIPOC Human Services workforce increased by 0.7 percentage points from the 2022Q2 estimates. The age of the workforce is evenly distributed between 25 and 64 years of age.

Age

Southeast Minnesota



Minnesota



16 to 19 years (2.4%)  
20 to 24 years (8.4%)

25 to 34 years (21.0%)  
35 to 44 years (22.3%)

45 to 54 years (20.6%)  
55 to 64 years (18.6%)  
65 years and over (6.8%)

Data for Human Services (CTE Field)  
Source: JobsEQ®. Data as of 2023Q2.

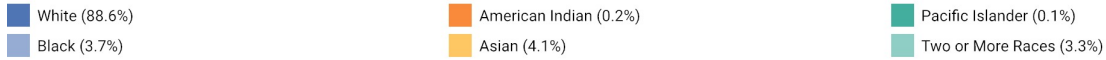


Race

Southeast Minnesota



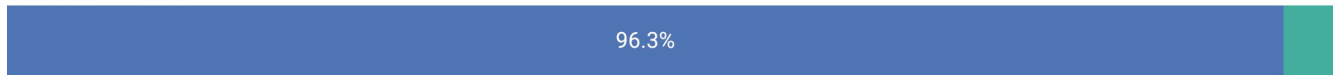
Minnesota



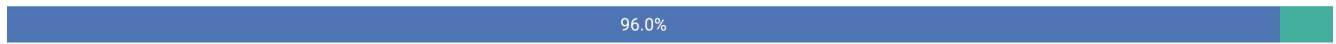
Data for Human Services (CTE Field)  
Source: JobsEQ®. Data as of 2023Q2.

Ethnicity

Southeast Minnesota



Minnesota



Data for Human Services (CTE Field)  
Source: JobsEQ®. Data as of 2023Q2.

Gender

Southeast Minnesota



Minnesota



Data for Human Services (CTE Field)  
Source: JobsEQ®. Data as of 2023Q2.

**Educational Attainment and Requirements**

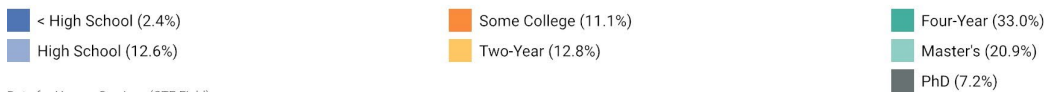
The stacked bar charts here illustrate the estimated mix of educational attainment of the workers in this career field in aggregate, followed by the typical education and training requirements in the field. In general, the Southeast Human Services workforce is over-skilled for the typical credentials of entry-level positions. For example, 2.4% of the Human Services workforce have no diploma at all, and 12.6% hold a high school diploma as their highest credential. In contrast, about 43% of positions in this field do not require any kind of postsecondary award or credential.

Educational Attainment

Southeast Minnesota



Minnesota

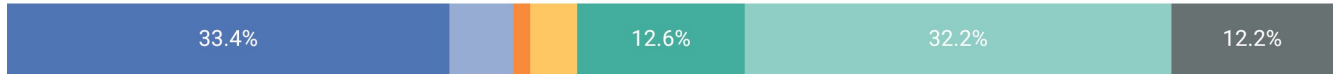


Data for Human Services (CTE Field)  
Source: JobsEQ®. Data as of 2023Q2.



### Education and Training Requirements

Southeast Minnesota



Minnesota



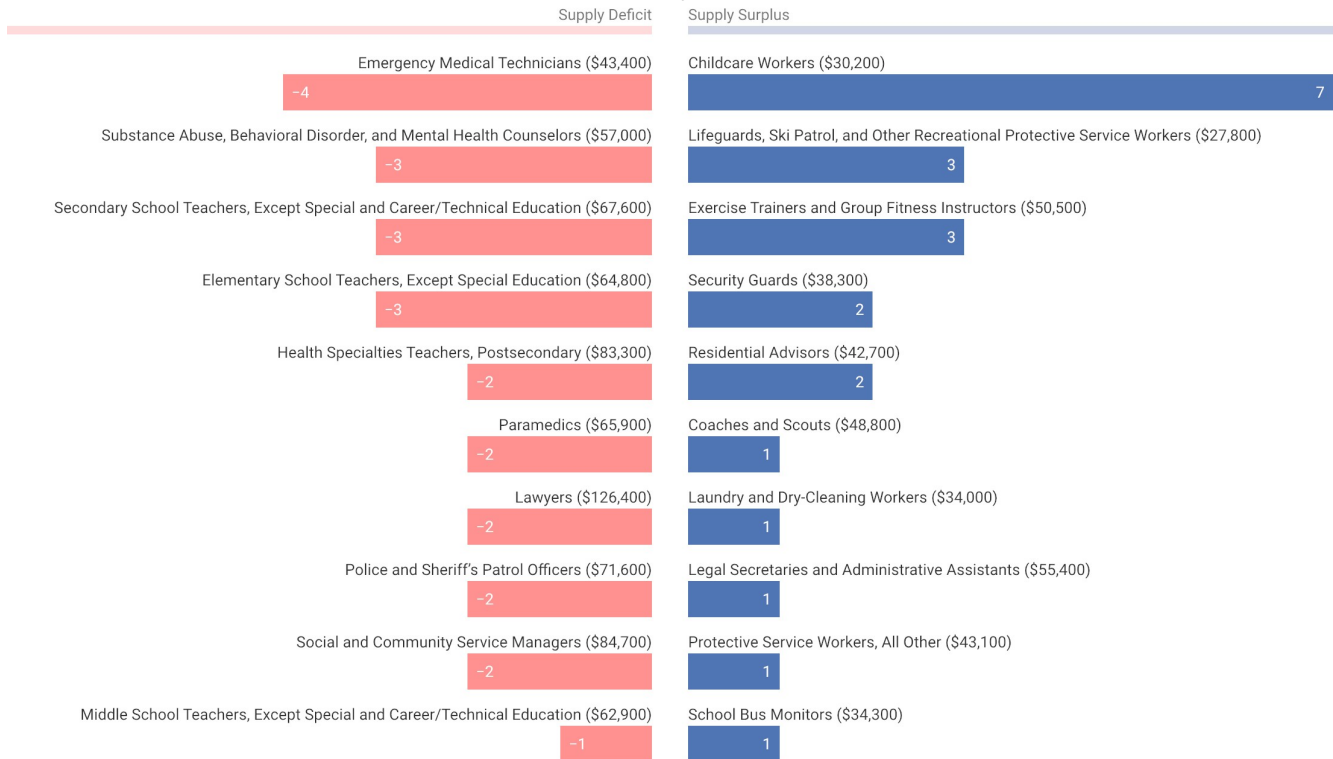
- Short-term OJT, no exp, no award (33.4%)
- Moderate-term OJT, no exp, no award (4.7%)
- Long-term training, no exp, no award (1.3%)
- Previous work experience, no award (3.6%)
- 2-year degree or certificate (12.6%)
- Bachelor's degree (32.2%)
- Postgraduate degree (12.2%)

Data for Human Services (CTE Field)  
Source: JobsEQ®. Data as of 2023Q2.

### Occupation Gaps

The chart below shows the potential average annual talent shortages over ten years. In Human Services, Emergency Medical Technicians, Substance Abuse, Behavioral Disorder, and Mental Health Counselors, and Secondary and Elementary Teachers are the top occupations of shortage in the region. These critical talent shortages in education and mental health counseling have shifted due in large part to forecasted employment growth and replacement demand needs due to retirements combined with insufficient talent coming through both secondary education and mental health counseling programs.

### Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Human Services, Southeast Minnesota, 2023Q2

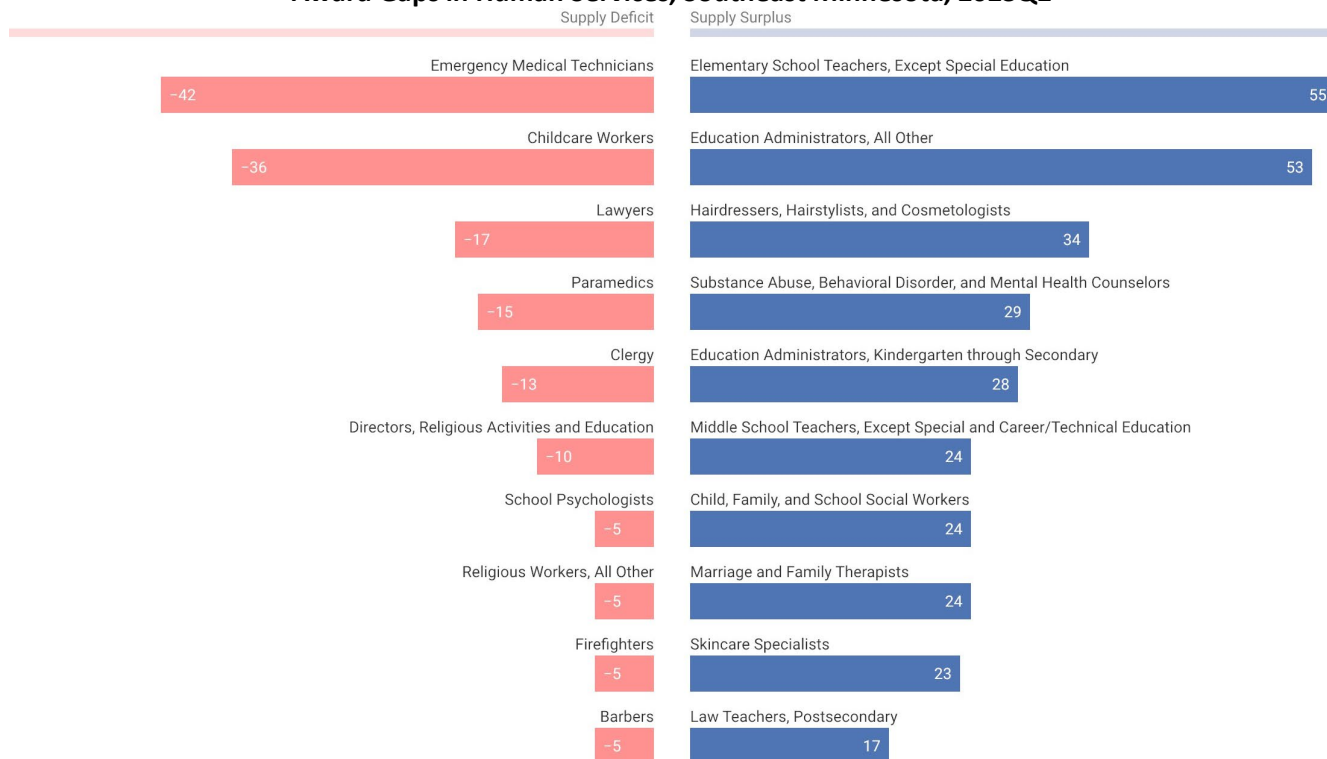




### Award Gaps

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. Southeast Minnesota faces several notable Human Services award gaps, meaning that the region is underproducing local talent in relation to employer demand. Southeast colleges and universities are underproducing about 42 graduates annually that are needed to fill Emergency Medical Technician positions open with employers based in the region. They are also underproducing at least 33 graduates to fill Childcare Worker roles, and at least 17 lawyers. 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, Southeast Minnesota, 2023Q2**



### Origin-Gateway-Target

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



## Origin-to-Gateway-to-Target Occupations for Human Services, Southeast Minnesota, 2023Q2

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

Lawyers (AG)  
 Social & Community Service Managers  
 Compliance Officers  
 Social Workers, All Other  
 Health Specialties Teachers, Postsecondary

### Gateway Occupations (all HS, OG)

Elementary School Teachers  
 Secondary Teachers  
 Middle School Teachers  
 Substance Abuse, Behavioral Disorder, & Mental Health Counselors (HD)  
 Child, Family, & School Social Workers (HD)

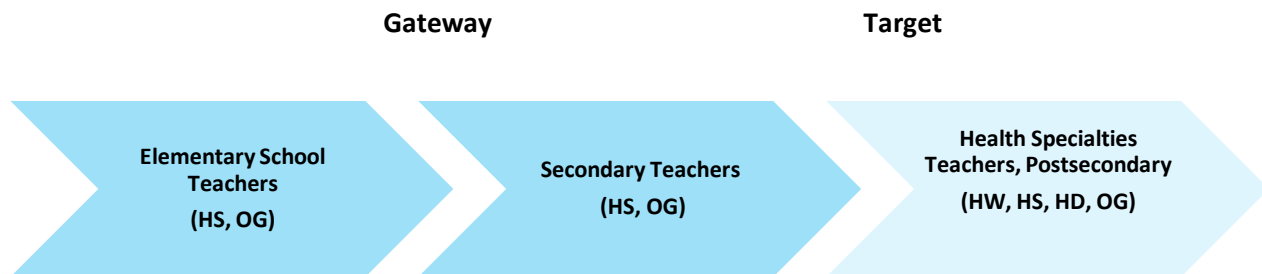
### Origin Occupations

Personal Care Aides (HD, AG)  
 Teaching Assistants (HS)  
 Childcare Workers (AG)  
 Preschool Teachers (HS, HD)  
 Emergency Medical Technicians (HS, HD, OG, AG)

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

### Featured Pathway

A potential pathway to explore in the Southeast region is Health Specialties Teachers, Postsecondary. The Target occupation is facing an occupation gap and relatively concentrated in the region. This role is in high demand and currently experiencing an occupation gap. Two Gateway occupations that could feed into this role are Elementary School Teachers and Secondary Teachers. Both of these roles face an occupation gap and are highly concentrated locally (LQ. 1.01 and 1.02 respectively). Forecast employment growth coupled with replacement demand due to retirement and insufficient graduate supply make this an important pathway to explore.



