

# *Using Data and Information to Align Economic and Workforce Development in the Mining Sector*

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# Nevada's Economic Development Sectors

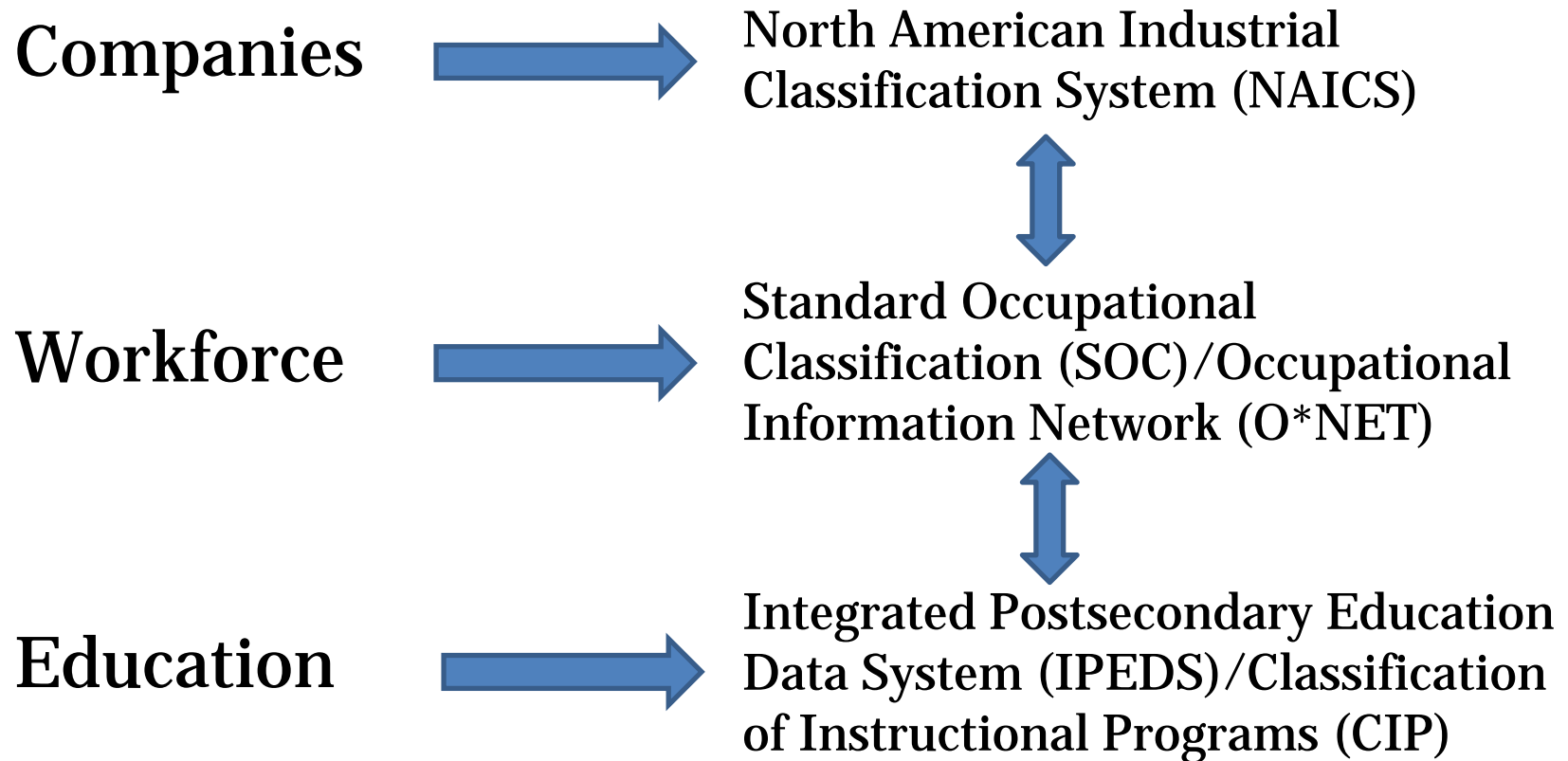
| Sector                                     | Number of Jobs | Percent of All Nevada Jobs | Average Annual Wage* | Jobs Multiplier | Location Quotient | Percent above or below National Concentration |
|--|----------------|----------------------------|----------------------|-----------------|-------------------|---|
| Aerospace and Defense                      | 13,110         | 1.0%                       | \$96,207             | 2.04            | 0.67              | -33%  |
| Business Information Technology Ecosystems | 59,367         | 4.5%                       | \$55,949             | 2.11            | 0.67              | -33%  |
| Health and Medical Services                | 106,222        | 8.1%                       | \$65,123             | 1.81            | 0.66              | -34%  |
| Manufacturing and Logistics                | 116,631        | 8.9%                       | \$69,497             | 2.68            | 0.59              | -41%  |
| Natural Resources                          | 49,052         | 3.8%                       | \$76,333             | 2.69            | 0.63              | -37%  |
| <b>Mining</b>                              | <b>14,028</b>  | <b>1.1%</b>                | <b>\$107,221</b>     | <b>2.29</b>     | <b>2.35</b>       | <b>135%</b>                                   |
| Tourism, Gaming, and Entertainment         | 408,856        | 31.3%                      | \$37,047             | 1.82            | 2.45              | 145%  |

\*The average earnings per worker in the region. Includes wages, salaries, supplements (additional employee benefits), and proprietor income.

