

REGIONAL BUSINESS CLUSTER ANALYSIS

The Location Quotient Technique is a common economic analysis method to determine the value of a community's business clusters. In this report, we are comparing the regional economies in which Blackford County participates to the national economy. The purpose of the study is to identify basic employers, those establishments that are exporting goods out the county or region and bringing capital back into the community.

This is an important concept in understanding the nature of wealth creation. If a shop that sharpens saw blades purchases a loaf of bread from a local bakery or if the baker has his or her saw blades sharpened, capital is simply exchanged within the community. But, if the baker begins packaging bread and exporting it for sale outside the region, the money used to purchase the bread in another location now becomes new capital within the baker's community. The baker creates additional wealth where his or her business is located. It's not simply an exchange of existing capital. Goods are exported and capital imported. The baker has become a basic employer.

It is important to take advantage of the economic development opportunities presented by regional business sectors with strong basic employers. Location Quotients (LQs) help to identify these areas. An LQ is a ratio comparing the specialization of a job sector in a given region against its specialization in larger reference area. By specialization we are referring to the share of jobs a sector has as a percentage of a regional economy in comparison to the share it has in a larger referenced economy, in this case the nation. This comparison takes the form of a ratio or quotation. We are assuming that if an industry has a greater share than expected of a given industry, then that "extra" industry employment is assumed to be basic because those jobs are above what a local economy should have to serve local needs. A greater share would be a quotient over 1; a smaller share less than 1; and 1 indicating exactly the same degree of specialization locally and nationally.

This approach assumes that the local economy would have that same percentage of its workers in the food processing industry to serve its local needs as the nation. That would result in an LQ of 1. If, for example, food processing including our baker employed 3% of the total local workforce and the national economy had only 1.5% of its workforce in food processing. Any employment over and above the expected average percentage (in this case 1.5%) is, therefore, considered to consist of basic sector jobs because these workers are assumed to be exporting their goods and services to non-local areas. In this case, the LQ is $3/1.5$ or 2. If the percentages had been identical, an LQ of 1, or if the local percentage had been less than the reference percentage, then we would conclude that the local area has no basic sector employment for that industry as the area can only, at best, meet their local demand and not export these goods and services.

In order to identify regional growth trends and better understand development opportunities, SDG conducted a location quotient analysis across 23 industry clusters. For the years 2002 and 2008, this analysis compares LQs in employment (number of jobs), business establishments and wages in four regional economies in which Blackford County participates or may take advantage of:

- **Blackford County Region** - consisting of Blackford County and nearby counties. This region includes including Adams, Blackford, Delaware, Grant, Huntington, Jay, Madison, Randolph, and Wells counties.
- **Indianapolis MSA** – the key economic engine on the I-69 corridor to its south.
- **Ft. Wayne MSA** – the key economic engine on the I-69 corridor to its north.
- **Columbus, OH MSA** – an important regional economic engine.

A. Blackford County Region - Employment

With regard to 2008 employment quotients, the Blackford County Region presents a relatively balanced distribution. Eight of the 23 industry clusters possess quotients greater than 1. Four more have quotients above 0.65. Four clusters stand out for their particularly low quotients, and 5 emerge due to their strong outperformance and growth.

From a trending perspective, both high and low quotient clusters demonstrate positive momentum. However, of the most noteworthy low performers, only two relative outliers, with very low quotients and absolute impacts, show trending strength. On the other hand, Chemicals and Glass & Ceramics, which both display more meaningful economic levels with low quotients, have experienced significant percentage decreases from 2002 through 2008.

The cluster with the highest quotient, Transportation Equipment Manufacturing, has reduced its outlier position from 6.38 in 2002 to 3.42 in 2008. Electrical Equipment Manufacturing and Agribusiness emerged as outperforming sectors, despite previous underperformance. Out of the high quotient industries, only Machinery Manufacturing maintained a stable quotient over the analyzed period.

Table 1: Low and High Quotient Clusters – 2002 - 2008

Cluster	2002 LQ	2008 LQ	% Change
<i>Low Quotient</i>			
Apparel & Textiles	0.02	0.06	200%
Arts & Entertainments	0.2	0.29	45%
Chemicals & Chemical Based Products	0.83	0.39	-53%
Glass & Ceramics	1.1	0.33	-70%
<i>High Quotient</i>			
Electrical Equipment, Appliance & Component Manufacturing	0.03	1.17	3800%
Machinery Manufacturing	1.96	1.97	0.5%
Transportation Equipment Manufacturing	6.38	3.42	-46.4%
Agribusiness, Food Processing & Technology	0.51	1.17	129.4%
Biomedical/Biotechnical (life sciences)	1.16	1.28	10.3%

In the case of Blackford County, the location quotient analysis using employment data reveals a trend towards increased economic balance. While strong outperformers remain, the trend over the period 2002 to 2008 shows the emergence of new clusters and the moderation of those at risk of attaining disproportionate levels.