**OGT Wages and Experience Level Requirements, Human Services, Southeast Minnesota, 2023Q2**

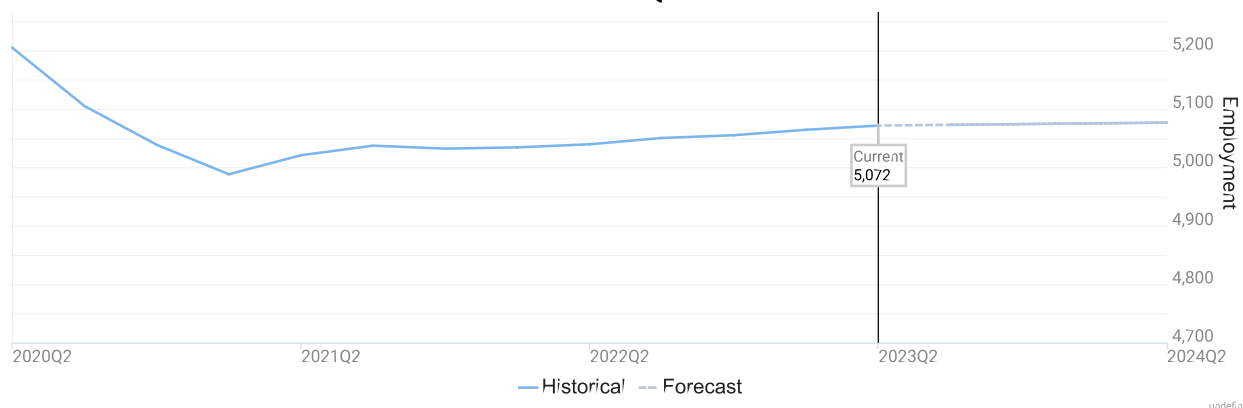
SOC	Occupation	Empl Count	Mean	Entry Level	Experienced	10%	25%	50% (Median)	75%	90%	Typical Entry-Level Education	Previous Work Experience	Typical On-the-Job Training
23-1011	Lawyers	344	\$126,400	\$74,400	\$152,400	\$70,000	\$85,300	\$108,100	\$152,600	\$209,500	PhD	None	None
11-9151	Social and Community Service Managers	295	\$84,700	\$58,800	\$97,600	\$57,200	\$64,500	\$81,700	\$98,900	\$118,200	BA	< 5 years	None
13-1041	Compliance Officers	261	\$79,400	\$54,200	\$92,000	\$50,600	\$62,300	\$77,800	\$91,500	\$110,000	BA	None	Mod-term OJT
21-1029	Social Workers, All Other	164	\$79,000	\$61,900	\$87,600	\$60,000	\$67,500	\$81,300	\$97,100	\$100,100	BA	None	None
25-1071	Health Specialties Teachers, Postsecondary	156	\$83,300	\$54,200	\$97,900	\$50,800	\$62,100	\$80,500	\$90,500	\$118,600	PhD	< 5 years	None
25-2021	Elementary School Teachers, Except Special Education	1,503	\$64,800	\$48,500	\$72,900	\$48,400	\$51,300	\$64,400	\$76,900	\$80,700	BA	None	None
25-2031	Secondary School Teachers, Except Special and Career/Technical Education	1,147	\$67,600	\$48,600	\$77,200	\$48,800	\$51,200	\$65,700	\$79,200	\$82,800	BA	None	None
25-2022	Middle School Teachers, Except Special and Career/Technical Education	636	\$62,900	\$48,600	\$70,000	\$48,400	\$51,300	\$63,800	\$69,900	\$85,500	BA	None	None
21-1018	Substance Abuse, Behavioral Disorder, and Mental Health Counselors	508	\$57,000	\$46,400	\$62,300	\$44,800	\$49,100	\$50,500	\$63,600	\$76,600	BA	None	None
21-1021	Child, Family, and School Social Workers	405	\$61,200	\$42,100	\$70,700	\$40,900	\$46,600	\$60,000	\$68,900	\$84,400	BA	None	None
31-1122	Personal Care Aides	3,330	\$33,500	\$29,600	\$35,500	\$29,200	\$30,400	\$32,600	\$36,400	\$38,900	HS/GED	None	Short-term OJT
25-9045	Teaching Assistants, Except Postsecondary	1,965	\$36,600	\$30,100	\$39,800	\$29,700	\$31,800	\$37,800	\$39,100	\$41,800	Certificate	None	None
39-9011	Childcare Workers	1,056	\$30,200	\$25,400	\$32,600	\$24,600	\$26,900	\$28,700	\$31,900	\$38,700	HS/GED	None	Short-term OJT
25-2011	Preschool Teachers, Except Special Education	713	\$38,200	\$30,300	\$42,200	\$29,300	\$32,400	\$35,900	\$40,100	\$49,900	AS	None	None
29-2042	Emergency Medical Technicians	668	\$43,400	\$34,000	\$48,200	\$31,300	\$38,700	\$44,700	\$46,300	\$61,200	Certificate	None	None



# 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. Current employment sits at 5,072 for talent in this field, with about 103 unemployed, trained professionals in the region (1.9% unemployment rate, an increase of 0.3 percentage points from last year). Over the next three years, Arts, Communications, and Information Systems Field employment is forecast to grow by 0.0% annually, a drop from last year’s projected 0.3% growth. A total of 2,116 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 \$76,800 on average in 2022Q2 to \$84,500 in 2023Q2.

## Baseline 3-Year Forecast for Arts, Communications, and Information Systems Careers, Southeast Minnesota, 2023Q2



## Top Ten Arts, Communications, and Information Systems Occupations by Employment Volume in Southeast Minnesota, 2023Q2

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Change
Software Developers	1,061	\$111,100	0.60	-25	88	1.4%
Computer User Support Specialists	491	\$66,400	0.62	23	35	-0.4%
Computer Systems Analysts	428	\$107,000	0.76	12	31	0.1%
Computer Network Support Specialists	267	\$78,600	1.41	2	20	-0.1%
Network and Computer Systems Administrators	204	\$98,800	0.56	-6	12	-0.5%
Graphic Designers	192	\$63,000	0.66	-2	16	-0.5%
Computer Occupations, All Other	190	\$81,000	0.40	-3	14	0.1%
Telecommunications Equipment Installers and Repairers, Except Line Installers	173	\$60,700	0.93	-8	20	0.3%
Printing Press Operators	140	\$49,300	0.84	-14	13	-1.5%
Musicians and Singers	137	\$113,100	0.73	-13	17	-0.4%
Remaining Component Occupations	1,786	\$73,200	0.63	-97	157	-0.4%
<b>Arts, Communications, &amp; Information Systems (CTE Field)</b>	<b>5,072</b>	<b>\$84,500</b>	<b>0.62</b>	<b>-133</b>	<b>422</b>	<b>0.0%</b>

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

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



The largest share of talent in the Southeast that is working in Arts, Communications, and Information Systems roles are employed by Computer and Peripheral Equipment Manufacturing (10.6%) and Wired and Wireless Telecommunications (8.1%). Overall, employment is relatively spread out across many different industries.

### Arts, Communications, and Information Systems Field Employment by Industry, Southeast Minnesota, 2023Q2

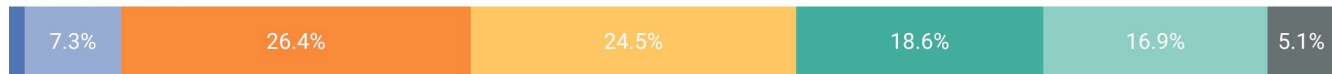
Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Change	10-Year Total Demand
Computer and Peripheral Equipment Manufacturing	10.6%	537	380	40	421
Wired and Wireless Telecommunications (except Satellite)	8.1%	409	382	-6	376
Management of Companies and Enterprises	6.6%	332	249	25	274
Computer Systems Design and Related Services	5.5%	277	208	42	250
Independent Artists, Writers, and Performers	4.1%	210	216	-2	214
Printing and Related Support Activities	3.6%	185	181	-35	145
General Medical and Surgical Hospitals	3.4%	174	126	2	128
Offices of Physicians	3.3%	169	123	0	123
Religious Organizations	3.3%	166	177	-7	169
Office Administrative Services	2.6%	134	107	30	137
Depository Credit Intermediation	2.4%	121	86	6	92
Semiconductor and Other Electronic Component Manufacturing	2.4%	121	84	5	89
Other Professional, Scientific, and Technical Services	2.2%	113	99	0	99
Colleges, Universities, and Professional Schools	1.9%	98	75	-7	67
Elementary and Secondary Schools	1.9%	96	72	-5	68
Sound Recording Industries	1.8%	93	83	-9	73
Newspaper, Periodical, Book, and Directory Publishers	1.7%	87	79	-14	65
Executive, Legislative, and Other General Government Support	1.7%	85	63	-2	60
Employment Services	1.6%	83	63	-1	62
Software Publishers	1.4%	71	54	13	67
All Others	29.8%	1,511	1,289	-24	1,264

### Career Field Demographics

The Arts, Communications, and Information Systems field is predominantly male (74.6%, decreasing by two percentage points from the prior year) and white (83.0%), diversity decreased with now 17% of talent in the field BIPOC by race compared to 18.1% in the year prior. Over half of the Arts, Communications, and Information Systems workforce in the region is under 45 years of age (59.3%) and averaging younger each year.

#### Age

Southeast Minnesota



Minnesota



16 to 19 years (1.1%)  
20 to 24 years (7.3%)

25 to 34 years (26.4%)  
35 to 44 years (24.5%)

45 to 54 years (18.6%)  
55 to 64 years (16.9%)  
65 years and over (5.1%)

Data for Arts, Communications, & Information Systems (CTE Field)  
Source: JobsEQ®. Data as of 2023Q2.



Race

Southeast Minnesota



Minnesota



- White (83.0%)
- Black (2.1%)
- American Indian (0.1%)
- Asian (10.9%)
- Pacific Islander (0.0%)
- Two or More Races (3.8%)

Data for Arts, Communications, & Information Systems (CTE Field)  
Source: JobsEQ®. Data as of 2023Q2.

Ethnicity

Southeast Minnesota



Minnesota



- Non-Hispanic/Latino (97.5%)
- Hispanic or Latino (of any race) (2.5%)

Data for Arts, Communications, & Information Systems (CTE Field)  
Source: JobsEQ®. Data as of 2023Q2.

Gender

Southeast Minnesota



Minnesota



- Male (74.6%)
- Female (25.4%)

Data for Arts, Communications, & Information Systems (CTE Field)  
Source: JobsEQ®. Data as of 2023Q2.

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, followed by the typical education and training requirements in the field. Just under two-thirds (64.1%, down 1.4 percentage points from the prior years' estimates) of all occupations in this field require a Bachelor's degree, while 49.1% of the workforce hold a four-year degree as their highest credential. Another 19.8% hold a Master's or PhD.

Educational Attainment

Southeast Minnesota



Minnesota



- < High School (0.9%)
- High School (7.8%)
- Some College (9.7%)
- Two-Year (12.7%)
- Four-Year (49.1%)
- Master's (16.9%)
- PhD (2.9%)

Data for Arts, Communications, & Information Systems (CTE Field)  
Source: JobsEQ®. Data as of 2023Q2.



### Education and Training Requirements

Southeast Minnesota



Minnesota



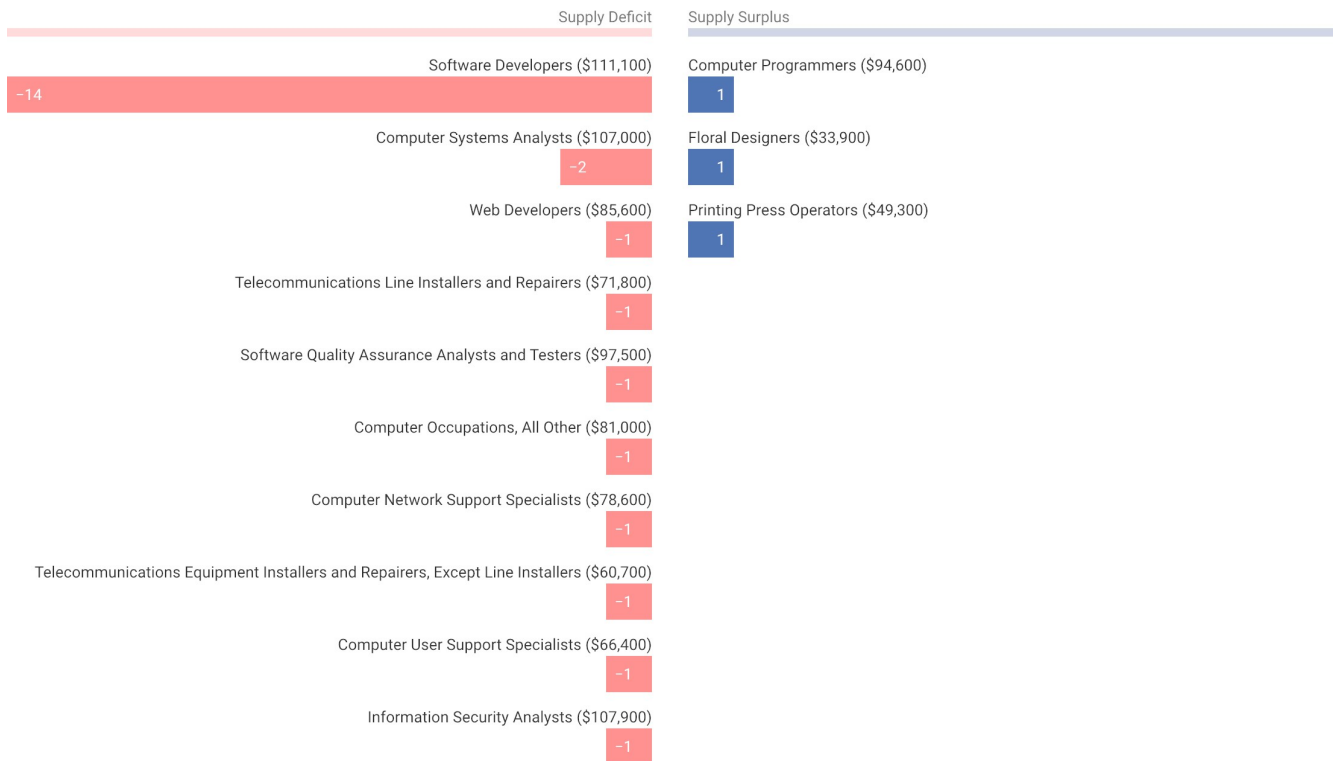
- Short-term OJT, no exp, no award (1.1%)
- Moderate-term OJT, no exp, no award (16.8%)
- Long-term training, no exp, no award (6.1%)
- Previous work experience, no award (0.1%)
- 2-year degree or certificate (11.8%)
- Bachelor's degree (64.1%)
- Postgraduate degree (0.0%)

Data for Arts, Communications, & Information Systems (CTE Field)  
Source: JobsEQ®. Data as of 2023Q2.

