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Cluster Analysis: Regional Economic Base Analysis

CMAP is conducting a cluster analysis for northeastern Illinois, which consists of seven counties -- Cook, DuPage, Kane, Kendall, Lake, McHenry, and Will. Business clusters are characterized by the concentration and interconnectedness of business – suppliers and buyers, as well as associated institutions and service providers. "The most successful clusters are typically found in multi-county regions where participants can easily interact and leverage the same pool of labor and training assets. Firms that are part of robust clusters are in a stronger position to compete successfully in the global economy and thus to contribute to regional prosperity."[†] This report offers an overview of the region's economy and a comparative analysis of its industries. Through this process CMAP and its partners can begin to identify cluster candidates and develop a policy and investment strategy that can maximize the region's human capital, diverse economic base and achieve the economic goal of being a globally competitive, innovative, and dynamic.

Statistics show that the region has numerous strengths. Employment figures from the Illinois Department of Employment Securities shows that northeastern Illinois contains sixty seven percent of all Illinois jobs in 2007. The region continues to gain jobs with Kane, Kendall, McHenry, and Will counties reporting gains over 15%. Overall the economy is diverse, though trends indicate an economy that is increasingly service oriented, particularly in professional and financial services. According to the US Department of Commerce, the region exported over $29 billion dollars in goods and services in 2006 and is ranked sixth among the nation's export markets. The region is constantly touted as the nation's freight hub, with six class I railroads converging to eighteen intermodal yards, two international airports and several interstate highways.

Despite its strengths, the region faces many challenges which include developing a skilled workforce that can adapt to the changes demanded by today's integrated global economy; the need to modernize and increase the capacity of the transportation network in order to efficiently move and process the increasing number of trucks, trains, and people across the region; the need for a stronger collaboration across all sectors to develop public/private partnership and a unique identity that will continue to drive its global competitive advantage.

[†] Rosenfeld, Stuart, et al. "Cluster-Based Strategies for Growing State Economies," pg 1. *Innovation America* Series; National Governor's Association and the Council on Competitiveness, 2006.

Regional Profile

Population:

Northeastern Illinois is home to over 8.5 million people. Of these, over half live in Cook County. The collar counties grew exponentially over the seven year period. Kendall County was the fastest growing county in the country during this time and Will County added the most people in the state from 2000 to 2007.

Area	2000	2007	% Change
Cook	5,376,741	5,285,107	-1.7%
DuPage	904,161	929,192	2.8%
Kane	404,119	501,021	24.0%
Kendall	54,544	96,818	77.5%
Lake	644,356	710,241	10.2%
McHenry	260,077	315,943	21.5%
Will	502,266	673,586	34.1%
Region-wide	8,146,264	8,511,908	4.5%

Source: US Census Bureau

Labor Force:

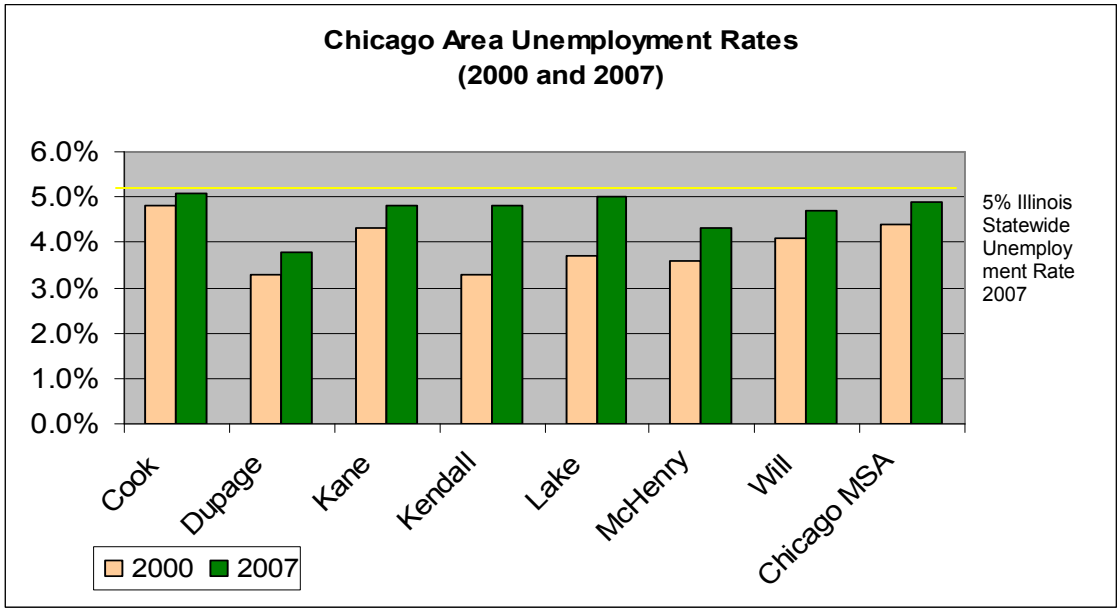
Northeastern Illinois dominates the Illinois economy containing 67% of the state's employed labor force in 2007. Kendall, Kane, McHenry, and Will saw gains in jobs above 15% over that same time period.

