PREPARING FOR PORTS SITE REINDUSTRIALIZATION

WORKFORCE READY: AN ANALYSIS OF WORKFORCE STRENGTH IN THE OVRDC REGION

PREPARED BY

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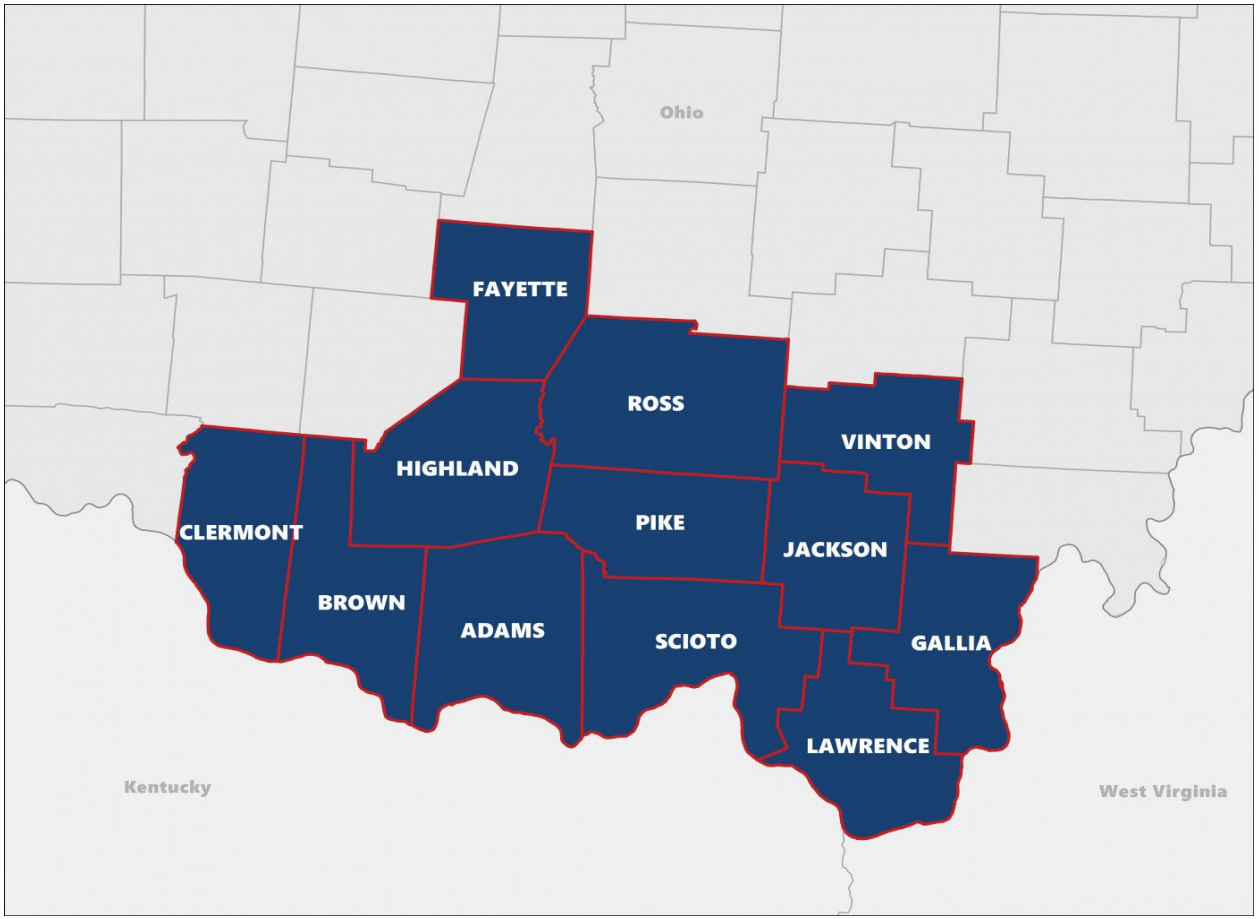
OVRDC Region map

Source: Ohio Valley Regional Development Commission. Retrieved from https:// www. ovrdc. org/ about



1. Understanding OVRDC's Workforce Specialization

OVRDC region

12 counties in southern Ohio population 660,812 (2022)

Data

IMPLAN Occupational Data 2022.*

Total employed workforce

~214,890 (2022)

(Ages 16 and over)

Goal:

Identify workforce strengths and specialization

Method:

Location Quotient (LQ)

- ***IMPLAN Group LLC. (2022).*** *IMPLAN System (data and software), 2022 data, using inputs provided by the user, and IMPLAN Group LLC. Huntersville, NC. Accessed: 2025-02-25. Available at: https://www.implan.com*

Method: Location Quotient (LQ) analysis

$$LQ_i = \frac{\left(\frac{\text{Employment in occupation } i \text{ in OVRDC}}{\text{Total employment in OVRDC}}\right)}{\left(\frac{\text{Employment in occupation } i \text{ in Ohio}}{\text{Total employment in Ohio}}\right)}$$

- LQ_i represents the Location Quotient for occupation i.
- The numerator measures the share of occupation i in total employment within the OVRDC region.
- The denominator measures the share of occupation i in total employment within Ohio.