### Occupation Gaps

The chart below shows the potential average annual talent shortages over ten years. Software Developers are the top occupation of shortage in this field, falling short at least 14 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 supply of trained software professionals in this region. The Computer Systems Analysts occupation has the second greatest forecasted shortage.

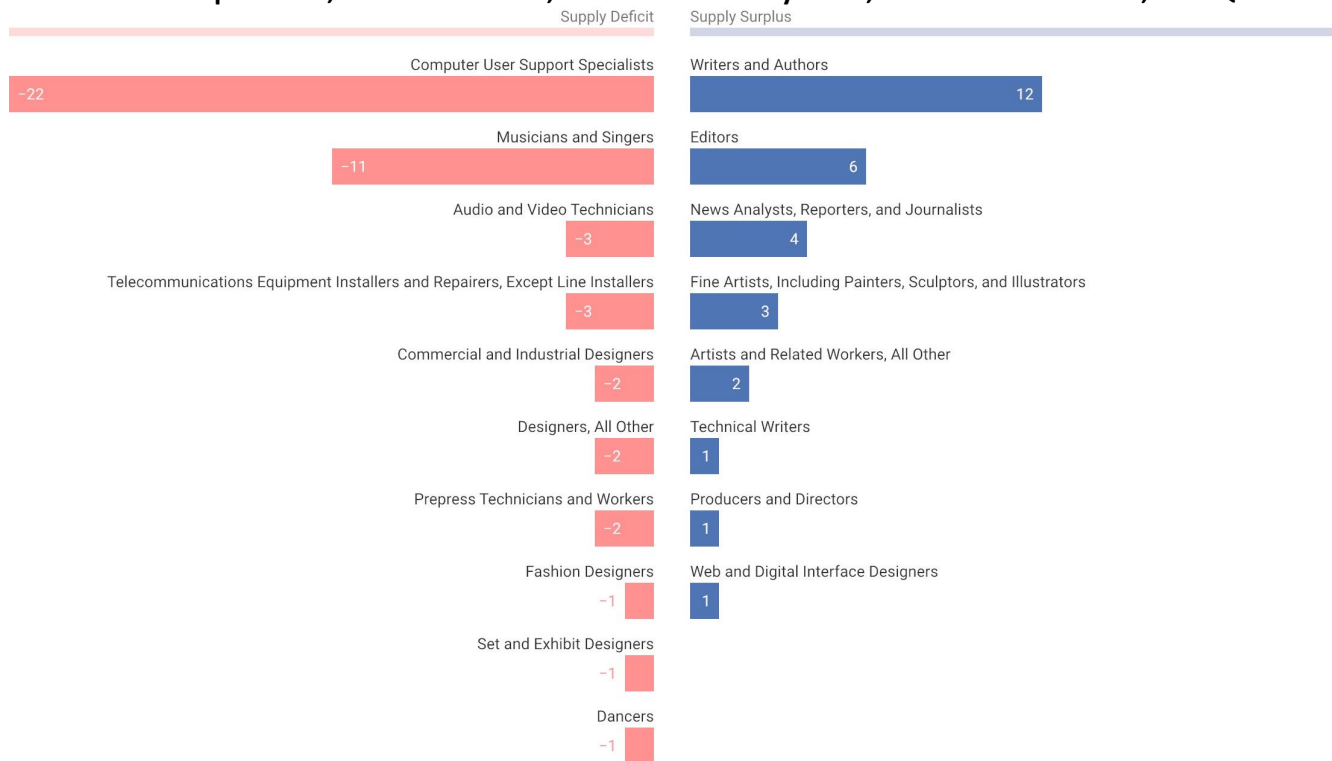
### Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Arts, Communications. And Information Systems, Southeast Minnesota, 2023Q2



## Award Gaps

A comparison of the graduate talent pipeline obtaining a certificate or postsecondary degree to the current estimated openings by occupation reveal several regional shortages. Postsecondary institutions in Southeast Minnesota are 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. Southeast Minnesota colleges and universities are underproducing trained Computer User Support Specialists and Musicians and Singers measured against national benchmarks. Occupations that show higher awards given than what is currently needed in the local talent market are examples of programs that serve other parts of the state where talent demand is high but relevant programs may not exist.

### Award Gaps in Arts, Communications, and Information Systems, Southeast Minnesota, 2023Q2



## Origin-Gateway-Target

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



## Origin-to-Gateway-to-Target Occupations for Arts, Communications, and Information Systems, Southeast Minnesota, 2023Q2

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

Software Developers  
 Computer Systems Analysts  
 Computer Network Support Specialists  
 Computer Occupations, All Other (emerging occs)  
 Software Quality Assurance Analysts

### Gateway Occupations

Computer User Support Specialists (HS, OG, AG)  
 Graphic Designers (HS)  
 Telecommunications Equipment Installers & Repairers (HS, HD, OG, AG)  
 Printing Press Operators  
 Photographers

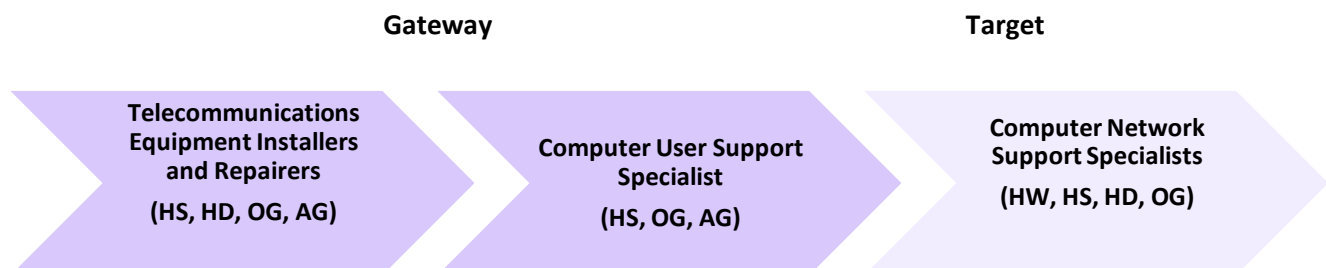
### Origin Occupations

Floral Designers  
 Broadcast Announcers & Radio Disc Jockeys (HS)  
 Disc Jockeys, Except Radio  
 Dancers (HD, AG)  
 Craft Artists

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

### Featured Pathway

With a projected occupation gap, high wages, and high demand, the occupation of Computer Network Support Specialists is a promising pathway to explore in the Southeast region. This occupation is highly concentrated in the region with a location quotient of 1.41. A Gateway occupation with related skillsets is Computer User Support Specialists. This occupation is relatively concentrated locally and faces both an award and occupation gap. Another related Gateway occupation is Telecommunications Equipment Installers and Repairers. This role is in high demand and also faces both an occupation and award gap and is relatively concentrated locally as well.



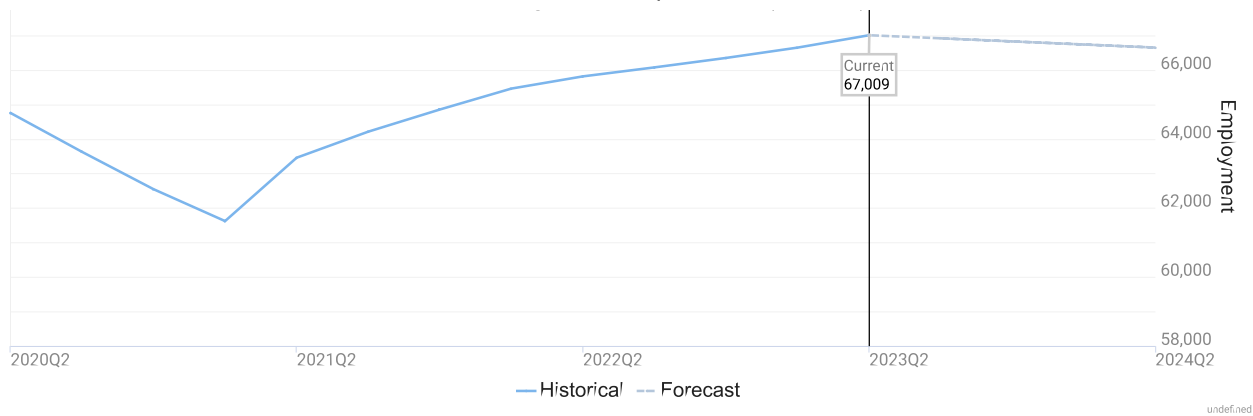
**OGT Wages and Experience Level Requirements, Arts, Communications, and Information Systems, Southeast Minnesota, 2023Q2**

SOC	Occupation	Empl Count	Mean	Entry Level	Experienced	10%	25%	50% (Median)	75%	90%	Typical Entry-Level Education	Previous Work Experience	Typical On-the-Job Training
15-1252	Software Developers	1,061	\$111,100	\$78,700	\$127,400	\$75,600	\$87,900	\$111,400	\$137,600	\$139,100	BA	None	None
15-1211	Computer Systems Analysts	428	\$107,000	\$70,500	\$125,300	\$65,200	\$82,300	\$102,700	\$134,500	\$143,600	BA	None	None
15-1231	Computer Network Support Specialists	267	\$78,600	\$54,500	\$90,700	\$51,000	\$62,100	\$75,300	\$93,800	\$109,800	AS	None	Mod-term OJT
15-1299	Computer Occupations, All Other	190	\$81,000	\$50,800	\$96,100	\$43,800	\$61,800	\$75,300	\$91,100	\$121,000	BA	None	None
15-1253	Software Quality Assurance Analysts and Testers	82	\$97,500	\$66,900	\$112,700	\$62,800	\$77,200	\$99,200	\$109,300	\$129,900	BA	None	None
15-1232	Computer User Support Specialists	491	\$66,400	\$47,500	\$75,800	\$45,300	\$53,000	\$64,500	\$76,000	\$87,800	Certificate	None	Mod-term OJT
27-1024	Graphic Designers	192	\$63,000	\$42,700	\$73,100	\$39,300	\$49,300	\$58,900	\$69,800	\$92,800	BA	None	None
49-2022	Telecommunications Equipment Installers and Repairers, Except Line Installers	173	\$60,700	\$43,200	\$69,400	\$40,400	\$49,400	\$62,500	\$67,900	\$79,400	Certificate	None	Mod-term OJT
51-5112	Printing Press Operators	140	\$49,300	\$35,000	\$56,500	\$32,300	\$39,900	\$46,800	\$58,300	\$69,100	HS/GED	None	Mod-term OJT
27-4021	Photographers	127	\$61,500	\$39,100	\$72,700	\$37,200	\$43,900	\$55,800	\$69,700	\$87,800	HS/GED	None	Mod-term OJT
27-1023	Floral Designers	57	\$33,900	\$27,500	\$37,100	\$25,600	\$30,300	\$32,200	\$37,900	\$39,600	HS/GED	None	Mod-term OJT
27-3011	Broadcast Announcers and Radio Disc Jockeys	37	\$39,300	\$24,700	\$46,600	\$24,000	\$25,800	\$32,800	\$40,000	\$55,800	BA	None	None
27-2091	Disc Jockeys, Except Radio	20	\$42,200	\$25,300	\$50,700	\$23,200	\$27,400	\$36,800	\$50,400	\$78,500	HS/GED	None	Short-term OJT
27-2031	Dancers	10	\$38,000	\$24,600	\$44,800	\$23,200	\$26,000	\$34,400	\$45,800	\$60,700	None	None	Long-term OJT
27-1012	Craft Artists	8	\$41,100	\$23,300	\$50,100	\$23,000	\$23,200	\$38,100	\$48,700	\$71,700	None	None	Long-term OJT

# Business, Management, and Administration

Business, Management, and Administration is a broad career field with Hospitality and Tourism, Finance, Administration, Human Resources, and Marketing careers, which all experienced different timing of recovery from the pandemic’s impacts. As of 2023Q2, employment in occupations aligned to this career field sits at about 67,009 (an increase from last year’s 65,844 workers) workers in the Southeast, with an estimated unemployment rate of 2.9%. Over the next three years, Business, Management, and Administration Field employment is forecast to decline by -0.6% on average annually, a further dip from last year’s forecasted growth of 0.2%. Most of the growth is attributable to the Hospitality and Tourism Cluster careers in this field. Wages average \$55,100 annually, compared to \$68,000 across all career fields.

**Baseline 3-Year Forecast for Business, Management, and Administration Careers, Southeast Minnesota, 2023Q2**



**Top Ten Business, Management, and Administration Systems Occupations by Employment Volume in Southeast Minnesota, 2023Q2**

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Change
Cashiers	4,013	\$30,600	1.10	92	661	-1.5%
Retail Salespersons	3,656	\$36,400	0.90	147	494	-0.7%
General and Operations Managers	3,372	\$106,000	0.89	387	286	-0.1%
Fast Food and Counter Workers	3,067	\$30,300	0.83	-43	636	-0.5%
Office Clerks, General	3,056	\$45,600	1.07	-94	334	-1.2%
Customer Service Representatives	2,643	\$44,700	0.83	224	324	-1.2%
Stockers and Order Fillers	2,425	\$36,800	0.78	227	415	0.1%
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	2,271	\$39,600	0.88	16	303	-0.3%
Receptionists and Information Clerks	2,142	\$39,900	1.85	3	288	-0.1%
Waiters and Waitresses	2,136	\$27,300	0.89	102	404	-0.8%
Remaining Component Occupations	38,228	\$63,000	0.76	1,189	4,286	-0.5%
<b>Business, Management, &amp; Administration (CTE Field)</b>	<b>67,009</b>	<b>\$55,100</b>	<b>0.86</b>	<b>2,251</b>	<b>8,432</b>	<b>-0.6%</b>

“Annual Demand” is the projected need for new entrants into an occupation. New entrants are needed due to expected growth and to replace workers who left the occupation due to factors such as retirement or switching careers. “Forecast Ann Growth” is the expected baseline (most pessimistic) yearly change in employment due to national, long-term trend projections (per the BLS) as well as local factors such as industry mix, labor force participation rates, and population growth (as computed and modeled by RealTime Talent in JobsEQ).