# *Strategic Location Drivers*

- Availability of a Qualified Workforce
- Competitive Cost Environment
  - Labor, Utilities, Real Estate, Transportation, Taxes
- Favorable Logistics/Accessibility
  - Air, Highway, Rail, Port
- Favorable Business Environment
  - Taxes, Incentives, Permitting
- Quality of place
  - Ability to recruit/relocate key workforce

# *The Economic and Workforce Information and Data Pipeline*



# *Tying Economic and Workforce Development Together*

## Identifying high demand occupations

- Employment Projections
- Burning Glass Technologies
- Target Sector approach
- Job Openings
- Brookings STEM Score

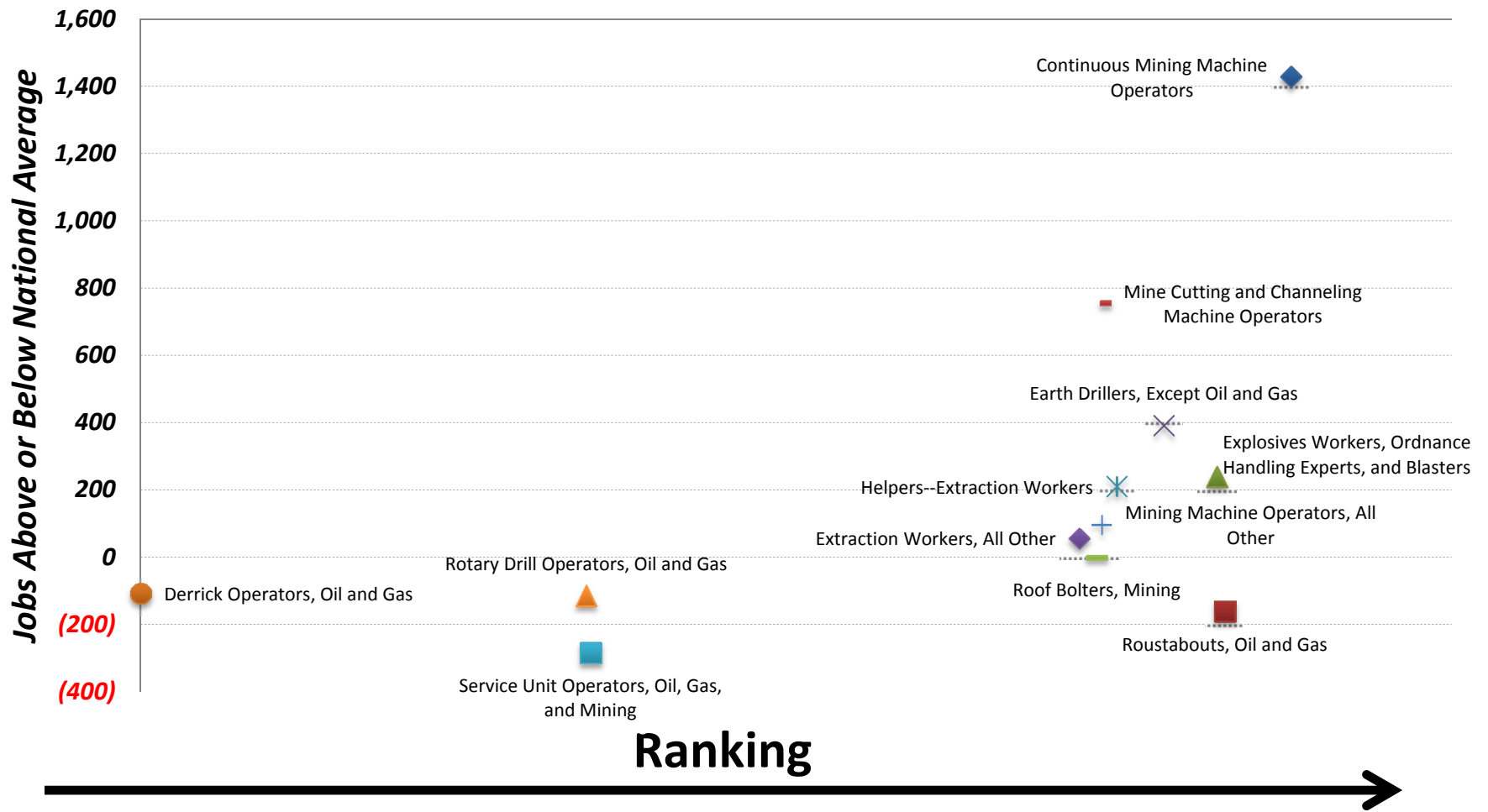
# Top 20 High Demand Mining Occupation Groups

