Workforce Trends & Careers of Tomorrow
For Career & Technical Education

RealTime Talent
Erin Olson, Director of Strategic Research
December 5th, 7th, and 14th 2022

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

In the chat field, please share your name, your role, and the organization that you represent.
Workforce Trends & Careers of Tomorrow
For Career & Technical Education

Northern Minnesota

RealTime Talent
Erin Olson, Director of Strategic Research
December 7, 2022

Access the full report here:
http://www.realtimetalent.org
Overview

• Community Profile
• Workforce Forecast
• Talent Shortage
• Emerging Career Paths
• Career Cluster Overview
• Career Field Insights

Access the full reports here: http://www.realtimetalent.org
Community Profile

Population Race, All Ages

<table>
<thead>
<tr>
<th>Location</th>
<th>White</th>
<th>Black or African American</th>
<th>American Indian or Alaska Native</th>
<th>Asian</th>
<th>Native Hawaiian or Other Pacific Islander</th>
<th>Some Other Race</th>
<th>Two or More Races</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grand Rapids</td>
<td>91.7%</td>
<td>8.9%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Brainerd</td>
<td>91.1%</td>
<td>8.3%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Duluth</td>
<td>91.3%</td>
<td>8.4%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Northeast</td>
<td>91.3%</td>
<td>8.5%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Minnesota</td>
<td>81.6%</td>
<td>8.9%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
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</table>

Population of Hispanic/Latinx

<table>
<thead>
<tr>
<th>Location</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northeast</td>
<td>1.7%</td>
</tr>
<tr>
<td>Minnesota</td>
<td>5.5%</td>
</tr>
</tbody>
</table>

American Community Survey 2016-2020.
Community Profile

Population Race, All Ages

<table>
<thead>
<tr>
<th>Location</th>
<th>White</th>
<th>American Indian or Alaska Native</th>
<th>Black or African American</th>
<th>Asian</th>
<th>Native Hawaiian or Other Pacific Islander</th>
<th>Two or More Races</th>
<th>Population of Hispanic/Latinx</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moorhead</td>
<td>87.6%</td>
<td></td>
<td>1.6%</td>
<td></td>
<td></td>
<td></td>
<td>4.6%</td>
</tr>
<tr>
<td>Alexandria</td>
<td>96.8%</td>
<td></td>
<td>1.3%</td>
<td>1.0%</td>
<td></td>
<td></td>
<td>1.7%</td>
</tr>
<tr>
<td>Berndji</td>
<td>72.6%</td>
<td></td>
<td>1.0%</td>
<td>1.4%</td>
<td></td>
<td></td>
<td>3.5%</td>
</tr>
<tr>
<td>Northwest</td>
<td>89.2%</td>
<td></td>
<td>1.4%</td>
<td>2.1%</td>
<td></td>
<td></td>
<td>4.2%</td>
</tr>
<tr>
<td>Minnesota</td>
<td>81.6%</td>
<td></td>
<td>6.4%</td>
<td>4.9%</td>
<td></td>
<td></td>
<td>5.5%</td>
</tr>
</tbody>
</table>

American Community Survey 2016-2020.
Community Profile

Annual Percent Change in Employment

- NHED Region (County-Based) (2.1%)
- Northwest Minnesota (1.8%)
- Minnesota (3.3%)

Source: JobsEQ. Data as of 2022Q2. The shaded areas of the graph represent national recessions.

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 2022Q1.
Community Profile

Regional Unemployment Rate

Northeast
Northwest

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

Source: Jobs 101. Data as of Sep 2022. The shaded areas of the graph represent national recessions.
Community Profile

Average Wage Changes from Prior Year

Annual average wages per worker data are derived from the Quarterly Census of Employment and Wages, provided by the Bureau of Labor Statistics and imputed where necessary. Data are updated through 2022Q1 with preliminary estimates updated to 2022Q2.
Community Profile

Educational Attainment, Age 25-64

Grand Rapids
- No High School Diploma: 4.5%
- High School Graduate or GED: 28.4%
- Some College, No Degree: 26.9%
- Associate’s Degree: 15.5%
- Bachelor’s Degree: 16.2%
- Postgraduate Degree: 8.6%

Brainerd
- No High School Diploma: 5.7%
- High School Graduate or GED: 28.2%
- Some College, No Degree: 25.5%
- Associate’s Degree: 15.6%
- Bachelor’s Degree: 17.4%
- Postgraduate Degree: 7.7%

Duluth
- No High School Diploma: 5.1%
- High School Graduate or GED: 24.3%
- Some College, No Degree: 25.7%
- Associate’s Degree: 15.4%
- Bachelor’s Degree: 19.8%
- Postgraduate Degree: 9.7%

Northwest
- No High School Diploma: 5.0%
- High School Graduate or GED: 26.1%
- Some College, No Degree: 25.7%
- Associate’s Degree: 15.4%
- Bachelor’s Degree: 18.8%
- Postgraduate Degree: 9.0%

Minnesota
- No High School Diploma: 6.1%
- High School Graduate or GED: 21.4%
- Some College, No Degree: 20.6%
- Associate’s Degree: 12.9%
- Bachelor’s Degree: 26.1%
- Postgraduate Degree: 13.0%

American Community Survey 2016-2020.

Northeast Minnesota
Community Profile

Educational Attainment, Age 25-64

<table>
<thead>
<tr>
<th></th>
<th>No High School Diploma</th>
<th>High School Graduate or GED</th>
<th>Some College, No Degree</th>
<th>Associate's Degree</th>
<th>Bachelor's Degree</th>
<th>Postgraduate Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moorhead</td>
<td>3.8%</td>
<td>17.5%</td>
<td>22.0%</td>
<td>18.1%</td>
<td>27.4%</td>
<td>11.2%</td>
</tr>
<tr>
<td>Alexandria</td>
<td>3.9%</td>
<td>23.4%</td>
<td>20.0%</td>
<td>23.8%</td>
<td>21.3%</td>
<td>7.6%</td>
</tr>
<tr>
<td>Bemidji</td>
<td>7.5%</td>
<td>26.3%</td>
<td>22.3%</td>
<td>13.8%</td>
<td>19.5%</td>
<td>10.6%</td>
</tr>
<tr>
<td>Northwest</td>
<td>6.2%</td>
<td>26.7%</td>
<td>23.2%</td>
<td>17.6%</td>
<td>18.9%</td>
<td>7.4%</td>
</tr>
<tr>
<td>Minnesota</td>
<td>6.1%</td>
<td>21.4%</td>
<td>20.6%</td>
<td>12.9%</td>
<td>26.1%</td>
<td>13.0%</td>
</tr>
</tbody>
</table>

American Community Survey 2016-2020.

Northwest Minnesota
Community Profile

Northeast Minnesota

• Gross Regional Product (GRP) rose +14.4%

• Health Care and Social Assistance contributes most to GRP
Community Profile

Northwest Minnesota

- Gross Regional Product (GRP) rose +11.6%
- Manufacturing contributes most to GRP
0.0% Average Annual Employment Growth Forecast
Workforce of Today & Tomorrow

Forecast

0.3% Average Annual Employment Growth Forecast
Polling Question

When you think about the current economic situation in your community, which of the following career fields do you feel has the most challenging or pressing workforce needs to be addressed right now? (select up to two)

1. Agriculture, Food, and Natural Resources
2. Arts, Communications, and Information Systems
3. Business, Management, and Administration
4. Engineering, Manufacturing, and Technology
5. Health Science Technology
6. Human Services
Polling Question

When you think about your local school, district, or consortium’s programming, how well do you feel current program offerings address your community’s most challenging or pressing workforce needs right now?