Employment in Business, Management, and Administration careers is spread across a number of different industries. In the Southeast, the industries with the greatest share of Business, Management, and Administration talent are Restaurants (13%) and Offices of Physicians (9.1%). These two industries account for a substantial amount of talent demand over the next ten years (restaurants alone accounts for well over half of future positions needing to be filled in this field), but overall both current employment and future growth are relatively spread out over many different industries.

### Business, Management, and Administration Field Employment by Industry, Southeast Minnesota, 2023Q2

Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Change	10-Year Total Demand
Restaurants and Other Eating Places	13.0%	8,702	15,564	-265	15,299
Offices of Physicians	9.1%	6,083	7,108	-241	6,867
Warehouse Clubs, Supercenters, and Other General Merchandise Retailers	3.9%	2,616	3,893	-208	3,685
Grocery and Convenience Retailers	3.7%	2,498	3,943	-182	3,760
Gasoline Stations	3.4%	2,289	3,698	-273	3,425
General Medical and Surgical Hospitals	3.4%	2,253	2,767	-113	2,653
Management of Companies and Enterprises	2.4%	1,633	1,620	18	1,638
Traveler Accommodation	2.3%	1,509	2,260	-43	2,218
Elementary and Secondary Schools	2.1%	1,432	1,839	-128	1,711
Depository Credit Intermediation	2.1%	1,389	1,287	-115	1,171
Special Food Services	2.1%	1,375	2,249	-86	2,163
Office Administrative Services	2.0%	1,331	1,466	179	1,645
Building Material and Supplies Dealers	1.9%	1,251	1,745	-52	1,693
Executive, Legislative, and Other General Government Support	1.6%	1,086	1,283	-95	1,188
Other Amusement and Recreation Industries	1.6%	1,067	1,875	26	1,901
Drinking Places (Alcoholic Beverages)	1.5%	991	1,616	-65	1,550
Services to Buildings and Dwellings	1.4%	923	1,190	-35	1,155
Automobile Dealers	1.4%	910	1,101	-57	1,043
Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	1.2%	789	1,189	31	1,220
Computer and Peripheral Equipment Manufacturing	1.2%	785	743	-24	720
All Others	38.9%	26,097	29,089	-1,767	27,322

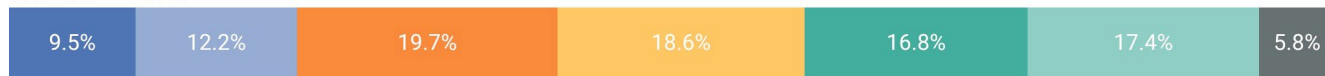
### Career Field Demographics

The Business, Management, and Administration field is about 89.3% white, seeing racial diversity increase by 0.5 percentage points from the prior year's estimates. By gender, the field flipped from being majority male in 2021 to being 54.3% females employed in 2022, and now 52.7% of the field's talent are females as of 2023Q2. Age is fairly evenly distributed, with the largest share 25 to 34 years old (19.7%).

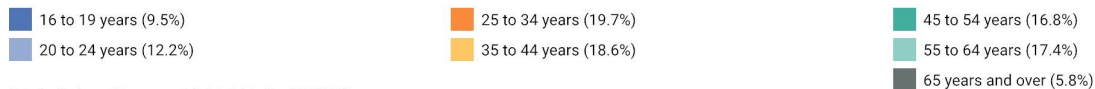
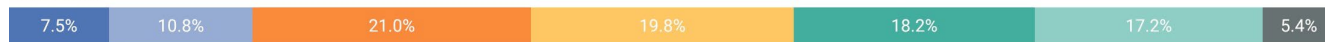


### Age

Southeast Minnesota



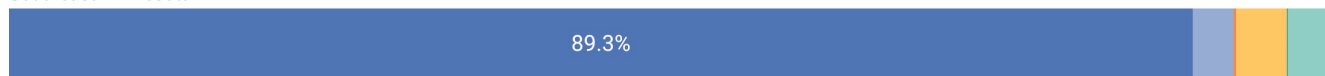
Minnesota



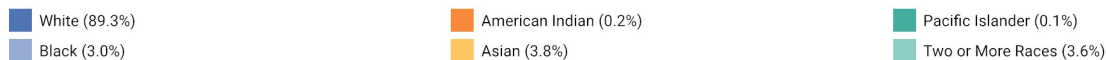
Data for Business, Management, & Administration (CTE Field)  
Source: JobsEQ®. Data as of 2023Q2.

### Race

Southeast Minnesota



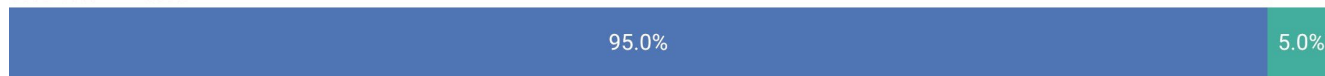
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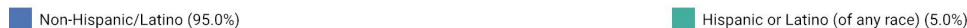
Data for Business, Management, & Administration (CTE Field)  
Source: JobsEQ®. Data as of 2023Q2.

### Ethnicity

Southeast Minnesota



Minnesota



Data for Business, Management, & Administration (CTE Field)  
Source: JobsEQ®. Data as of 2023Q2.

### Gender

Southeast Minnesota



Minnesota



Data for Business, Management, & Administration (CTE Field)  
Source: JobsEQ®. Data as of 2023Q2.

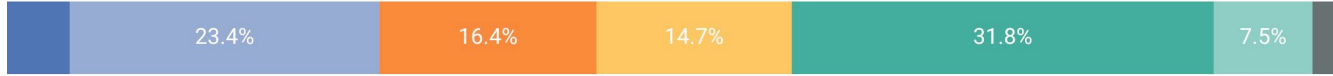
## Educational Attainment and Requirements

The stacked bar charts here illustrate the estimated mix of educational attainment of the workers in this career field in aggregate, followed by the typical education and training requirements of occupations in the field. In general, consistent with data from 2022Q2, the Southeast Minnesota Business, Management, and Administration workforce is more likely to have a two-year degree than what is in demand. While 14.7% of the workforce holds a two-year degree, just 0.3% of the occupations in this field require a two-year degree. Over half of all positions in this field (57.8%) require no degree, no experience, and only short-term on-the-job training. Another 20.2% require experience or some on-the-job training, but still no degree. In contrast, only 4.7% of the workforce in this field has no degree at all, and 23.4% hold a high school diploma as their highest credential.

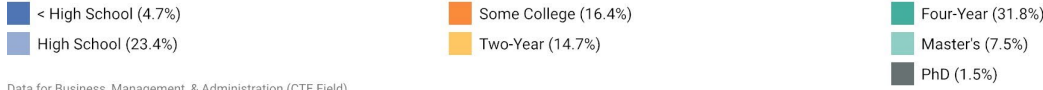


### Educational Attainment

Southeast Minnesota



Minnesota



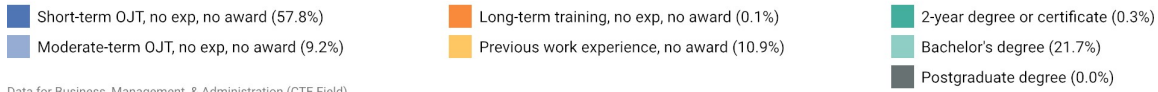
Data for Business, Management, & Administration (CTE Field)  
Source: JobsEQ®. Data as of 2023Q2.

### Education and Training Requirements

Southeast Minnesota



Minnesota

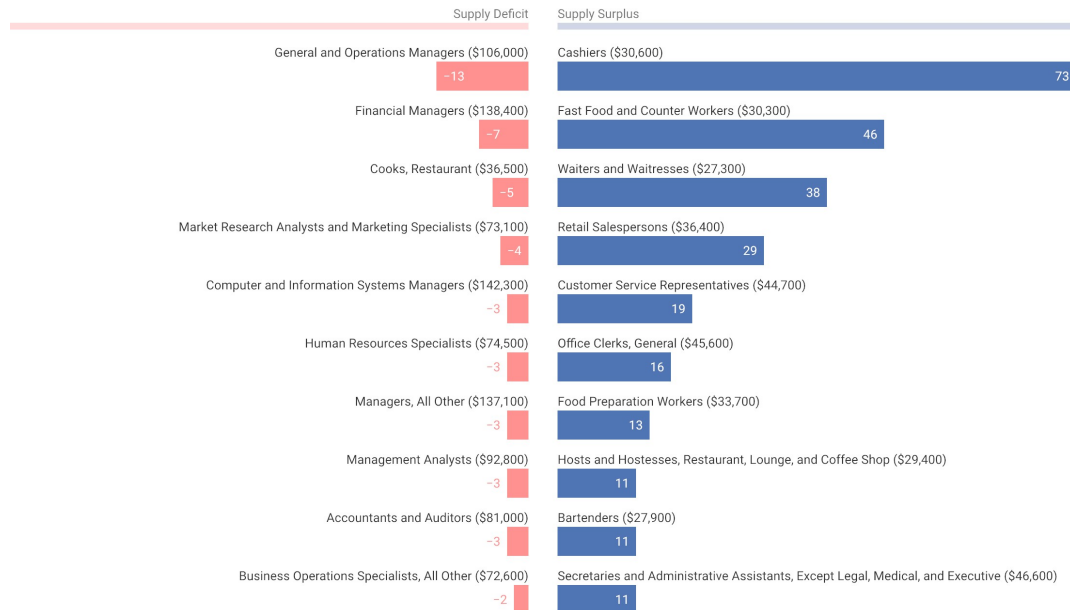


Data for Business, Management, & Administration (CTE Field)  
Source: JobsEQ®. Data as of 2023Q2.

### Occupation Gaps

The chart below shows the potential average annual talent shortages over ten years. 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 13 skilled workers needed annually (averaged over the next ten years) to meet employer demand—a decrease of three short estimated the year prior. Cooks was the highest occupation shortage forecasted in the previous year (short 16 skilled workers in last year's estimates and only short three years in this year's estimates). These shortages vary by region due to retirements, projected growth, and turnover rates.

### Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Business, Management, and Administration, Southeast Minnesota, 2023Q2

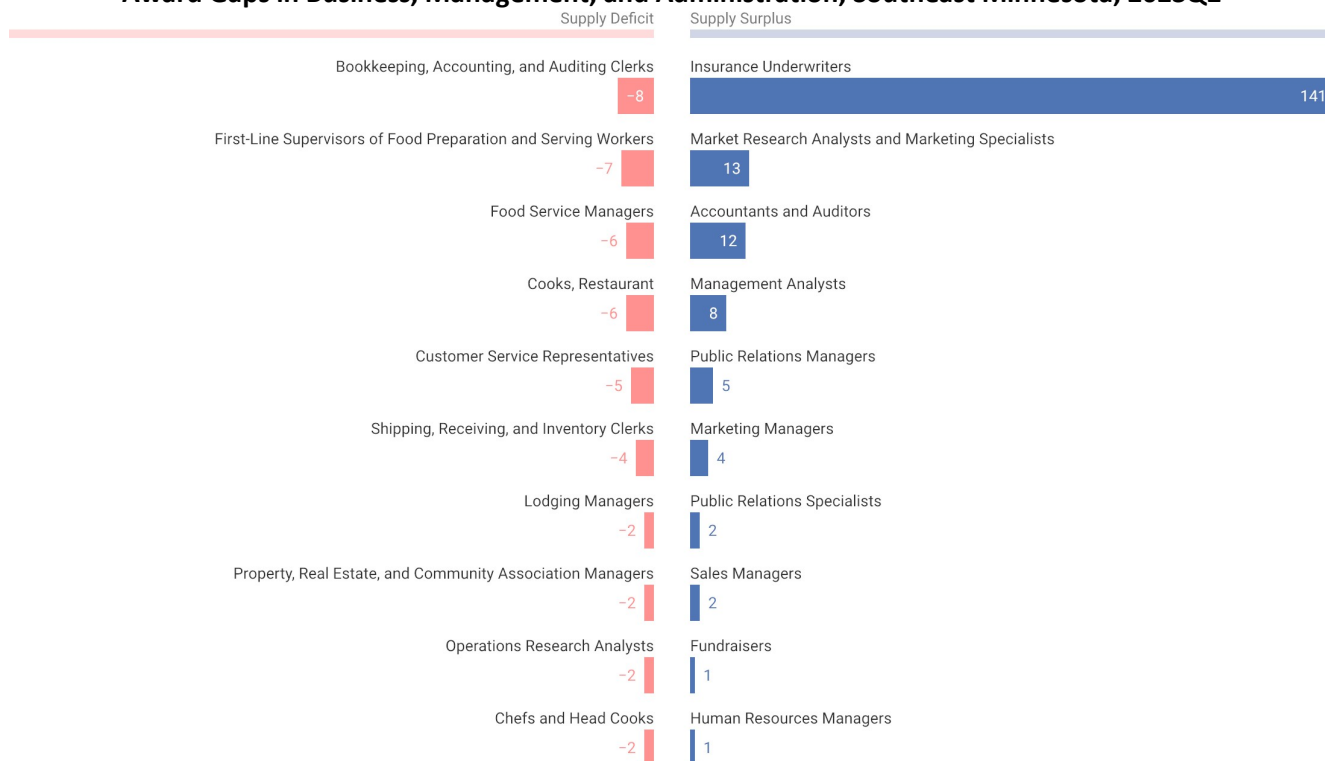




### Award Gaps

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 Southeast currently under-train talent in Business, Management, and Administration when compared to national benchmarks. Specifically, regional colleges and universities are underproducing around 8 graduates annually that are needed to fill Bookkeeping, Accounting, and Auditing Clerk positions open with employers based in the Southeast alone. Regional colleges and universities are also underproducing approximately 7 Supervisors of Food Preparation and Serving Workers graduates annually.