## Typical Entry Level Education/On-The-Job Training

|   |
|---|
| Bachelor's degree   |
| Associate's degree/Postsecondary non-degree award           |
| High school diploma/Postsecondary non-degree award with OJT |
| High school diploma/Less than high school with OJT          |

| Occupation Group Description  | Consensus Rank | 2016 Jobs | Jobs Above or Below National Average | Median Hourly Earnings |   |
|---|----------------|-----------|--------------------------------------|------------------------|---|
| Extraction Workers  | 1              | 3,916     | 2,154                                | \$26.71                | ← |
| Other Installation, Maintenance, and Repair Occupations               | 2              | 1,156     | 89                                   | \$22.82                | ← |
| Other Production Occupations  | 3              | 1,030     | (978)                                | \$15.74                | ← |
| Construction Trades Workers   | 4              | 934       | 188                                  | \$22.26                |   |
| Drafters, Engineering Technicians, and Mapping Technicians            | 5              | 255       | (76)                                 | \$27.29                |   |
| Material Moving Workers   | 6              | 635       | (53)                                 | \$13.12                |   |
| Metal Workers and Plastic Workers                                     | 7              | 288       | (445)                                | \$17.30                |   |
| Business Operations Specialists                                       | 8              | 182       | (78)                                 | \$27.40                |   |
| Engineers   | 9              | 508       | (621)                                | \$40.73                | ← |
| Vehicle and Mobile Equipment Mechanics, Installers, and Repairers     | 10             | 1,195     | (14)                                 | \$22.77                |   |
| Material Recording, Scheduling, Dispatching, and Distributing Workers | 11             | 162       | 12                                   | \$15.10                |   |
| Life, Physical, and Social Science Technicians                        | 12             | 448       | (9)                                  | \$22.74                |   |
| Supervisors of Installation, Maintenance, and Repair Workers          | 13             | 222       | (55)                                 | \$33.65                |   |
| Top Executives  | 14             | 177       | (14)                                 | \$42.62                |   |
| Other Management Occupations  | 15             | 126       | 11                                   | \$37.29                |   |
| Supervisors of Production Workers                                     | 16             | 268       | (273)                                | \$27.55                |   |
| Operations Specialties Managers                                       | 17             | 122       | (37)                                 | \$41.66                |   |
| Motor Vehicle Operators   | 18             | 1,017     | 142                                  | \$16.35                |   |
| Financial Specialists   | 19             | 39        | (15)                                 | \$27.83                |   |
| Secretaries and Administrative Assistants                             | 20             | 95        | (51)                                 | \$18.76                |   |

