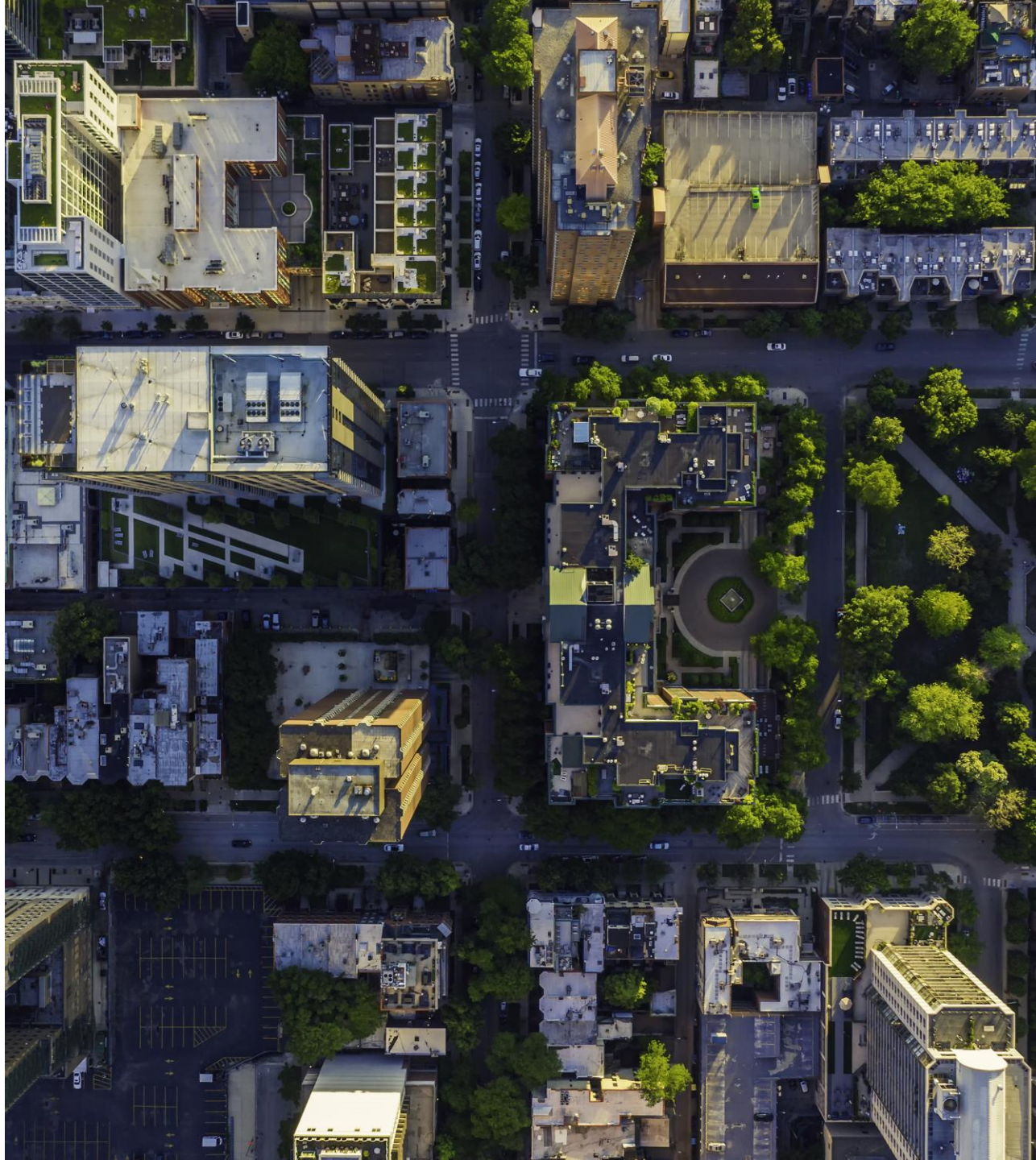
CLUSTER IDENTIFICATION

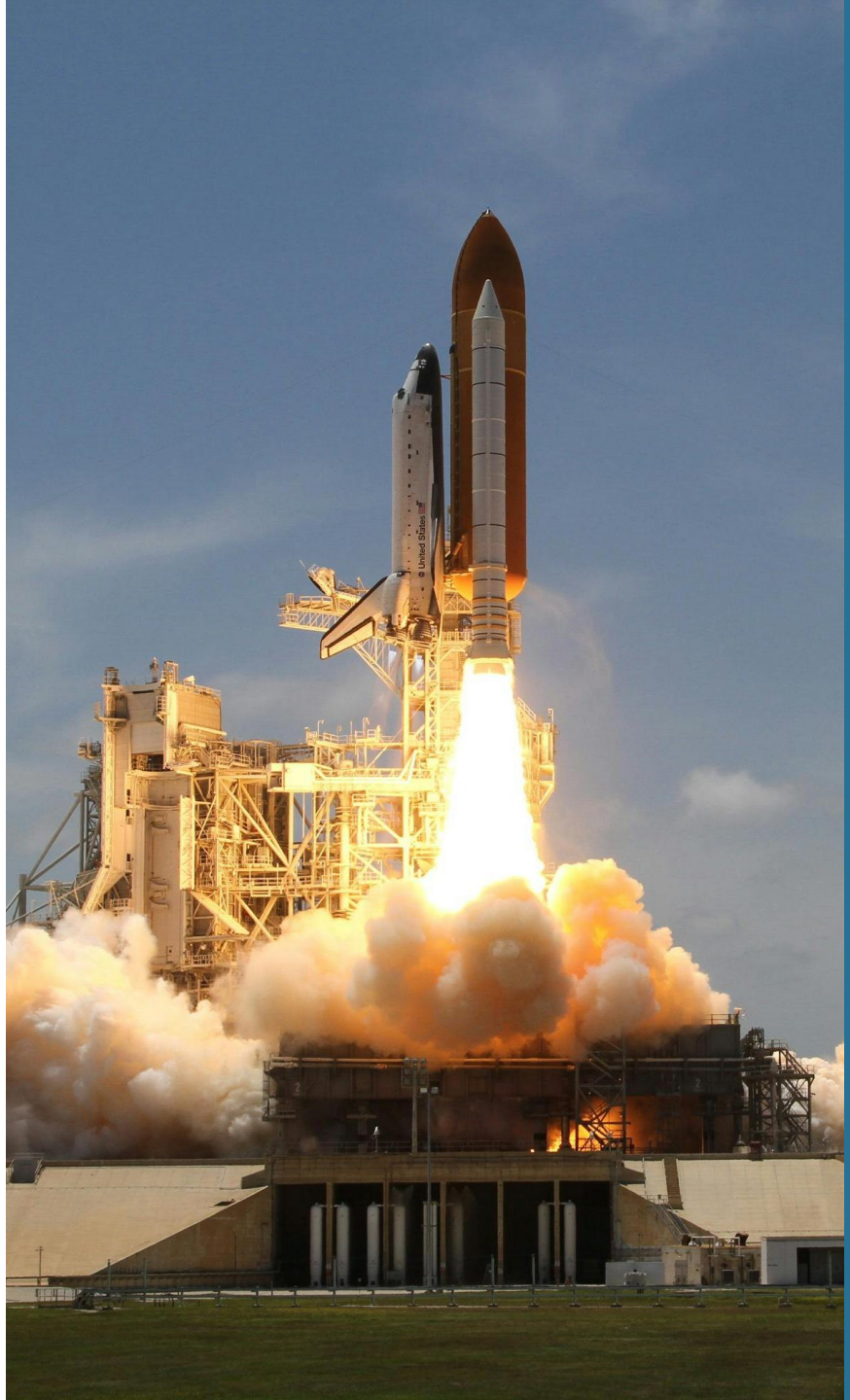
Recognizing & prioritizing regional industry

CENTER FOR CLUSTER DEVELOPMENT



COURSE GOALS

1. Know how to identify clusters
2. Understand how to prioritize clusters for public support
3. Be prepared to lead your region in cluster identification and prioritization process



COURSE SESSIONS

1. About Clusters
2. **Location Quotient**
3. Qualitative Assessment
4. Prioritizing Assistance
5. Beyond Identification
6. Report out & Discussion