### Award Gaps in Business, Management, and Administration, Southeast Minnesota, 2023Q2



### Promising Pathways

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



## Origin-to-Gateway-to-Target Occupations for Business, Management, and Administration, Southeast Minnesota, 2023Q2

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

### Gateway Occupations

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

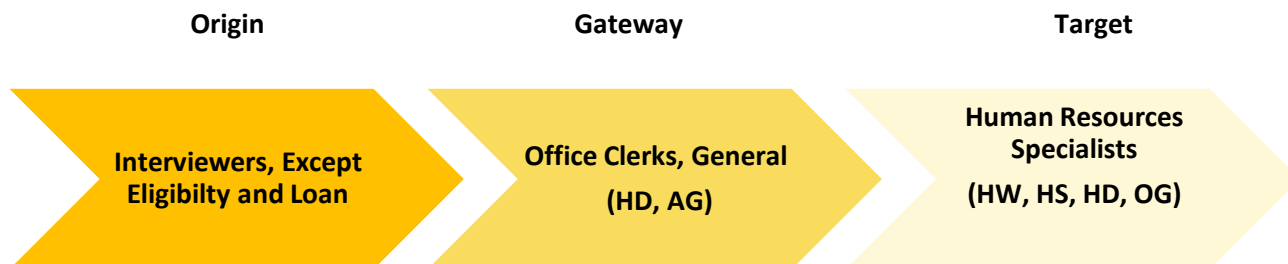
### Origin Occupations

Cashiers  
 Retail Salespersons  
 Fast Food & Counter Workers  
 Customer Service Representative (AG)  
 Stockers & Order Fillers (HD)

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

### Featured Pathway

With a projected talent shortage and high demand, the pathway to the Target occupation of Human Resources Specialists is worth exploring in the Southeast region. This occupation is relatively concentrated in the region with a location quotient of 0.84. The Gateway occupation of General Office Clerks is also locally concentrated (LQ 1.07), in high demand, and facing a projected award gap. The Origin occupation of Interviewers is highly concentrated locally (LQ of 1.70) and shares a range of crossover skillsets valuable to the other two occupations in this pathway. These Origin and Gateway occupations are a potential path into the Target occupation of Human Resources Specialists.



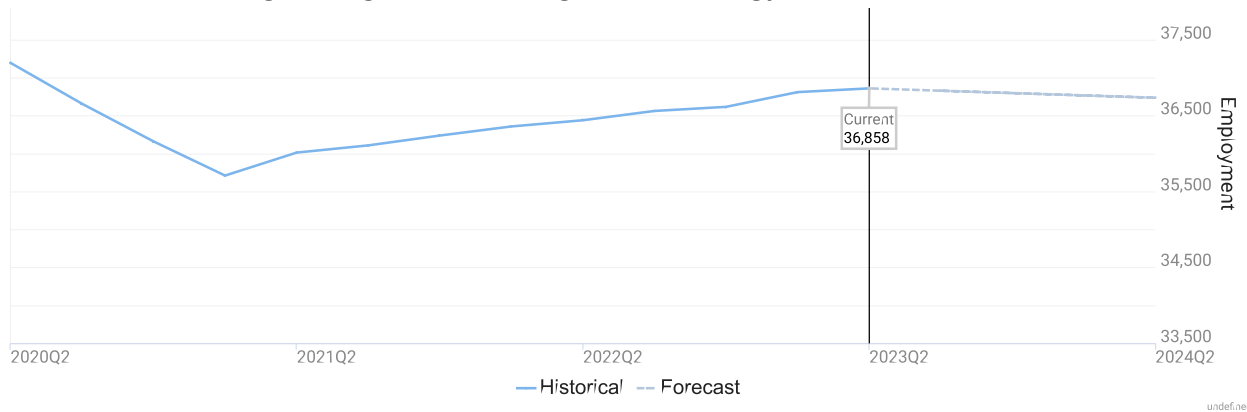
**OGT Wages and Experience Level Requirements, Business, Management, and Administration, Southeast Minnesota, 2023Q2**

SOC	Occupation	Empl Count	Mean	Entry Level	Experienced	10%	25%	50% (Median)	75%	90%	Typical Entry-Level Education	Previous Work Experience	Typical On-the-Job Training
11-1021	General and Operations Managers	3,372	\$106,000	\$47,200	\$135,300	\$42,500	\$57,100	\$84,500	\$133,400	\$197,200	BA	>5 years	None
13-2011	Accountants and Auditors	1,218	\$81,000	\$53,000	\$95,000	\$49,600	\$60,100	\$71,600	\$90,800	\$117,800	BA	None	None
13-1199	Business Operations Specialists, All Other	806	\$72,600	\$48,600	\$84,500	\$44,900	\$56,000	\$68,300	\$81,000	\$102,600	BA	None	None
13-1161	Market Research Analysts and Marketing Specialists	798	\$73,100	\$41,700	\$88,900	\$38,400	\$48,800	\$66,700	\$94,800	\$124,000	BA	None	None
13-1071	Human Resources Specialists	753	\$74,500	\$50,300	\$86,600	\$47,500	\$56,900	\$70,000	\$87,200	\$107,000	BA	None	None
43-9061	Office Clerks, General	3,056	\$45,600	\$34,000	\$51,400	\$31,400	\$38,600	\$45,100	\$48,500	\$62,200	HS/GED	None	Short-term OJT
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	1,872	\$46,600	\$35,500	\$52,100	\$33,600	\$39,600	\$46,500	\$52,300	\$59,800	HS/GED	None	Short-term OJT
43-3031	Bookkeeping, Accounting, and Auditing Clerks	1,572	\$48,900	\$35,200	\$55,800	\$33,300	\$39,500	\$48,100	\$55,200	\$64,700	Certificate	None	Mod-term OJT
41-1011	First-Line Supervisors of Retail Sales Workers	1,488	\$49,300	\$37,300	\$55,300	\$36,200	\$40,100	\$45,700	\$53,500	\$67,100	HS/GED	<5 years	None
43-3021	Billing and Posting Clerks	907	\$51,400	\$43,600	\$55,400	\$41,100	\$47,600	\$49,400	\$57,900	\$67,400	HS/GED	None	Mod-term OJT
41-2011	Cashiers	4,013	\$30,600	\$26,400	\$32,700	\$25,700	\$27,800	\$29,900	\$32,500	\$36,200	None	None	Short-term OJT
41-2031	Retail Salespersons	3,656	\$36,400	\$26,800	\$41,100	\$25,200	\$29,200	\$32,200	\$38,300	\$50,000	None	None	Short-term OJT
35-3023	Fast Food and Counter Workers	3,067	\$30,300	\$26,500	\$32,200	\$24,900	\$28,700	\$29,800	\$30,800	\$36,800	None	None	Short-term OJT
43-4051	Customer Service Representatives	2,643	\$44,700	\$33,000	\$50,500	\$30,900	\$36,800	\$42,100	\$50,600	\$60,800	HS/GED	None	Short-term OJT
53-7065	Stockers and Order Fillers	2,425	\$36,800	\$29,600	\$40,400	\$28,900	\$31,100	\$34,300	\$40,300	\$49,300	HS/GED	None	Short-term on-the-job training

# Engineering, Manufacturing, and Technology

Engineering, Manufacturing, and Technology is a wide career field with transportation, logistics, STEM, architecture, construction, manufacturing, and machining careers. Previously, employment sat at 36,179 in this field, which has rebounded further to 36,858 as of 2023Q2 in the Southeast. Over the next three years, this career field’s employment is forecast to decline moderately (-0.4% annually), a drop from the 0.0% forecast estimated in 2022Q2. All occupations with the exception of Light Truck Drivers and Construction Laborers have forecasted declines over the next three years.

**3-Year Forecast for Engineering, Manufacturing, and Technology Careers, Southeast Minnesota, 2023Q2**



**Top Ten Engineering, Manufacturing, and Technology Occupations by Employment Volume in Southeast Minnesota, 2023Q2**

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Change
Laborers and Freight, Stock, and Material Movers, Hand	2,353	\$41,800	0.74	67	321	-0.2%
Heavy and Tractor-Trailer Truck Drivers	2,018	\$58,600	0.85	-24	227	-0.3%
Maintenance and Repair Workers, General	1,575	\$50,900	0.91	29	148	-0.2%
Construction Laborers	1,299	\$53,200	0.83	58	127	0.0%
Team Assemblers	1,147	\$41,700	0.85	-95	111	-1.5%
Landscaping and Groundskeeping Workers	1,016	\$39,900	0.80	44	130	-0.1%
Carpenters	928	\$60,700	0.91	-23	81	-0.4%
Automotive Service Technicians and Mechanics	841	\$49,900	0.99	49	79	-0.3%
Light Truck Drivers	841	\$46,300	0.68	0	102	0.3%
Slaughterers and Meat Packers	742	\$42,400	8.59	-17	87	-0.6%
Remaining Component Occupations	24,104	\$60,900	0.75	-430	2,432	-0.4%
<b>Engineering, Manufacturing, &amp; Technology (CTE Field)</b>	<b>36,858</b>	<b>\$56,700</b>	<b>0.85</b>	<b>-337</b>	<b>3,857</b>	<b>-0.4%</b>

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

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

Many different industries employ Engineering, Manufacturing, and Technology talent in the Southeast. Locally, the industries with the greatest share of this field’s talent are Animal Slaughtering and Processing (8.3%), Building Equipment Contractors (5%). Most industries employing talent in this field only touch less than 2% of



total talent skilled in this field, suggesting that education and training programs will need to build broad strategies that cross each of these sectors.

### Engineering, Manufacturing, and Technology Field Employment by Industry, Southeast Minnesota, 2023Q2

Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Change	10-Year Total Demand
Animal Slaughtering and Processing	8.3%	3,051	3,789	-61	3,728
Building Equipment Contractors	5.0%	1,845	1,819	-15	1,804
Semiconductor and Other Electronic Component Manufacturing	3.1%	1,142	1,088	-46	1,042
Building Finishing Contractors	3.1%	1,138	1,019	-28	991
Agriculture, Construction, and Mining Machinery Manufacturing	2.8%	1,039	1,068	6	1,074
General Freight Trucking	2.5%	915	1,051	-25	1,025
Executive, Legislative, and Other General Government Support	2.4%	890	922	-20	902
Automotive Repair and Maintenance	2.2%	796	833	-24	809
Other Specialty Trade Contractors	2.0%	754	744	-20	724
Computer and Peripheral Equipment Manufacturing	2.0%	726	686	-32	654
Employment Services	1.9%	692	835	-27	808
Nonresidential Building Construction	1.9%	685	621	-17	604
Services to Buildings and Dwellings	1.8%	681	826	-21	805
Foundation, Structure, and Building Exterior Contractors	1.8%	676	636	-25	610
Plastics Product Manufacturing	1.8%	666	714	-25	690
Residential Building Construction	1.8%	661	594	-18	575
Automobile Dealers	1.8%	650	717	-7	711
Highway, Street, and Bridge Construction	1.8%	647	633	-9	624
Specialized Freight Trucking	1.7%	624	711	-27	684
Couriers and Express Delivery Services	1.4%	503	657	63	720
All Others	49.0%	18,076	19,753	-838	18,915

### Career Field Demographics

The Engineering, Manufacturing, and Technology field is heavily male (82.6% male; female representation increased by 0.8 percentage points) and White (91.3%), with a slight increase this year in the share of talent that is BIPOC by race (1 percentage point) from the prior years' estimates. Just under half of workers (46.3%) in this field are 45 years or older, signaling potential exacerbation of the talent shortage due to impending retirements.

#### Age

Southeast Minnesota



Minnesota



16 to 19 years (3.4%)  
20 to 24 years (9.7%)

25 to 34 years (20.1%)  
35 to 44 years (20.6%)

45 to 54 years (20.1%)  
55 to 64 years (20.4%)  
65 years and over (5.8%)

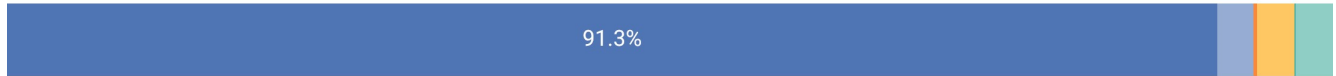
Data for Engineering, Manufacturing, & Technology (CTE Field)  
Source: JobsEQ®. Data as of 2023Q2.





Race

Southeast Minnesota



Minnesota



- White (91.3%)
- Black (2.7%)
- American Indian (0.3%)
- Asian (2.8%)
- Pacific Islander (0.1%)
- Two or More Races (2.9%)

Data for Engineering, Manufacturing, & Technology (CTE Field)  
Source: JobsEQ®. Data as of 2023Q2.

Ethnicity

Southeast Minnesota



Minnesota



- Non-Hispanic/Latino (92.7%)
- Hispanic or Latino (of any race) (7.3%)

Data for Engineering, Manufacturing, & Technology (CTE Field)  
Source: JobsEQ®. Data as of 2023Q2.

Gender

Southeast Minnesota



Minnesota



- Male (82.6%)
- Female (17.4%)

Data for Engineering, Manufacturing, & Technology (CTE Field)  
Source: JobsEQ®. Data as of 2023Q2.

**Educational Attainment and Requirements**

In general, the Southeast Minnesota Engineering, Manufacturing, and Technology workforce is well-aligned for the typical credentials of entry-level positions. Nearly one in three of all positions in this field (29.3%) require no degree, no experience, and only short-term on-the-job training. Exactly 50% require experience or some on-the-job training, but still no degree. Almost one in ten people working in this field have no degree at all (10%), and almost two in five (37.6%) hold a high school diploma as their highest credential. In all, 64.7% of the Engineering, Manufacturing, and Technology workforce have not completed a postsecondary credential.

Educational Attainment

Southeast Minnesota



Minnesota



- < High School (10.0%)
- High School (37.6%)
- Some College (17.1%)
- Two-Year (15.2%)
- Four-Year (15.9%)
- Master's (3.3%)
- PhD (0.9%)

Data for Engineering, Manufacturing, & Technology (CTE Field)  
Source: JobsEQ®. Data as of 2023Q2.



