

EXERCISE 5:

EXPLORING LQ SYMBOL MAPS AND SUMMARY TOOLS FOR OCCUPATION CLUSTERS

In this exercise you will develop skills to navigate LQ symbol maps of counties for occupation clusters and calculate LQs for the custom region and the corridor region by using specific tools. You will work with the same region and corridor from Exercise 3. Please note that industry and occupation clusters are two different lenses from which you should analyze your region.

Location Quotients (LQs) show specialization of occupation clusters by counties. The maps of LQs can be shown as polygons (county geography) or as points (county centroids). In both the cases, they are examples of lattice geospatial datasets and can facilitate various types of spatial analysis. This includes visually identifying patterns of cluster specialization across geographies. Please note that a region specializing in an occupation cluster may traverse across states and other political boundaries. As you develop cluster-based strategies for your constituents, polygon and point-based maps of the larger region can be helpful for providing regional context and the background.

Please view Tutorial 8 of “Video Tutorials” in RDM prior to completing exercise in Step 1, (http://prodgis.agriculture.purdue.edu/RDM/Tutorials_home.html). The tutorial is developed for industry cluster but same step is required for “Area of Interest” calculations for occupation clusters.

Step 1: Explore LQ summary for the region

1. In this exercise, we will calculate regional LQ for a group of counties in the northeastern part of Indiana. In the main Regional Decision Maker¹ website, go to GIS Atlas, National Data and click on Occupation Clusters – Location Quotient link. Use “Zoom to State” tool and click on Indiana. Open “Layer List” and “Legend” and expand both the tools. In the “Layer List”, expand the group “Occupation Clusters, Technology-based”. You will see that “Engineering and Related Sciences, LQ” layer is checked. Similar to Exercise 3, if you want, scroll down and open-up “LQ Percent Change 2008-2010” layer group and check “Engineering and Related Sciences”. It should open the county map for engineering occupation cluster, LQ percent change from 2008-2010. The LQ summary for the region tool would calculate LQs for all the 17 occupation clusters irrespective of which layer is active on the “Layer List”. Zoom on to the northeast corner of the state and we will be calculating LQs for the four counties region as shown below.