1. To a Great Extent
2. Somewhat
3. Very Little
4. Not At All
5. I Do Not Know
Workforce of Today & Tomorrow

Forecast

Industry Clusters for Northeast Minnesota as of 2022Q2

Northeast Minnesota
Workforce of Today & Tomorrow

Forecast

Industry Clusters for Northwest Minnesota as of 2022Q2
Workforce of Today & Tomorrow

Forecast

Northeast

Northeast unemployment rate: **3.2%**

Northwest

Northwest unemployment rate: **2.8%**

*As of 2022Q2*
Talent Shortage

Occupation Gaps

Northeast

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Supply Deficit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooks, Restaurant ($31,300)</td>
<td>$1</td>
</tr>
<tr>
<td>General and Operations Managers ($85,100)</td>
<td>$20</td>
</tr>
<tr>
<td>Registered Nurses ($72,220)</td>
<td>$17</td>
</tr>
<tr>
<td>Maintenance and Repair Workers, General ($47,900)</td>
<td>$13</td>
</tr>
<tr>
<td>Medical and Health Services Managers ($92,400)</td>
<td>$12</td>
</tr>
<tr>
<td>Software Developers ($102,900)</td>
<td>$11</td>
</tr>
<tr>
<td>Substance Abuse, Behavioral Disorder, and Mental Health Counselors ($50,200)</td>
<td>$8</td>
</tr>
<tr>
<td>Nurse Practitioners ($137,600)</td>
<td>$7</td>
</tr>
<tr>
<td>Market Research Analysts and Marketing Specialists ($65,200)</td>
<td>$6</td>
</tr>
<tr>
<td>Elementary School Teachers, Except Special Education ($60,600)</td>
<td>$5</td>
</tr>
</tbody>
</table>

Northwest

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Supply Deficit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registered Nurses ($74,500)</td>
<td>$20</td>
</tr>
<tr>
<td>Cooks, Restaurant ($30,900)</td>
<td>$20</td>
</tr>
<tr>
<td>General and Operations Managers ($80,700)</td>
<td>$19</td>
</tr>
<tr>
<td>Elementary School Teachers, Except Special Education ($37,800)</td>
<td>$12</td>
</tr>
<tr>
<td>Software Developers ($93,600)</td>
<td>$11</td>
</tr>
<tr>
<td>School Teachers, Except Special and Career/Technical Education ($56,200)</td>
<td>$10</td>
</tr>
<tr>
<td>Maintenance and Repair Workers, General ($42,900)</td>
<td>$9</td>
</tr>
<tr>
<td>Medical and Health Services Managers ($98,000)</td>
<td>$9</td>
</tr>
<tr>
<td>Heavy and Tractor-Trailer Truck Drivers ($50,800)</td>
<td>$7</td>
</tr>
<tr>
<td>Nurse Practitioners ($117,200)</td>
<td>$6</td>
</tr>
</tbody>
</table>

New in 2022

1) Software Developers now ranks as top occupation of shortage statewide
2) Two new occupations of the top 10 roles in highest talent shortage are Origin and Gateway Careers that typically require an industry credential: Restaurant Cooks and Maintenance and Repair Workers
Emerging Career Paths

Total Jobs Advertised Monthly in Minnesota,
October 2021-2022

54,199 unique job postings in the Northeast (+10%)

49,864 unique job postings in the Northwest (+23%)

SOURCE: Gartner TalentNeuron Plan accessed 11/3/2022

Chmura Economics JobsEQ, 2022Q2 dataset.
Emerging Career Paths

Total Remote Job Postings Advertised Monthly in Northeast Minnesota

SOURCE: Gartner TalentNeuron Plan accessed 11/3/2022

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

SOURCE: Gartner TalentNeuron Plan accessed 11/7/2022
## Career Cluster Overview

### Cluster Forecasts by Region

<table>
<thead>
<tr>
<th>Career Cluster</th>
<th>Minnesota</th>
<th>MSP Metro</th>
<th>Northeast</th>
<th>Northwest</th>
<th>Central</th>
<th>Southwest</th>
<th>Southeast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science, Technology, Engineering &amp; Mathematics</td>
<td>6.2% (+)</td>
<td>6.5% (+)</td>
<td>-3.3% (+)</td>
<td>3.0% (+)</td>
<td>6.8% (+)</td>
<td>2.1% (+)</td>
<td>2.9% (+)</td>
</tr>
<tr>
<td>Information Technology</td>
<td>11.6% (+)</td>
<td>11.0% (+)</td>
<td>0.3% (+)</td>
<td>4.7% (+)</td>
<td>8.4% (+)</td>
<td>1.1% (+)</td>
<td>5.7% (+)</td>
</tr>
<tr>
<td>Finance</td>
<td>1.8% (+)</td>
<td>1.4%</td>
<td>-4.8%</td>
<td>-0.5% (+)</td>
<td>2.0%</td>
<td>-4.2%</td>
<td>0.8% (+)</td>
</tr>
<tr>
<td>Health Science</td>
<td>10.1% (+)</td>
<td>12.0% (+)</td>
<td>2.0% (+)</td>
<td>6.9% (+)</td>
<td>10.3% (+)</td>
<td>4.3% (+)</td>
<td>10.5% (+)</td>
</tr>
<tr>
<td>Law, Public Safety, Corrections &amp; Security</td>
<td>5.4% (+)</td>
<td>6.1% (+)</td>
<td>-1.1%</td>
<td>3.5% (+)</td>
<td>6.4%</td>
<td>0.6% (+)</td>
<td>5.8% (+)</td>
</tr>
<tr>
<td>Government &amp; Public Administration</td>
<td>2.8% (+)</td>
<td>2.9% (+)</td>
<td>-3.2% (+)</td>
<td>2.2% (+)</td>
<td>4.9% (+)</td>
<td>-0.4% (+)</td>
<td>2.5% (+)</td>
</tr>
<tr>
<td>Business, Management &amp; Administration</td>
<td>-0.3% (+)</td>
<td>0.1% (+)</td>
<td>-7.0% (+)</td>
<td>-3.1% (+)</td>
<td>0.2%</td>
<td>-6.2% (+)</td>
<td>2.5% (+)</td>
</tr>
<tr>
<td>Architecture &amp; Construction</td>
<td>3.7% (+)</td>
<td>4.6% (+)</td>
<td>-2.8% (+)</td>
<td>2.0% (+)</td>
<td>6.1%</td>
<td>-0.8% (+)</td>
<td>2.7% (+)</td>
</tr>
<tr>
<td>Arts, AV Technology &amp; Communications</td>
<td>3.9% (+)</td>
<td>4.9% (+)</td>
<td>-2.1% (+)</td>
<td>0.2% (+)</td>
<td>4.0%</td>
<td>-6.3% (+)</td>
<td>0.2% (+)</td>
</tr>
<tr>
<td>Education &amp; Training</td>
<td>10.3% (+)</td>
<td>12.9% (+)</td>
<td>3.5% (+)</td>
<td>7.0% (+)</td>
<td>10.0%</td>
<td>3.2% (+)</td>
<td>7.1% (+)</td>
</tr>
<tr>
<td>Agriculture, Food &amp; Natural Resources</td>
<td>6.0% (+)</td>
<td>7.0% (+)</td>
<td>-3.0% (+)</td>
<td>-1.0% (+)</td>
<td>2.0%</td>
<td>-5.0% (+)</td>
<td>-1.0% (+)</td>
</tr>
<tr>
<td>Marketing, Sales &amp; Service</td>
<td>-0.6% (+)</td>
<td>0.8% (+)</td>
<td>-9.5% (+)</td>
<td>-4.5% (+)</td>
<td>-1.0%</td>
<td>-7.5% (+)</td>
<td>-4.3% (+)</td>
</tr>
<tr>
<td>Transportation, Distribution &amp; Logistics</td>
<td>7.1% (+)</td>
<td>8.6% (+)</td>
<td>-1.4% (+)</td>
<td>2.9% (+)</td>
<td>7.7%</td>
<td>0.6% (+)</td>
<td>3.9% (+)</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>-0.7% (+)</td>
<td>0.3% (+)</td>
<td>-6.5% (+)</td>
<td>-3.6% (+)</td>
<td>2.2%</td>
<td>-5.1% (+)</td>
<td>-2.9% (+)</td>
</tr>
<tr>
<td>Human Services</td>
<td>20.0% (+)</td>
<td>22.6% (+)</td>
<td>11.5% (+)</td>
<td>15.8% (+)</td>
<td>19.2%</td>
<td>13.2% (+)</td>
<td>16.8% (+)</td>
</tr>
<tr>
<td>Hospitality &amp; Tourism</td>
<td>17.3% (+)</td>
<td>18.4% (+)</td>
<td>12.5% (+)</td>
<td>16.5% (+)</td>
<td>19.6%</td>
<td>13.2% (+)</td>
<td>16.2% (+)</td>
</tr>
<tr>
<td><strong>Total - All Occupations</strong></td>
<td>6.0% (+)</td>
<td>7.0% (+)</td>
<td>0.0% (+)</td>
<td>3.0% (+)</td>
<td>7.0%</td>
<td>0.0% (+)</td>
<td>5.0% (+)</td>
</tr>
<tr>
<td>SOC</td>
<td>Occupation</td>
<td>Empl</td>
<td>Mean Ann Wages</td>
<td>LO</td>
<td>Unempl</td>
<td>Unempl Rate</td>
<td>30-Day Online Job Ads</td>
</tr>
<tr>
<td>---------</td>
<td>-------------------------------------------------</td>
<td>------</td>
<td>----------------</td>
<td>----</td>
<td>--------</td>
<td>-------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>21-2021</td>
<td>Directors, Religious Activities and Education</td>
<td>247</td>
<td>$54,400</td>
<td>1.36</td>
<td>0</td>
<td>0.0%</td>
<td>2</td>
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<tr>
<td>29-1171</td>
<td>Nurse Practitioners</td>
<td>201</td>
<td>$117,200</td>
<td>0.73</td>
<td>0</td>
<td>0.0%</td>
<td>18</td>
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<tr>
<td>29-1229</td>
<td>Physicians, All Other</td>
<td>188</td>
<td>$282,700</td>
<td>0.60</td>
<td>0</td>
<td>0.0%</td>
<td>22</td>
</tr>
<tr>
<td>33-1012</td>
<td>First-Line Supervisors of Police and Detectives</td>
<td>157</td>
<td>$88,100</td>
<td>1.15</td>
<td>0</td>
<td>0.0%</td>
<td>1</td>
</tr>
<tr>
<td>29-1021</td>
<td>Dentists, General</td>
<td>135</td>
<td>$155,400</td>
<td>0.01</td>
<td>0</td>
<td>0.0%</td>
<td>24</td>
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<tr>
<td>21-1092</td>
<td>Probation Officers and Correctional Treatment Specialists</td>
<td>110</td>
<td>$66,600</td>
<td>1.12</td>
<td>0</td>
<td>0.0%</td>
<td>n/a</td>
</tr>
<tr>
<td>19-1042</td>
<td>Medical Scientists, Except Epidemiologists</td>
<td>109</td>
<td>$77,800</td>
<td>0.85</td>
<td>0</td>
<td>0.0%</td>
<td>1</td>
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<tr>
<td>33-5021</td>
<td>Detectives and Criminal Investigators</td>
<td>104</td>
<td>$77,500</td>
<td>0.88</td>
<td>0</td>
<td>0.0%</td>
<td>3</td>
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<tr>
<td>19-3034</td>
<td>School Psychologists</td>
<td>95</td>
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<td>0</td>
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<td>8</td>
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<tr>
<td>49-9043</td>
<td>Maintenance Workers, Machinery</td>
<td>95</td>
<td>$52,500</td>
<td>1.43</td>
<td>0</td>
<td>0.0%</td>
<td>n/a</td>
</tr>
<tr>
<td>25-1215</td>
<td>Family Medicine Physicians</td>
<td>89</td>
<td>$263,100</td>
<td>0.71</td>
<td>0</td>
<td>0.0%</td>
<td>23</td>
</tr>
<tr>
<td>25-2051</td>
<td>Special Education Teachers, Preschool</td>
<td>87</td>
<td>$62,100</td>
<td>3.62</td>
<td>0</td>
<td>0.0%</td>
<td>n/a</td>
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<tr>
<td>00-0000</td>
<td>Total - All Occupations</td>
<td>175,767</td>
<td>$50,500</td>
<td>1.00</td>
<td>5,635</td>
<td>2.8%</td>
<td>8,523</td>
</tr>
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</table>

