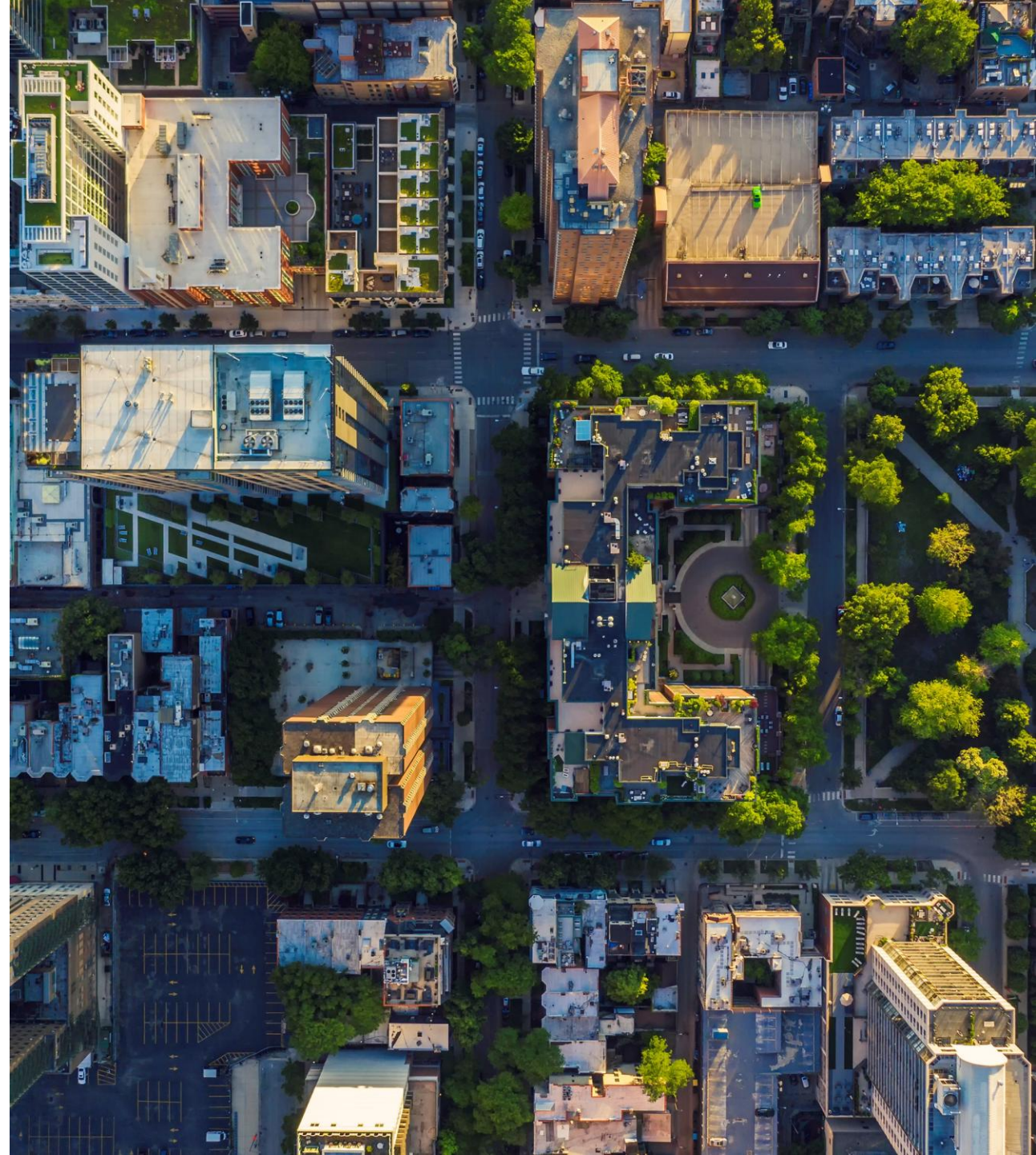


INDUSTRY CLUSTERS & THE ECONOMIC DEVELOPMENT TOOLBOX

NADO ATC 2026
JASON RITTENBERG



REASONS TO LEARN ABOUT REGIONAL INDUSTRY CLUSTERS

You have a limited budget for company recruitment and want to understand how to maximize your impact.

Your region is seeking greater economic diversification, and you need to identify your existing and emerging clusters.

Local education and workforce providers want to organize industry-driven training and need to know where to start.

A federal, state, or philanthropic funder wants to support a regional industry cluster, and you need to start with an assessment.

You think an industry gives your region a competitive edge, but you want to be able to benchmark its strength against your peers.

INTRODUCTIONS

- Name
- Region
- Something you watched or read recently and liked



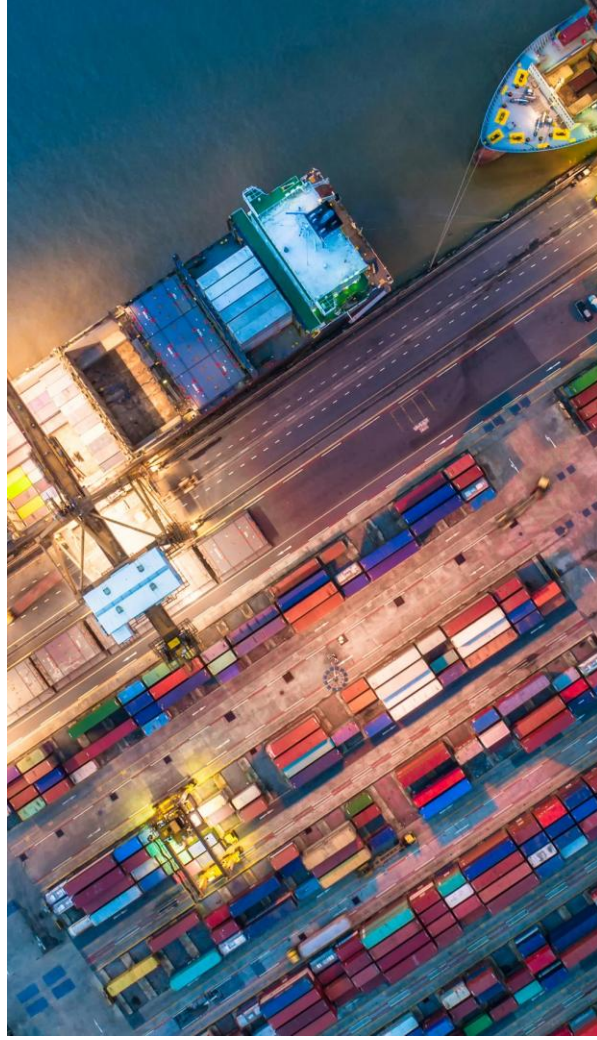
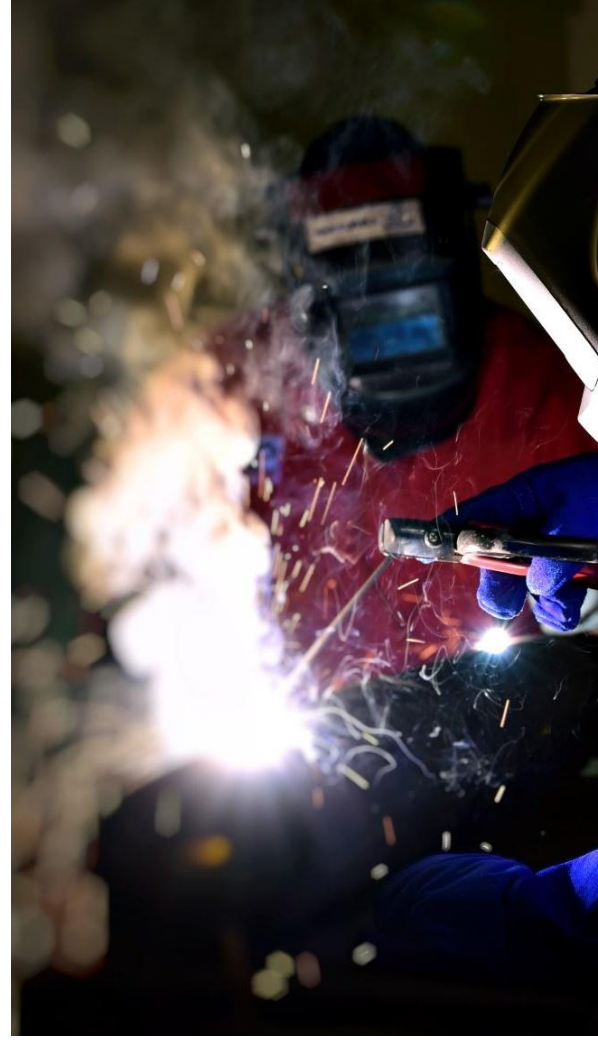
AGENDA