To provide some perspective on the location quotient analysis, **Table 2** highlights the most significant clusters in terms of absolute employment levels. The Agribusiness, Electrical Equipment Manufacturing, and Biomedical clusters represent the only industries that both create jobs and outperform the national quotient level within the Blackford County Region. Conversely, Machinery Manufacturing and Transportation Equipment Manufacturing, while having high location quotients, both shed jobs from 2002 to 2008. Nevertheless, they remain key industry clusters with Transportation Equipment Manufacturing remaining a large basic employer. The location quotients for the other top employment sectors fall within a limited range from the national average. Total employment in the region was 170,688 in 2008.

Table 2: Top Employment Clusters

Cluster	2002 Employment	2008 Employment	% Change
<i>Top Clusters</i>			
Education & Knowledge Creation	10,895	10,986	0.8%
Biomedical/Biotechnical (life sciences)	6,591	7,489	13.6%
Transportation Equipment Manufacturing	17,025	7,096	-58.3%
Business & Financial Services	4,857	5,153	6.1%
Agribusiness, Food Processing & Technology	2,372	4,725	99.2%
<i>Other Noteworthy Clusters</i>			
Electrical Equipment, Appliance & Component Manufacturing	20	623	3,150%

The location quotient analysis using employment data indicates some areas of strength and weakness. The quotient trend of underperforming clusters remains stable or decreases, in absolute terms, over the period of analysis. Coupled with the limited employment levels of these low quotient clusters, this potentially indicates a movement away from industries with limited growth potential. However, the cluster imbalance heavily skewed towards underperforming industries may reveal opportunities to improve employment diversity and reduce economic risk.

B. Blackford County Region— Establishments

When analyzing location quotients using establishment data, the Blackford County Region demonstrated outperformance in 16 of the 23 clusters with only two industries falling below 0.6. Six clusters possess quotients greater than two. In each of these high quotient cases, positive growth trends were also observed.

The period of 2002 through 2008 reveals no quotient degradation in terms of percentage change. Eight industry clusters experienced quotient growth of greater than 100%. Of this group, only one cluster possesses a quotient of above 2.0. This is not to say that all establishments in every industry increased in absolute terms. However, the regional quotient ratios universally outperformed national trends.

Table 3: Blackford County Region Establishments

Cluster	2002 LQ	2008 LQ	% Change
<i>Superior Quotients</i>			
Fabricated Metal Product Manufacturing	1.87	2.15	15%
Machinery Manufacturing	2.91	3.33	14.4%
Primary Metal Manufacturing	2.5	3.75	50%
Transportation Equipment Manufacturing	2.83	3.82	35.5%
Glass & Ceramics	0.99	2.17	109.1%
General Manufacturing	1.92	2.38	24%
<i>Trend Outperformance</i>			
Advanced Materials	0.59	1.88	218.6%
Agribusiness, Food Processing, & Technology	0.76	1.69	122.4%
Apparel & Textiles	0.08	0.72	800%
Arts & Entertainment	0.43	0.99	130.2%
Mining	0.32	1.8	462.5%

While employment quotient distribution was generally balanced, the establishment quotient for the Blackford County Region demonstrated outperformance in the majority of clusters.

C. Blackford County Region - Wages

Similar to the results seen with the employment quotients, nine out of 23 clusters possessed values higher than 1. There were a few significant outperformers. Four industries had quotients higher than 1.5 culminating with the 4.06 value demonstrated by Transportation Equipment Manufacturing, which is down from an 8.01 level in 2002. Aside from a few outliers, the lowest quotient sectors largely experienced stagnant or decreasing trends between 2002 and 2008.

D. Indianapolis MSA

When looking across the top employment clusters, Indianapolis possesses both strengths and opportunities for growth. Their top sector, Business & Financial Services, demonstrates both basic employment characteristics and sizeable absolute employment growth over the analyzed period. Likewise, the Transportation & Logistics and Biomedical/biotechnical clusters also display similar strength as community wealth generators. On the other hand, the Energy cluster shows a trend towards further underperformance despite most employment growth. While the Defense & Security segment possesses a ratio below the national average, the positive trend in both quotient and absolute employment indicates a potential area of strength.