Chmura Economics JobsEQ, 2022Q2 dataset.
<table>
<thead>
<tr>
<th>SOC</th>
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<th>Empl</th>
<th>Mean Ann. Wages</th>
<th>IQ</th>
<th>Unempl</th>
<th>Unempl Rate</th>
<th>30-Day Online Job Ads</th>
<th>Empl Change</th>
<th>Ann %</th>
<th>Total Demand</th>
<th>Exits</th>
<th>Transfers</th>
<th>Empl Growth</th>
<th>Ann % Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>29-1229</td>
<td>Physicians, All Other</td>
<td>301</td>
<td>$287,400</td>
<td>0.88</td>
<td>0</td>
<td>0.0%</td>
<td>84</td>
<td>128</td>
<td>11.8%</td>
<td>36</td>
<td>24</td>
<td>16</td>
<td>-5</td>
<td>-0.3%</td>
</tr>
<tr>
<td>33-1012</td>
<td>First-Line Supervisors of Police and Detectives</td>
<td>206</td>
<td>$92,000</td>
<td>1.37</td>
<td>0</td>
<td>0.0%</td>
<td>n/a</td>
<td>4</td>
<td>0.4%</td>
<td>65</td>
<td>22</td>
<td>42</td>
<td>-1</td>
<td>-0.1%</td>
</tr>
<tr>
<td>21-2021</td>
<td>Directors, Religious Activities and Education</td>
<td>182</td>
<td>$55,100</td>
<td>0.91</td>
<td>0</td>
<td>0.0%</td>
<td>1</td>
<td>-25</td>
<td>-2.5%</td>
<td>103</td>
<td>35</td>
<td>66</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>21-1092</td>
<td>Probation Officers and Correctional Treatment Specialists</td>
<td>155</td>
<td>$55,400</td>
<td>1.43</td>
<td>0</td>
<td>0.0%</td>
<td>n/a</td>
<td>-3</td>
<td>-0.4%</td>
<td>60</td>
<td>17</td>
<td>46</td>
<td>-2</td>
<td>-0.3%</td>
</tr>
<tr>
<td>53-4031</td>
<td>Railroad Conductors and Yardmasters</td>
<td>149</td>
<td>$56,600</td>
<td>2.63</td>
<td>0</td>
<td>0.0%</td>
<td>1</td>
<td>-13</td>
<td>-1.7%</td>
<td>51</td>
<td>16</td>
<td>48</td>
<td>-5</td>
<td>-0.4%</td>
</tr>
<tr>
<td>33-3021</td>
<td>Detectives and Criminal Investigators</td>
<td>147</td>
<td>$78,200</td>
<td>1.14</td>
<td>0</td>
<td>0.0%</td>
<td>0</td>
<td>0</td>
<td>0.0%</td>
<td>48</td>
<td>18</td>
<td>38</td>
<td>-3</td>
<td>-0.4%</td>
</tr>
<tr>
<td>29-1021</td>
<td>Dentists, General</td>
<td>140</td>
<td>$164,000</td>
<td>0.87</td>
<td>0</td>
<td>0.0%</td>
<td>28</td>
<td>-15</td>
<td>-2.0%</td>
<td>18</td>
<td>13</td>
<td>6</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>19-5050</td>
<td>Clinical and Counseling Psychologists</td>
<td>124</td>
<td>$75,500</td>
<td>1.58</td>
<td>0</td>
<td>0.0%</td>
<td>10</td>
<td>56</td>
<td>-2.5%</td>
<td>43</td>
<td>16</td>
<td>25</td>
<td>2</td>
<td>0.4%</td>
</tr>
<tr>
<td>29-1311</td>
<td>Veterinarians</td>
<td>124</td>
<td>$96,700</td>
<td>1.11</td>
<td>0</td>
<td>0.0%</td>
<td>9</td>
<td>28</td>
<td>5.2%</td>
<td>24</td>
<td>10</td>
<td>10</td>
<td>4</td>
<td>0.7%</td>
</tr>
<tr>
<td>29-1215</td>
<td>Family Medicine Physicians</td>
<td>121</td>
<td>$276,600</td>
<td>0.88</td>
<td>0</td>
<td>0.0%</td>
<td>43</td>
<td>-19</td>
<td>-2.8%</td>
<td>14</td>
<td>10</td>
<td>7</td>
<td>-2</td>
<td>-0.3%</td>
</tr>
<tr>
<td>29-2031</td>
<td>Cardiovascular Technologists and Technicians</td>
<td>118</td>
<td>$63,200</td>
<td>1.63</td>
<td>0</td>
<td>0.0%</td>
<td>74</td>
<td>-2</td>
<td>-0.3%</td>
<td>40</td>
<td>16</td>
<td>25</td>
<td>-1</td>
<td>-0.2%</td>
</tr>
<tr>
<td>49-5045</td>
<td>Maintenance Workers, Machinery</td>
<td>118</td>
<td>$58,000</td>
<td>1.61</td>
<td>0</td>
<td>0.0%</td>
<td>n/a</td>
<td>-13</td>
<td>-2.1%</td>
<td>49</td>
<td>19</td>
<td>32</td>
<td>-2</td>
<td>-0.3%</td>
</tr>
<tr>
<td>00-0000</td>
<td>Total - All Occupations</td>
<td>192,894</td>
<td>$52,500</td>
<td>1.00</td>
<td>6,119</td>
<td>3.2%</td>
<td>11,793</td>
<td>-5,395</td>
<td>-0.6%</td>
<td>106,416</td>
<td>42,501</td>
<td>63,912</td>
<td>-17</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