1. Define clusters
2. Identify clusters
3. Support clusters



HOW THE COURSE WAS BUILT

- Experience working with cluster development professionals
- Assessments of federal cluster funding
- Reviews of academic literature and regional reports
- Interviews with cluster leaders
- Testing with two cohorts of regional practitioners



DEFINE CLUSTERS

“The enduring competitive advantages in a global economy lie increasingly in local things—knowledge, relationships, motivation—that distant rivals cannot match.”

- Michael E. Porter

Porter, M.E. (1998). “Clusters and the New Economics of Competition.” *Harvard Business Review*, 76, 6, 77-90. Retrieved: <https://hbr.org/1998/11/clusters-and-the-new-economics-of-competition>.

WHAT IS A CLUSTER?

A cluster is a concentration of interconnected businesses, assets, and institutions operating in a sector (or related sectors) within a region.

WHAT IS A CLUSTER?

Location quotient is the most common tool to measure cluster "concentration." See session 2 for details.

Here, think of relevant tangible (e.g., research facilities) and intangible (e.g., skilled workforce) assets.

A cluster is a **concentration** of interconnected businesses, **assets**, and institutions operating in a sector (or **related sectors**) within a **region**.

Proximity to suppliers or to related fields that in different sectors are often important to cluster success. This is discussed more in later sessions.

The definition of region here is flexible but usually should be small enough for geographic proximity to be meaningful, such as a metro area or a small state.

BOSTON-CAMBRIDGE LIFE SCIENCES CLUSTER

One of the well-known U.S. clusters is biotech in Boston-Cambridge. The reputation is well-deserved:

- Nearly 20% of all U.S. biotech investments are made in the metro's startups.
- Cambridge's county has the greatest concentration of life sciences R&D employees in the U.S. (Boston's county also ranks in the top 15).
- The metro has the largest lab inventory by square feet in the country.

This sector has been the subject of regular, proactive policy and investment support from Massachusetts economic development initiatives, federal R&D, and local universities and nonprofits.

* Sources: Venture capital data from PitchBook. Concentration data from U.S. Bureau of Labor Statistics. Lab space from [CBRE](#).

EXAMPLES OF CLUSTERS

Well-known clusters include:

- Movie production in Hollywood
- App development in Silicon Valley
- Investment banking in New York City and London
- Lobster fishing in Maine
- Leatherworking in Northern Italy
- Winemaking in Western France

Caveats:

- These examples are illustrative to help define clusters – not as models to copy in your region.
- Each cluster can be unique, even if within the same industry.
- Focus on what exists and can be built in your region, not on replicating activity elsewhere.

ECONOMIC BENEFITS OF CLUSTERS

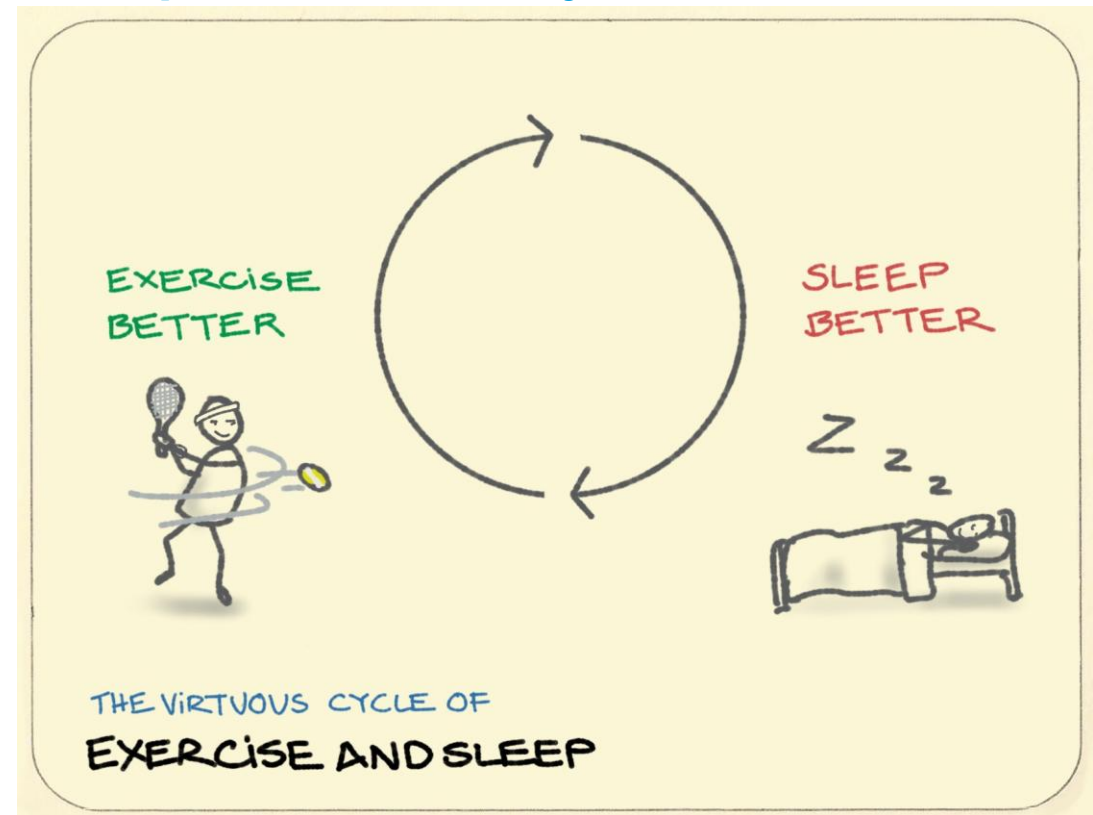
When compared to businesses in the same industry that are located outside of a cluster, **businesses within industry clusters tend to achieve these economic outcomes** for themselves and the region:

- Improved productivity
- Faster innovation
- Stronger supply chains
- Increased entrepreneurship
- More skilled workforce
- Benefits to other sectors

HOW DOES CO-LOCATION IN A CLUSTER ACHIEVE GREATER IMPACT?