Workforce strengths and specialization

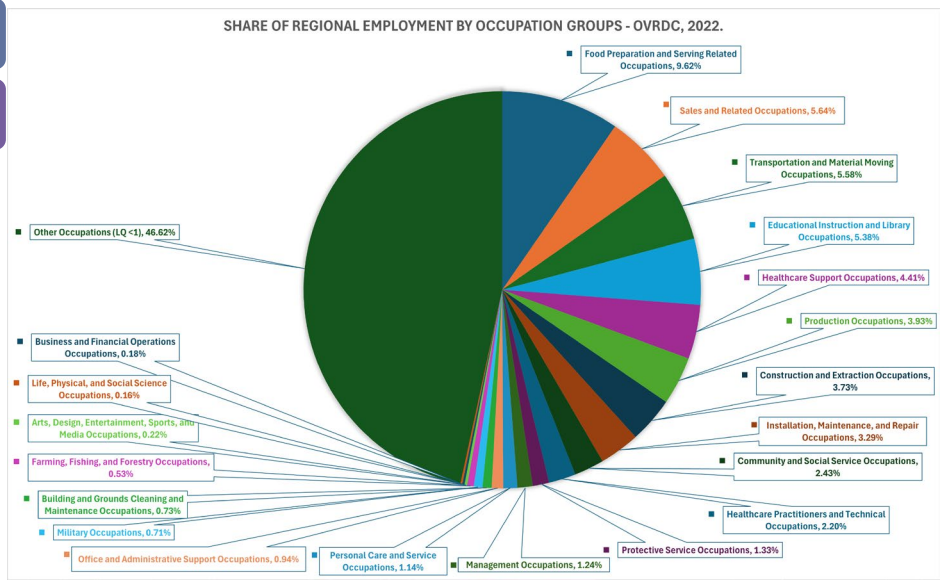
Total employment in the region: **214,890**. *(Ages 16 and over) in 844 occupations*

215 occupations with LQ > 1, totaling **114,704** jobs (**53.4%** of the region's employment) LQ analysis applied to occupations with 50 or more job holders.

Most concentrated groups:

- **Food Preparation & Serving jobs**: 20,680 jobs (9.6%)
- **Sales and related**: 12,115 jobs (5.6%)
- **Transportation & Material Moving jobs**: 11,569 jobs (5.6%)
- **Education and Library jobs**: 8,484 jobs (3.93%)
- **Healthcare Support jobs**: 9,477 jobs (4.41%)
- **Production jobs**: 8,448 jobs (3.93%)
- **Construction and Extraction jobs**: 8,011 jobs (3.73%)
- **Installation, Maintenance, and Repair job**: 7,071 jobs (3.29%)
- **Community and Social Service jobs**: 5,217 jobs (2.43%)
- **Healthcare Practitioners and Technical jobs**: 4,722 jobs (2.20%)

Indicates strong regional capabilities in **hospitality**, **logistics**, **education**, **healthcare**, and **skilled trades** (manufacturing and construction)