LOCATION QUOTIENT

DAY AGENDA

1. Calculating and interpreting Location Quotients
2. Data sources for LQs
3. Problems with relying on LQ alone for cluster IDs

INTRODUCTIONS

- Name
- Organization
- Region
- Favorite thing about your region

DEFINITION OF A CLUSTER

- Clusters are geographic concentrations of interconnected businesses and institutions within a specific sector
- How do you know when your region's "concentration" has become a "cluster"?
  - Technical method: Location Quotient

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

Location Quotient for a region's industry

equals

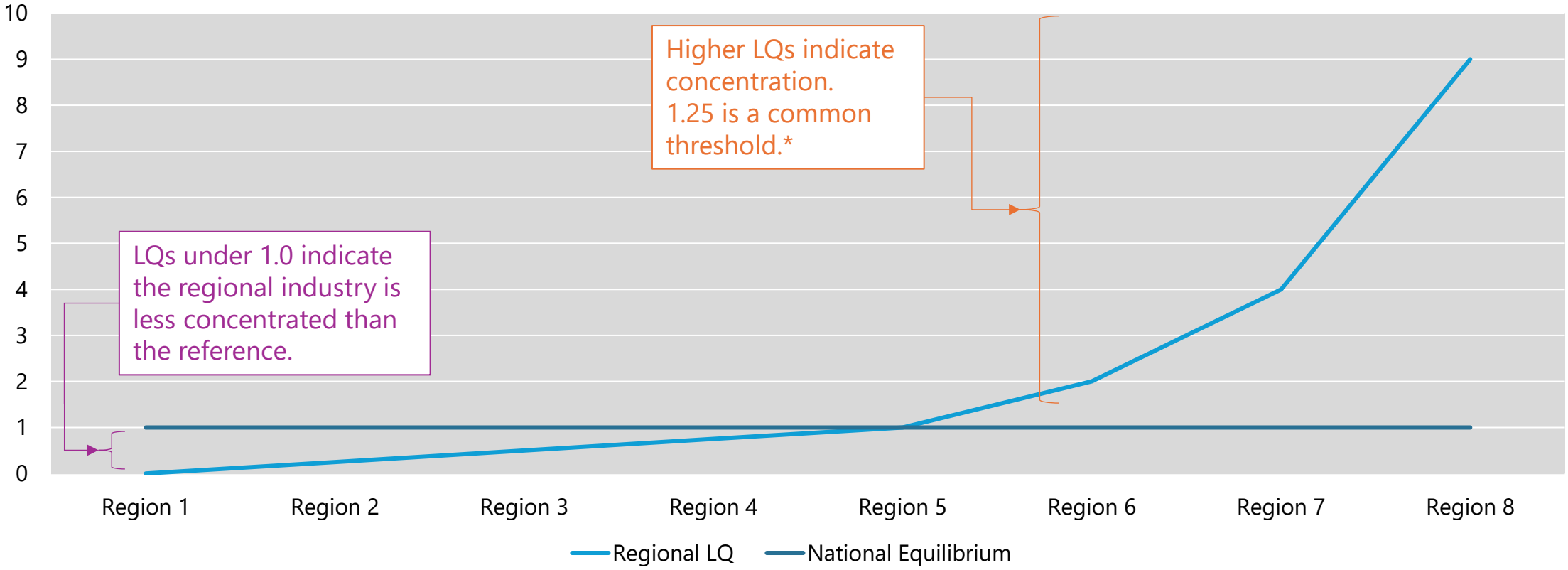
(Regional employment* in the industry *divided by* total regional employment*)

divided by

(National† employment* in the industry *divided by* total national employment*)