Table 4: Indianapolis MSA

	Employment			Establishments		Wage	
	2008 # of Jobs	2008 LQ	% Change in LQ from 2002	2008 LQ	% Change in LQ from 2002	2008 LQ	% Change in LQ from 2002
<u>Noteworthy Sectors</u>							
Business & Financial Services	78,206	1.04	-2.8%	1.18	4.4%	0.85	-5.6%
Transportation & Logistics	43,244	1.69	2.4%	1.23	13.9%	1.51	-2.6%
Biomedical/Biotechnical	42,058	1.41	-2.1%	2.38	-9.5%	1.59	-3.0%
Defense & Security	36,048	0.84	7.7%	1.11	20.7%	0.83	18.6%
Energy (Fossil & Renewable)	35,307	0.68	-8.1%	0.98	10.1%	0.58	-10.8%

The establishment quotient showed generalized growth, with only one cluster falling below 1. The wage quotients roughly mirrored the employment analysis, but showed slightly more aggressive trending. One item to note is the underperformance of Business and Financial Services in wages relative to sector overperformance in employment.

E. Ft. Wayne MSA

In analyzing location quotients between 2002 and 2008 across the same three data sets, Ft. Wayne demonstrates an economy in transition. The segment with the highest absolute employment, Business & Financial Services, has seen jobs decrease over the analyzed period, while possessing a quotient indicating underperformance relative to the overall economy. The remaining segments all show growing employment and improving quotient trends. While Biomedical/Biotechnical and Advanced Materials already outperform with regard to their employment ratios, Energy and Information Technology show encouraging trends in terms of both their quotients and absolute employment growth.

Table 5: Fort Wayne MSA

	Employment			Establishments		Wage	
	2008 # of Jobs	2008 LQ	% Change in LQ from 2002	2008 LQ	% Change in LQ from 2002	2008 LQ	% Change in LQ from 2002
<u>Noteworthy Sectors</u>							
Business & Financial Services	12,208	0.69	-11.5%	1.03	13.2%	0.56	-16.4%
Biomedical/Biotechnical	11,349	1.62	3.8%	3.02	4.5%	2.01	8.1%
Energy (Fossil & Renewable)	8,507	0.7	7.7%	1.06	17.8%	0.61	8.9%
Information Technology	8,502	0.88	76.0%	0.87	38.1%	0.89	117.1%
Advanced Materials	7,932	1.01	60.3%	2.06	87.3%	1.11	85.0%

The establishment quotients generally show positive momentum. Considering both employment and wages, similar trends are apparent with wages moving more aggressively. One area to note is the positive picture inherent in both the Information Technology and Advanced Materials sectors.

F. Columbus, Ohio MSA

The analysis of Columbus, OH shows generalized employment and ratio growth, with only Biomedical/biotechnical showing a slight quotient decrease. Four out of their top five employment sectors have quotients higher than 1. Only Education & Knowledge underperforms the national average, but shows solid growth in terms of both its ratio and absolute employment. While most sectors demonstrate modest changes over the analyzed period, Transportation Logistics improved by over 40% in their employment and wage quotients, and also absolute employment.

Table 6: Columbus, Ohio MSA

	Employment			Establishments		Wage	
	2008 # of Jobs	2008 LQ	% Change in LQ from 2002	2008 LQ	% Change in LQ from 2002	2008 LQ	% Change in LQ from 2002
<i>Noteworthy Sectors</i>							
Business & Financial Services	100,239	1.27	1.6%	1.19	4.4%	1.06	2.9%
Education & Knowledge	58,473	0.67	8.1%	1.25	108.3%	0.73	12.3%
Defense & Security	51,683	1.15	6.5%	1.21	4.3%	1.23	15.0%
Biomedical/Biotechnical	50,488	1.62	-4.7%	3.41	-0.6%	1.69	-10.6%
Transportation Logistics	43,618	1.64	41.4%	1.19	15.5%	1.71	52.7%

G. Summary

While not extensively imbalanced, the location quotient analysis illuminated a trend towards employment and wage strength amongst a relatively small set of industries. The Blackford County Region possesses a more balanced establishment profile, which could support further employment and wage shifts away from traditionally outperforming sectors. In looking at the broader region, Blackford County may be able to leverage emerging strength in Electrical Equipment Manufacturing to take advantage of complementary businesses in Indianapolis and Ft. Wayne. In particular, the emergence of Information Technology in Ft. Wayne and established sectors in Indianapolis present potential growth opportunities. This will be one set of factors in creating new cluster recruitment strategies for Blackford County Economic Development.