Area	2000	2007	% Change
Cook	2,596,408	2,504,059	-3.6%
DuPage	511,994	516,438	0.9%
Kane	212,203	252,011	18.8%
Kendall	31,290	49,014	56.6%
Lake	325,926	354,846	8.9%
McHenry	145,929	170,822	17.1%
Will	267,410	344,708	28.9%
Region-wide	4,091,160	4,191,898	2.5%
Statewide	6,361,800	6,176,800	-2.9%

Source: Illinois Department of Employment Security (IDES)

Unemployment Rate:

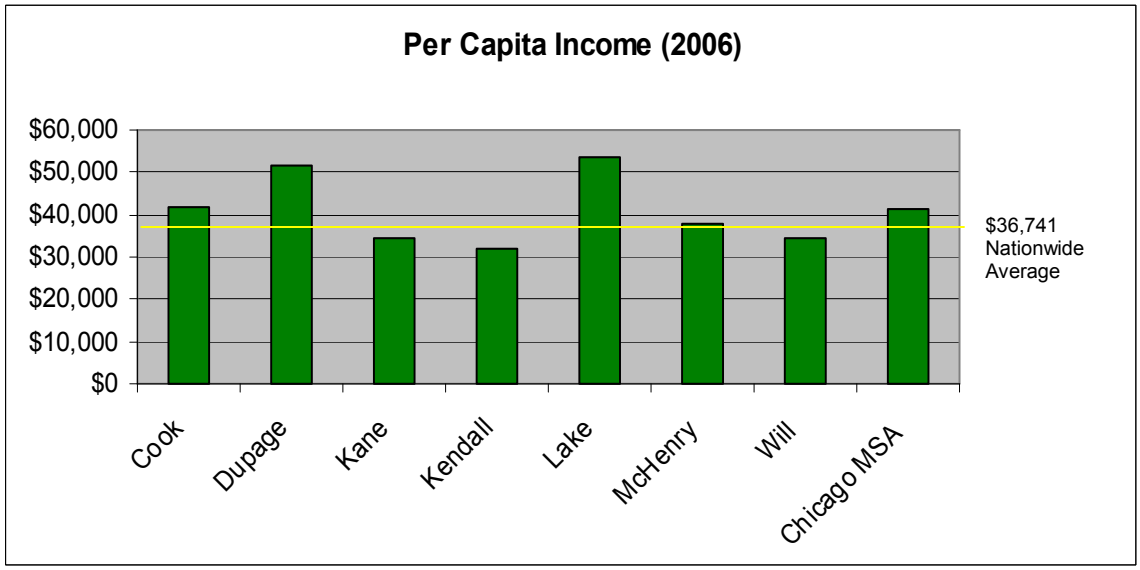
The statewide unemployment rate was 5.0% in 2007. The region was 4.9%. Only two counties, Cook and Lake, had unemployment rates above the State average, while the other five counties retained rates below 4.8%.



Source: Illinois Department of Employment Security (IDES)

Per Capita Income:

The region had a per capita income in 2006 higher than the national average of $41,282. Three counties, Cook, DuPage, and Lake Counties had higher per capita income levels. The remaining collar counties have relatively high per capita income close to the national average.



Source: Bureau of Economic Analysis

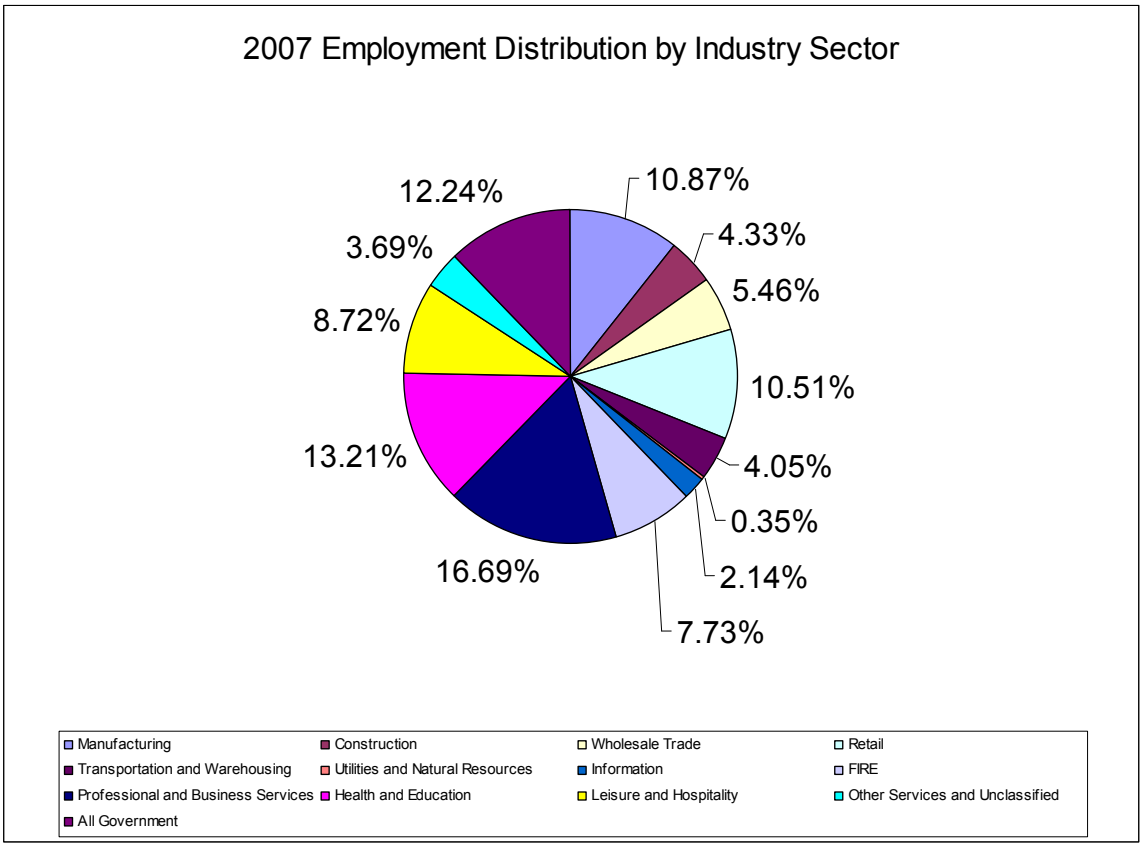
Northeastern Illinois' Jobs:

The following table shows the private and public industry employment in each county and the region in 2007. Cook County has the largest percentage of all jobs in the region followed by DuPage and Lake County.

Area	Private Industry	All Government	Total
Cook	2,194,338	312,191	2,506,529
DuPage	538,626	50,919	589,545
Kane	177,607	28,843	206,450
Kendall	18,098	3,575	21,673
Lake	283,271	40,728	323,999
McHenry	85,523	14,463	99,986
Will	154,665	31,007	185,672
Region	3,452,128	481,726	3,933,854

Source: Illinois Department of Employment Security (IDES)

The following graph shows the composition of the region's economic base in 2007 based on the traditional industry sector definitions. Professional and Business Services provide the most jobs, and it is the leading employer in the region. Health and Education, Leisure and Hospitality, Government, and Manufacturing round out the top five leading industry employers. Overall the region's economy has a fairly balanced spread across industry sectors. This compliments the diverse character of the region and can also provide for resilience during national economic downturns.



Source: Illinois Department of Employment Security (IDES)

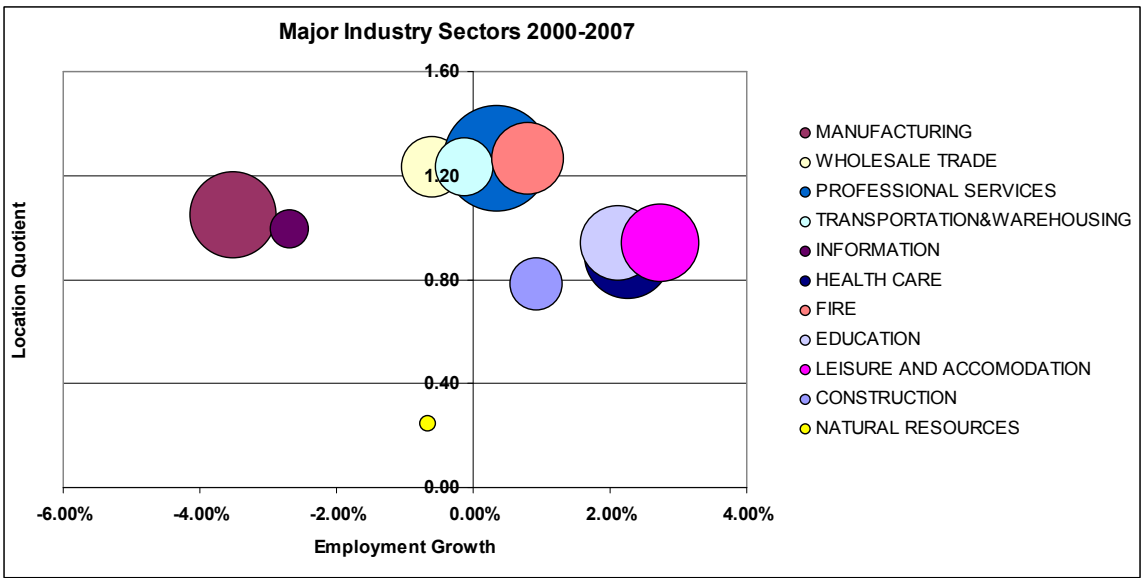
Sector and Industry Profile

In order to develop a cluster based strategy for the *GO TO 2040* plan, it is necessary to highlight industries in the northeastern Illinois region that may display a competitive advantage when compared to the nation. Three determinants are used to identify industries that may have a competitive advantage – industries that have a high employment concentration (location quotient), high wage levels, and fast relative employment growth.

The following chart provides information on the region's sector composition through the use of bubble charts.

Interpreting the chart:

- The size of the bubble indicates the employment size (number of jobs).
- The horizontal axis indicates the employment change over the seven year period. Growth to the right of the graph is positive.
- The vertical axis indicates the concentration of that industry relative the nation. If the concentration is *above 1.25* than that industry is more heavily concentrated in the region than in the nation.