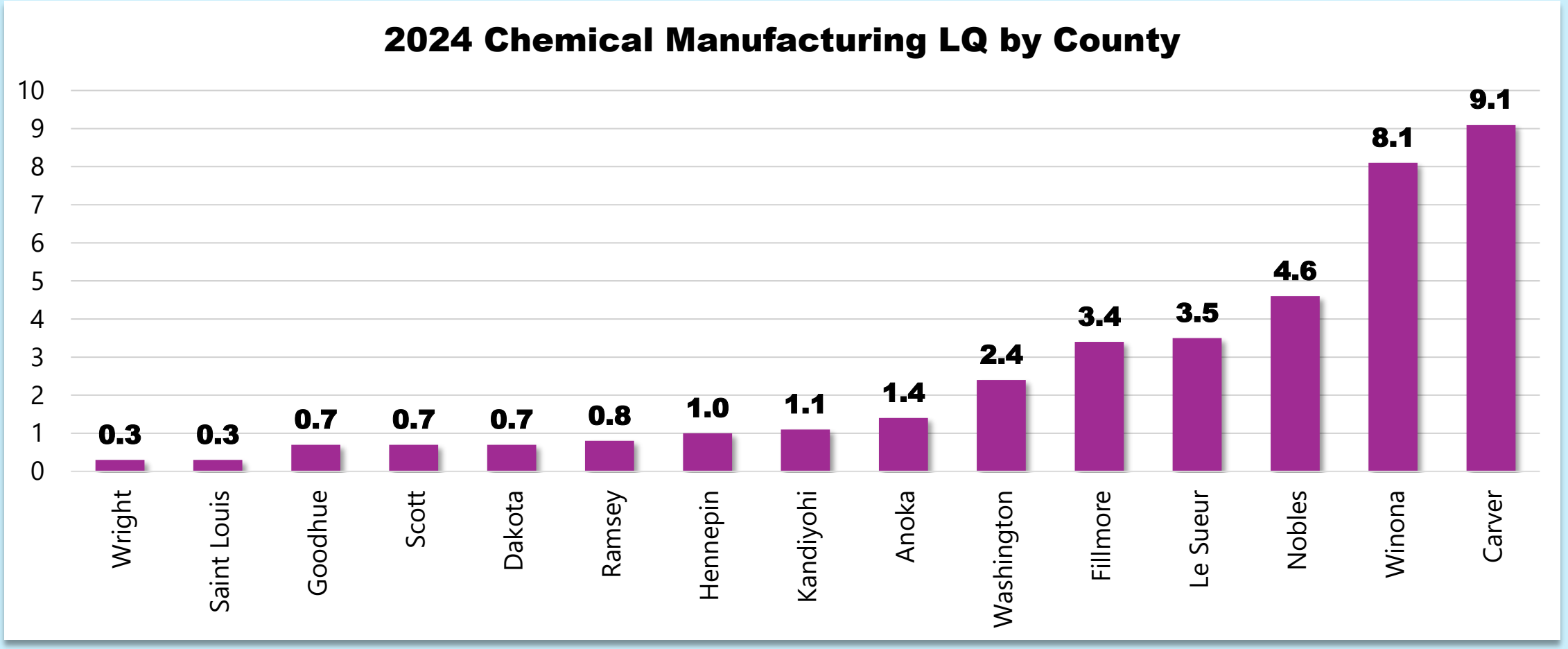
* Establishments can be used instead of employment.
† Another reference geography (e.g., state) can be used instead of nation.

INTERPRETING LQ



* In practice, minimum threshold should depend several factors, particularly the size of the region.