Zero Unemployment

Northeast Minnesota

Chmura Economics JobsEQ, 2022Q2 dataset.
Career Field Analysis

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

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

**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*
Occupation Characteristics for Consideration

• High-Wage: Paying above the area mean wage
• High-Skill: Requiring some form of credential
• High-Demand: 2/4 of the following requirements met:
  • Low unemployment
  • High volume of job postings in the past 3 months
  • Forecasted growth outpaces average regional forecasted growth
  • Forecasted total demand equal to or greater than 50% of total current employment
• Occupation Gaps
• Award Gaps
## Gateway Occupations of Focus

<table>
<thead>
<tr>
<th></th>
<th>Overall Unemployment Rate 2022Q2</th>
<th>Overall Mean Wage</th>
<th>Gateway Occupation Unemployment Rate 2022Q2</th>
<th>Top 4-Digit Sub-Industries of High Local Concentration (LQ) and High Demand (replacement or growth)</th>
<th>Top Gateway Occupations with Occupation Gaps and/or Award Gaps in Order of Total Employment, including Unemployment Rate*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Northeast</strong></td>
<td>2.8%</td>
<td>$50,500</td>
<td>2.4%</td>
<td>• Household Appliances &amp; Electrical &amp; Electronic Goods Merchant Wholesalers (9.61)</td>
<td>• Maintenance &amp; Repair Workers (1.5%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Other Wood Product Manufacturing (8.93)</td>
<td>• Carpenters (3.3%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Other General Purpose Machinery Manufacturing (5.78)</td>
<td>• LPNs (1.1%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Animal Slaughtering and Processing (3.76)</td>
<td>• Welders, Cutters, Solderers, &amp; Brazers (2.9%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Machinists (2.3%)</td>
</tr>
<tr>
<td><strong>Northwest</strong></td>
<td>3.2%</td>
<td>$52,500</td>
<td>2.9%</td>
<td>• Metal Ore Mining (79.16)</td>
<td>• Maintenance &amp; Repair Workers (1.7%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Residential Intellectual &amp; Developmental Disability, Mental Health, &amp; Substance Abuse Facilities (4.52)</td>
<td>• Bookkeeping, Accounting, &amp; Auditing Clerks (2.2%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Traveler Accommodation (2.90)</td>
<td>• Carpenters (3.7%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Executive, Legislative, &amp; Other General Government Support (2.69)</td>
<td>• LPNs (1.2%)</td>
</tr>
<tr>
<td><strong>Minnesota Statewide</strong></td>
<td>2.5%</td>
<td>$60,300</td>
<td>2.3%</td>
<td>• Hog &amp; Pig Farming (6.05)</td>
<td>• Social &amp; Human Service Assistants (3.0%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Metal Ore Mining (5.13)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Other Residential Care Facilities (3.28)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Farm Product Raw Material Merchant Wholesalers (3.18)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Heavy Tractor Trailer &amp; Truck Drivers (OG, AG; 2.2%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Bookkeeping, Accounting, &amp; Auditing Clerks (AG; 1.8%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Maintenance &amp; Repair Workers (OG; 1.4%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Carpenters (OG; 3.2%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Light Truck Drivers (AG; 2.2%)</td>
</tr>
</tbody>
</table>
Polling Question – Choose A Field!

Which ONE career field would you like to learn more about in further detail today?

The top 3 selections by the group will be highlighted now through the end of today’s presentation.

(all fields are detailed in the full report)

1. Agriculture, Food, and Natural Resources
2. Arts, Communications, and Information Systems
3. Business, Management, and Administration
4. Engineering, Manufacturing, and Technology
5. Health Science Technology
6. Human Services
## Health Science Technology

### Summary Statistics

#### Northwest
- **2022Q2 Employment:** 16,628 (9.5% of NW employment)
- **Average Wage:** $67,800 (compared to $50,500 across all occupations)
- **Location Quotient:** 1.04
- **2022Q2 Unemployment:** 269 (1.4% rate)
- **30-Day Job Ads:** 1,821*
- **5-Year Ann Avg Employment Change:** -0.1%
- **Forecast 5-Year Ann Employment Change:** 0.7%
- **Total 5-Year Demand:** 7,153

#### Northeast
- **2022Q2 Employment:** 22,619 (11.7% of NE employment)
- **Average Wage:** $70,000 (compared to $52,500 across all occupations)
- **Location Quotient:** 1.29
- **2022Q2 Unemployment:** 323 (1.5% rate)
- **30-Day Job Ads:** 4,169*
- **5-Year Ann Avg Employment Change:** -0.8%
- **Forecast 5-Year Ann Employment Change:** 0.2%
- **Total 5-Year Demand:** 8,738
### Top Occupation Gaps

**Northwest**
- Registered Nurses
- Medical & Health Services Managers
- Nurse Practitioners
- Licensed Practical & Licensed Vocational Nurses
- Speech-Language Pathologists

**Northeast**
- Registered Nurses
- Medical & Health Services Managers
- Nurse Practitioners
- Licensed Practical & Licensed Vocational Nurses
- Physician Assistants

### Top Award Gaps

**Northwest**
- Medical Assistants
- Nurse Practitioners
- Physical Therapists
- Pharmacists
- Occupational Therapists

**Northeast**
- Medical Assistants
- Medical Secretaries & Administrative Assistants
- Radiologic Technologists & Technicians
- Nursing Assistants
- Pharmacists

Chmura Economics JobsEQ, 2022Q2 dataset. *Indicates live postings during the month of October, compared to 182,561 across all occupations.*
<table>
<thead>
<tr>
<th>Health Science Technology</th>
<th>Northwest</th>
</tr>
</thead>
</table>

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

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

**Origin Occupations**

<table>
<thead>
<tr>
<th>Likely</th>
<th>Aligned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing Assistants (HS, HD, OG, AG)</td>
<td>Childcare Workers</td>
</tr>
<tr>
<td>Home Health Aides (HD)</td>
<td>Customer Service Reps</td>
</tr>
<tr>
<td>Medical Secretaries &amp; Administrative Assistants (HD, OG)</td>
<td>Secretaries</td>
</tr>
<tr>
<td>Pharmacy Technicians (OG, AG)</td>
<td>Cashiers</td>
</tr>
<tr>
<td>Medical Assistants (HS, HD, OG, AG)</td>
<td></td>
</tr>
</tbody>
</table>
### Health Science Technology

**Gateway Occupations**
- Licensed Practical Nurses (HS, OG)
- Dental Assistants (HS, HD, OG)
- Medical Records Specialists (HS)
- Health Technologists & Technicians (HS, AG)
- Ophthalmic Technicians (HS, HD, OG)

**Origin Occupations**

<table>
<thead>
<tr>
<th>Likely</th>
<th>Aligned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing Assistants (HS, HD, OG, AG)</td>
<td>Childcare Workers</td>
</tr>
<tr>
<td>Home Health Aides (HD)</td>
<td>Customer Service Reps</td>
</tr>
<tr>
<td>Medical Secretaries &amp; Administrative Assistants (HD, OG, AG)</td>
<td>Secretaries</td>
</tr>
<tr>
<td>Medical Assistants (HS, HD, OG, AG)</td>
<td>Cashiers</td>
</tr>
<tr>
<td>Psychiatric Technicians (AG)</td>
<td></td>
</tr>
</tbody>
</table>

**Target Occupations**
- Registered Nurses (OG)
- Medical & Health Services Managers (OG)
- Radiologic Technicians (OG, AG)
- Physical Therapists (OG)
- Nurse Practitioners (OG)
## Health Science Technology