Highlights from the Sector Perspective

Professional Services provides the most jobs in the region (656,868), followed by Manufacturing (427,706), Health Care (419,166), and Leisure and Accommodation (343,212).

Professional Services, Finance Insurance & Real Estate (FIRE), Transportation and Warehousing, and Wholesale Trade carry concentrations above 1.25. This indicates that

these sectors are heavily concentrated in the region when compared to the nation. FIRE and Professional Services have seen modest growth in employment over the seven year period 0.80% and 0.34% respectively.

The fastest growing sectors in the region are Leisure and Accommodation (2.74%) followed by Health Care (2.26%), and Education (2.13%).

Manufacturing (-3.52%) reported the highest rate of job loss during the seven year period followed by Information (-2.67%) and Natural Resources (Agriculture, Mining, and Utilities) (-0.167).

Six of the eleven sectors in the region–Professional Services, FIRE, Construction, Education, Health Care, and Leisure and Accommodation reported job growth from 2000 to 2007.

Highlights from the Industry Perspective[‡]

Industries that have a high concentration and low employment growth are *mature* industries in the region (pgs. 8, 9). They represent industries that have a stronghold but do not experience any significant growth. Many of them are manufacturing industries (i.e. Pharmaceutical and Medicine Manufacturing, Forging and Stamping). Although these appear to be in decline, global supply chain patterns have caused manufacturing to be integrated into transportation and warehousing industries. Further analysis indicates that these industries pay a competitive wage. A cluster approach will capture the importance of what are at first glance declining industries.

Industries with high concentration and high employment growth are *important growth* industries in the region (pgs 10, 11). They represent industries that export their products or knowledge out of the region and may have a competitive advantage because they are more concentrated here than in other areas. Eighteen industries fall within this classification and eight industries also have wages above the national average. The important growth industries exemplify the diversity of the economy and the region because they are spread through all sectors. The industries do not operate in a bubble and they are strengthened by competing and complimentary firms as will be seen in the next stage of the analysis through the development of clusters.

Industries with low concentration but high employment growth may be *potential emerging* industries (pgs.12). High employment growth indicates that the industry and its products are demanded by local consumers as well as being exported. That demand is met with increased labor. Thirteen industries are considered potentially emerging and offer competitive wages when compared to the national average. These industries are likely growing due to the effects of maturing and important growing industries which have created a demand for industries that had not previously experienced much growth. A

[‡] A complete industry analysis begins on page 8.

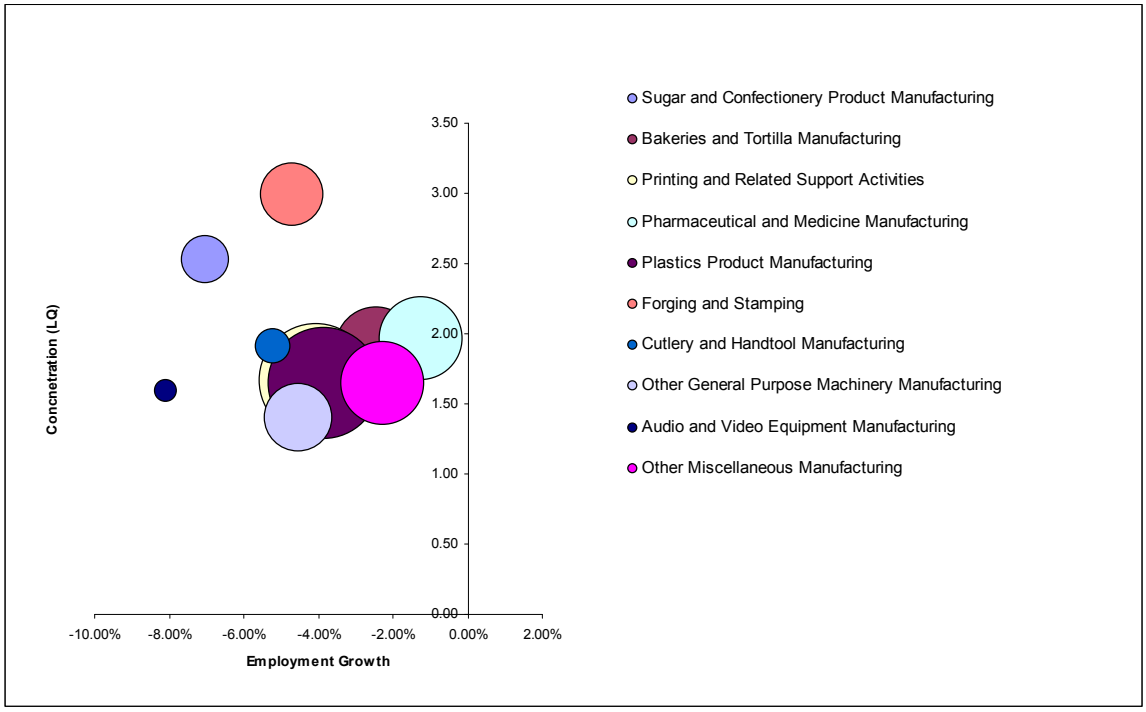
cluster based approach will connect the strengths and needs of these industries with similar labor pools, supply chain needs, and business strategies.