MINNESOTA EMPLOYMENT-BASED LQS

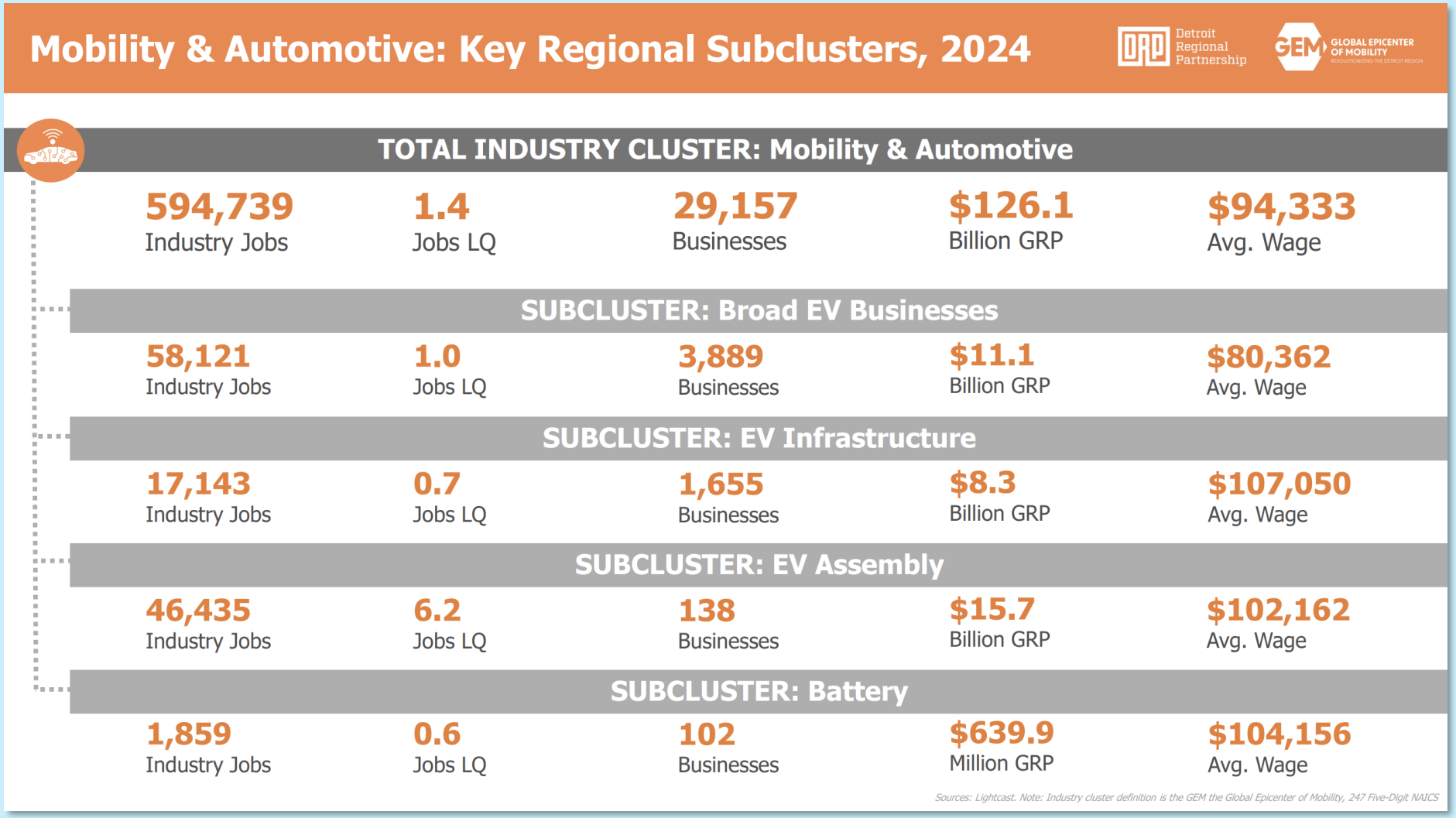


Source: Minnesota Department of Employment & Economic Development's MN Location Quotient Tool: https://mn.gov/deed/data/data-tools/qcew/qcew-location-quotient.jsp.