# Drilling Down into the Detail: Extraction Workers

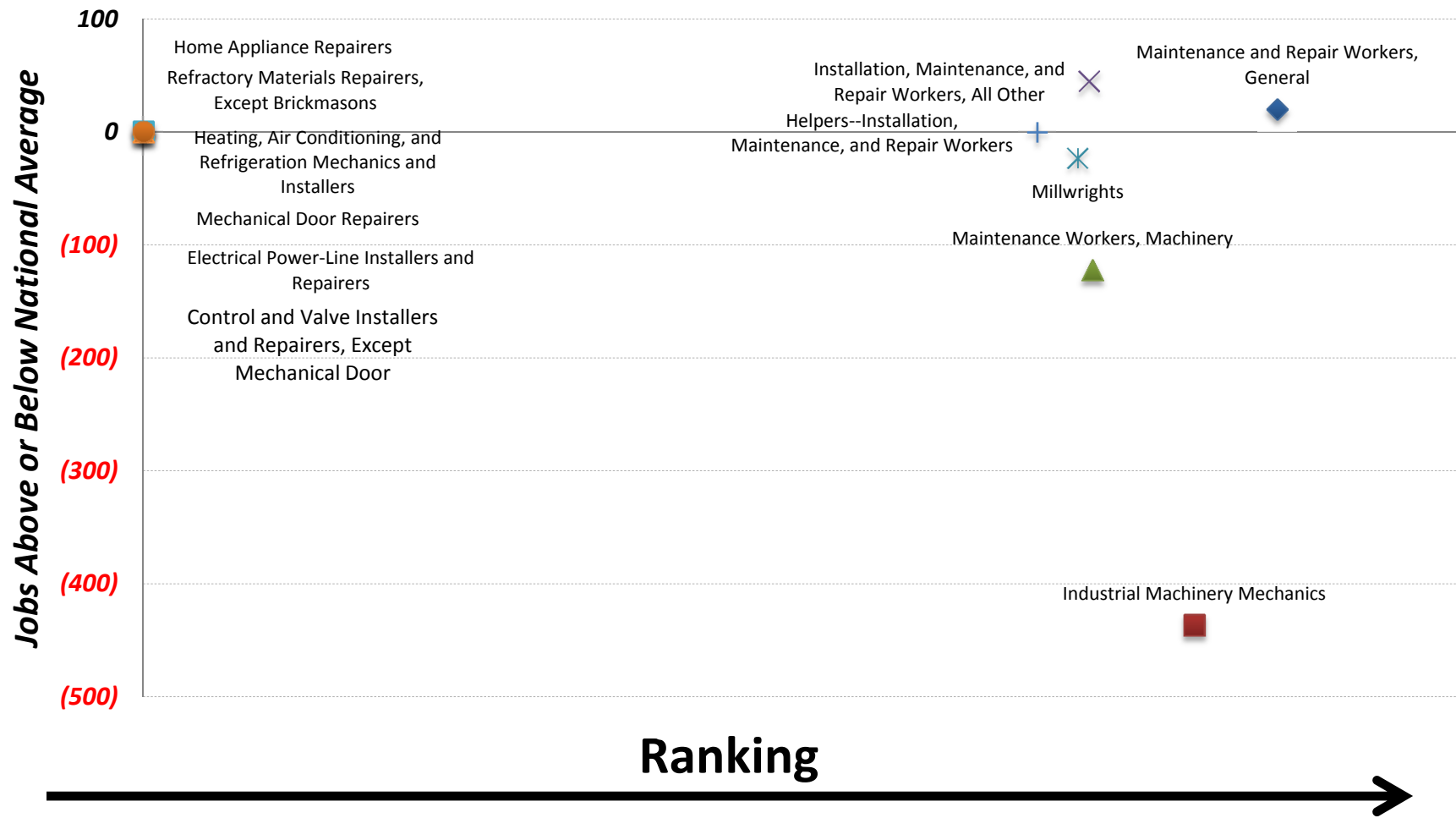


# Drilling Down into the Detail: Extraction Workers

| Occupation Description                                      | Consensus Rank | Jobs  | Median Hourly Earnings | Jobs Above or Below National Average | Typical Entry Level Education     | Typical On-The-Job Training       |
|---|----------------|-------|------------------------|--------------------------------------|-----------------------------------|-----------------------------------|
| Continuous Mining Machine Operators                         | 42             | 1,515 | \$28.79                | 1,427                                | No formal educational credential  | Moderate-term on-the-job training |
| Roustabouts, Oil and Gas                                    | 49             | 30    | \$16.66                | (161)                                | No formal educational credential  | Moderate-term on-the-job training |
| Explosives Workers, Ordnance Handling Experts, and Blasters | 52             | 292   | \$28.07                | 239                                  | High school diploma or equivalent | Long-term on-the-job training     |
| Earth Drillers, Except Oil and Gas                          | 55             | 516   | \$26.72                | 392                                  | High school diploma or equivalent | Moderate-term on-the-job training |
| Helpers--Extraction Workers                                 | 60             | 369   | \$17.80                | 209                                  | High school diploma or equivalent | Moderate-term on-the-job training |
| Mining Machine Operators, All Other                         | 61             | 116   | \$27.82                | 96                                   | High school diploma or equivalent | Moderate-term on-the-job training |
| Mine Cutting and Channeling Machine Operators               | 62             | 807   | \$27.61                | 755                                  | High school diploma or equivalent | Moderate-term on-the-job training |
| Roof Bolters, Mining  | 63             | 39    | \$30.27                | (1)                                  | High school diploma or equivalent | Moderate-term on-the-job training |
| Extraction Workers, All Other                               | 65             | 91    | \$30.21                | 56                                   | High school diploma or equivalent | Moderate-term on-the-job training |
| Service Unit Operators, Oil, Gas, and Mining                | 67             | 48    | \$21.33                | (284)                                | No formal educational credential  | Moderate-term on-the-job training |
| Rotary Drill Operators, Oil and Gas                         | 68             | 48    | \$25.76                | (116)                                | No formal educational credential  | Moderate-term on-the-job training |
| Derrick Operators, Oil and Gas                              | 69             | 21    | \$25.69                | (109)                                | No formal educational credential  | Short-term on-the-job training    |