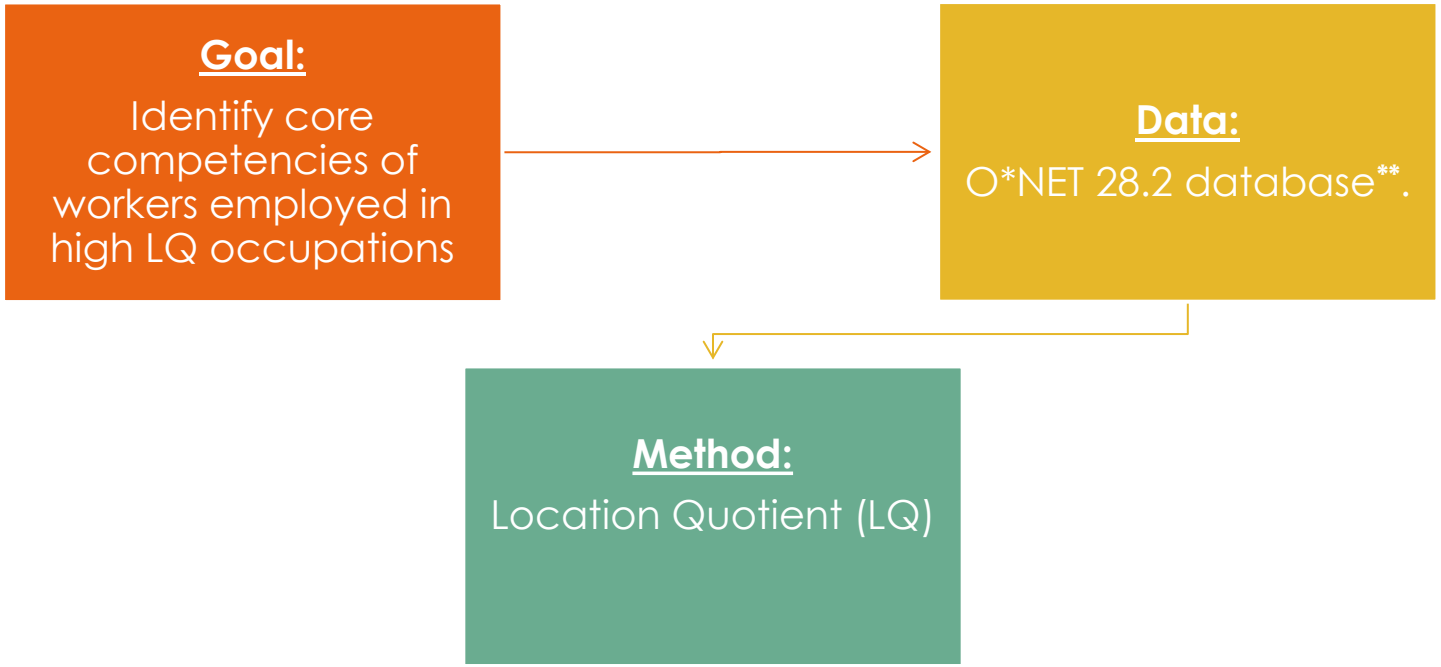


Top 20 industries in the OVRDC region

(by employment)

1. Food Services and Drinking Places
2. Ambulatory Health Care Services
3. Nursing and Residential Care Facilities
4. General Merchandise Stores
5. Social Assistance
6. Professional, Scientific, and Technical Services
7. Food and Beverage Stores
8. Administrative and Support Services
9. Transportation Equipment Manufacturing
10. Specialty Trade Contractors
11. Fabricated Metal Product Manufacturing
12. Motor Vehicle and Parts Dealers
13. Religious, Civic, and Professional Organizations
14. Merchant Wholesalers, Durable Goods
15. Machinery Manufacturing
16. Building Material and Garden Supply Stores
17. Food Manufacturing
18. Truck Transportation
19. Credit Intermediation and Related Activities
20. Management of Companies and Enterprises

2. Assessing The OVRDC Region Workforce Core Competencies



** ***O*NET database:*** *National Center for O*NET Development. O*NET 28.0 Database. O*NET Resource Center. Retrieved April 26, 2024, from https://www.onetcenter.org/database.html.*

Data

O*NET 28.2 database

- National Center for O*NET Development. O*NET 28.0 Database. O*NET Resource Center. Retrieved April 26, 2024, from https://www.onetcenter.org/database.html.

Contains 277 descriptors

- **Knowledge** *(33 descriptors)*
- **Skills** *(35 descriptors)*
- Work activities
- Job context
- Occupational requirements

Level Rating:

- Ranging from **1** *(no requirement)* to **7** *(mastery)*

Converting the original level rating to standardized scores

$$Score_{ij} = \frac{(O_{ij} - L_j)}{(H_j - L_j)} * 100$$

- For each occupation ***i*** and descriptor ***j***
  - ***Score*$_{ij}$** is the new standardized score
  - ***O*$_{ij}$** is the original level rating
  - ***L*$_j$** is the lowest original rating for descriptor ***j*** among all occupations with high LQ in OVRDC,
  - ***H*$_j$** is the highest original rating for descriptor j in the same set.

- **For example:**
- *If an occupation has a descriptor with an original level rating of 4, the highest rating for that descriptor is 7, and the lowest rating is 0.*
- ***New standardized score*** $= \frac{(4-0)}{(7-0)} \times 100 = 57$

Converting the original level rating to standardized scores

Why Standardizing Matters?