### Education and Training Requirements

Southeast Minnesota



Minnesota



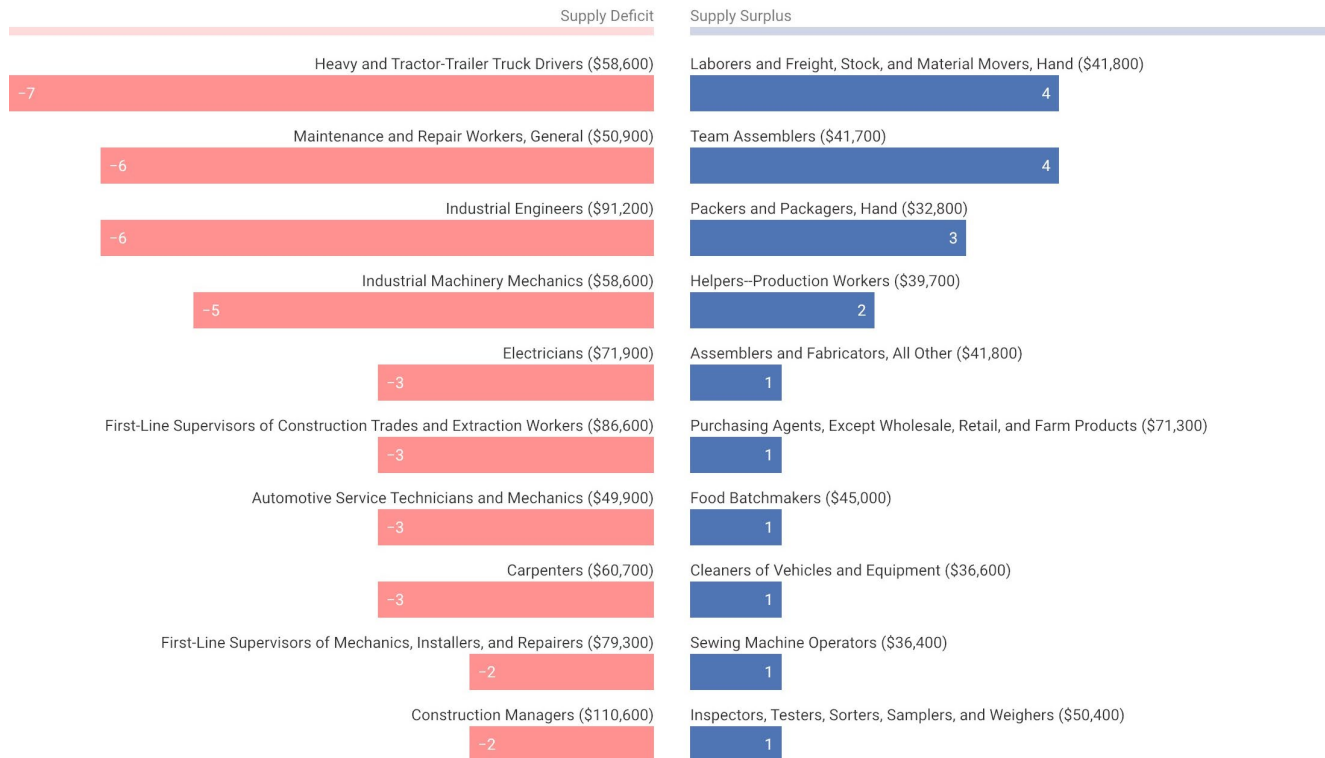
- Short-term OJT, no exp, no award (29.3%)
- Moderate-term OJT, no exp, no award (30.7%)
- Long-term training, no exp, no award (11.9%)
- Previous work experience, no award (7.4%)
- 2-year degree or certificate (11.6%)
- Bachelor's degree (8.8%)
- Postgraduate degree (0.2%)

Data for Engineering, Manufacturing, & Technology (CTE Field)  
Source: JobsEQ®. Data as of 2023Q2.

### Occupation Gaps

The chart below shows the potential average annual gaps over ten years. Several maintenance, construction, and other trades roles indicate shortages in the years ahead, with the Heavy and Tractor-Trailer Truck Drivers falling short at least seven skilled workers needed annually (averaged over the next ten years) and both Maintenance and Repair Workers and Industrial Engineers talent pools likely falling short at least six skilled workers needed annually to meet demand. These talent shortages are primarily due to growth in demand and retirements which far outpace the local talent pipeline. All forecasted shortages and talent surpluses are fairly similar to what was observed in 2022Q2.

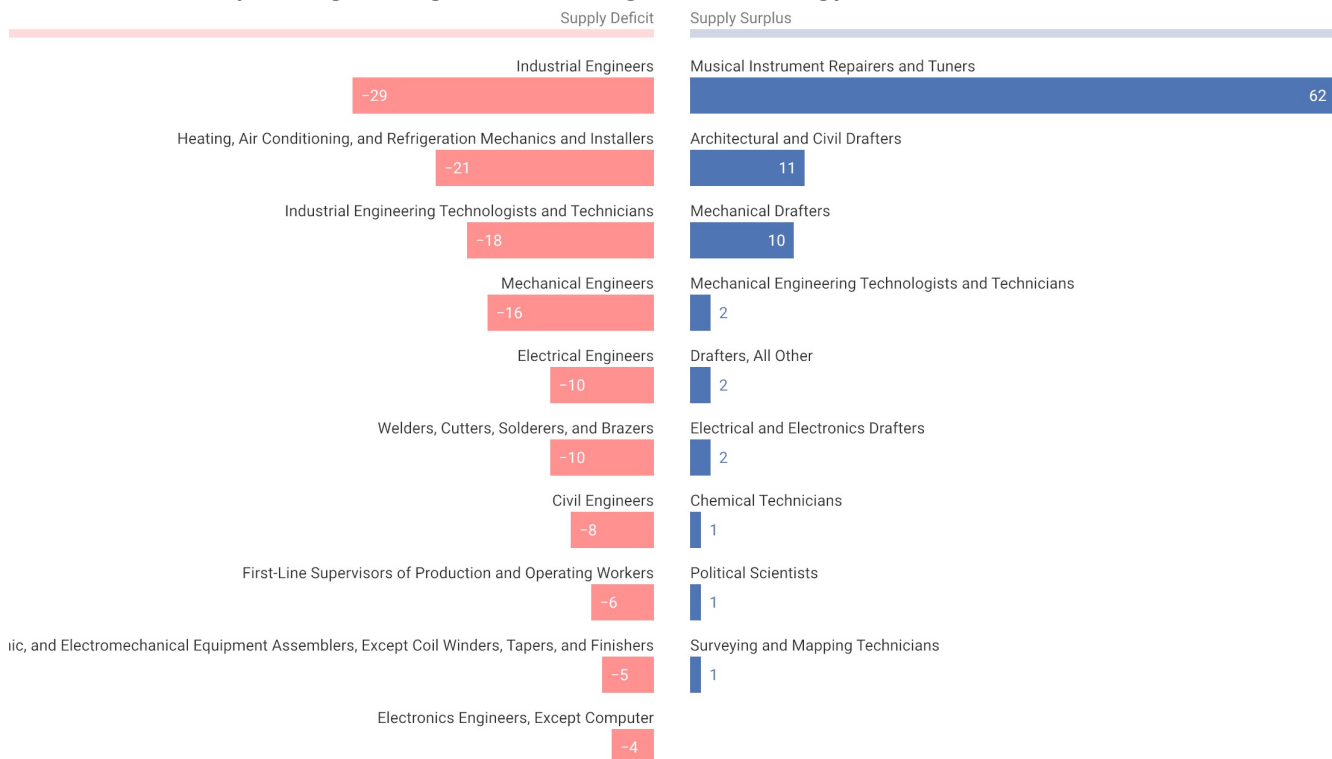
### Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Engineering, Manufacturing, and Technology, Southeast Minnesota, 2023Q2



## Award Gaps

A comparison of the graduate talent pipeline through certificate and other postsecondary degree programs to the current estimated openings by occupation illuminate a number of important shortages. The Southeast currently under-trains some talent in Engineering, Manufacturing, and Technology when compared to national benchmarks. Southeast Minnesota colleges and universities are underproducing around 29 graduates annually that are needed to fill Industrial Engineer positions open with employers based in this region alone. Second, there are at least 21 fewer HVAC graduates graduating locally annually than what employers currently need to support demand.

### Award Gaps in Engineering, Manufacturing, and Technology, Southeast Minnesota, 2023Q2



## Promising Pathways

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



## Origin-to-Gateway-to-Target Occupations for Engineering, Manufacturing, and Technology, Southeast Minnesota, 2023Q2

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

Industrial Engineers (AG)  
 Construction Managers  
 Mechanical Engineers (AG)  
 Electrical Engineers (AG)  
 Logisticians

### Gateway Occupations

Heavy & Tractor Trailer Drivers (HS, HD, OG)  
 Maintenance & Repair Workers, General (OG)  
 Construction Laborers  
 Carpenters (OG)  
 Automotive Service Technicians (HS, OG)

### Origin Occupations

Laborers & Freight, Stock Movers (HD)  
 Team Assemblers  
 Landscaping & Groundskeeping Workers (HD)  
 Slaughterers & Meat Packers (HD)  
 Meat, Poultry, & Fish Cutters & Trimmers (HD)

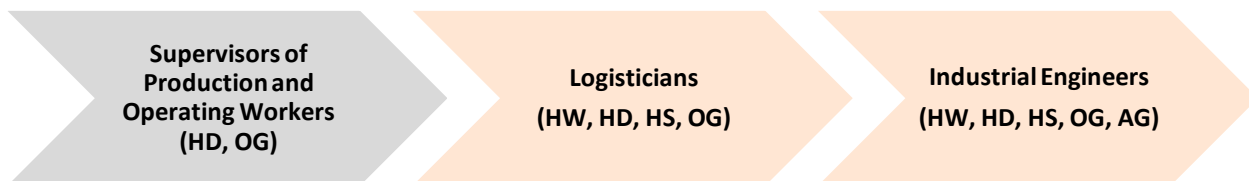
HW = High-Wage; HS=High-Skill; HD=High-Demand; OG=Occupation Gaps; AG=Award Gaps

### Featured Pathway

With a projected occupation gap and award gap, the Target occupation of Industrial Engineers should be considered in the Southeast region. This occupation is highly concentrated in the region with a location quotient of 2.03. A related Target occupation that could feed into this role is Logisticians, which also faces an occupation gap. A potential feeder occupation of Supervisors of Production and Operating workers is relatively locally concentrated in this region with a location quotient of 0.99. This occupation is high wage, paying above the regional average at \$70,400 and faces both an occupation and award gap. is in high demand and faces an occupation gap.

### Aligned Occupation

### Target



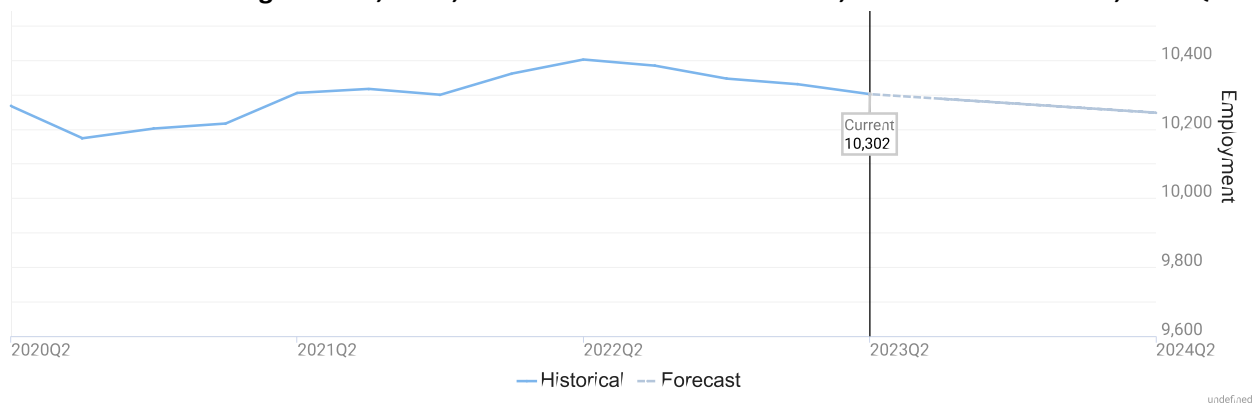
### OGT Wages and Experience Level Requirements, Engineering, Manufacturing, and Technology, Southeast Minnesota, 2023Q2

SOC	Occupation	Empl Count	Mean	Entry Level	Experienced	10%	25%	50% (Median)	75%	90%	Typical Entry-Level Education	Previous Work Experience	Typical On-the-Job Training
17-2112	Industrial Engineers	732	\$91,200	\$67,800	\$102,900	\$62,900	\$76,300	\$83,900	\$103,300	\$129,400	BA	None	None
11-9021	Construction Managers	428	\$110,600	\$72,900	\$129,500	\$68,700	\$82,000	\$97,800	\$120,200	\$155,200	BA	None	Mod-term OJT
17-2141	Mechanical Engineers	256	\$99,600	\$68,900	\$114,900	\$64,500	\$76,500	\$82,700	\$101,100	\$116,600	BA	None	None
17-2071	Electrical Engineers	161	\$111,200	\$75,500	\$129,100	\$72,300	\$84,500	\$107,000	\$143,600	\$143,700	BA	None	None
13-1081	Logisticians	138	\$77,000	\$51,600	\$89,600	\$48,000	\$59,800	\$75,900	\$88,900	\$108,600	BA	None	None
53-3032	Heavy and Tractor-Trailer Truck Drivers	2,018	\$58,600	\$43,400	\$66,100	\$40,900	\$48,300	\$54,900	\$68,000	\$81,400	Certificate	None	Short-term OJT
49-9071	Maintenance and Repair Workers, General	1,575	\$50,900	\$35,800	\$58,400	\$33,700	\$40,400	\$49,700	\$60,200	\$67,000	HS/GED	None	Mod-term OJT
47-2061	Construction Laborers	1,299	\$53,200	\$38,900	\$60,400	\$38,200	\$41,600	\$49,800	\$63,000	\$75,900	None	None	Short-term OJT
47-2031	Carpenters	928	\$60,700	\$42,500	\$69,800	\$39,900	\$48,200	\$58,600	\$72,800	\$83,600	HS/GED	None	Apprenticeship
49-3023	Automotive Service Technicians and Mechanics	841	\$49,900	\$34,200	\$57,700	\$32,500	\$38,300	\$48,600	\$60,500	\$65,600	Certificate	None	Short-term OJT
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	2,353	\$41,800	\$32,600	\$46,300	\$31,100	\$35,700	\$40,200	\$46,900	\$54,000	None	None	Short-term OJT
51-2092	Team Assemblers	1,147	\$41,700	\$33,600	\$45,700	\$31,700	\$37,100	\$40,700	\$46,300	\$52,500	HS/GED	None	Mod-term OJT
37-3011	Landscaping and Groundskeeping Workers	1,016	\$39,900	\$28,300	\$45,700	\$26,600	\$31,200	\$38,500	\$46,100	\$56,000	None	None	Short-term OJT
51-3023	Slaughterers and Meat Packers	742	\$42,400	\$39,300	\$43,900	\$38,700	\$40,400	\$40,900	\$43,300	\$51,500	None	None	Short-term OJT
51-3022	Meat, Poultry, and Fish Cutters and Trimmers	707	\$40,000	\$31,800	\$44,100	\$31,800	\$33,400	\$41,500	\$42,000	\$49,500	None	None	Short-term OJT

# 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. These roles represent positions that are at least 50% or more concentrated in Agriculture, Food, and Natural Resources industries, and as such exclude some occupations that are critical to the industry but may have smaller in-industry employment numbers (such as Ag Loan Officers, Ag Financing, or some trades). About 10,302 people are employed in Agriculture, Food, and Natural Resources roles in the region as of 2023Q2. Over the next three years, this career field’s employment is forecast to decline by about -0.6% in the Northwest, a drop from last year’s forecast of -0.1%.