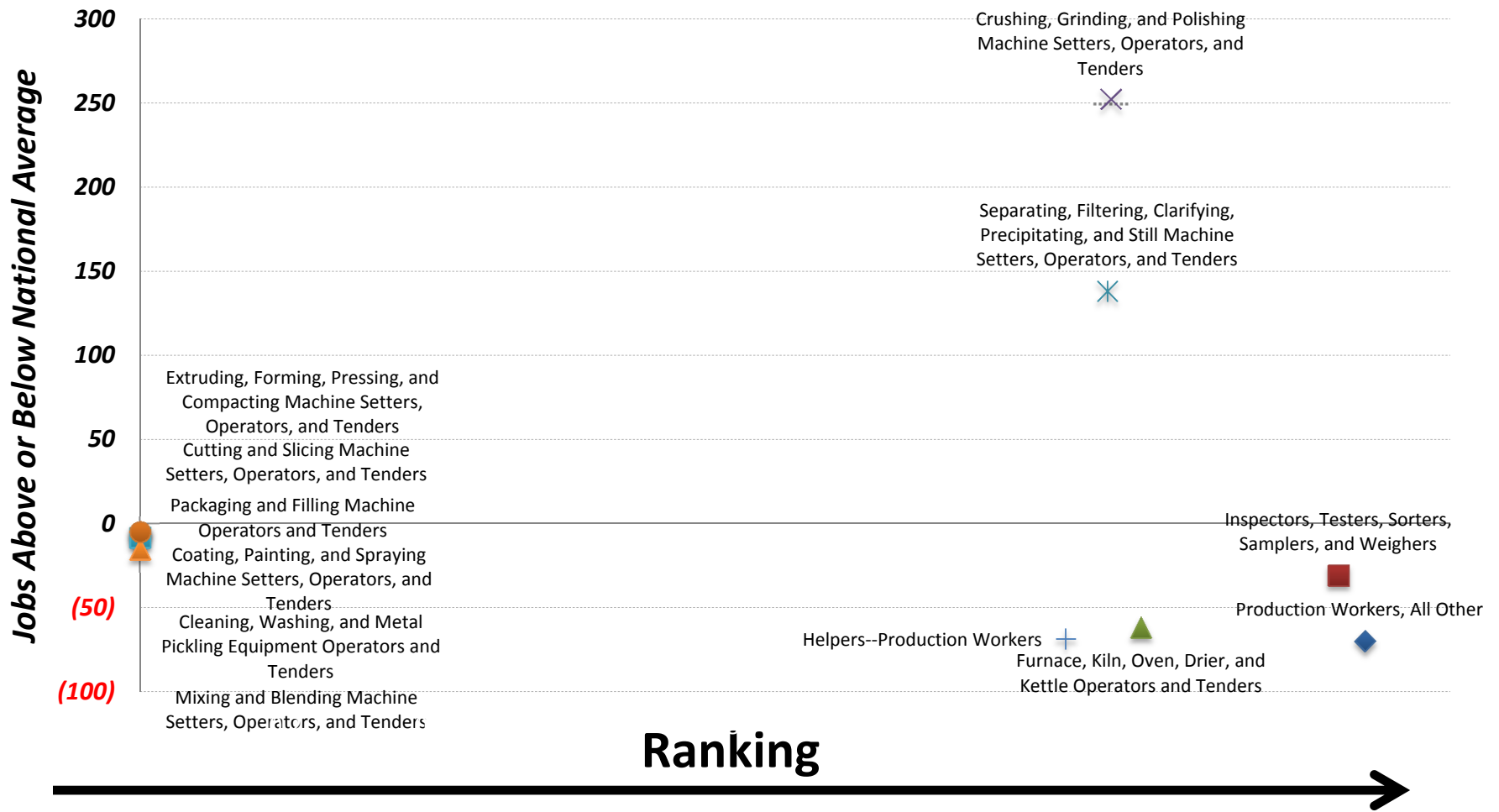
# Drilling Down into the Detail: Other Installation, Maintenance, and Repair Occupations



# Drilling Down into the Detail: Other Installation, Maintenance, and Repair Occupations

| Occupation Description   | Consensus Rank | Jobs | Median Hourly Earnings | Jobs Above or Below National Average | Typical Entry Level Education     | Typical On-The-Job Training       |
|--|----------------|------|------------------------|--------------------------------------|-----------------------------------|-----------------------------------|
| Maintenance and Repair Workers, General                              | 6              | 213  | \$21.82                | 20                                   | High school diploma or equivalent | Long-term on-the-job training     |
| Industrial Machinery Mechanics                                       | 20             | 487  | \$27.44                | (437)                                | High school diploma or equivalent | Long-term on-the-job training     |
| Maintenance Workers, Machinery Installation, Maintenance, and Repair | 35             | 198  | \$25.09                | (122)                                | High school diploma or equivalent | Moderate-term on-the-job training |
| Workers, All Other   | 36             | 100  | \$23.95                | 45                                   | High school diploma or equivalent | Moderate-term on-the-job training |
| Millwrights  | 38             | 51   | \$23.87                | (23)                                 | High school diploma or equivalent | Apprenticeship                    |
| Helpers--Installation, Maintenance, and Repair Workers               | 46             | 91   | \$14.55                | (0)                                  | High school diploma or equivalent | Short-term on-the-job training    |