- Proximity to suppliers, customers, and competitors shortens feedback loops
- Proximity improves formal and informal communications channels
- Some think proximity heightens companies' sense of competition
- Each explanation describes a sort of virtuous cycle

Example of a virtuous cycle.



Available via CC license from [Sketchplanations](#).

WHY IS YOUR REGION INTERESTED IN CLUSTERS?

- Consider the matrix at right
- Do these align with your region's interest in cluster development?
- Are there other challenges you are hoping to address through cluster development?

Economic Goal	Does it apply to your region?	
	Yes	No
Improving productivity in key sectors		
Accelerating development and adoption of technology & innovation		
Training a skilled workforce		
Increasing entrepreneurship		
Strengthening supply chain & other businesses related to your key sectors		

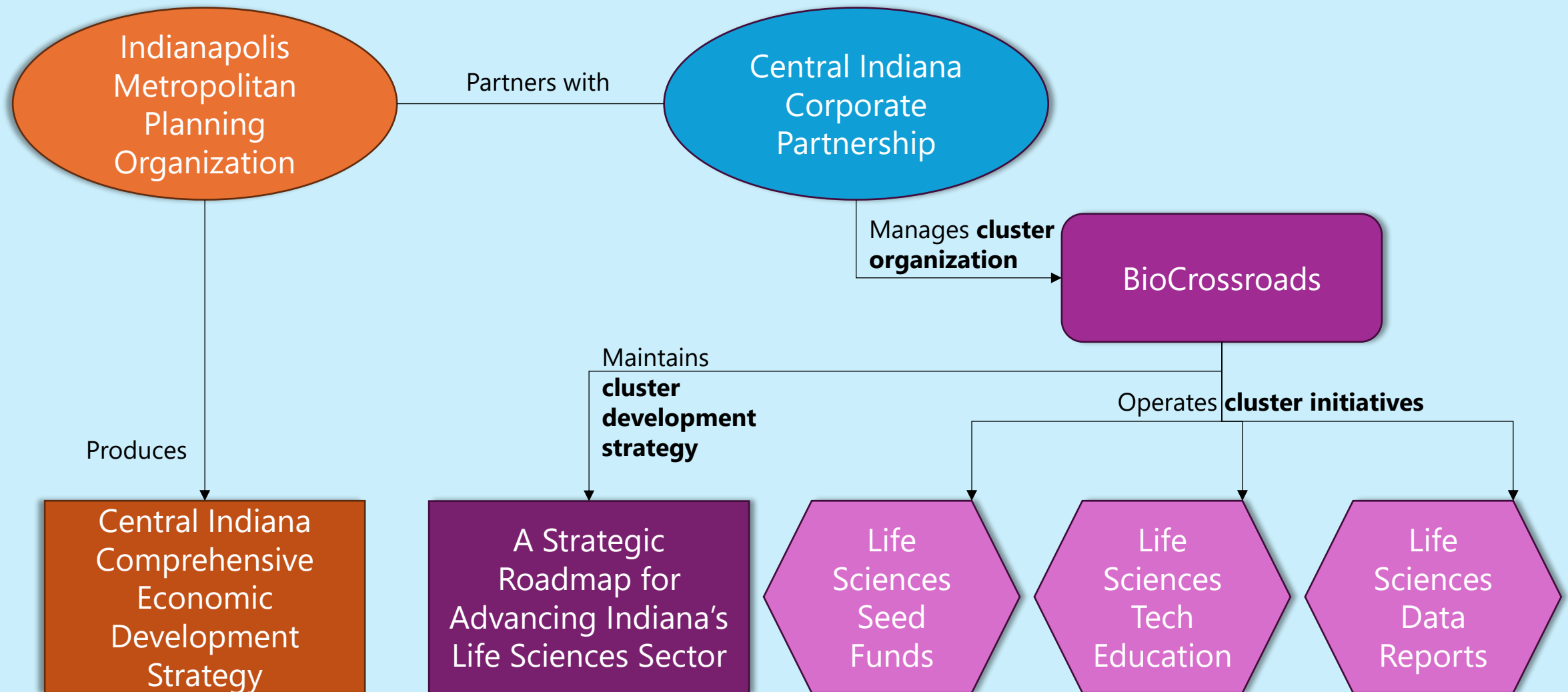
CLUSTER TERMINOLOGY

Clarifying some common terms (as they'll be used in this course and will generally be used elsewhere).

- **Cluster development** – describes a set of policies, actions, and initiatives intended to support one or more clusters
- **Cluster development strategy** – a plan for supporting one or more clusters
- **Cluster initiative** – a specific program/activity for cluster development
- **Cluster organization** – an entity that supports a particular cluster

CENTRAL INDIANA & BIOCROSSROADS

An overview of the Indianapolis life sciences **cluster** and its leaders' **cluster development** approach.