CLASSIC U.S. CLUSTERS

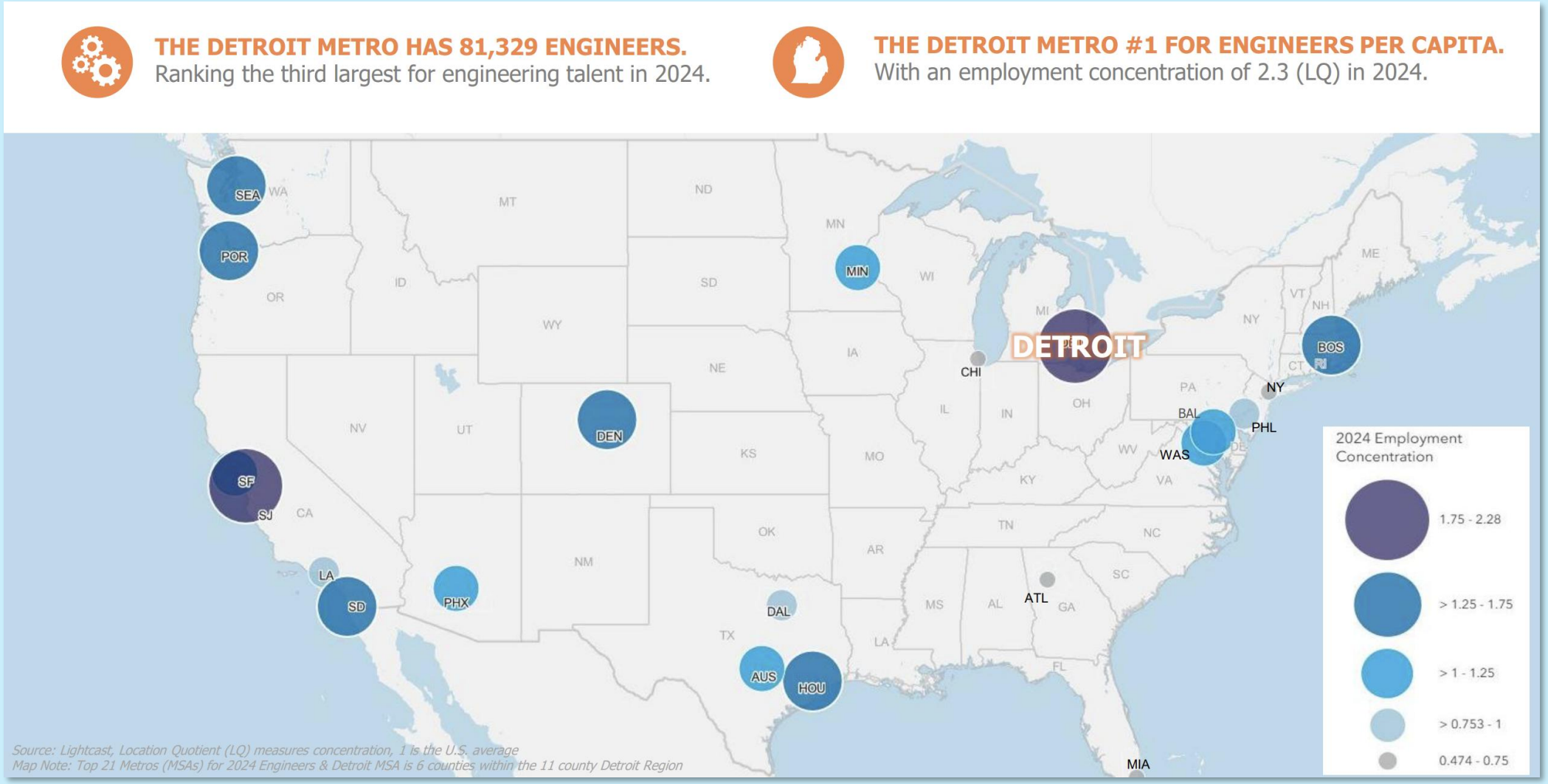
Industry	U.S. Region	Employment LQ
Motion picture & video	Los Angeles County, Cal.	9.2
R&D in biotechnology	Middlesex (Cambridge) County, Mass.	25.2
Securities and commodity exchanges	New York County	17.8
Textile furnishings mills	Whitfield (Northwest) County, Georgia	723.5