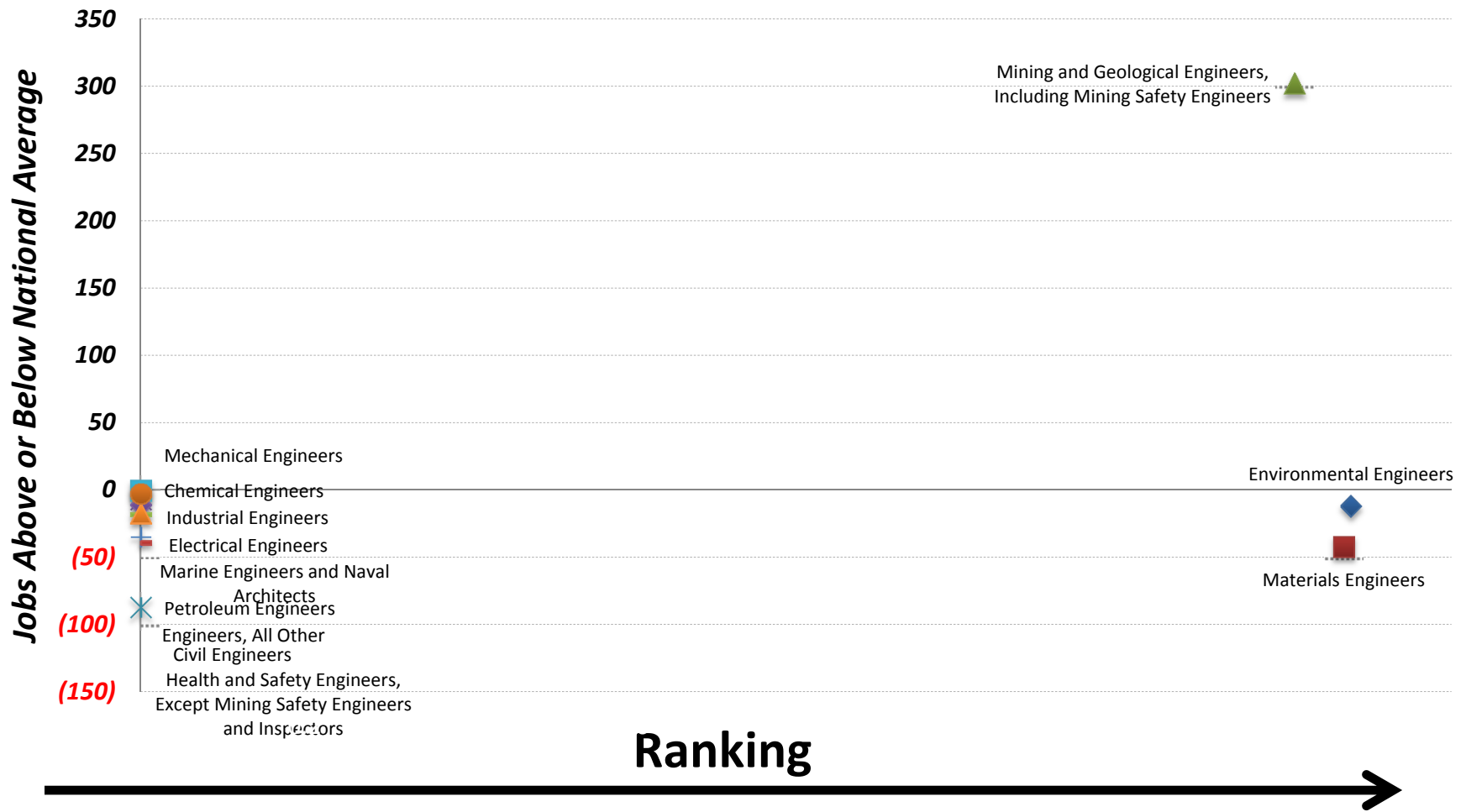
# Drilling Down into the Detail: Other Production Occupations



# Drilling Down into the Detail: Other Production Occupations

| Occupation Description  | Consensus Rank | Jobs | Median Hourly Earnings | Jobs Above or Below National Average | Typical Entry Level Education     | Typical On-The-Job Training       |
|---|----------------|------|------------------------|--------------------------------------|-----------------------------------|-----------------------------------|
| Production Workers, All Other   | 11             | 66   | \$19.37                | (70)                                 | High school diploma or equivalent | Moderate-term on-the-job training |
| Inspectors, Testers, Sorters, Samplers, and Weighers  | 16             | 35   | \$14.91                | (31)                                 | High school diploma or equivalent | Moderate-term on-the-job training |
| Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders  | 44             | 35   | \$23.16                | (62)                                 | High school diploma or equivalent | Moderate-term on-the-job training |
| Crushing, Grinding, and Polishing Machine Setters, Operators, and Separating, Filtering, Clarifying, Precipitating, and Still Machine | 47             | 427  | \$21.79                | 252                                  | High school diploma or equivalent | Moderate-term on-the-job training |
| Helpers--Production Workers   | 48             | 371  | \$23.78                | 138                                  | High school diploma or equivalent | Moderate-term on-the-job training |
| Mixing and Blending Machine Setters, Operators, and Tenders   | 54             | 75   | \$11.51                | (68)                                 | No formal educational credential  | Short-term on-the-job training    |
| Cutting and Slicing Machine Setters, Operators, and Tenders   | 69             | 5    | \$16.17                | (5)                                  | High school diploma or equivalent | Moderate-term on-the-job training |
| Extruding, Forming, Pressing, and Compacting Machine Setters, Packaging and Filling Machine Operators and Tenders                     | 69             | 5    | \$18.26                | (7)                                  | High school diploma or equivalent | Short-term on-the-job training    |
| Coating, Painting, and Spraying Machine Setters, Operators, and Cleaning, Washing, and Metal Pickling Equipment Operators and Tenders | 69             | 5    | \$14.26                | (10)                                 | High school diploma or equivalent | Moderate-term on-the-job training |
|   | 69             | 5    | \$13.24                | (8)                                  | High school diploma or equivalent | Moderate-term on-the-job training |
|   | 69             | 5    | \$13.77                | (15)                                 | High school diploma or equivalent | Moderate-term on-the-job training |
|   | 69             | 5    | \$13.64                | (5)                                  | No formal educational credential  | Moderate-term on-the-job training |