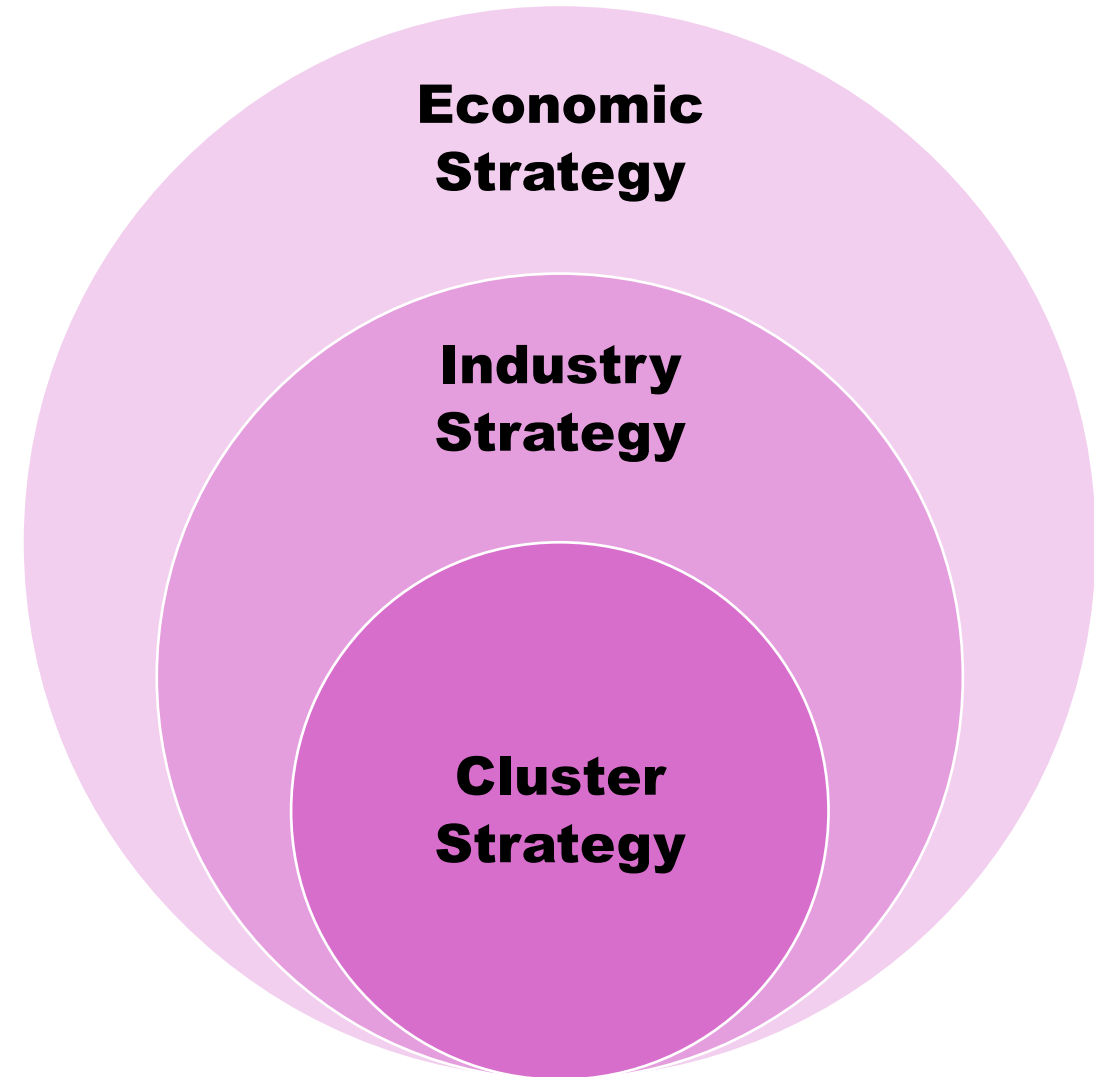


HOW DO CLUSTERS RELATE TO ECONOMIC DEVELOPMENT?

- Clusters are a way to understand your local industry
 - Which sectors have a notable concentration that could/should yield benefits greater than the sum of its parts?
- Cluster development is an economic development approach that fits within a broader regional strategy
 - Lean into a competitive advantage by supporting a strong industry
 - Diversify your economy by cultivating a locally emerging industry
 - Buttress a declining sector through targeted support

CLUSTER VS. INDUSTRY DEVELOPMENT

- Clusters are a subset of industry-focused economic development strategies (see right)
- “Cluster” development supports strong concentrations of connected industry assets
- Industry strategies do not have to focus on concentrations, may not be supporting interconnections



BASIC PRINCIPLES OF CLUSTER DEVELOPMENT

1. Focus support on the whole industry
2. Engage industry in cluster strategy design and implementation
3. Invest in measurement and evaluation
4. Adapt approach to evolving cluster needs
5. Only do what private sector will not or does not do
6. Design efforts to encourage beneficial private activity / investment

CLUSTERS IN YOUR REGION

- Consider the matrix at right for known or suspected cluster activities in your region.
- For each cluster organization or initiative, note what you know about its goals.

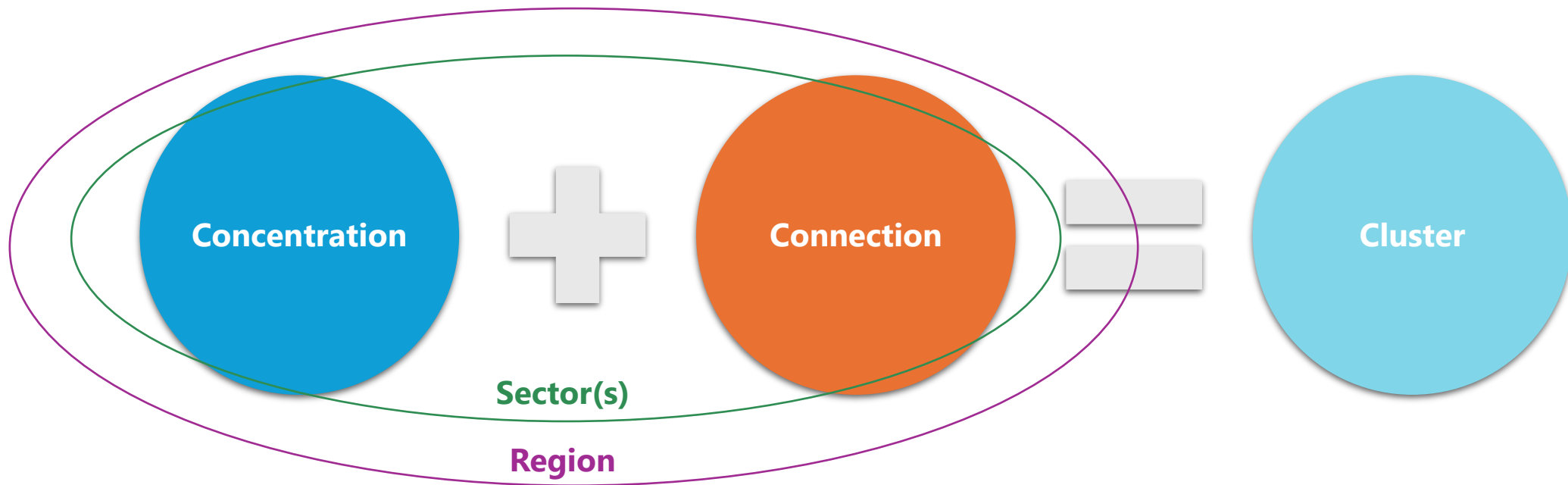
Activity	Present?	Name & Description
Clusters		
Cluster strategies		
Cluster organizations		
Cluster initiatives		



IDENTIFYING CLUSTERS

DEFINITION OF A CLUSTER

- A cluster is a concentration of interconnected businesses, assets, and institutions operating in a sector (or related sectors) within a region.



REGION

- Many jurisdictions will be interested in a specific geography (e.g., metro)
 - If your jurisdiction is a part of a clear region, it may make sense to look at both the larger area and your jurisdiction for context
 - If your region is small and near a metro, it may make sense to look at clusters in that metro and then see if your industry may be serving that cluster
- Some cluster analysis looks at entire nations (particularly in Europe)
- In most cases, the region of study should be small enough that physical proximity is meaningful
 - Owners, employees, suppliers can meet face-to-face regularly
 - Labor shed (or “laborshed”) is one way to understand these boundaries

SECTOR: NAICS

- Many industries can be defined by NAICS
- Helpful for measurement because data may be available this way
- Best sources are <https://www.census.gov/naics/> or <https://www.naics.com/search/>

SECTOR: BEYOND NAICS

- NAICS definitions may not help smaller regions because of data suppression
- Complex clusters can span multiple codes
- Tech- or market-based clusters may use parts of multiple codes
- Emerging sectors may not be reflected in NAICS

HOW TO DEFINE AN ARTIFICIAL INTELLIGENCE CLUSTER?

- Only one NAICS code references AI in its definition
 - 541715 - Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology)
- An AI cluster also could include companies from:
 - Semiconductor and Related Device Manufacturing (e.g., NVIDIA @ 334413)
 - Computer system services and sales sectors (e.g., Anthropic PBC @ 541511)
 - Software services and sales sectors (e.g., Salesforce @ 513210)

DISCUSSION QUESTION

- What Industry / Cluster is the top priority for your region?