### High Location Quotient

<table>
<thead>
<tr>
<th>Region</th>
<th>Field</th>
<th>Region</th>
<th>Field</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Northeast</strong></td>
<td></td>
<td><strong>Northwest</strong></td>
<td></td>
</tr>
<tr>
<td>Region: $52,500</td>
<td>Field: $70,000</td>
<td>Region: $50,500</td>
<td>Field: $67,800</td>
</tr>
<tr>
<td>Region: 3.2%</td>
<td>Field: 1.5%</td>
<td>Region: 2.8%</td>
<td>Field: 1.4%</td>
</tr>
</tbody>
</table>

#### Northeast
- Genetic Counselors
- Pediatric Surgeons
- Recreational Therapists
- Psychiatric Aides
- Epidemiologists

#### Northwest
- Nursing Assistants
- Home Health Aides
- Medical Secretaries
- Medical Assistants
- Psychiatric Technicians

## High Location Quotient

**Northeast**
- LPNs
- Dental Assistants
- Medical Records Specialists
- Health Technicians, Other
- Ophthalmic Technicians

**Northwest**
- Registered Nurses
- Medical & Health Services Managers
- Radiologic Technicians
- Physical Therapists
- Nurse Practitioners

**Recreational Therapists**
- Psychiatric Aides
- Genetic Counselors
- Nursing Assistants
- Epidemiologists
## Human Services

### Summary Statistics

<table>
<thead>
<tr>
<th>Region</th>
<th>2022Q2 Employment</th>
<th>Average Wage</th>
<th>Location Quotient</th>
<th>2022Q2 Unemployment</th>
<th>30-Day Job Ads</th>
<th>5-Year Ann Avg Employment Change</th>
<th>Forecast 5-Year Ann Employment Change</th>
<th>Total 5-Year Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Northwest</strong></td>
<td>29,152 (16.6% of NW employment)</td>
<td>$50,300 (compared to $50,500 across all occupations)</td>
<td>1.07</td>
<td>614 (2.0% rate)</td>
<td>1,324*</td>
<td>0.3%</td>
<td>0.9%</td>
<td>16,185</td>
</tr>
<tr>
<td><strong>Northeast</strong></td>
<td>34,015 (17.6% of NE employment)</td>
<td>$50,900 (compared to $52,500 across all occupations)</td>
<td>1.13</td>
<td>735 (2.2% rate)</td>
<td>1,371*</td>
<td>-0.3%</td>
<td>0.5%</td>
<td>18,602</td>
</tr>
</tbody>
</table>

*Chmura Economics JobsEQ, 2022Q2 dataset. *Indicates live postings during the month of October, compared to 182,561 across all occupations.
<table>
<thead>
<tr>
<th><strong>Top Occupation Gaps</strong></th>
<th><strong>Top Award Gaps</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary School Teachers</td>
<td>Childcare Workers</td>
</tr>
<tr>
<td>Secondary School Teachers</td>
<td>Lawyers</td>
</tr>
<tr>
<td>Middle School Teachers</td>
<td>Hairdressers, Hairstylists, &amp; Cosmetologists</td>
</tr>
<tr>
<td>Police &amp; Sheriff’s Patrol Officers</td>
<td>Clergy</td>
</tr>
<tr>
<td>Substance, Behavioral, Mental Health Counselors</td>
<td>Social &amp; Human Services Assistants</td>
</tr>
</tbody>
</table>

**Northwest**

<table>
<thead>
<tr>
<th><strong>Top Occupation Gaps</strong></th>
<th><strong>Top Award Gaps</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance, Behavioral, Mental Health Counselors</td>
<td>Teaching Assistants</td>
</tr>
<tr>
<td>Elementary School Teachers</td>
<td>Childcare Workers</td>
</tr>
<tr>
<td>Self-Enrichment Teachers</td>
<td>Coaches &amp; Scouts</td>
</tr>
<tr>
<td>Secondary School Teachers</td>
<td>Hairdressers, Hairstylists, &amp; Cosmetologists</td>
</tr>
<tr>
<td>Preschool Teachers</td>
<td>Clergy</td>
</tr>
</tbody>
</table>

**Northeast**

Chmura Economics JobsEQ, 2022Q2 dataset. *Indicates live postings during the month of October, compared to 182,561 across all occupations.
### Human Services

**Northwest**

<table>
<thead>
<tr>
<th><strong>Origin Occupations</strong></th>
<th><strong>Likely</strong></th>
<th><strong>Aligned</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Care Aides</td>
<td>(HD, AG)</td>
<td>Tellers</td>
</tr>
<tr>
<td>Teaching Assistants</td>
<td>(HS, HD)</td>
<td>Retail Sales Workers</td>
</tr>
<tr>
<td>Childcare Workers</td>
<td>(AG)</td>
<td>Waiters and Waitresses</td>
</tr>
<tr>
<td>Social &amp; Human Service</td>
<td>Service Assistants (HD, AG)</td>
<td>Cashiers</td>
</tr>
<tr>
<td>Preschool Teachers</td>
<td>(HS, HD, OG)</td>
<td>Cooks</td>
</tr>
</tbody>
</table>

**Target Occupations** (all HW, HD, HS, OG)
- Elementary School Teachers
- Secondary School Teachers
- Middle School Teachers
- Special & CTE Teachers
- Child, Family, & School Social Workers

**Gateway Occupations**
- Court, Municipal, & License Clerks (HD, OG)
- Clergy (HS, HD, OG, AG)
- Correctional Officers (AG)
- Self-Enrichment Teachers (HD, OG, AG)
- Paralegals & Legal Assistants (HS, HD, OG)
### Human Services

#### Origin Occupations

**Likely**
- Personal Care Aides (HD, AG)
- Teaching Assistants (HS, HD, AG)
- Childcare Workers (HD, AG)
- Security Guards (HD)
- Firefighters (HS, OG)

**Aligned**
- Tellers
- Retail Sales Workers
- Waiters and Waitresses
- Cashiers
- Cooks

### Gateway Occupations

- Social & Human Service Assistants (HD, AG)
- Substance Abuse, Behavioral Disorder, & Mental Health Counselors (HS, HD, OG)
- Court, Municipal, & License Clerks (OG)
- Self-Enrichment Teachers (HD, OG, AG)
- Clergy (HS, OG, AG)

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

- Child, Family, & School Social Workers
- Social & Community Service Managers
- Mental Health & Substance Abuse Social Workers
- Educational, Guidance, & Career Counselors
- Education Administrators, Kindergarten-Secondary (AG)

---

**Northeast**
<table>
<thead>
<tr>
<th>High Location Quotient</th>
<th>Northeast</th>
<th>Northwest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Region:</strong> $52,500</td>
<td>$50,900</td>
<td>$50,500</td>
</tr>
<tr>
<td><strong>Field:</strong> 3.2%</td>
<td>2.2%</td>
<td>2.8%</td>
</tr>
<tr>
<td><strong>Field:</strong> 2.2%</td>
<td>2.0%</td>
<td></td>
</tr>
</tbody>
</table>

**Northeast**
- Gambling Surveillance Officers
- Court, Municipal & License Clerks
- Residential Advisors
- Legislators
- Judicial Law Clerks

**Northwest**
- Personal Care Aides
- Teaching Assistants
- Childcare Workers
- Security Guards
- Firefighters
- Social & Human Service Assistants
- Firefighters
- Court, Municipal & License Clerks
- Clergy
- Substance Abuse & Mental Health Counselors
- Self-Enrichment Teachers
- Supervisors of Personal Service Workers
- Child, Family, & School Social Workers
- Social & Community Service Managers
- Mental Health Social Workers
- Educational, Guidance, & Career Counselors
- Education Administrators
- Secondary School Teachers
- Child, Family, & School Social Workers
- Educational, Guidance, & Career Counselors
- Secondary Special Ed Teachers
- Kindergarten Special Ed Teachers
### Arts, Communications, & Information Systems