# Drilling Down into the Detail: Engineers



## Drilling Down into the Detail: Engineers

| Occupation Description   | Consensus Rank | Jobs | Median Hourly Earnings | Jobs Above or Below National Average | Typical Entry Level Education | Typical On-The-Job Training |
|--|----------------|------|------------------------|--------------------------------------|-------------------------------|-----------------------------|
| Environmental Engineers  | 30             | 34   | \$40.34                | (12)                                 | Bachelor's degree             | None                        |
| Materials Engineers  | 32             | 42   | \$43.08                | (42)                                 | Bachelor's degree             | None                        |
| Mining and Geological Engineers, Including Mining Safety Engineers | 41             | 352  | \$42.68                | 302                                  | Bachelor's degree             | None                        |
| Civil Engineers  | 69             | 23   | \$40.23                | (7)                                  | Bachelor's degree             | None                        |
| Petroleum Engineers  | 69             | 20   | \$35.69                | (87)                                 | Bachelor's degree             | None                        |
| Industrial Engineers   | 69             | 16   | \$37.60                | (35)                                 | Bachelor's degree             | None                        |
| Mechanical Engineers   | 69             | 13   | \$36.02                | (39)                                 | Bachelor's degree             | None                        |
| Chemical Engineers   | 69             | 5    | \$43.15                | (18)                                 | Bachelor's degree             | None                        |
| Electrical Engineers   | 69             | 5    | \$41.52                | (11)                                 | Bachelor's degree             | None                        |
| Health and Safety Engineers, Except Mining Safety Engineers and    | 69             | 5    | \$36.29                | (1)                                  | Bachelor's degree             | None                        |
| Marine Engineers and Naval Architects                              | 69             | 5    | \$29.92                | (17)                                 | Bachelor's degree             | None                        |
| Engineers, All Other   | 69             | 5    | \$48.15                | (3)                                  | Bachelor's degree             | None                        |

# Top 25 High Demand Occupations in the Mining Sector by Consensus Rank

| Description  | Consensus Rank | 2016 Jobs | Median Hourly Earnings | Jobs Above or Below National Average | Typical Entry Level Education     | Typical On-The-Job Training       |
|--|----------------|-----------|------------------------|--------------------------------------|-----------------------------------|-----------------------------------|
| First-Line Supervisors of Mechanics, Installers, and Repairers | 1              | 222       | \$33.65                | (55)                                 | High school diploma or equivalent | None                              |
| Electricians   | 2              | 269       | \$27.04                | 28                                   | High school diploma or equivalent | Apprenticeship                    |
| General and Operations Managers                                | 3              | 168       | \$40.00                | (5)                                  | Bachelor's degree                 | None                              |
| Managers, All Other  | 4              | 63        | \$44.32                | 22                                   | Bachelor's degree                 | None                              |
| First-Line Supervisors of Production and Operating Workers     | 5              | 268       | \$27.55                | (273)                                | High school diploma or equivalent | None                              |
| Maintenance and Repair Workers, General                        | 6              | 213       | \$21.82                | 20                                   | High school diploma or equivalent | Long-term on-the-job training     |
| Construction Laborers  | 7              | 227       | \$17.82                | (1)                                  | No formal educational credential  | Short-term on-the-job training    |
| Purchasing Agents, Except Wholesale, Retail, and Far           | 8              | 48        | \$25.28                | (10)                                 | Bachelor's degree                 | Long-term on-the-job training     |
| Industrial Production Managers                                 | 9              | 60        | \$38.09                | (57)                                 | Bachelor's degree                 | None                              |
| Engineering Technicians, Except Drafters, All Other            | 10             | 63        | \$31.92                | (37)                                 | Associate's degree                | None                              |
| Production Workers, All Other                                  | 11             | 66        | \$19.37                | (70)                                 | High school diploma or equivalent | Moderate-term on-the-job training |
| Electrical and Electronics Engineering Technicians             | 12             | 91        | \$32.26                | (11)                                 | Associate's degree                | None                              |
| Bus and Truck Mechanics and Diesel Engine Specialists          | 13             | 236       | \$26.09                | (82)                                 | High school diploma or equivalent | Long-term on-the-job training     |
| Mobile Heavy Equipment Mechanics, Except Engines               | 14             | 925       | \$29.68                | 377                                  | High school diploma or equivalent | Long-term on-the-job training     |
| Heavy and Tractor-Trailer Truck Drivers                        | 15             | 997       | \$22.41                | (405)                                | Postsecondary nondegree award     | Short-term on-the-job training    |
| Inspectors, Testers, Sorters, Samplers, and Weighers           | 16             | 35        | \$14.91                | (31)                                 | High school diploma or equivalent | Moderate-term on-the-job training |
| Accountants and Auditors                                       | 17             | 37        | \$27.27                | (12)                                 | Bachelor's degree                 | None                              |
| Production, Planning, and Expediting Clerks                    | 18             | 39        | \$19.38                | (27)                                 | High school diploma or equivalent | Moderate-term on-the-job training |
| Secretaries and Administrative Assistants, Except Legal        | 19             | 81        | \$17.21                | (39)                                 | High school diploma or equivalent | Short-term on-the-job training    |
| Industrial Machinery Mechanics                                 | 20             | 487       | \$27.44                | (437)                                | High school diploma or equivalent | Long-term on-the-job training     |
| Laborers and Freight, Stock, and Material Movers, Hand         | 21             | 155       | \$12.79                | 4                                    | No formal educational credential  | Short-term on-the-job training    |
| Training and Development Specialists                           | 22             | 38        | \$25.20                | (6)                                  | Bachelor's degree                 | None                              |
| Human Resources Specialists                                    | 23             | 35        | \$24.21                | (15)                                 | Bachelor's degree                 | None                              |
| Bookkeeping, Accounting, and Auditing Clerks                   | 24             | 54        | \$17.52                | (11)                                 | Some college, no degree           | Moderate-term on-the-job training |
| Industrial Truck and Tractor Operators                         | 25             | 50        | \$16.77                | (31)                                 | No formal educational credential  | Short-term on-the-job training    |