CONCENTRATION: LOCATION QUOTIENT

- LQ is a valid measure of relative concentration
- LQ is the industry standard for assessing cluster presence
 - Reviewers of cluster funding ask for or will expect it
 - Economic consultants hired by your region will use it
- Understanding proper uses will make you more informed for:
 - Developing local economic development strategy
 - Creating funding requests
 - Drafting contractor RFPs and evaluating their responses, reports

LQ CALCULATION

- LQ is a ratio of ratios
 - Ratio 1 measures the concentration of the industry's economic activity within the region of interest
 - Ratio 2 measures the concentration of the industry's economic activity within the reference point (usually the nation, but could be state or world)
 - LQ is the ratio of regional concentration to national concentration
- What is economic activity?
 - LQs are most often calculated with employment or establishments
 - Research spending, investment and other measures can be used
 - In identifying a cluster, looking at multiple LQs can help (more on this later)

LQ FORMULA

$$LQ_i = (e_i / e) / (E_i / E)$$

Location Quotient for a region's industry [LQ_i]

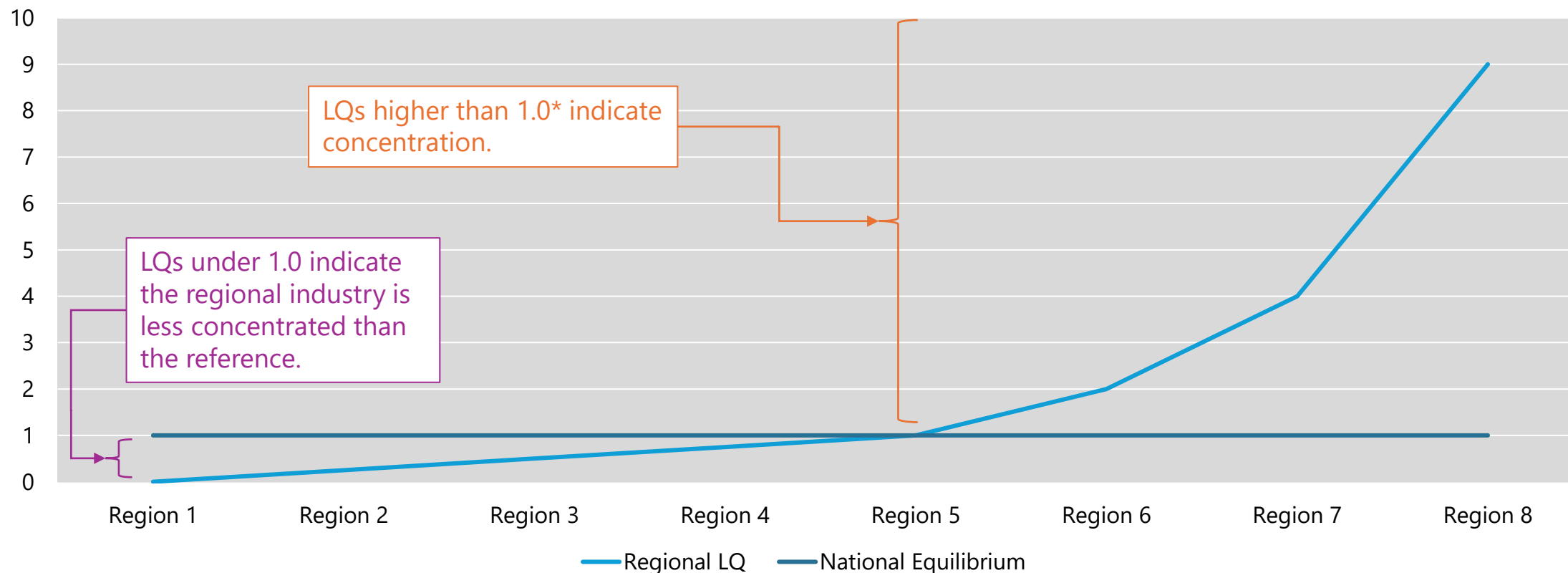
equals

(Regional economic activity in the industry [e_i] *divided by* total regional economic activity [e])

divided by

(Reference economic activity in the industry [E_i] *divided by* total reference economic activity [E])

INTERPRETING LQ



* Some sources use an LQ of 1.25 as a threshold to consider an industry concentrated. This helps account for measurement error but is not a hard rule. See the information on feeling more confident in LQ, later in this lesson.

LQ CALCULATION EXAMPLE

- Acme Metro has 1,250 employees in snake oil manufacturing and 100,000 total employees.
- The U.S. has 160,000 snake oil manufacturing employees and 160 million total employees.
- LQ Formula: $LQ_i = (e_i / e) / (E_i / E)$
- Acme Metro snake oil manufacturing employment LQ:
 - $e_i = 1,250$
 - $e = 100,000$
 - $E_i = 160,000$
 - $E = 160,000,000$
 - $LQ = (1,250 / 100,000) / (160,000 / 160,000,000) = \mathbf{12.5}$
- The LQ indicates Acme has high concentration in this sector and may have a cluster.

EXAMPLES OF LQ IN PRACTICE: CLASSIC U.S. CLUSTERS

Industry	U.S. Region	Employment LQ
Motion picture & video	Los Angeles County, Cal.	9.2
R&D in biotechnology	Middlesex (Cambridge) County, Mass.	25.2
Securities and commodity exchanges	New York County	17.8

THE WATER COUNCIL

Milwaukee businesses began recognizing common water tech interests in the mid-aughts. Coincidentally, the region had created a new economic development entity and, in forming its first strategy, identified 50 local companies focused on water. While water tech is not an “industry” with an identifiable NAICS code, the region moved forward with a formal study to assess its place in the broader market. This effort, which used about 36 sector codes (since trimmed down), identified 120 relevant companies in the Milwaukee region and compared its advantages to other global regions with a significant water tech presence. This concentration led the region to identify water tech as a local cluster, ultimately forming The Water Council as a cluster organization to drive a regional development strategy.

* Sources: Interview with The Water Council founding CEO Dean Amhaus; [The Water Council's official history](#); S.B. White et al.'s 2010, [Water Markets of the U.S. and the World](#); and a 2018 [Rethinking Cluster Initiatives Case Study: Milwaukee Water Technology](#) by Brookings's Brad McDearman.

MEASURING CONNECTION*

- Stakeholder surveys
- News/social media analysis
- Walk the streets to observe establishments
- Interviews/focus groups with regional stakeholders and industry