LQS – DETROIT'S AUTO SUBCLUSTERS



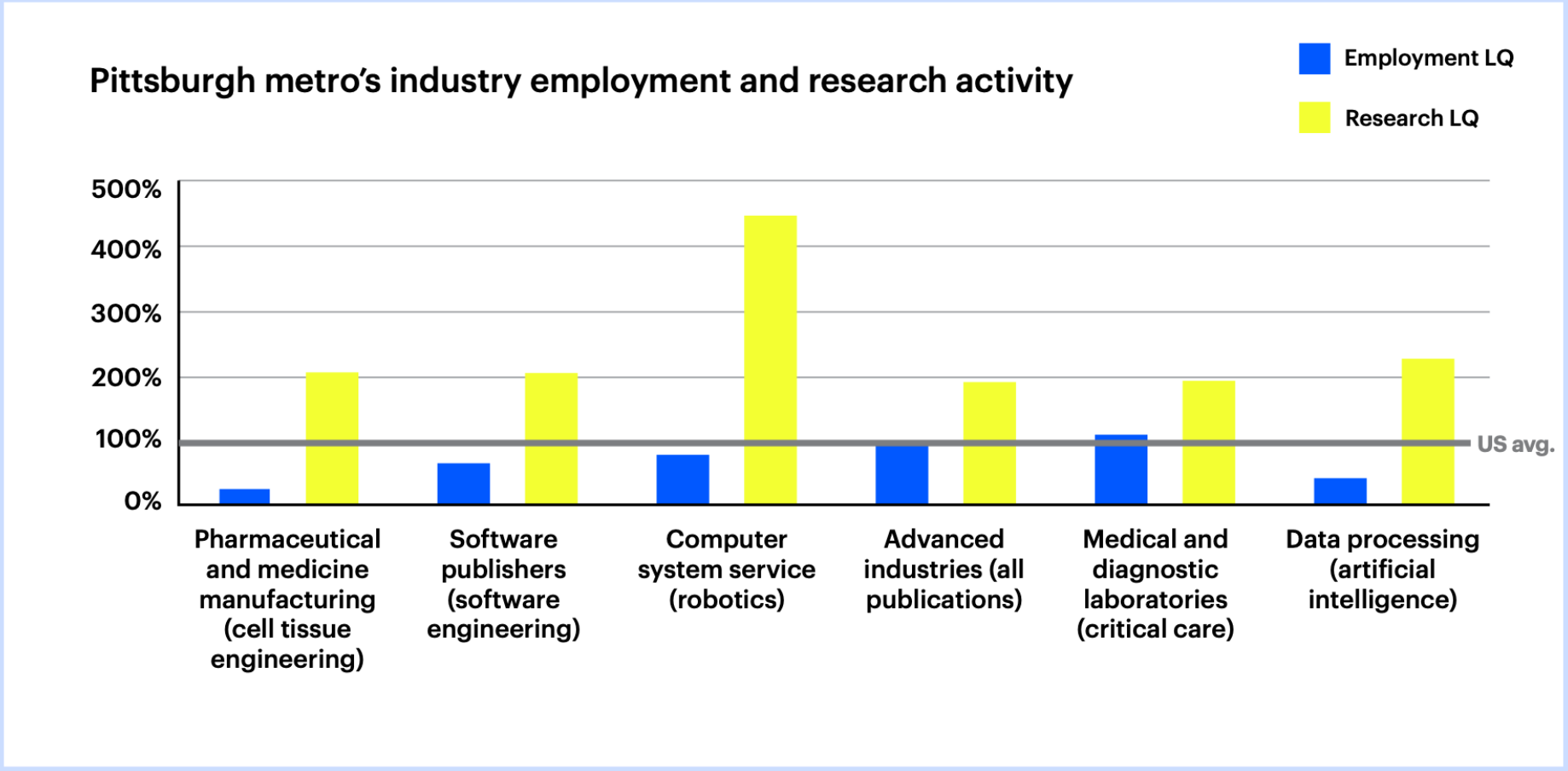
Source: Detroit Regional Partnership, Exploring the Mobility & Automotive Industry Cluster, https://www.detroitregionalpartnership.com/mobility-auto-industrycluster/

LQS – BENCHMARKING YOUR PEERS



Source: Detroit Regional Partnership, Exploring the Mobility & Automotive Industry Cluster, https://www.detroitregionalpartnership.com/mobility-auto-industrycluster/

BEYOND EMPLOYMENT LQS



Source: Brookings and TEConomy analysis of National Science Foundation, Higher Education Research and Development Survey; BLS, QCEW enhanced file from IMPLAN; and U.S. Census Bureau. Note: LQ = regional location quotient.