#### Summary Statistics

<table>
<thead>
<tr>
<th>Region</th>
<th>2022Q2 Employment</th>
<th>Average Wage</th>
<th>Location Quotient</th>
<th>2022Q2 Unemployment</th>
<th>30-Day Job Ads</th>
<th>5-Year Ann Avg Employment Change</th>
<th>Forecast 5-Year Ann Employment Change</th>
<th>Total 5-Year Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Northwest</strong></td>
<td>5,284 (3.0% of NW employment)</td>
<td>$67,000 (compared to $50,500 across all occupations)</td>
<td>0.63</td>
<td>116 (2.0% rate)</td>
<td>178*</td>
<td>1.4%</td>
<td>0.2%</td>
<td>2,302</td>
</tr>
<tr>
<td><strong>Northeast</strong></td>
<td>6,080 (3.2% of NE employment)</td>
<td>$71,700 (compared to $52,500 across all occupations)</td>
<td>0.66</td>
<td>144 (2.4% rate)</td>
<td>429*</td>
<td>1.1%</td>
<td>-0.1%</td>
<td>2,454</td>
</tr>
</tbody>
</table>

*Indicates live postings during the month of October, compared to 182,561 across all occupations.
### Arts, Communications, & Information Systems

#### Top Occupation & Award Gaps

<table>
<thead>
<tr>
<th>Northwest</th>
<th>Northeast</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Top Occupation Gaps</strong></td>
<td><strong>Top Occupation Gaps</strong></td>
</tr>
<tr>
<td>• Software Developers</td>
<td>• Software Developers</td>
</tr>
<tr>
<td>• Music Directors &amp; Composers</td>
<td>• Computer Occupations, Other</td>
</tr>
<tr>
<td>• Audio &amp; Video Technicians</td>
<td>• Computer Network Support Specialists</td>
</tr>
<tr>
<td>• Computer Occupations, All Other</td>
<td>• Writers &amp; Authors</td>
</tr>
<tr>
<td>• Software Quality Assurance Analysts &amp; Testers</td>
<td>• Software Quality Assurance Analysts &amp; Testers</td>
</tr>
<tr>
<td><strong>Top Award Gaps</strong></td>
<td><strong>Top Award Gaps</strong></td>
</tr>
<tr>
<td>• Computer User Support Specialists</td>
<td>• Musicians &amp; Singers</td>
</tr>
<tr>
<td>• Musicians &amp; Singers</td>
<td>• Photographers</td>
</tr>
<tr>
<td>• Telecommunications Equipment Installers</td>
<td>• Art Directors</td>
</tr>
<tr>
<td>• Music Directors &amp; Composers</td>
<td>• Music Directors &amp; Composers</td>
</tr>
<tr>
<td>• Prepress Technicians &amp; Workers</td>
<td>• Computer User Support Specialists</td>
</tr>
</tbody>
</table>

Chmura Economics JobsEQ, 2022Q2 dataset. *Indicates live postings during the month of October, compared to 182,561 across all occupations.
Arts, Communications, & Information Systems

Northeast, 2021Q1

**Origin Occupations**

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

**Gateway Occupations**

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

**Target Occupations**

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

**Likely**

- Library Technicians
- Recreation Attendants
- Hosts and Hostesses
- Customer Service Reps
- Machine Operators
Arts, Communications, & Information Systems

Northeast

**Target Occupations** (all HW, HD, HS, OG)
- Software Developers
- Computer Network Support Specialists
- Writers & Authors
- Software Quality Assurance Analysts & Testers
- Art Directors (AG)

**Gateway Occupations**
- Graphic Designers (HS)
- Producers & Directors (HS, HD, OG)
- Editors (HS)
- Music Directors & Composers (HS, HD, AG)
- Audio & Video Technicians (HS, HD, OG, AG)

**Origin Occupations**

**Likely**
- Printing Press Operators
- Photographers (HD, OG, AG)
- Broadcast Announcers & Radio Disc Jockeys (HS)
- Floral Designers
- Print Binding & Finishing Workers

**Aligned**
- Library Technicians
- Recreation Attendants
- Hosts and Hostesses
- Customer Service Reps
- Machine Operators
## Arts, Communications, & Information Systems

### High Location Quotient

<table>
<thead>
<tr>
<th>Northeast</th>
<th>Northwest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Region:</strong> $52,500</td>
<td><strong>Region:</strong> $50,500</td>
</tr>
<tr>
<td><strong>Field:</strong> $71,700</td>
<td><strong>Field:</strong> $67,000</td>
</tr>
<tr>
<td><strong>Northeast</strong></td>
<td><strong>Northwest</strong></td>
</tr>
<tr>
<td><strong>Region:</strong> 3.2%</td>
<td><strong>Region:</strong> 2.8%</td>
</tr>
<tr>
<td><strong>Field:</strong> 2.4%</td>
<td><strong>Field:</strong> 2.0%</td>
</tr>
</tbody>
</table>

**Northeast**
- Broadcast Announcers
- Computer Network Support Specialists
- Disc Jockeys, Except Radio
- Dancers
- Choreographers

**Northwest**
- Printing Press Operators
- Photographers
- Broadcast Announcers
- Floral Designers
- Print Binding & Finishing Workers
- Graphic Designers
- Producers & Directors
- Editors
- Music Directors & Composers
- Audio & Video Technicians

**Northeast**
- Software Developers
- Computer Network Support Specialists
- Writers & Authors
- Software QA Analysts & Testers
- Art Directors

**Northwest**
- Computer User Support Specialists
- Graphic Designers
- Photographers
- Audio & Video Technicians
- Actors

- Broadcast Announcers & Radio Disc Jockeys
- Commercial & Industrial Designers
- Floral Designers
- Printing Press Operators
- Print Binding & Finishing Workers
### Business, Management, & Administration

#### Summary Statistics

<table>
<thead>
<tr>
<th>Northwest</th>
<th>Northeast</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2022Q2 Employment:</strong> 68,887 (39.2% of NW employment)</td>
<td><strong>2022Q2 Employment:</strong> 82,435 (42.7% of NE employment)</td>
</tr>
<tr>
<td><strong>Average Wage:</strong> $45,800 (compared to $50,500 across all occupations)</td>
<td><strong>Average Wage:</strong> $54,100 (compared to $52,500 across all occupations)</td>
</tr>
<tr>
<td><strong>Location Quotient:</strong> 0.89</td>
<td><strong>Location Quotient:</strong> 0.97</td>
</tr>
<tr>
<td><strong>2022Q2 Unemployment:</strong> 2,742 (3.3% rate)</td>
<td><strong>2022Q2 Unemployment:</strong> 3,204 (3.9% rate)</td>
</tr>
<tr>
<td><strong>30-Day Job Ads:</strong> 3,061*</td>
<td><strong>30-Day Job Ads:</strong> 4,162*</td>
</tr>
<tr>
<td><strong>5-Year Ann Avg Employment Change:</strong> -0.5%</td>
<td><strong>5-Year Ann Avg Employment Change:</strong> -1.0%</td>
</tr>
<tr>
<td><strong>Forecast 5-Year Ann Employment Change:</strong> 0.2%</td>
<td><strong>Forecast 5-Year Ann Employment Change:</strong> -0.1%</td>
</tr>
<tr>
<td><strong>Total 5-Year Demand:</strong> 45,226</td>
<td><strong>Total 5-Year Demand:</strong> 53,094</td>
</tr>
</tbody>
</table>

Chmura Economics JobsEQ, 2022Q2 dataset. *Indicates live postings during the month of October, compared to 182,561 across all occupations.
## Business, Management, & Administration

### Top Occupation & Award Gaps

#### Northwest

**Top Occupation Gaps**
- Restaurant Cooks
- General & Operations Managers
- Market Research Analysts & Specialists
- Financial Managers
- Management Analysts

**Top Award Gaps**
- Food Service Managers
- Recreation Workers
- Lodging Managers
- Market Research Analysts & Specialists
- Real Estate Agents

#### Northeast

**Top Occupation Gaps**
- Restaurant Cooks
- General & Operations Managers
- Financial Managers
- Market Research Analysts & Specialists
- Supervisors of Food Prep Workers

**Top Award Gaps**
- General & Operations Managers
- Food Service Managers
- Training & Development Specialists
- Business Operations Specialists
- Bookkeeping, Accounting, & Auditing Clerks

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*Chmura Economics JobsEQ, 2022Q2 dataset. *Indicates live postings during the month of October, compared to 182,561 across all occupations.*
Business, Management, & Administration
Northwest

**Origin Occupations**
- Cashiers
- Retail Salespersons (HD)
- Fast Food and Counter Workers (HD)
- Office Clerks, General (HD, AG)
- Stockers & Order Fillers (HD)