## 3-Year Forecast for Agriculture, Food, and Natural Resources Careers, Southeast Minnesota, 2023Q2



## Top Ten Agriculture, Food, and Natural Resources Occupations by Employment Volume in Southeast Minnesota, 2023Q2

6-Digit Occupation	Empl	Avg Mean Wages	LQ	Historical 3-Year Empl Change	Annual Demand	Baseline Forecast Ann Change
Farmers, Ranchers, and Other Agricultural Managers	2,505	\$75,100	2.98	-96	211	-1.5%
Landscaping and Groundskeeping Workers	1,016	\$39,900	0.80	44	130	-0.1%
Meat, Poultry, and Fish Cutters and Trimmers	707	\$40,000	4.67	-7	87	-0.1%
Farmworkers, Farm, Ranch, and Aquacultural Animals	633	\$37,100	3.93	-5	88	-1.4%
Plumbers, Pipefitters, and Steamfitters	558	\$77,900	1.06	-26	55	-0.2%
Food Batchmakers	424	\$45,000	2.27	1	58	0.0%
Farmworkers and Laborers, Crop, Nursery, and Greenhouse	362	\$36,700	0.58	33	53	-0.9%
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	357	\$66,900	0.79	16	34	0.1%
Animal Caretakers	277	\$34,500	0.76	51	54	0.8%
Butchers and Meat Cutters	184	\$42,800	1.30	-6	22	-0.5%
Remaining Component Occupations	3,280	\$62,300	0.78	29	369	-0.2%
<b>Agriculture, Food, and Natural Resources (CTE Field)</b>	<b>10,302</b>	<b>\$58,400</b>	<b>1.12</b>	<b>35</b>	<b>1,163</b>	<b>-0.6%</b>

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

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



Many different industries employ Agriculture, Food, and Natural Resources talent in the Southeast. Locally, the industries with the greatest share of this field's talent are Animal Production (18.5%) and Animal Slaughtering and Processing (9.1%). Most industries employing talent in this field only touch less than 2% of total talent skilled in this field and span from grocery to ranching to electric power generation.

### Agriculture, Food, and Natural Resources Field Employment by Industry, Southeast Minnesota, 2023Q2

Industry Title	% of Career Field Empl	Career Field Empl	10-Year Separations	10-Year Empl Change	10-Year Total Demand
Animal Production (Proprietors)	18.5%	1,907	1,859	-298	1,561
Animal Slaughtering and Processing	9.1%	936	1,206	-8	1,197
Cattle Ranching and Farming	8.5%	873	1,151	-103	1,048
Building Equipment Contractors	7.8%	801	790	-3	787
Services to Buildings and Dwellings	6.4%	654	812	-20	792
Other Professional, Scientific, and Technical Services	3.1%	317	365	47	412
Executive, Legislative, and Other General Government Support	3.0%	309	333	-11	322
Wired and Wireless Telecommunications (except Satellite)	2.3%	236	264	9	273
Crop Production (Proprietors)	2.0%	206	209	-28	181
Grocery and Convenience Retailers	2.0%	203	255	-14	240
Other Amusement and Recreation Industries	1.9%	191	247	7	255
Other Personal Services	1.8%	185	334	24	358
Support Activities for Crop Production	1.8%	182	267	-15	253
Hog and Pig Farming	1.8%	180	242	-15	228
Dairy Product Manufacturing	1.6%	168	229	0	229
Restaurants and Other Eating Places	1.2%	122	168	1	168
Fruit and Vegetable Preserving and Specialty Food Manufacturing	1.2%	122	170	-5	165
Colleges, Universities, and Professional Schools	1.1%	114	115	-7	108
Oilseed and Grain Farming	1.1%	110	155	-1	154
Support Activities for Animal Production	1.1%	108	161	2	163
All Others	23.1%	2,378	2,802	-86	2,716



### Career Field Demographics

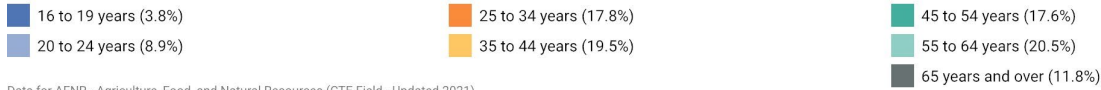
The Agriculture, Food, and Natural Resources field remains predominantly male (75.4%) and White (93.7%, decreasing by one percentage point), but with variation by career pathway. The largest share of talent employed in this field are between the ages of 55 to 64 (20.5%), and another 11.8% are 65 years or older—signaling the challenge of impending retirements and a limited talent pool entering this field regionally.

#### Age

Southeast Minnesota



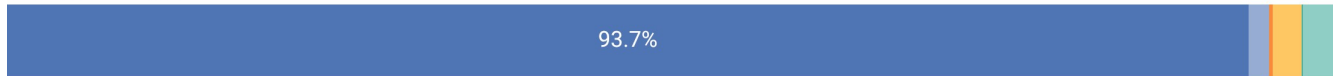
Minnesota



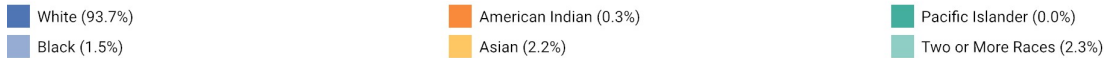
Data for AFNR - Agriculture, Food, and Natural Resources (CTE Field - Updated 2021)  
Source: JobsEQ®. Data as of 2023Q2.

#### Race

Southeast Minnesota



Minnesota



Data for AFNR - Agriculture, Food, and Natural Resources (CTE Field - Updated 2021)  
Source: JobsEQ®. Data as of 2023Q2.

#### Ethnicity

Southeast Minnesota



Minnesota



Data for AFNR - Agriculture, Food, and Natural Resources (CTE Field - Updated 2021)  
Source: JobsEQ®. Data as of 2023Q2.

#### Gender

Southeast Minnesota



Minnesota



Data for AFNR - Agriculture, Food, and Natural Resources (CTE Field - Updated 2021)  
Source: JobsEQ®. Data as of 2023Q2.



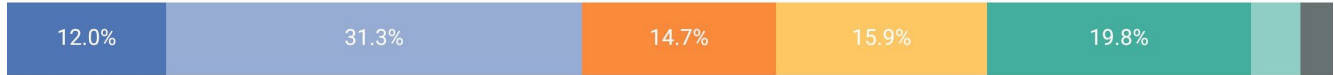


## Educational Attainment and Requirements

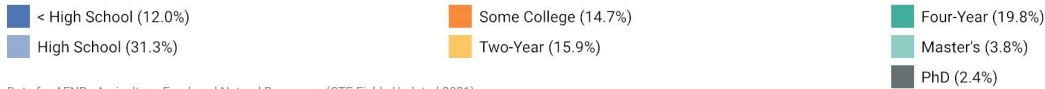
The stacked bar charts here illustrate the estimated mix of educational attainment of workers in the career field in aggregate, and the typically required education of positions in the field. Over one-third of all positions in this field regionally (32.2%) require no degree, no experience, and only short-term on-the-job training. Over half (52.3%) require experience or some on-the-job training, but still no degree; in all, 84.5% of positions in this field require no formal education. About 12% of the workforce in this field has no degree at all, and about one in three (31.3%) hold a high school diploma as their highest credential. In all, 58% of the Agriculture, Food, and Natural Resources workforce have not completed a postsecondary credential.

### Educational Attainment

Southeast Minnesota



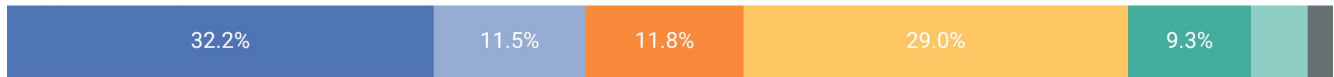
Minnesota



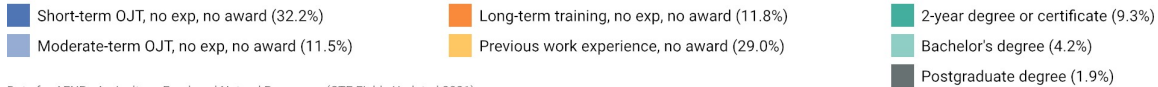
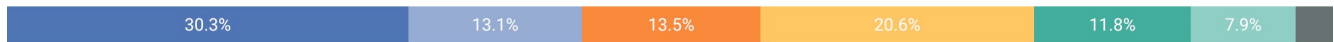
Data for AFNR - Agriculture, Food, and Natural Resources (CTE Field - Updated 2021)  
Source: JobsEQ®. Data as of 2023Q2.

### Education and Training Requirements

Southeast Minnesota



Minnesota



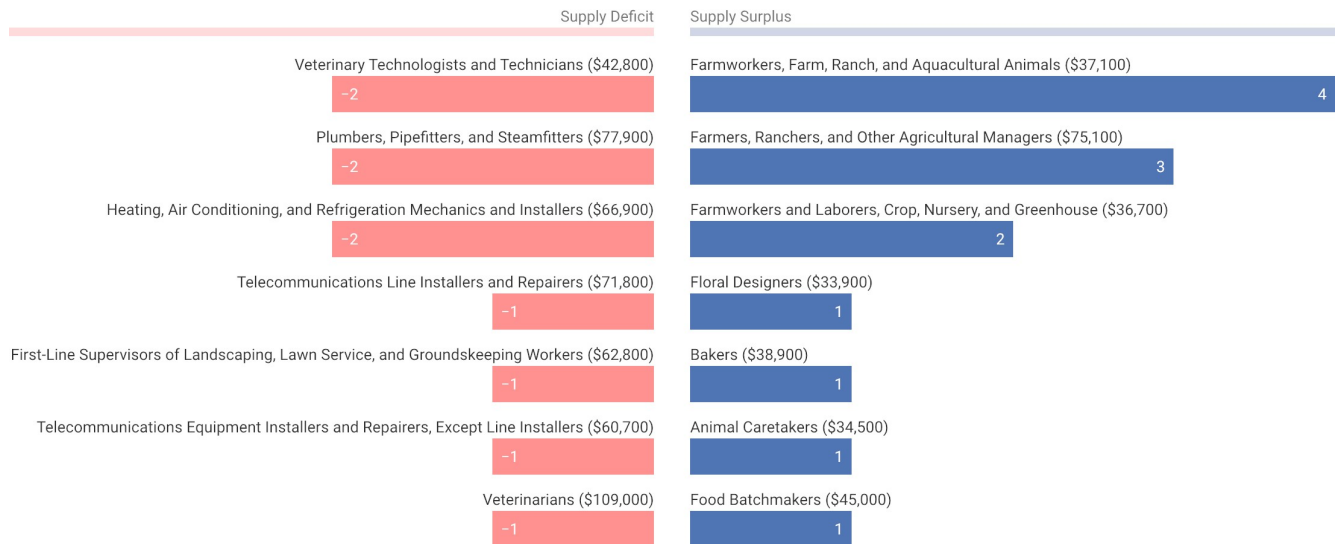
Data for AFNR - Agriculture, Food, and Natural Resources (CTE Field - Updated 2021)  
Source: JobsEQ®. Data as of 2023Q2.



## Occupation Gaps

The chart below shows the potential average annual talent shortages over ten years. A number of crucial trades, animal science, environmental services, and natural science roles indicate shortages in the years ahead, with talent pools of Veterinary Technologists and Technicians, Plumbers, and HVAC likely falling behind the most. Retirements and growing demand unmet by the local talent supply chain are both contributing factors.