¹ <http://prodgis2.agriculture.purdue.edu/RDM/>

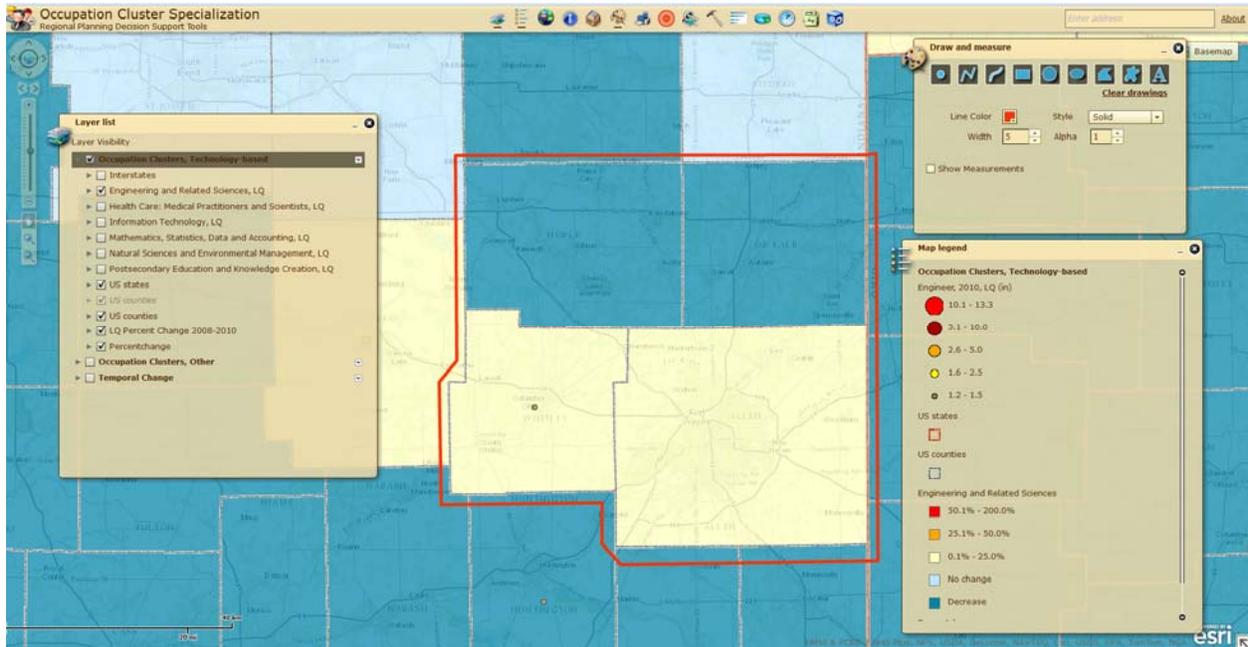


Figure 1: Four Counties Target-region (Noble, DeKalb, Whitley and Allen)

Click on the “AOI LQ Calculator 2010” tool. AOI stands for “Area of Interest”. Use “Draw Polygon” or any other selection tool, such as “Draw Circle” to select the four counties. Please note that your drawing needs to intersect the counties. Your drawing does not need to encompass the county boundaries in total. Click “Submit” and wait for several seconds for the result table. The tool should calculate the 2010 regional LQs for the combined four counties region. Look at the result window and answer the following.

Q1. What are the LQ values for following clusters for the four counties region in Indiana? I have filled-in Advanced Materials cluster for your reference.

Four Counties Region

Cluster	LQ, 2010
Agribusiness & Food Technology	2.68
Engineering & Related Sciences	
Health Care & Medical Science (aggregate)	
Skilled Production Workers	

Q2. From the result window please answer the following. Which occupation cluster has the maximum LQ? Which occupation cluster has the minimum LQ?

LQ 2010	Maximum	Minimum
Name of Occupation Cluster		

Please view Tutorial 9 of “Video Tutorials” in RDM prior to completing exercise in Step 2. (http://prodgis.agriculture.purdue.edu/RDM/Tutorials_home.html). The tutorial is developed for industry cluster but same step is required for “Corridor Region” calculations for occupation clusters.

Step 2: Explore LQ summary for the corridor

- In this exercise, we will calculate regional LQ for a group of counties located along the Interstate 70 corridor in the central Indiana. In the main Regional Decision Maker² website, go to GIS Atlas, National Data and click on Occupation Clusters – Location Quotient link. Use “Zoom to State” tool and click on Indiana. Open “Layer List” and “Legend” and expand both the tools. In the “Layer List”, expand the group “Occupation Clusters, Technology-based”. You will see that “Engineering and Related Sciences” layer is checked. Similar to previous exercise scroll down and open-up “LQ Percent Change 2008-2010” layer group and check “Engineering and Related Sciences”. It should open the county map for engineering occupation cluster, LQ percent change from 2008-2010. The LQ summary for the corridor tool would calculate LQs for all the 17 occupation clusters regardless of which layer is checked on the “Layer List”. In the “Layer List”, check on “Interstates” layers. Zoom on to the central Indiana along the Interstate 70 corridor going to Ohio, and we will be calculating LQs for the four counties region as shown below.