**Likely**
- Library Technicians
- Eligibility Interviewers
- Childcare Workers

**Aligned**
- Market Research Analysts & Marketing Specialists (AG)
- Management Analysts
- Financial Managers

**Target Occupations** (all HW, HD, HS, OG)
- Business Operations Specialists, All Other
- Project Management Specialists
- Market Research Analysts & Marketing Specialists (AG)
- Management Analysts
- Financial Managers

**Gateway Occupations**
- Supervisors of Retail Sales Workers (HD)
- Bookkeeping, Accounting, & Auditing Clerks (HS, HD)
- Real Estate Agents (AG)
- Billing & Posting Clerks
- Supervisors of Housekeeping and Janitorial Workers (HD, OG)
Business, Management, & Administration

Northeast

**Target Occupations** (all HW, HD, HS)
- General & Operations Managers (OG, AG)
- Project Management Specialists (OG, AG)
- Management Analysts (OG, AG)
- Market Research Analysts & Marketing Specialists (OG)
- Financial Managers (OG)

**Gateway Occupations**
- Supervisors of Retail Sales Workers (HD)
- Bookkeeping, Accounting, & Auditing Workers (HS, AG)
- Real Estate Sales Agents (AG)
- Billing & Posting Clerks
- Supervisors of Housekeeping & Janitorial Workers (HD, OG)

**Origin Occupations**

**Likely**
- Cashiers
- Retail Salespersons (HD)
- Fast Food & Counter Workers (HD)
- Waiters & Waitresses (HD)
- Office Clerks, General

**Aligned**
- Library Technicians
- Eligibility Interviewers
- Childcare Workers
<table>
<thead>
<tr>
<th></th>
<th>Northeast</th>
<th>Northwest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High Location Quotient</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Northeast</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Region: $52,500</td>
<td>Region: $50,500</td>
<td></td>
</tr>
<tr>
<td>Field: $45,100</td>
<td>Field: $45,100</td>
<td></td>
</tr>
<tr>
<td>Field: 3.9%</td>
<td>Field: 3.3%</td>
<td></td>
</tr>
<tr>
<td>Gambling &amp; Sports Book Writers &amp; Runners</td>
<td>Cashiers</td>
<td></td>
</tr>
<tr>
<td>Gambling Service Workers</td>
<td>Retail Salespersons</td>
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<tr>
<td>Gambling Cage Workers</td>
<td>Fast Food &amp; Counter Workers</td>
<td></td>
</tr>
<tr>
<td>Supervisors of Gambling Service Workers</td>
<td>Waiters &amp; Waitresses</td>
<td></td>
</tr>
<tr>
<td>Gambling Change Persons &amp; Booth Cashiers</td>
<td>Office Clerks, General</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Supervisors of Retail Workers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bookkeeping, Accounting, &amp; Auditing Workers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Real Estate Sales Agents</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Billing &amp; Posting Clerks</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Supervisors of Housekeeping &amp; Janitorial Workers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>General &amp; Operations Managers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Project Mgmt Specialists</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Management Analysts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Market Research Analysts &amp; Marketing Specialists</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Financial Managers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Business Operations Specialists</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Project Mgmt Specialists</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Market Research Analysts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Management Analysts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Financial Managers</td>
<td></td>
</tr>
</tbody>
</table>
Engineering, Manufacturing, & Tech

**Summary Statistics**

<table>
<thead>
<tr>
<th>Region</th>
<th>2022Q2 Employment</th>
<th>Average Wage</th>
<th>Location Quotient</th>
<th>2022Q2 Unemployment</th>
<th>30-Day Job Ads</th>
<th>5-Year Ann Avg Employment Change</th>
<th>Forecast 5-Year Ann Employment Change</th>
<th>Total 5-Year Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Northwest</strong></td>
<td>46,683 (26.6% of NW employment)</td>
<td>$48,800 (compared to $50,500 across all occupations)</td>
<td>1.08</td>
<td>1,685 (3.0% rate)</td>
<td>2,049*</td>
<td>0.2%</td>
<td>0.0%</td>
<td>24,331</td>
</tr>
<tr>
<td><strong>Northeast</strong></td>
<td>44,493 (23.1% of NE employment)</td>
<td>$55,900 (compared to $52,500 across all occupations)</td>
<td>0.94</td>
<td>1,603 (3.5% rate)</td>
<td>1,575*</td>
<td>0.1%</td>
<td>-0.4%</td>
<td>21,428</td>
</tr>
</tbody>
</table>

Chmura Economics JobsEQ, 2022Q2 dataset. *Indicates live postings during the month of October, compared to 182,561 across all occupations.
## Top Occupation & Award Gaps

### Northwest

**Top Occupation Gaps**
- Maintenance & Repair Workers
- Heavy & Tractor Trailer Truck Drivers
- Industrial Machinery Mechanics
- Industrial Engineers
- Carpenters

**Top Award Gaps**
- Welders, Cutters, Solderers, & Brazers
- Industrial Engineers
- Mechanical Engineers
- Civil Engineers
- Electrical Engineers

### Northeast

**Top Occupation Gaps**
- Maintenance & Repair Workers
- Industrial Machinery Mechanics
- Construction Workers
- Supervisors of Construction Trades Workers
- Heavy & Tractor Trailer Truck Drivers

**Top Award Gaps**
- HVAC Technicians
- Industrial Engineers
- Supervisors of Production & Operating Workers
- Heavy & Tractor Trailer Truck Drivers
- Architects

Chmura Economics JobsEQ, 2022Q2 dataset. *Indicates live postings during the month of October, compared to 182,561 across all occupations.*
Origin Occupations

Likely
- Laborers & Freight, Stock Movers
- Team Assemblers
- Landscaping & Groundskeeping Workers (HD)
- Slaughterers & Meat Packers (HD)
- Packaging & Filling Machine Operators & Tenders

Aligned
- Parking Lot Attendants
- Stockers & Order Fillers
- Janitors & Cleaners
- Personal Services Managers

Gateway Occupations

- Construction Laborers
- Maintenance & Repair Workers, General (HD, OG, AG)
- Carpenters (OG)
- Light Truck Drivers (HD)
- Welders, Cutters, Solderers, & Brazers (HD, OG, AG)

Target Occupations (all HW, HD, HS)
- Construction Managers (OG)
- Industrial Engineers (OG, AG)
- Civil Engineers (OG, AG)
- Logisticians (OG)
- CNC Tool Programmers (OG, AG)
## Engineering, Manufacturing, & Tech

### Northeast

### Origin Occupations

**Likely**
- Laborers & Freight, Stock Movers
- Landscaping & Groundskeeping Workers (HD)
- Team Assemblers
- School Bus Drivers (HD, AG)
- Cleaners of Vehicles & Equipment

**Aligned**
- Parking Lot Attendants
- Retail Sales Workers
- Stockers & Order Fillers
- Janitors & Cleaners
- Personal Services Managers

### Gateway Occupations

- Maintenance & Repair Workers, General (HD, OG, AG)
- Construction Laborers
- Carpenters (OG)
- Light Truck Drivers (HD, AG)
- Highway Maintenance Workers (OG)
- Automotive Service Technicians & Mechanics (HS, AG)

### Target Occupations (all HW, HD, HS)
- Heavy & Tractor Trailer Truck Drivers (OG, AG)
- Construction Managers (OG, AG)
- Industrial Engineers (OG, AG)
- Chemical Technicians
- Logisticians (OG, AG)
### Engineering, Manufacturing, & Technology

#### Northeast
- Underground Mining Machine Operators, All Other
- Loading & Moving Machine Operators, Underground Mining
- Mining & Geological Engineers, Including Mining Safety Engineers
- Other Extraction Workers
- Mining Machine Operators

<table>
<thead>
<tr>
<th>Region</th>
<th>Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northeast</td>
<td>$52,500</td>
</tr>
<tr>
<td></td>
<td>$55,900</td>
</tr>
<tr>
<td>Northeast High</td>
<td>3.2%</td>
</tr>
<tr>
<td>Location Quotient</td>
<td>3.5%</td>
</tr>
</tbody>
</table>
- Laborers & Stock Movers
- Landscaping & Groundskeeping Workers
- Team Assemblers
- School Bus Drivers
- Cleaners of Vehicles & Equipment

#### Northwest
- Laborers & Stock Movers
- Team Assemblers
- Landscaping & Groundskeeping Workers
- Slaughterers & Meat Packers
- Packaging & Filling Machine Operators