Source: Capturing the Next Innovation Economy, Brookings Institution, 2018.
https://www.brookings.edu/wp-content/uploads/2017/09/pittsburgh_es.pdf

NOTES ABOUT NAICS

- North American Industry Classification System is the federal standards for defining the industry for each business establishment
- 6-digit code ranging from least to most specific
  - Fewer digits = more variance in company activities but less data suppression in federal sources
  - More digits = companies are more similar but more likely to have data issues, particularly for lower population areas
- Best sources are https://www.census.gov/naics/ or https://www.naics.com/search/

LQ DATA TOOLS

Source	Geography	Industry	Key Metrics	Timing	Notes
BLS Census of Employment & Wages	U.S. State County MSA	2-6 digit NAICS*	Employment Establishments Wages LQs	Frequency: Quarterly Lag: 5-6 months	• Excludes contractors, self-employed, some ag and military • High data suppression, particularly at detailed NAICS
Census County/ZIP Business Patterns	U.S. State County or ZIP MSA	2-6 digit NAICS	Employment Establishments Payroll	Frequency: Annual (based on Mar. 12) Lag: 18 months	• March-only means poor seasonal coverage & less timely • Less data suppression than CEW
Proprietary (e.g., Lightcast)	Any	2-6 digit NAICS	Above & may have more	Depends on sources	• Typically supplement federal data with job postings, other sources • Can be expensive • May have unsuppressed data
State data portals (e.g., MN LQ Tool)	State County Special?	Variable	Variable	Depends on sources	• Can be handy for local purposes • May be unable to compare to out-of-state peers

CALCULATE LQ

1. Decide on at least one industry you want to test for your region
2. Navigate to source website
3. Access data for your region and U.S.
4. Calculate LQ
5. Is this a cluster for your region?
6. Repeat the steps to test another industry (or subsector)

SIZE & DATA LIMITATIONS FOR LQ

- Smaller regions could have odd results
  - High LQ based on a few companies
  - Big year-over-year changes possible because of sampling in underlying data
- LQ stability can vary with the level of industry you are measuring (e.g., NAICS 1- vs. 3-digit)
- Be particularly cautious with regions under 100K population

Further Reading

Pominova, M., Gabe, T., & Crawley, A. (2022). The stability of location quotients. *The Review of Regional Studies, 52,* 296-320. https://rrs.scholasticahq.com/article/66197-the-stability-of-location-quotients.pdf.

HOW TO FEEL MORE CONFIDENT IN LQ
(AND GOOD ADVICE FOR ANY DATA ANALYSIS)

- Run LQ with different levels of industry data to see how much LQ changes
- Assess historical data to see if LQs are consistent or highly variable
- Look at the numerator size to see if it is meaningful
- Even if using employment LQ, check establishment score – if your LQs are very different, consider what this means for a cluster

BROADER SHORTCOMINGS OF LQ

- Regardless of LQ, region must have mass to create the network effects that drive clusters' benefits
- Some effective clusters don't organize well around traditional industry or employment data (e.g., emerging tech sectors) or may require including many definitions to define (e.g., outdoor recreation)
- Prioritizing investments in cluster development should consider more than industry presence alone

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 Brooking's Brad McDearman.

RECONSIDERING LQ SCORES

1. Revisit the LQs you calculated in the previous exercise
2. Consider: How large is your region of interest? How did you define the industries? Do you need to take a deeper dive to be confident in the score?
3. What other evaluations do you want to run on your sector(s) of interest to see whether there is a cluster in your region?
4. Are you interested in a cluster that doesn't have a (single) NAICS? If so, how can you define it?

LOCATION QUOTIENT: TAKEAWAYS

- LQ is the primary statistical measure of clusters
- LQ is the ratio of regional industry concentration to national concentration: an LQ > 1.0 signals relative concentration and could indicate a cluster
- LQ's shortcomings include instability for small regions (particularly for narrow industry definitions) and reliance on NAICS to define sectors
- Regardless of LQ score, prioritizing public support requires weighing additional factors

QUESTIONS & DISCUSSION

PREP FOR NEXT SESSION

- Brainstorm potential clusters in your region that are outside of standard NAICS codes
- List your region's key stakeholders for the economy
  - Key businesses & executives
  - Chambers / trade associations
  - Policymakers & regulators
  - Funders & investors
  - Economic development, workforce organizations

FEEDBACK SURVEY

https://forms.gle/5eBgVba76i5uSu1V6

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Jason Rittenberg, Principal at Excel Regional Solutions, is the primary author of this curriculum.

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EXCEL REGIONAL SOLUTIONS

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