This analysis identifies the mature, important growth, and emerging industries in the region. The next step in the analysis is to conduct interviews with regional leaders, institutions, and economic developers to gain insight into current trends and factors effecting industries throughout the region. With this information, cluster candidates can be identified which will allow CMAP and its partners to develop a policy and investment strategy that can promote clusters of business. Focus on individual industries has traditionally had limited spillover effects and produced minimal regional economic benefits for our workforce, transportation infrastructure, or collaborative efforts. The cluster approach can maximize the region's human capital, diverse economic base and achieve the economic goal of being a globally competitive, innovative, and dynamic region.

APPENDIX I – Detailed Industry Analysis[§]

Mature Industries

The northeastern region has two dozen industries that have a concentration greater than 1.25 and pay a wage above the national average in those industries. Half of these industries are *Goods Producing* – specifically, manufacturing, while the other half are *Service Oriented* – professional services and finance. They have been broken down into those two categories for analysis.



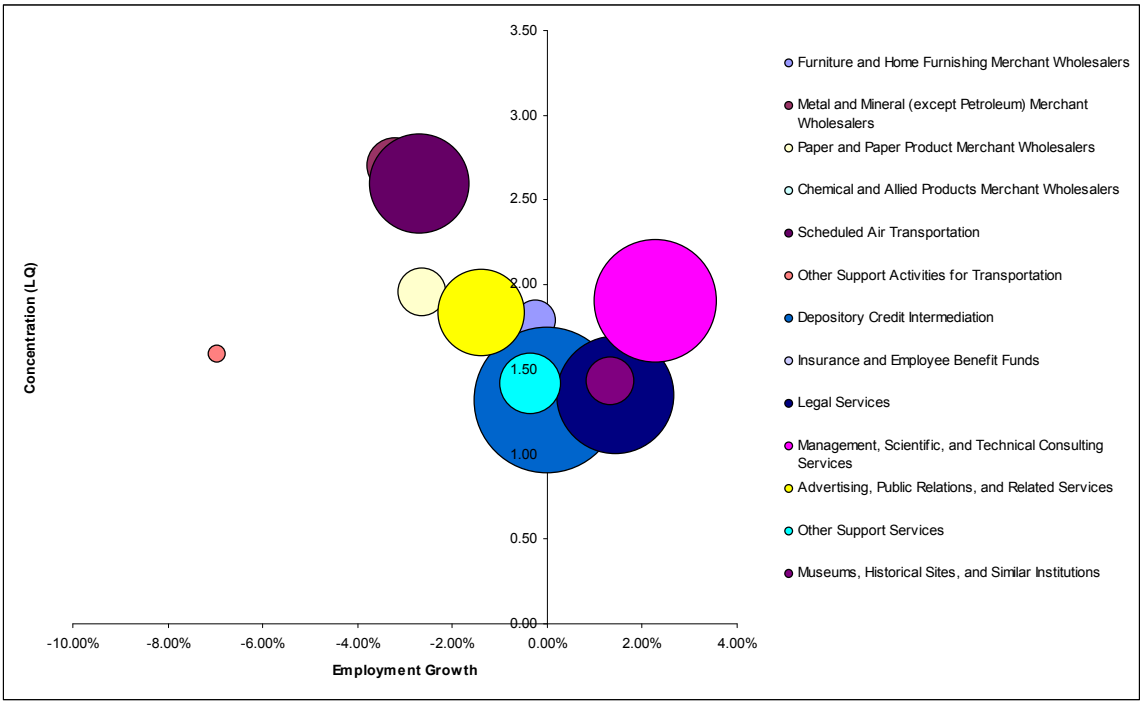
Industry	US Wkly Wage	MSA Wkly Wage	Greater than 10%
Sugar and Confectionery Product Manufacturing	$829	$1,018	**22.80%**
Bakeries and Tortilla Manufacturing	$623	$792	**27.13%**
Printing and Related Support Activities	$830	$966	**16.39%**
Pharmaceutical and Medicine Manufacturing	$2,317	$2,648	**14.29%**
Plastics Product Manufacturing	$794	$924	**16.37%**
Forging and Stamping	$904	$1,159	**28.21%**
Cutlery and Hand tool Manufacturing	$919	$1,236	**34.49%**
Other General Purpose Machinery Manufacturing	$1,077	$1,214	**12.72%**
Audio and Video Equipment Manufacturing	$1,151	$1,273	**10.60%**
Other Miscellaneous Manufacturing	$807	$1,118	**38.54%**

The chart above depicts the goods producing industries that are heavily concentrated in the region and pay a competitive wage. These ten manufacturing industries carry concentrations above 1.50 with Forging and Stamping (2.99), Sugar and Confectionary Product Manufacturing (2.53) and Pharmaceutical and Medicine Manufacturing (1.96) round out the top three. All of these industries are considered advanced manufacturing and materials – the

[§] Data sources and methodology can be found in Appendix II – Methodology.

end stage of products to be used by a consumer or business (i.e. paper, medicine, hand tools, etc.).