# Top 25 High Demand Mining Occupations Sorted by Jobs Below National Average

| Description  | Consensus Rank | 2016 Jobs | Median Hourly Earnings | Jobs Above or Below National Average | Typical Entry Level Education     | Typical On-The-Job Training       |
|--|----------------|-----------|------------------------|--------------------------------------|-----------------------------------|-----------------------------------|
| Industrial Machinery Mechanics                           | 20             | 487       | \$27.44                | (437)                                | High school diploma or equivalent | Long-term on-the-job training     |
| Heavy and Tractor-Trailer Truck Drivers                  | 15             | 997       | \$22.41                | (405)                                | Postsecondary nondegree award     | Short-term on-the-job training    |
| Service Unit Operators, Oil, Gas, and Mining             | 67             | 48        | \$21.33                | (284)                                | No formal educational credential  | Moderate-term on-the-job training |
| First-Line Supervisors of Production and Operating Wor   | 5              | 268       | \$27.55                | (273)                                | High school diploma or equivalent | None                              |
| Roustabouts, Oil and Gas                                 | 49             | 30        | \$16.66                | (161)                                | No formal educational credential  | Moderate-term on-the-job training |
| Maintenance Workers, Machinery                           | 35             | 198       | \$25.09                | (122)                                | High school diploma or equivalent | Moderate-term on-the-job training |
| Rotary Drill Operators, Oil and Gas                      | 68             | 48        | \$25.76                | (116)                                | No formal educational credential  | Moderate-term on-the-job training |
| Welders, Cutters, Solderers, and Brazers                 | 31             | 132       | \$19.85                | (110)                                | High school diploma or equivalent | Moderate-term on-the-job training |
| Derrick Operators, Oil and Gas                           | 69             | 21        | \$25.69                | (109)                                | No formal educational credential  | Short-term on-the-job training    |
| Operating Engineers and Other Construction Equipmen      | 37             | 344       | \$25.97                | (90)                                 | High school diploma or equivalent | Moderate-term on-the-job training |
| Petroleum Engineers                                      | 69             | 20        | \$35.69                | (87)                                 | Bachelor's degree                 | None                              |
| Bus and Truck Mechanics and Diesel Engine Specialis      | 13             | 236       | \$26.09                | (82)                                 | High school diploma or equivalent | Long-term on-the-job training     |
| Production Workers, All Other                            | 11             | 66        | \$19.37                | (70)                                 | High school diploma or equivalent | Moderate-term on-the-job training |
| Helpers--Production Workers                              | 54             | 75        | \$11.51                | (68)                                 | No formal educational credential  | Short-term on-the-job training    |
| Furnace, Kiln, Oven, Drier, and Kettle Operators and Te  | 44             | 35        | \$23.16                | (62)                                 | High school diploma or equivalent | Moderate-term on-the-job training |
| Industrial Production Managers                           | 9              | 60        | \$38.09                | (57)                                 | Bachelor's degree                 | None                              |
| First-Line Supervisors of Mechanics, Installers, and Rej | 1              | 222       | \$33.65                | (55)                                 | High school diploma or equivalent | None                              |
| Wellhead Pumpers   | 69             | 5         | \$26.57                | (51)                                 | High school diploma or equivalent | Moderate-term on-the-job training |
| Mine Shuttle Car Operators                               | 69             | 5         | \$27.51                | (43)                                 | No formal educational credential  | Short-term on-the-job training    |
| Materials Engineers                                      | 32             | 42        | \$43.08                | (42)                                 | Bachelor's degree                 | None                              |
| Engine and Other Machine Assemblers                      | 69             | 5         | \$18.75                | (41)                                 | High school diploma or equivalent | Moderate-term on-the-job training |
| Secretaries and Administrative Assistants, Except Legi   | 19             | 81        | \$17.21                | (39)                                 | High school diploma or equivalent | Short-term on-the-job training    |
| Mechanical Engineers                                     | 69             | 13        | \$36.02                | (39)                                 | Bachelor's degree                 | None                              |
| Engineering Technicians, Except Drafters, All Other      | 10             | 63        | \$31.92                | (37)                                 | Associate's degree                | None                              |
| Machinists   | 69             | 15        | \$17.17                | (35)                                 | High school diploma or equivalent | Long-term on-the-job training     |



# Questions for Sector Council Members

## In your experience:

1. Which of the discussed occupations do you find most difficult to fill?
2. Which of these occupations do you believe will increase in demand because of new and emerging industry trends?
  - Please share your rationale.
3. Do you believe the typical entry education and experience levels identified by the Bureau of Labor Statistics are correct?
  - If not, please share the specific education (i.e., certification program, degree, etc.) and experience you typically look for when sourcing talent within your sector.

# ***Governors Office of Economic Development***

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