<table>
<thead>
<tr>
<th>Region</th>
<th>Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northwest</td>
<td>$50,500</td>
</tr>
<tr>
<td></td>
<td>$48,800</td>
</tr>
<tr>
<td>Northwest High</td>
<td>2.8%</td>
</tr>
<tr>
<td>Location Quotient</td>
<td>3.0%</td>
</tr>
</tbody>
</table>
- Construction Laborers
- Maintenance & Repair Workers, General
- Carpenters
- Light Truck Drivers
- Welders, Cutters, Solderers, & Brazers

#### High Location Quotient

- Construction Managers
- Industrial Engineers
- Civil Engineers
- Logisticians
- CNC Tool Programmers

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Chmura Economics JobsEQ, 2022Q2 dataset.
## Summary Statistics

### Northwest

- **2022Q2 Employment**: 15,443 (8.8% of NW employment)
- **Average Wage**: $51,400 (compared to $50,500 across all occupations)
- **Location Quotient**: 1.66
- **2022Q2 Unemployment**: 399 (2.4% rate)
- **30-Day Job Ads**: 277*
- **5-Year Ann Avg Employment Change**: -1.0%
- **Forecast 5-Year Ann Employment Change**: -0.1%
- **Total 5-Year Demand**: 8,821

### Northeast

- **2022Q2 Employment**: 9,639 (5.0% of NE employment)
- **Average Wage**: $55,200 (compared to $52,500 across all occupations)
- **Location Quotient**: 0.94
- **2022Q2 Unemployment**: 284 (2.9% rate)
- **30-Day Job Ads**: 307*
- **5-Year Ann Avg Employment Change**: -0.3%
- **Forecast 5-Year Ann Employment Change**: -0.3%
- **Total 5-Year Demand**: 5,120

*Indicates live postings during the month of October, compared to 182,561 across all occupations.
### Agriculture, Food, & Natural Resources

#### Top Occupation & Award Gaps

<table>
<thead>
<tr>
<th>Northeast</th>
<th>Northwest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Top Occupation Gaps</strong></td>
<td></td>
</tr>
<tr>
<td>Farmers, Ranchers, &amp; Agricultural Managers</td>
<td>Farmers, Ranchers, &amp; Agricultural Managers</td>
</tr>
<tr>
<td>Farm Equipment Mechanics &amp; Service Techs</td>
<td>Chefs &amp; Head Cooks</td>
</tr>
<tr>
<td>Plumbers, Pipefitters, &amp; Steamfitters</td>
<td>HVAC Mechanics</td>
</tr>
<tr>
<td>Wind Turbine Service Technicians</td>
<td>Aircraft Mechanics &amp; Service Technicians</td>
</tr>
<tr>
<td>Animal Trainers</td>
<td>Animal Trainers</td>
</tr>
<tr>
<td>Supervisors of Landscaping &amp; Groundskeepers</td>
<td>Supervisors of Landscaping &amp; Groundskeepers</td>
</tr>
<tr>
<td><strong>Top Award Gaps</strong></td>
<td></td>
</tr>
<tr>
<td>Farmers, Ranchers, &amp; Agricultural Managers</td>
<td>HVAC Mechanics</td>
</tr>
<tr>
<td>Urban &amp; Regional Planners</td>
<td>Mining &amp; Geological Engineers</td>
</tr>
<tr>
<td>Veterinarians</td>
<td>Veterinarians</td>
</tr>
<tr>
<td>Veterinary Technologists &amp; Technicians</td>
<td>Environmental Engineers</td>
</tr>
<tr>
<td>Veterinary Assistants</td>
<td>Plumbers, Pipefitters, &amp; Steamfitters</td>
</tr>
</tbody>
</table>

Chmura Economics JobsEQ, 2022Q2 dataset. *Indicates live postings during the month of October, compared to 182,561 across all occupations.
# Agriculture, Food, & Natural Resources

## Northwest

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

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

### Origin Occupations

<table>
<thead>
<tr>
<th>Likely</th>
<th>Aligned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmworkers &amp; Laborers, Crop &amp; Nursery</td>
<td>Compliance Officers</td>
</tr>
<tr>
<td>Landscaping &amp; Groundskeeping Workers (HD, AG)</td>
<td>Laborers and Freight Movers</td>
</tr>
<tr>
<td>Food Batchmakers (HD)</td>
<td>Stockers and Order Fillers</td>
</tr>
<tr>
<td>Farmworkers, Farm, Ranch, &amp; Aquacultural Animals</td>
<td></td>
</tr>
<tr>
<td>Meat, Poultry, &amp; Fish Cutters &amp; Trimmers (HD)</td>
<td></td>
</tr>
</tbody>
</table>
### Agriculture, Food, & Natural Resources

#### Northeast

<table>
<thead>
<tr>
<th>Origin Occupations</th>
<th>Likely</th>
<th>Aligned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landscaping &amp; Groundskeeping Workers (HD)</td>
<td>Compliance Officers</td>
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</tr>
<tr>
<td>Animal Caretakers (HD)</td>
<td>Laborers &amp; Freight Movers</td>
<td></td>
</tr>
<tr>
<td>Veterinary Techs (HS, HD, OG)</td>
<td>Stockers &amp; Order Fillers</td>
<td></td>
</tr>
<tr>
<td>Bakers (HD)</td>
<td>Cooks</td>
<td></td>
</tr>
<tr>
<td>Farmworkers &amp; Laborers, Crop, Nursery, &amp; Greenhouse (HD)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Gateway Occupations
- Refuse & Recyclable Material Collectors (HD)
- Logging Equipment Operators (HD)
- Chefs & Head Cooks (HD, AG)
- Tree Trimmers & Pruners
- Forest & Conservation Technicians (HS, HD)

#### Target Occupations (all HW, HD, HS)
- Chemical Technicians
- Veterinarians (OG, AG)
- Biological Science Teachers, Postsecondary (OG)
- Life, Physical, & Social Science Technicians
- Biochemists & Biophysicists
## Agriculture, Food, & Natural Resources

### High Location Quotient

<table>
<thead>
<tr>
<th>Northeast</th>
<th>Northwest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region: $52,500</td>
<td>Region: $50,500</td>
</tr>
<tr>
<td>Field: $55,200</td>
<td>Field: $51,400</td>
</tr>
<tr>
<td>Region: 3.2%</td>
<td>Region: 2.8%</td>
</tr>
<tr>
<td>Field: 2.9%</td>
<td>Field: 2.4%</td>
</tr>
</tbody>
</table>

- **Northeast**
  - Mining & Geological Engineers
  - Logging Equipment Operators
  - Logging Workers, Other
  - Fallers
  - Foresters
  - Landscaping & Groundkeeping Workers
  - Animal Carotakers
  - Veterinary Technicians
  - Bakers
  - Farmworkers & Laborers, Crop, Nursery, & Greenhouse
  - Refuse & Recyclable Material Collectors
  - Logging Equipment Operators
  - Chefs & Head Cooks
  - Tree Trimmers & Pruners
  - Forest & Conservation Technicians
  - Chemical Technicians
  - Veterinarians
  - Biological Science Teachers, Postsecondary
  - Life, Physical, & Social Science Technicians
  - Biochemists & Biophysicists

- **Northwest**
  - Farmworkers & Laborers
  - Landscaping & Groundkeeping Workers
  - Food Batchmakers
  - Farmworkers, Farm, Ranch & Aquacultural Animals
  - Meat, Poultry, & Fish Cutters
  - Farm Equipment Mechanics
  - Supervisors of Farming, Fishing & Forestry Workers
  - Refuse & Recyclable Material Collectors
  - Tree Trimmers & Pruners
  - Logging Equipment Operators
  - Veterinarians
  - Urban & Regional Planners
  - Food Scientists & Technologists
  - Biological Science Teachers, Postsecondary
  - Aircraft Mechanics & Service Technicians
Summary and Discussion
What piece of the data surprised, inspired, validated, or challenged you?
Discussion Question 2

From your perspective, what are the most important considerations in these data for Career and Technical Education programs?
What is one barrier that you can help remove for BIPOC students?
What additional information will you seek out next?
Discussion Question 5

What changes or evaluations to your program will you prioritize next as a result of this data?
Thank you!

If you have questions about this report, please contact:
Erin Olson, Director of Strategic Research,
erin@realtimetalentmn.org
Appendix