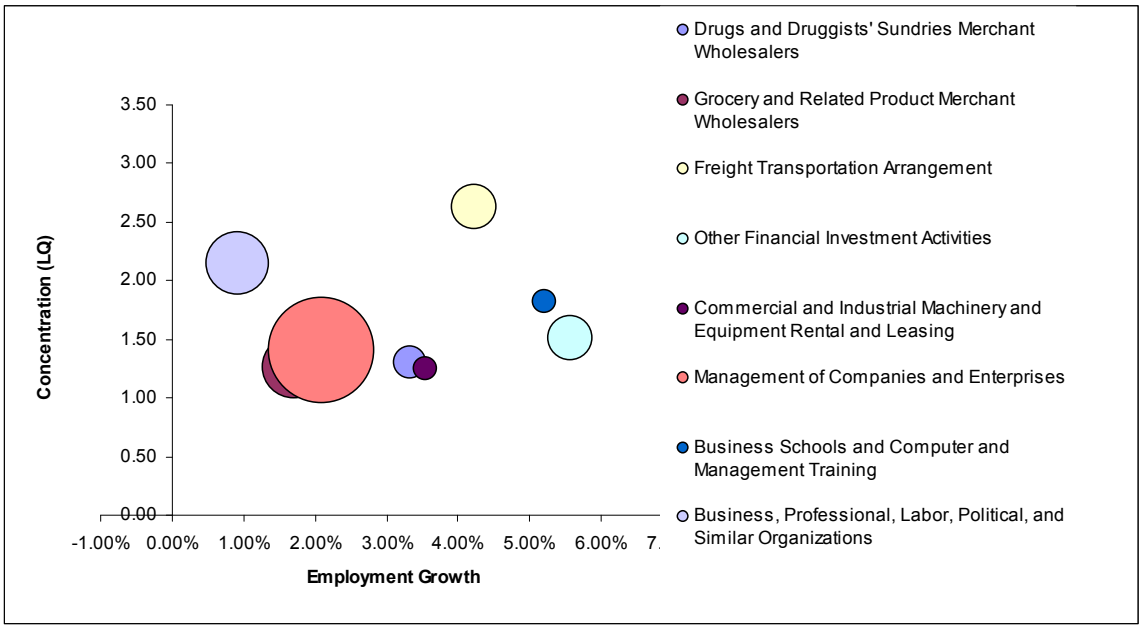
(Mature Industries Continued)



Industry	US Wkly Wage	MSA Wkly Wage	Greater than 10%
Furniture and Home Furnishing Merchant Wholesalers	$979	$1,172	**19.71%**
Metal and Mineral (except Petroleum) Merchant Wholesalers	$1,179	$1,326	**12.47%**
Paper and Paper Product Merchant Wholesalers	$1,089	$1,446	**32.78%**
Chemical and Allied Products Merchant Wholesalers	$1,387	$1,539	**10.96%**
Scheduled Air Transportation	$1,101	$1,318	**19.71%**
Other Support Activities for Transportation	$626	$721	**15.18%**
Depository Credit Intermediation	$1,319	$1,768	**34.04%**
Insurance and Employee Benefit Funds	$1,901	$3,716	**95.48%**
Legal Services	$1,317	$1,592	**20.88%**
Management, Scientific, and Technical Consulting Services	$1,470	$1,741	**18.44%**
Advertising, Public Relations, and Related Services	$1,259	$1,466	**16.44%**
Other Support Services	$737	$819	**11.13%**
Museums, Historical Sites, and Similar Institutions	$570	$646	**13.33%**

This chart depicts the service-providing industries have a strong concentration in the region and pay a competitive wage when compared to the national average in those industries. It is a clear mix between the industries that sell wholesale the advanced materials and products discussed above and Professional and Financial industries. Two industries in Professional Services – Management, Scientific, and Technical Consulting (1.90), Legal Services (1.35), and Museums, Historical Sites, and Similar Institutions in the Leisure sector (1.43) have had positive employment growth, but that growth has not been faster than the national average.