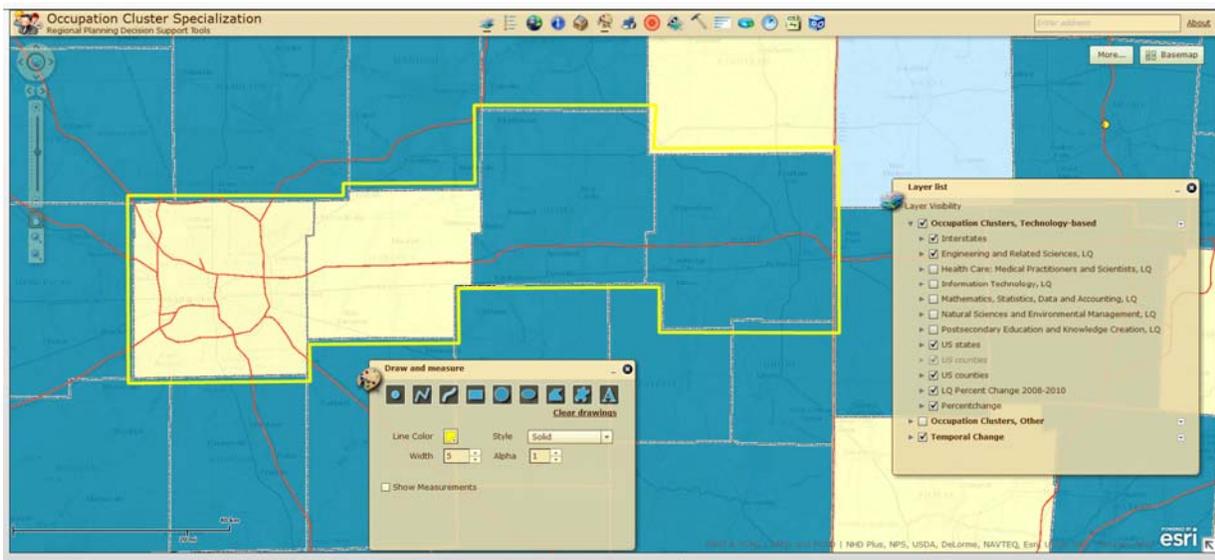


Figure 2: Four Counties Region along the I 70 (Marion, Hancock, Henry and Wayne)

Click on the “Corridor LQ Calculator” tool. Use “Draw Line” or the “Draw Freehand Line” and traverse Interstate 70 and make sure the line should intersect the counties. The tool will show a colored line as you draw along the corridor. The default ROW of 150 Meters should be fine for this exercise. Click “Submit” and wait for several seconds for the result table. The tool should

² http://prodgis.agriculture.purdue.edu/RDM/GIS_Atlas_home.html

calculate the 2010 combined regional LQs for the four counties located along the corridor. Look at the result window and please answer the following.

Q3. What are the LQ values for following clusters for the four counties corridor region located along the I-70 corridor? I have filled-in Agribusiness and Food Technology cluster for your reference.

Four Counties Region

Cluster	LQ, 2010
Agribusiness and Food Technology	1.6
Skilled Production Workers	
Health Care and Medical Science (Therapy, Counseling, Nursing and Rehabilitation)	
Arts, Entertainment, Publishing and Broadcasting	
Mathematics, Statistics, Data and Accounting	
Engineering and Related Sciences	

Note: You may have noticed from Exercise 3 that this group of counties located along the I-70 corridor is highly specialized with higher LQ values in various manufacturing related clusters, such as Primary Metal and Transportation Equipment. However, if you look into the occupations cluster, specialization (≥ 1.2) exists in Skilled Production Workers. This indicates that majority of jobs are middle skill, blue-color jobs. LQs for Engineering and related sciences; Mathematics, statistics, data and accounting; and Information technology are low. You should explore industry and occupation clusters and make inferences about “what your region makes” versus “what your region does”. RDM cluster tools can show your region’s competitive advantages and opportunity areas requiring improvements.

Please fill-in all the tables in this document, save with your initials and submit to Indraneel Kumar, ikumar@purdue.edu

THANK YOU!

ERRATA: Please note that question number has been revised to question 1 followed by question 2 and question 3 based on comment from one participant (02-03-2014). The earlier version had question 1, question 3 and then question 4. Thanks to Rex Knight for bringing this to our attention.