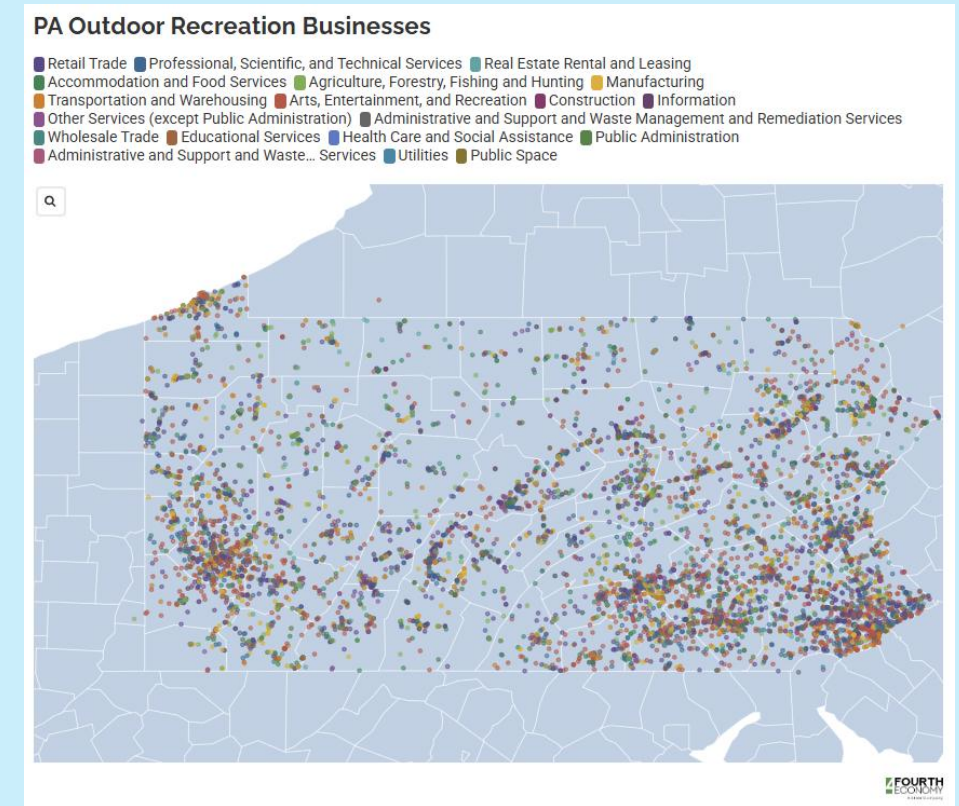
* and alternative ways to assess concentration

PENNSYLVANIA OUTDOOR BUSINESS ALLIANCE

Seeing the success of regional outdoor recreation clusters in Pennsylvania (such as PA Wilds), a group of partners set out to measure the industry across the entire commonwealth. Their methods are instructive for cluster evaluation.

One tool the analysis used was scraping websites and other sources to build a list of more than 9,000 PA businesses with connections to outdoor recreation.

Other methods included broad surveys and a series of 10 workshops.



Map by Fourth Economy and available on [Flourish](#).

ENGAGING ECONOMIC DEVELOPMENT & INDUSTRY STAKEHOLDERS

- Regional service providers have insights to economic connections/needs that can strengthen your cluster research
- Industry involvement is critical to successful cluster initiatives, so integrate early
- Small groups, interviews can be great for collecting wide input quickly
- This also is an opportunity to build support, partnerships and to start conceiving elements of a cluster plan

IDENTIFYING STAKEHOLDERS

- The purpose of this exercise is to identify stakeholders that can be consultant for your cluster identification work.
- There is a printable template for this exercise on the next slide.

ECONOMIC DEVELOPMENT STAKEHOLDERS			
	Private	Nonprofit	Public
IP sources			
Business support			
Workforce training			
Lenders & investors			
Employers & buyers			
Economic dev. funders			

- A gap in a cell does *not* mean your region necessarily needs to fill that spot.
- Who are the sources of new IP in your region?
- Who provides business support?
- Who trains/educates your region's workforce?
- Who lends/invests money in local businesses?
- Who are the major employers and buyers in the region?
- Who funds economic development in your region?

CLUSTER STAKEHOLDERS

Private	Nonprofit	Public
IP sources		
Business support		
Workforce training		
Lenders & investors		
Employers & buyers		
Economic dev. funders		

KEY QUESTIONS

FOR ED STAKEHOLDERS

- How do you measure success for our region? For your organization?
- What do you think is working well about our region's economy? What needs to be improved?
- What industries are most represented among your clients?
- Are there industries in our region that you do not support? Who does?
- Are there challenges you help address that are specific to one industry?
- Any challenges that are surprisingly common across just 2-3 industries?

FOR INDUSTRY

- Why does your company continue to be located in our region?
- What other regions in the U.S. or world do you look to as industry leaders?
- Where are most of your suppliers located? Buyers?
- When and how do your local peers/competitors meet to talk?
- What do you think is working well about our region's economy? What needs to be improved?
- How can our region better support your growth plans?

CLUSTERS & FUNDER EXPECTATIONS

- Resist the urge to identify or select clusters based on funders
- Possible pitfalls when funders drive cluster selection
 - Government's attempts to create clusters often fail*
 - Most grants don't pay well enough to be worthwhile without traction
 - Failure can create a vicious cycle for regional economic development funding
- ONLY consider funder preference if you are confident the region has a cluster and the support, resources to merit that prioritization

* For a discussion of the challenges governments face when trying to create tech clusters, see Josh Lerner's 2009 *Boulevard of Broken Dreams*.



SUPPORTING CLUSTERS

WHEN DO CLUSTERS MERIT FOCUSED ASSISTANCE?

- Not every cluster (or strong industry) may be an appropriate target for dedicated public assistance
- Several factors that can make help decide whether investing public resources in a cluster makes sense:
 - What impacts will a stronger cluster create for the region?
 - Is your region's investment likely to strengthen the cluster?
 - Are the cluster's needs appropriate for public investment?
 - How does a stronger cluster strengthen your regional identity?
- The region's values and priorities will be the key driver of these decisions

QUALITY OF IMPACTS

Consider which cluster will produce the best outcomes when stronger:



Is this industry on the rise globally/nationally? Can we lead or ride this wave?



Can we fill the likely new jobs? How do wages compare to our average?



Will this cluster increase our exports out of the region and nation?



Would this cluster's growth improve demand in other local sectors?



Does the cluster make our region more resilient to economic shocks?

KC & CLUSTER PRIORITIES

Kansas City's cluster selection process hit an impasse. Three sectors (advanced manufacturing, logistics, and biologics) each had merit and strong local support from different interests.

Stakeholders decided to pursue the cluster with the most promise for good jobs (defined here as paying enough to support a family of four) even without a college degree. Biologics scored the best on this metric. This recognition, alongside KC's high rates of biomedical research and drug production, unique assets, and history of industry organization, helped the region move forward with this cluster.

KC BioHub was designated as an EDA Tech Hub in 2023. The cluster has secured additional operations funding while the region has seen related companies locate/expand, increasing its relevant LQs.

* Sources: Interview with Melissa Roberts Chapman of KC BioHub, [EDA Tech Hubs listing](#), U.S. Bureau of Labor Statistics QCEW data.

IMPACTS OF POTENTIAL CLUSTERS

1. Consider your region's 1-3 potential priority industries
2. Jot down first-blush answers to these questions:
 - What is the share of above median paying jobs?
 - What proportion of sales would be exported (other regions or countries)?
 - What is the global outlook for this sector in 5, 10, 20 years?
 - What impact would cluster growth have on other industries in the region?
3. If you do not have real answers to these questions readily available, sketch a plan for how you can answer them (e.g., data sources, people to ask) and what other questions you would want to know.

CAPACITY FOR SUCCESS

- Assess if you can execute a plan that is capable of succeeding
 - *Type example:* The primary cluster need is connections to downstream buyers that aren't currently in your region. Can you move the needle on this?
 - *Scale example:* An emerging cluster has identified a \$50 million capital need, and your budget is \$1 million. Is this a useful start? What leverage can you create?
- If not, the best option may be:
 - Offering basic support to this cluster until capacity changes
 - Setting a time- and/or cost-limited goal on a narrow initiative

TULSA INNOVATION LABS (TIL)

In 2020, the George Kaiser Family Foundation launched TIL and charged it with building a “tech economy” in Tulsa. The org focused on five tech areas based on (a) local job access, (b) feasibility of impact, and (c) magnitude of impact.