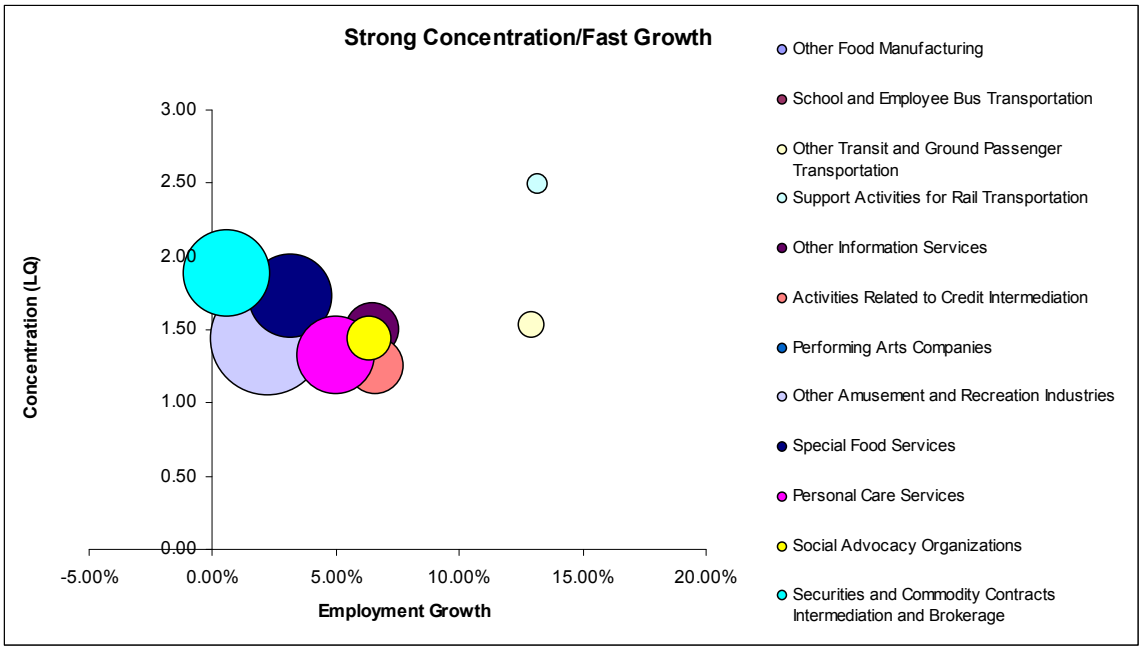
Important Growth Industries



Industry	US Wkly Wage	MSA Wkly Wage	Greater than 10%
Drugs and Druggists' Sundries Merchant Wholesalers	$1,922	$2,195	**14.20%**
Grocery and Related Product Merchant Wholesalers	$886	$1,000	**12.87%**
Freight Transportation Arrangement	$976	$1,087	**11.37%**
Other Financial Investment Activities	$4,826	$6,883	**42.62%**
Commercial and Industrial Machinery and Equipment Rental and Leasing	$1,135	$1,537	**35.42%**
Management of Companies and Enterprises	$2,203	$2,883	**30.87%**
Business Schools and Computer and Management Training	$1,068	$1,689	**58.15%**
Business, Professional, Labor, Political, and Similar Organizations	$884	$1,116	**26.24%**

The diagrams above and below depict industries that can be considered important growth. They are heavily concentrated in this region, have experienced fast employment growth and the majority pay a weekly wage above the national average. Five industries pay an average wage thirty percent more than the national average , have seen the fastest growth, and have strong concentration are within the Professional Services and Financial sectors – Management of Companies and Enterprises, Business Schools and Computer and Management Training, Commercial and Industrial Machinery and Equipment Rental and Leasing, , Other Financial Investment Activities, and Business and Professional Organizations. Freight Transportation Arrangement (i.e. freight distribution, third party logistics) had the strongest concentration (2.63) and experienced fast employment growth over four percent. An employee in the region earns on average one hundred dollars more a week in the region versus an employee in the nation.

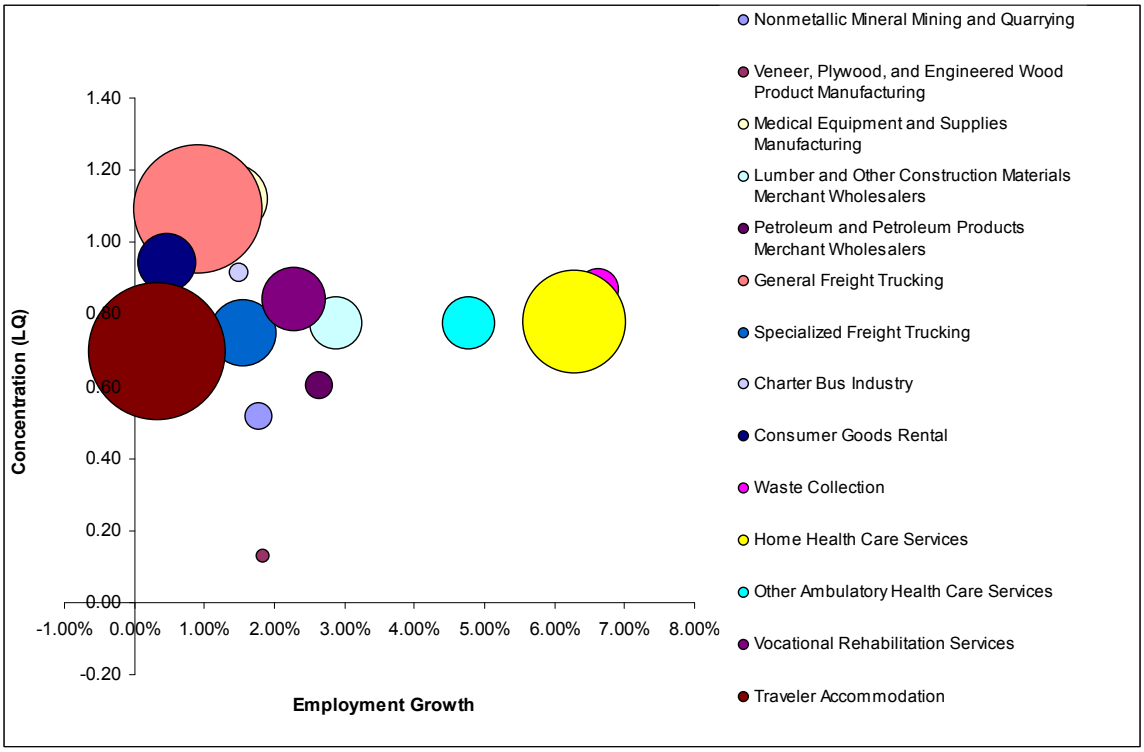
(Important Growth continued)



