Understanding Location Quotient

OCTOBER 14, 2011 BY ROB SENTZ 4 COMMENTS

Overview

Location quotient (LQ) is a valuable way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. **It can reveal what makes a particular region "unique" in comparison to the national average.**

In more exact terms, location quotient is a ratio that compares a region to a larger reference region according to some characteristic or asset. Suppose X is the amount of some asset in a region (e.g., manufacturing jobs), and Y is the total amount of assets of comparable types in the region (e.g., all jobs). X/Y is then the regional "concentration" of that asset in the region. If X' and Y' are similar data points for some larger reference region (like a state or nation), then the LQ or relative concentration of that asset in the region compared to the nation is (X/Y) / (X'/Y').

LQ for Industries and Industry Clusters

Industry LQ is a way of quantifying how "concentrated" an industry is in a region compared to a larger geographic area (see this post for an illustration), such as the state or nation. The basic uses of industry LQs (and, by extension, for clusters and occupations as well) include these:

- To determine which industries make the regional economy unique.
- To identify the "export orientation" of an industry and identify the most export-oriented industries in the region.
- To identify emerging export industries beginning to bring money into the region.
- To identify endangered export industries that could erode the region's economic base.

Industry LQs are calculated by comparing the industry's share of regional employment with its share of national employment. Suppose that Breweries (NAICS 31212) account for 0.16% of all regional jobs but only 0.015% of all national jobs. The region's LQ for Breweries would then be (.16 / .015) = 10.67, meaning that Breweries are nearly 11 times more

concentrated in the region than average.

Location quotient tells a much different story than merely job numbers or job growth. Industries with high LQ are typically (but not always) export-oriented industries, which are important because they bring money into the region, rather than simply circulating money that is already in the region (as most retail stores and restaurants do). Industries which have both high LQ and relatively high total job numbers typically form a region's economic base. Economic developers and government officials need to pay particular attention to these industries not only for the jobs they provide, but also for their multiplier effect—the jobs they create in other dependent industries like retail trade and food services.

LQ is augmented by two other pieces of information: size of industry/cluster/occupation in terms of jobs, and percent change in LQ over a given time period. A high-LQ industry with a small number of jobs may be an export-oriented industry, but is not vital to the region's economy. A large, high-LQ industry with declining LQ over time, however, is endangering the regional economy.

Consider an example: a city like Detroit, will have high-LQ industries in the manufacturing sector, specifically industries related to automobile and light truck manufacturing. This quantifies the well-known fact that automobiles are Detroit's major export. Because these industries also have very high total employment, a decline in employment or LQ indicates trouble for the entire economy. Growing employment paired with declining LQ, however, merely indicates that the industry is not growing as fast in the region as it is in the national economy.

Another example: an area like Sun Valley, Idaho will show high-LQ industries in hospitality sectors like hotels/motels and food services. This again quantifies Sun Valley's economic dependence on tourism, hospitality, and recreation—one of its major "export" industry clusters. Another large, high-LQ industry in Sun Valley is private households, which quantifies the concentration of wealthy home-owners who have out-of-region sources of income and employ workers like cooks, maids, groundskeepers, chauffeurs, etc.—and whose presence is another major driver of the local economy, though it is not what we typically think of as an "export."

If you are dealing with clusters, the interpretations generally apply since clusters are just groups of industries. If you are interpreting occupation data, keep in mind that occupational growth and decline are tied to the performance of the major industries that employ workers in those occupations. Occupational LQ is simply a more workforce- oriented way of examining industry trends. You can translate occupations to industries through the inverse staffing patterns in Analyst.

LQ for Demographic Groups

Location quotient is useful in demographic studies because it shows what makes the region's demographics unique in comparison to its state and/or the nation. For example, if age groups over 60 have an LQ greater than 1, then the region has a higher than average concentration of residents over 60. If the percent change in LQ is positive, then the over-60 age group in the region is also growing faster than the nation.

"State LQ" calculates the regional LQ(s) by dividing the regional concentration of a demographic group by the state concentration. "National LQ" calculates the regional LQ(s) by dividing regional concentration by national concentration. For example, suppose that in a certain region, 7.5% of the population is age 60 to 64. In the region's state, this age group composes 6% of the population, while in the nation it composes 5.8% of the population. This group is thus 1.25 times more concentrated in the region than the state (7.5% divided by 6%), and 1.29 times more concentrated in the region than the nation (7.5% divided by 5.8%). So the state LQ would be 1.25 and the national LQ would be 1.29. If the region contains areas in two or more states, then the average concentration in all those states is the basis for the LQ calculation.

LQ numbers can be useful for many different analyses, such as the challenge of an aging workforce or the need to create more employment opportunities for a certain ethnic group. Suppose 25% of the population of your region is composed of people with Hispanic ethnicity, while only 10% of the national population has Hispanic ethnicity. The LQ of Hispanics in the

region as compared to the nation (national LQ) is thus (25 / 10) = 2.5, meaning that Hispanics are 2.5 times more concentrated in the region than the nation. This helps to quantify the region's demographic uniqueness and thus inform policy.

For more on LQ, please contact us, or check out Analyst, which presents location quotients for any industry, occupation, or demographic group in any region.

Rob Sentz

Chief Innovation Officer

Justin Shelby says

DECEMBER 6, 2012 AT 7:04 AM

I am working on a project and need to determine the regions with the highest LQs of independent personal trainers. (Those who manage their own clients and billing as apposed to those working on a commission basis for others) The BLS shows the geographic regional data for the overall category but does not break it down from there.

Is this the type of project you tackle?

We also need to profile several other occupational types in the same way with the goal being to prioritize by industry and region for the biggest bang.

Thanks for your feedback.

Rob Sentz says

DECEMBER 6, 2012 AT 10:03 AM

Thanks Justin. We will be in touch to help!

Madison Michelle says

MAY 16, 2017 AT 6:26 AM

Hey, i need some help about finding the highest LQ's for a Veterinarian in the state of Louisiana. Preferably in Prairieville, LA in the zip code 70769. I need to know if this state has high LQ than average amounts in this career. I'm trying to research to become a Veterinarian yet I really would like to know every factor of the job. I just really want to understand all my features of my job since I'll be doing it for the rest of my life. Thanks so much and please respond any time you want just maybe before the dead line of May, 18th? Thanks so much!

Joshua Wright says

MAY 17, 2017 AT 5:09 AM

Hey, there. Happy to help. We'll send data on veterinarians in Louisiana your way.

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