To determine feasibility, TIL focused on being able to identify sector-relevant connections to: higher education, corporate R&D (Tulsa does not have an R1 university), workforce providers, and physical infrastructure.

TIL is now an EDA Tech Hub in advanced air mobility (e.g., drones), which is one of the sectors pursued by the region.



* Sources: Interview with Jennifer Hankins of TIL; GKFF [site on TIL](#); TIL [site](#); EDA Tech Hubs designation for Tulsa; image under CC license from Photog.

CONSIDER LOCAL CAPACITY

1. What would be required to meet the top need for each potential cluster?
2. If you don't know, who needs to be contacted or what needs to be ID'd?
3. What is the potential budget for your cluster initiative? What support can you expect from state and local government? From nonprofits? From local industry? Other sources?
4. Can your potential budget address the cluster's need completely? If not, is it sufficient to be impactful?

“BUT FOR” PRINCIPLE

- Public funds are best spent when creating desirable public benefits that would not exist “but for” the public expense
 - In other words: Are the benefits worthwhile? Would they happen anyway?
- This is a frequent tension in economic development
 - Programs should aim to catalyze new activity, but broad requirements can result merely in adding money to otherwise likely investments
 - Programs sometimes fail to prioritize the production of public benefits, such as by providing incentives for creation of low-paying jobs or for development that exacerbates housing/transportation issues

“BUT FOR” & CLUSTER DEVELOPMENT

- Cluster support can bleed into roles normally covered by dues-accepting trade associations
 - *Common examples:* advocacy & marketing
 - Assess what is normal for the industry in other regions
- May be appropriate to catalyze industry activity absent in your region
 - Have a clear path and timeline to transition such activities
 - *Examples:*
 - Fund the one-time creation of a tourism directory
 - Host an industry awards show, then transition to sponsor
- If your cluster's greatest needs fall into these categories, prioritizing it for public investment may not make sense

GETTING “BUT FOR” WRONG: OPPORTUNITY ZONES

- The Opportunity Zone tax incentive ignores this principle:
 - Incentive is provided to all investors (who must have a large capital gain)
 - Investments can be for any project that meets broad criteria
 - Primary incentive only pays if the project makes money on its own
- The lack of intentionality is reflected in the program's outcomes:
 - Only area of development with evidence of OZ impact is increased multi-family housing construction
 - This was not even a potential impact considered until more than a year after it became law

REGIONAL HISTORY

- If you have an economic legacy that is meaningful to your community and companies – and is known outside of your region – that can translate into earlier traction
- If that legacy industry is still present, there may be a cluster strategy around tech adoption or related sectors

Examples:

- Akron, OH:
Rubber => Sustainable Polymers
- Milwaukee, WI:
Water => Water tech
- Portland, OR:
Logging => Prefab housing
- Wichita, KS:
Aerospace manufacturing =>
Advanced aerospace manufacturing

WICHITA & A HISTORY OF AEROSPACE MANUFACTURING

Wichita's aerospace cluster began nearly 100 years ago. An early cluster initiative was Wichita State University's procurement in 1948 of what is now the Walter H. Beech Wind Tunnel. At the time, the equipment was too expensive for Beechcraft or Cessna, but neither wanted to share directly with a competitor. The university was a neutral convener and solved the problem. Today, Wichita State University continues to lead cluster development work for the region, and the institution's close ties to industry help it remain relevant. A recent example is the creation of a Maintenance, Repair, and Overhaul program that is one of only three in the world.



* Sources: Interview with WSU Associate VP Debbie Franklin; [Beechcraft's official history](#); [Cessna's official history](#) (archived); ["75th Anniversary Celebration of Walter H. Beech Wind Tunnel"](#) by WSU; [Maintenance, Repair and Overhaul](#) by WSU. Images courtesy of WSU Libraries, Special Collections and University Archives.

CLUSTER ORGANIZATIONS

- Cluster organizations are entities that focus on developing specific clusters
- Most successful cluster organizations:
 - Facilitate public-private engagement
 - Access multiple funding types
 - Operate cluster initiatives that the public sector could or would not
- A dedicated organization is not always needed to support a cluster's needs

CLUSTER ORGANIZATIONS VS. INITIATIVES

CREATE A CLUSTER ORG.

- You have long-term plans for cluster support
- New org. is needed for:
 - Initiative requirements
 - Financial sustainability
 - Embedding public-private leadership

NEW INITIATIVES IN GENERAL ORG.

- Uncertain future
- New org. would complicate financial picture
- Initiatives can be managed by existing entities
- Private leadership can be integrated without new org.

WASHINGTON MARITIME BLUE

In 2017, Washington's Department of Commerce launched a new cluster initiative to advance sustainable ocean tech and operating companies. The state incubated the cluster strategy's early years but, in 2019, supported the creation of a separate 501(c)(3).

Maritime Blue better positions the cluster for private participation and funding and has more freedom to explore investments and asset ownership than the state. Its board includes a mix of public, nonprofit, and private directors, and its steadily-growing funding now is roughly 60% grants (mixed sources), and 40% revenue from contracts, rent, & membership. It is operating shared pilot tech projects, career programs, and an incubator/accelerator.

* Sources: EDA [2017 i6 award](#); WA Commerce [2019 press release](#); WA Maritime Blue [site](#) and [2024-205 annual report](#).

CLUSTER LEADERSHIP QUESTIONS

Answer the following questions to help plan for whether your region's cluster development activities may be better served by a cluster organization or a broader economic development organization.

- What organizations lead economic development activity in your region?
- What role does the private sector play in leading these organizations? Board positions, advisory councils, other, none?
- Are there ample financial resources for these economic development organizations to operate currently? Or are they struggling with sustainability?
- Are these organizations able to accept fee-for-service payments? To own assets used by the private sector?

EVOLVE STRATEGY & INITIATIVES

- Change is an inevitable part of cluster development
 - Ineffective initiatives don't address problem sufficiently
 - Successful initiatives will solve issues, create new needs
 - Broader tech & economic forces can change industry, region
- Course correct on the go as needed and when doing so maintains your goals and mission
 - *Example:* If recruitment for a TA program is poor, strengthening marketing likely makes sense. Broadening eligibility may be appropriate or could alter the nature of the program you're offering.

PACIFIC NORTHWEST MASS TIMBER

Stakeholders in Oregon and Washington have been collaborating on timber cluster initiatives since 2016. The goal has been to produce and export high-value wood products, rather than raw timber alone.

Over time, the strategy has shifted. The industry has expanded from a manufacturing focus to add more tech development and mills. Geographically, the Washington and rural footprint has increased, driving attention to urban-rural cross-cluster connections.

Impact has been slow but is rapidly building. In addition to tech advances, the cluster has seen multiple mills make significant upgrades, major improvements to its port facilities, and new manufacturer investments in the region.

* Sources: Interview with Marcus Kauffman, Pacific Northwest Mass Timber Tech Hub; [IMCP profile](#); [Mass Timber Mfg. Supply Chain](#) report.

COMPLETE A LOGIC MODEL FOR YOUR CLUSTER DEVELOPMENT

Goals	Activities	Outputs	Output Metrics	Outcome Metrics

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The **Center for Cluster Development** is a project of Excel Regional Solutions.