- Although the Level Rating ranges from 1 to 7, most descriptors (skills or knowledge) will not go up to 7.
- Let's look at two different skills from O*NET:
  - **Critical Thinking**
  - **Equipment Maintenance**

Skills	Max Rating in Jobs
Critical Thinking	Ranging from **0 to 5.75**. Some jobs, like **doctors** or **judges**, can have a **rating of 5.75**, meaning they need a very high level of Critical Thinking.
Equipment Maintenance	Usually does not exceed 4.75**.** For jobs like **mechanics** or **maintenance workers**, a **4.75** is the **highest rating** you'll ever see.

Converting the original level rating to standardized scores

The Problem:

- Let's consider the **critical thinking level rating of 4.75** and the **Equipment Maintenance level rating of 4.75**.
- Both skills are rated **4.75,** but **don't mean the same thing**.
- Someone with **Level 4.75** in **Equipment Maintenance** is a **top expert** in this skill.
- Someone with **Level 4.75** in **Critical Thinking** is **very strong**, but **not yet at the highest level**.
- **Standardized scores** help us **see who's at the top and** who has **room to grow**.

Skills (Original rating)	Standardized Score (0-100)
Critical Thinking (4.75/5.75)	≈ 82.6/100
Equipment Maintenance (4.75/4.75)	≈ 100/100

Table 2: OVRDC Workers' Top 10 Knowledge

Knowledge	Mean Standardized Score	SD	% High Level
Customer and Personal Service	58.45	21.93	0.68
Computers and Electronics	54.17	23.88	0.59
English Language	49.46	18.86	0.45
Administrative	48.94	21.90	0.46
Education and Training	46.21	21.99	0.39
Administration and Management	45.84	18.47	0.41
Mathematics (Knowledge)	45.12	17.00	0.36
Production and Processing	44.69	21.78	0.38
Personnel and Human Resources	40.92	20.25	0.28
Public Safety and Security	39.57	18.52	0.23

N=215. % High Level represents the percentage of occupations among the 215 occupations with a high Location Quotient (LQ) that have a standardized competency score exceeding 50.

Table 3: OVRDC Workers' Top 10 Skills

Skills	Mean Standardized Score	SD	% High Level
Instructing	63.55	17.48	0.72
Management of Personnel Resources	57.50	16.47	0.62
Coordination	57.32	24.17	0.51
Critical Thinking	55.81	24.81	0.54
Quality Control Analysis	54.76	23.26	0.60
Writing	53.70	23.00	0.56
Time Management	52.72	21.01	0.60
Service Orientation	49.53	23.88	0.48
Negotiation	48.30	23.86	0.44
Systems Analysis	47.89	22.04	0.46

N=215. % High Level represents the percentage of occupations among the 215 occupations with a high Location Quotient (LQ) that have a standardized competency score exceeding 50.

Method: Principal Component Analysis (PCA)

What is PCA?

- A method to **reduce the number of variables** in a dataset while keeping the most important information.
- It transforms the data into **new variables** called **principal components**.

Why do we use PCA?

- To make complex data **simpler** and **easier to understand**.
- Helps in **visualizing** high-dimensional data.
- Some skills or knowledge are related to one another. PCA is useful for removing **redundant or less important** variables while preserving essential information.

How does it work?

- Finds the directions (principal components) where the data varies the most.
- The **first principal component** captures the **most variation**, the **second** captures the next most, and so on.
- Each new component is a **combination** of the original variables.

Method: Principal Component Analysis (PCA)

- From **33 knowledge** descriptors and **35 skill descriptors**, we employed the PCA method to identify **8 Competency Domains** *(8 Principal Components)* driving the region:
  - 1. Leadership, Coordination & Decision-Making
  - 2. Engineering, Construction & Technical Design
  - 3. Manufacturing, Production & Quality Control
  - 4. Business, Finance & Administrative Management
  - 5. Education, Communication & Cultural Competency
  - 6. Science, Research & Healthcare Professions
  - 7. Technology, IT & Digital Skills
  - 8. Public Safety, Security & Law

Takeaways for Planning & Investment

The region has a well-established industrial base *(transportation, production, construction)* and a well-established healthcare base.

Emerging opportunities in IT, education, and digital transformation.

The region has a diverse and specialized labor force with strengths in **leadership**, **skilled trades**, **business administration**, **education**, **science**, **digital skills**, and **public safety.**

Some high LQ occupations *(Cashiers, manufacturing jobs)* might face future declines. Hence, there is a need for tailored education and upskilling strategies to align the workforce with emerging regional opportunities.