### Annual Average Occupation Gaps (i.e. Talent Shortages) for the next 10 Years in Agriculture, Food, and Natural Resources, Southeast Minnesota, 2023Q2

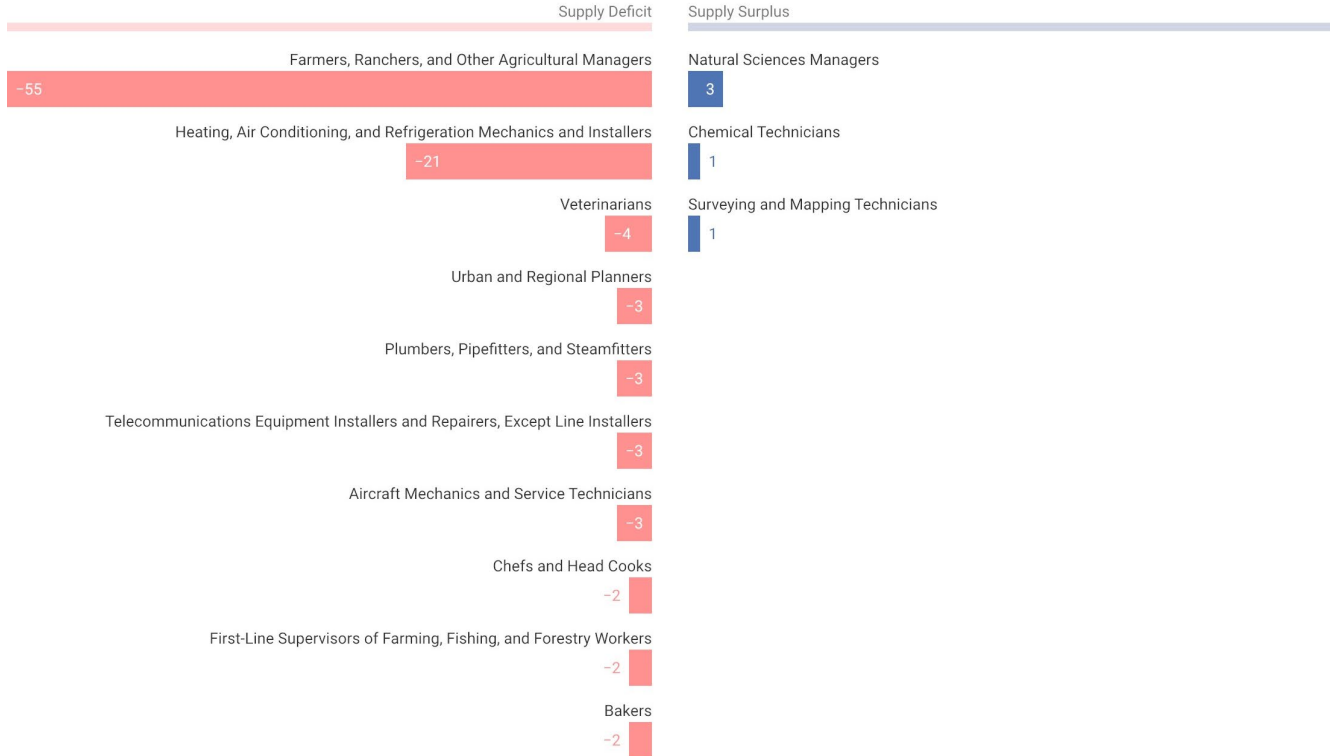


## Award Gaps

A comparison of the graduate talent pipeline through certificate and other postsecondary degree programs to the current estimated openings by occupation reveal several moderate shortages. Postsecondary institutions in the Southeast currently prepare a smaller volume of talent in Agriculture, Food, and Natural Resources when compared to national benchmarks. Southeast Minnesota colleges and universities are underproducing at least 55 graduates annually needed to fill Farmers, Ranchers, and other Agricultural Manager roles, 21 graduates annually needed to fill HVAC roles, and four graduates annually needed to fill Veterinarian roles. The majority of Animal Systems completions are made in the MSP Metro.



## Award Gaps in Agriculture, Food, and Natural Resources, Southeast Minnesota, 2023Q2



### Promising Pathways

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



## Origin-to-Gateway-to-Target Occupations for Agriculture, Food, and Natural Resources, Southeast Minnesota, 2023Q2

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

Natural Sciences Managers  
 Aircraft Mechanics & Service Technicians (AG)  
 Life, Physical, & Social Science Technicians, All Other  
 Biological Science Teachers, Postsecondary  
 Conservation Scientists

### Gateway Occupations (all HD)

Food Batchmakers  
 Heating, Air Conditioning, & Refrigeration Mechanics (HS, HOG, AG)  
 Supervisors of Landscaping Workers (OG)  
 Telecommunications Equipment Installers & Repairers (HS, OG, AG)  
 Chefs & Head Cooks (AG)

### Origin Occupations

Landscaping & Groundskeeping Workers (HD)  
 Meat, Poultry, & Fish Cutters & Trimmers (HD)  
 Farmworkers, Farm, Ranch, & Aquacultural Animals  
 Farmworkers & Laborers (HD)  
 Animal Caretakers (HD)

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

### Featured Pathway

The Gateway occupation of Chefs and Head Cooks is a potential pathway to explore. This occupation is facing an award gap locally and has a high volume of total demand and is in need among industrial food production companies regionally. The experience of leading a function as a Chef or Head Cook may be strong preparation for roles in Agricultural Management of food production facilities. There are over 2,500 people working as Farmers, Ranchers, and Other Agricultural Managers in the Southeast, highly concentrated locally compared to the national average (LQ 2.98) and experiencing very low unemployment (0.5% or 12 people locally). A potential starting occupation for this pathway is Meat, Poultry, and Fish Cutters and Trimmers which is both in high demand and is very locally concentrated (LQ 4.67).



**OGT Wages and Experience Level Requirements, Agriculture, Food, and Natural Resources, Southeast Minnesota, 2023Q2**

SOC	Occupation	Empl Count	Mean	Entry Level	Experienced	10%	25%	50% (Median)	75%	90%	Typical Entry-Level Education	Previous Work Experience	Typical On-the-Job Training
11-9121	Natural Sciences Managers	54	\$120,500	\$81,300	\$140,200	\$67,000	\$103,100	\$110,300	\$136,300	\$168,600	BA	5+ years	None
49-3011	Aircraft Mechanics and Service Technicians	44	\$77,400	\$50,900	\$90,600	\$48,200	\$57,900	\$74,400	\$96,700	\$121,000	Certificate	None	None
19-4099	Life, Physical, and Social Science Technicians, All Other	41	\$90,200	\$39,600	\$115,500	\$40,100	\$42,300	\$61,000	\$101,400	\$128,000	AS	None	None
25-1042	Biological Science Teachers, Postsecondary	37	\$93,300	\$64,400	\$107,700	\$61,800	\$71,200	\$86,300	\$105,400	\$136,000	PhD	None	None
19-1031	Conservation Scientists	24	\$86,800	\$55,000	\$102,700	\$51,800	\$62,000	\$74,400	\$92,900	\$130,600	BA	None	None
51-3092	Food Batchmakers	424	\$45,000	\$35,300	\$49,800	\$35,300	\$36,900	\$44,700	\$52,200	\$55,100	HS/GED	None	Mod-term OJT
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	357	\$66,900	\$44,000	\$78,300	\$40,100	\$51,700	\$65,200	\$80,400	\$94,800	Certificate	None	Long-term OJT
37-1012	First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	179	\$62,800	\$48,600	\$69,900	\$47,800	\$51,900	\$62,400	\$71,200	\$81,900	HS/GED	< 5 years	None
49-2022	Telecommunications Equipment Installers and Repairers, Except Line Installers	173	\$60,700	\$43,200	\$69,400	\$40,400	\$49,400	\$62,500	\$67,900	\$79,400	Certificate	None	Mod-term OJT
35-1011	Chefs and Head Cooks	171	\$54,900	\$35,500	\$64,500	\$33,900	\$39,700	\$52,600	\$64,000	\$85,900	HS/GED	5+ years	None
37-3011	Landscaping and Groundskeeping Workers	1,016	\$39,900	\$28,300	\$45,700	\$26,600	\$31,200	\$38,500	\$46,100	\$56,000	None	None	Short-term OJT
51-3022	Meat, Poultry, and Fish Cutters and Trimmers	707	\$40,000	\$31,800	\$44,100	\$31,800	\$33,400	\$41,500	\$42,000	\$49,500	None	None	Short-term OJT
45-2093	Farmworkers, Farm, Ranch, and Aquacultural Animals	633	\$37,100	\$29,300	\$41,000	\$28,500	\$31,200	\$36,300	\$39,600	\$49,400	None	None	Short-term OJT
45-2092	Farmworkers and Laborers, Crop, Nursery, and Greenhouse	362	\$36,700	\$30,500	\$39,900	\$29,700	\$32,100	\$34,500	\$40,000	\$49,100	None	None	Short-term OJT
39-2021	Animal Caretakers	277	\$34,500	\$28,700	\$37,300	\$28,400	\$29,700	\$32,800	\$36,600	\$45,400	HS/GED	None	Short-term OJT

# Conclusion

Some new occupations of need have emerged, signaling some rebounding and recovery following the pandemic, and reflecting the tight labor market across all industry sectors. What continues to be true is that the most in-demand occupations of the future typically require a two-year degree or higher, offer higher 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. An exciting new development likely to have impact across all industries is the governor's decision to remove degree requirements from most Minnesota government jobs.

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 Health Science field is highly concentrated in the Southeast. There continues to be a shortage of graduates needed to fill Registered Nursing roles – this region and the Metro are the only regions that have an award gap for Registered Nurses, meaning that both regions likely draw upon graduates from other parts of the state to meet local demand. This region has a higher average wage as well, with the Health Science cluster having the highest overall average wage of all fields. The region is poised to see changes in demand for talent over the next five years and beyond as the region continues to wrestle with deepening talent shortages and face the possibility of recession as interest rates continue to rise. There is urgency to address these talent shortages now by leveraging new ways of working remotely and leveraging new technologies wherever possible.



# Data Notes

- This 2023 publication was compiled by Julia Diaz, Research Analyst for RealTime Talent in November 2023. She can be reached at [julia@realtimetalentmn.org](mailto:julia@realtimetalentmn.org)
- Occupation employment by default indicates employment by place of work. Occupation employment is as of 2023Q2 and based on industry employment and local staffing patterns calculated by Chmura and utilizing BLS OES data. Employment forecasts are by RealTime Talent using models provided by Chmura and are consistent with BLS national-level 10-year forecasts. Occupation wages (mean, median, and percentiles) are derived from BLS OES data as of 2022 and represent the average for all Covered Employment. Entry-level and experienced wages are derived from these source data, computed by Chmura.
- Industry employment is as of 2023Q2 and based upon BLS QCEW data that are imputed by Chmura where necessary and supplemented by additional sources including Census ZBP data.
- Education and training requirements are from the BLS. Educational attainment mix and other occupation demographics data are modeled by Chmura for 2023Q2 using regional occupation employment from JobsEQ, ZCTA-level demographics data from the Census Bureau, and national occupation-demographics patterns from the BLS.
- Postsecondary awards are per the NCES and for the 2021-2022 academic year. Any programs shown are linked with the occupation(s) being analyzed via the program-occupation crosswalk, which may not be comprehensive. Any programs shown reflect only data reported to the NCES; reporting is required of all Title IV schools. Training providers that do not report data to the NCES are not reflected.
- General job ads data are online job posts from the Real-Time Intelligence (RTI) data set, produced by Chmura and gleaned from over 40,000 websites. Data reflect ads active during September 2023 and advertised for any Zip Code Tabulation Area in or intersecting with the region for which this report was produced. Historical ad volume is revised as additional data are made available and processed. The sections on Employer Demand include Job ads data from Gartner TalentNeuron Plan, which allows for greater specificity on education, experience level, and employer names. Since many extraneous factors can affect short-term volume of online job postings, time-series data can be volatile and should be used with caution. All ad counts represent deduplicated figures.
- Occupation gaps are modeled by Chmura, indicating long-term potential supply and demand mismatches in a region due, in part, to job demand and labor pool dynamics, including educational attainment and projected growth.
- Occupation employment by place of residence is as of 2023Q2 and modeled by Chmura based upon occupation employment by place of work and commuting patterns. Commuting patterns are derived from source data from the Census Bureau, occupation-specific commuting tendencies, and updated to reflect more recent population and employment estimates.
- Annual demand is the sum of the annual projected growth demand and separation demand. Separation demand is the number of jobs required due to separations—labor force exits (including retirements) and turnover resulting from workers moving from one occupation into another. Note that separation demand does not include all turnover—it does not include when workers stay in the same occupation but switch employers. Growth demand is the increase or decrease of jobs expected due to expansion or contraction of the overall number of jobs.



- Career clusters and pathways have been identified for this report by the Source: National Career Clusters® Framework external site implemented by Department of Defense ASVAB Career Exploration Program, Advance CTE. <https://careertech.org/career-clusters> and viewable on ONET <https://www.onetonline.org/find/career?c=8>, but updated to the 2020 SOC classification system.
- Figures may not sum due to rounding.





# Definitions and Methodology

## High-Wage

High-Wage occupations are defined as occupations that have average annual wages greater than the overall regional average wage (\$68,000 in the region as of 2023Q2).

## High-Skill

High-Skill occupations are those that typically require a certificate or other formal credential for employment. Occupation by educational attainment are regional data modeled by Chmura using U.S. Census Bureau Educational Attainment data projected to 2023Q2 along with source data from the BLS.

## High-Demand

High-Demand occupations are defined as occupations that fulfill two or more of the following demand criteria: 1) high growth, 2) high total demand, 3) low unemployment, 4) high unemployment-to-posting ratio, and/or 5) high posting volume.

### D1: 5-Yr Growth

An occupation is considered to have high growth in that occupation has forecasted 5-year growth that is greater than the overall regional forecasted 5-year pessimistic growth model.

### D2: Total Demand

An occupation is considered to have high total demand if the total 5-year forecast employment growth, transfers, and exits combined is greater than 50% of total employment in that occupation as of 2023Q2 (i.e. high long-term demand)

### D3: Unempl <3%

An occupation is considered to have low unemployment if the estimated unemployment rate for the occupation is below 3% in the region as of 2023Q2 (i.e. high employer retention demand)

### D4: Unempl:Posting Ratio

An occupation is considered to have a strained unemployment-to-posting ratio if the estimated volume of unemployed individuals regionally exceeds the number of online job postings advertised in the month of October 2023 (i.e. ratio of unemployed-to-posts is greater than 1; low talent supply)

### D5: Posting Volume

An occupation is considered to have high posting volumes if the volume of online job postings in August 2023 was greater than 200 in the region, the occupation is considered to have high job posting volumes (i.e. high immediate employer demand).

## Occupation Gaps

Occupation gaps are developed by Chmura and use a multitude of data sources. Employment supply and demand projections are based on a starting date of 2023Q2 using baseline low-growth forecasts modeled from the Bureau of Labor Statistics (more pessimistic forecast outlook than utilized in D1 and D2). The potential supply shortfall is an underlying force that the market needs to resolve one way or another, such as by employers recruiting from further distances for these occupations, wages going up to attract more candidates, and/or increased demand and wages enticing more local residents to get training for these occupations. While this an important analysis for determining local occupation needs, the occupation gap should be considered along with other regional data including growth and separation forecasts, unemployment rates, wage trends, and award and skill gap analyses.

## Award Gaps



This metric illustrates the difference between the number of awards conferred (which are post-secondary certificates or degrees) and the occupation demand in your region. Negative values represent the gap, or shortage, of degrees being awarded in the region to meet the demand for the occupations selected. The positive values represent the surplus of awards meaning that the number of awards awarded are greater than the target range of demand for the region. Awards data are based upon degrees conferred for the academic year 2021-2022 and are provided by the National Center for Education Statistics (NCES). Occupation employment data are derived from the most recent four quarters of industry employment (from the Bureau of Labor Statistics, updated quarterly) and the industry/occupation matrix available for the region. Occupation training concentrations and shortfalls are calculated by Chmura. The percent college educated are provided by the BLS per the Employment Projections Program.

**Location Quotient**

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