Visit clusterdevelopment.us or contact info@excelregions.com for more information.

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EXCEL REGIONAL SOLUTIONS

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FURTHER READING ON CLUSTER BENEFITS

- Industry clusters are a comparatively well-researched area of economic development.
 - For additional information on regional economic impacts of industry clusters, see the sources listed at right.
- De Almeida Tavares, M. S., Gohr, C. F., Morioka, S., & Da Cunha, T. R. (2021). Systematic literature review on innovation capabilities in clusters. *Innovation & Management Review*, 18(2), 192–220. <https://doi.org/10.1108/inmr-12-2019-0153>.
 - Delgado, M., Porter, M. E., Stern, S., Center for Economic Studies, & U.S. Census Bureau. (2010). *Clusters and entrepreneurship*. <http://ssrn.com/abstract=1689084>.
 - Ketels, Christian & Sergiy Protsiv (2021) Cluster presence and economic performance: a new look based on European data, *Regional Studies*, 55:2, 208-220, DOI: [10.1080/00343404.2020.1792435](https://doi.org/10.1080/00343404.2020.1792435).
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 - Campi, M., & Dueñas, M. (2022). Clusters and Resilience during the COVID-19 Crisis: Evidence from Colombian Exporting Firms. In Inter-American Development Bank, *IDB Working Papers Series* (No. 1375). <http://www.iadb.org>.

LQ DATA TOOLS

Source	Geography	Industry	Key Metrics	Timing	Notes
<u>BLS Census of Employment & Wages</u>	U.S. State County MSA	2-6 digit NAICS*	Employment Establishments Wages LQs	Frequency: Quarterly Lag: 5-6 months	<ul style="list-style-type: none"> Excludes contractors, self-employed, some ag and military High data suppression, particularly at detailed NAICS
<u>Census County/ZIP Business Patterns</u>	U.S. State County or ZIP MSA	2-6 digit NAICS	Employment Establishments Payroll	Frequency: Annual (based on Mar. 12) Lag: 18 months	<ul style="list-style-type: none"> March-only means poor seasonal coverage & less timely Less data suppression than CEW
<u>Proprietary (e.g., Lightcast)</u>	Any	2-6 digit NAICS	Above & may have more	Depends on sources	<ul style="list-style-type: none"> Typically supplement federal data with job postings, other sources Can be expensive May have unsuppressed data
<u>State data portals (e.g., MN LQ Tool)</u>	State County Special?	Variable	Variable	Depends on sources	<ul style="list-style-type: none"> Can be handy for local purposes May be unable to compare to out-of-state peers

FURTHER RESOURCES ABOUT ENGAGEMENT IN ECONOMIC DEV.

- Some regions have a history of engaging the public and regional stakeholders in economic development strategies and can use these approaches.
 - If your region has not taken this approach previously, the tactics discussed in the resources listed in the next column may prove useful as you design a new engagement strategy.
- Center for Regional Economic Competitiveness. (2024). CREC Policy Academy: A Learning Cohort Designed to Improve Regional Competitiveness by Enhancing State and Local Alignment Strategies. CREC.
 - Gonzalez Martinez, J.L. & Johnson, S. (2022). Communication Resource Guide for Inclusive Economic Development. New Growth Innovation Network.
 - Venn Collaborative & University of Wisconsin-Oshkosh. (2024). “Conversation Guides.” C-CUBE.

RESOURCES FOR CLUSTER STRATEGIES

HOW TO

- German Cooperation (GIZ). 2021. *Cluster Development Guide*.
<https://www.giz.de/en/downloads/giz2021-en-cluster-development-guide.pdf>
- RTI International. “Resource Library: Industry Cluster Development.” Building Better Regions.
<https://www.buildingbetterregionscop.org/resources/library/>
- New Growth Innovation Network. *Tech Equity in Action Report & Worksheets*.
<https://techequity.newgrowth.org/>
- ICIC. (2017). *Cluster Growth Toolkit*.
<https://icic.org/research/economic-development/cluster-growth-toolkit/>

EXAMPLES

- Porter, M.E. & Monitor Company Group. (2003). New Jersey Life Science Super-Cluster Initiative.
https://www.isc.hbs.edu/Documents/pdf/NJ_lifescience.pdf
- Rittenberg, J. (2025). “Clusters feature prominently in local strategies.” *Excel*.
<https://excelregions.com/2025/08/20/clusters-feature-prominently-in-local-strategies/>
- Tallwood Design Institute & Business Oregon. (2020). *Identifying Drivers and Barriers for Investing in Oregon’s Mass Timber Manufacturing Supply Chain*. https://cdn.prod.website-files.com/6226677145b2b59b6d72e665/622b8a43138a6c142fe450a7_Oregon%20Mass%20Timber%20Manufacturing%20Supply%20Chain%20Analysis%20-%20Final.pdf

LOGIC MODELS: TOOL FOR STRATEGY, MEASUREMENT, & EVALUATION

- Logic models are useful for structuring cluster development strategies
- The model pushes stakeholders to connect goals to project activities, activities to outputs, and then list the metrics that will be used to assess outputs and outcomes
- This not only forces stakeholders to consider the validity of their strategy, but also to create an evaluative framework

Logic model example and framework.

Figure 2. Logic Model for Mapping Coalition-Level Goals to Project Activities and Output and Outcome Metrics

Goals	Project Activities	Outputs	Output metrics	Outcome metrics
<ul style="list-style-type: none">Workforce Development (e.g., increase number of qualified workers for target industry with a focus on historically underrepresented workers)	<ul style="list-style-type: none">Construct specialized facility for trainingDesign training program with industryPerform outreach to enroll participantsIncrease employment of graduates in industry	<ul style="list-style-type: none">Facility constructed and equippedTraining program designed and trainers identifiedParticipants enrolledParticipants graduatingGraduates hired by industry	<ul style="list-style-type: none">Facility constructed and operatingTraining program launchedNumber of participants enrolledNumber of graduatesNumber hired	<ul style="list-style-type: none">Increased pool of qualified workers for target industryAverage salary of jobs in industry relative to private-sector averageTotal number and share of workers enrolled, trained, and hired by race, ethnicity, gender, and county
<ul style="list-style-type: none">Technology Adoption (e.g., to address industry needs and improve competitiveness)	<ul style="list-style-type: none">Construct specialized facility for technology development and demonstrationSupport industry-higher education innovation collaborationLicense promising technologies to industry	<ul style="list-style-type: none">Facility constructed and equippedPartnerships developed between company and higher educationSpecific technology development projects fundedPromising technologies licenses	<ul style="list-style-type: none">Facility constructed and operatingEvents convened for companies to present needs and faculty to share ideasApplications for technology development submittedProjects awarded	<ul style="list-style-type: none">Number of projects awardedNumber of licensesIndustry-higher education relationships developed through the application and award process continue via collaboration on other funding opportunities
<ul style="list-style-type: none">Goal 3	<ul style="list-style-type: none">Activities	<ul style="list-style-type: none">XX	<ul style="list-style-type: none">YY	<ul style="list-style-type: none">ZZ

RTI International and SSTI created this graphic for a *Strategic Planning Tool: A Tool to Guide the Assessment and Execution of Build Back Better Regional Challenge Coalition Activities*.