Industry	US Wkly Wage	MSA Weekly Wage	Greather than 10%
Other Food Manufacturing	$1,026	$1,059	3.22%
School and Employee Bus Transportation	$375	$409	9.07%
Other Transit and Ground Passenger Transportation	$476	$473	-0.63%
Support Activities for Rail Transportation	$776	$847	9.15%
Other Information Services	$1,811	$1,565	-13.58%
Activities Related to Credit Intermediation	$1,283	$1,208	-5.85%
Performing Arts Companies	$640	$647	1.09%
Other Amusement and Recreation Industries	$346	$364	5.20%
Special Food Services	$380	$403	6.05%
Personal Care Services	$355	$347	-2.25%
Social Advocacy Organizations	$657	$604	-8.07%
Securities and Commodity Contracts Intermediation and Brokerage	$8,246	$6,094	-26.10%
Securities and Commodity Exchanges	$4,071	$3,843	-5.60%

The above diagram depicts eleven industries have concentrations in the region above 1.25 and have experienced rapid employment growth greater than those industries in the nation over the seven year period. Six of these industries also pay a weekly wage above the national average – Support Activities for Rail Transportation, School and Employee Bus Transportation, Special Food Services, Other Amusement and Recreation Industries, Other Food Manufacturing, and Performing Arts Companies. Support Activities for Rail Transportation had the highest concentration (2.50), fastest growth (13.21%) and pays close to $100 dollars above the national average. Other Amusement and Recreation Industries (1.44), Other Food Manufacturing (1.36), and Special Food Services (1.73) have above average wages while having employment growth over two percent in the seven year period. A cluster of miscellaneous industries – Social Advocacy Organizations (1.44), Activities related to Credit Intermediation (1.25), Personal Care Services (1.32), Other Information Services (1.50) have seen steady employment growth above four percent and moderately strong concentration in the region but do not have wages above the national average.

Emerging Industries



Industry	US Wkly Wage	MSA Wkly Wage	Greater than 10%
Nonmetallic Mineral Mining and Quarrying	$990	$1,335	**34.85%**
Veneer, Plywood, and Engineered Wood Product Manufacturing	$740	$822	**11.08%**
Medical Equipment and Supplies Manufacturing	$1,166	$1,793	**53.77%**
Lumber and Other Construction Materials Merchant Wholesalers	$978	$1,091	**11.55%**
Petroleum and Petroleum Products Merchant Wholesalers	$1,359	$1,617	**18.98%**
General Freight Trucking	$786	$898	**14.25%**
Specialized Freight Trucking	$706	$872	**23.51%**
Charter Bus Industry	$461	$599	**29.93%**
Consumer Goods Rental	$479	$715	**49.27%**
Waste Collection	$831	$1,113	**33.94%**
Home Health Care Services	$474	$525	**10.76%**
Other Ambulatory Health Care Services	$671	$741	**10.43%**
Vocational Rehabilitation Services	$436	$534	**22.48%**
Traveler Accommodation	$509	$576	**13.16%**

The chart above depicts thirteen industries that have seen employment growth faster than those industries in the nation and pay an average weekly wage greater than the national average. It is a mixture of Wholesale industries and Service oriented industries in Health Care, Education and Leisure. Home Health Care Services and Other Ambulatory Health Care Services have seen the fastest employment growth over five percent while paying close to 10%more in weekly wages. Medical Equipment and Supplies Manufacturing (1.12) and General Freight Trucking (1.09) are slightly more concentrated in the region and have had modest employment growth over the seven year period. Medical Equipment and Supplies Manufacturing pays on average 50% more in the region when compared to the national average.

Appendix II -- Methodology

The time frame for this analysis was 2000 to 2007. The report uses the most current data available at the time.

Data Sources

The industry analysis portion of this report uses Quarterly Census of Employment and Wages (QCEW) data for private and public sector employment based on the North American Industry Classification System (NAICS). The Illinois Department of Employment Security (IDES) provided the employment figures for the northeastern Illinois region. The national information comes from the Bureau of Labor Statistics (BLS).

Three determinants are traditionally used to identify industries that may have a competitive advantage. The criterion is location quotients, high wage levels, and average annual wage.

- **Location Quotient** is a ratio that compares employment in a particular industry in the region to the employment in that same industry in the nation. If the location quotient exceeds 1.0 the region's share exceeds the national share. Thus, it is more concentrated. This analysis will focus on industries with concentration of 1.25, which indicates the region has a concentration 25% or greater than that found in the United States as a whole.
- **Average annual growth** is analyzed to identify industries that in the seven year period are growing faster in the region when compared to average national growth. This indicates that the industry is more active and growing to meet increasing demand.
- When the **wage level** of the Chicago Metropolitan Area is ten percent (10%) or greater than the US average the region also has an advantage. Wage levels place a value on production of goods. "In a knowledge-based economy, average wage levels should be high for those industries that value innovation and knowledge creation."[**]

[**] Mayer, Heike "Cluster Monitor," Economic Development Journal/Fall 2005 (pg 44).