

Transportation, Logistics, and Distribution

Transportation, Logistics, and Distribution



DeKalb County Indicators

Employment (2015) = **2,433**
 Employment Trend (2009–2015) = **+7.6%**
 Location Quotient (2015) = **1.0**

DeKalb County Region Indicators

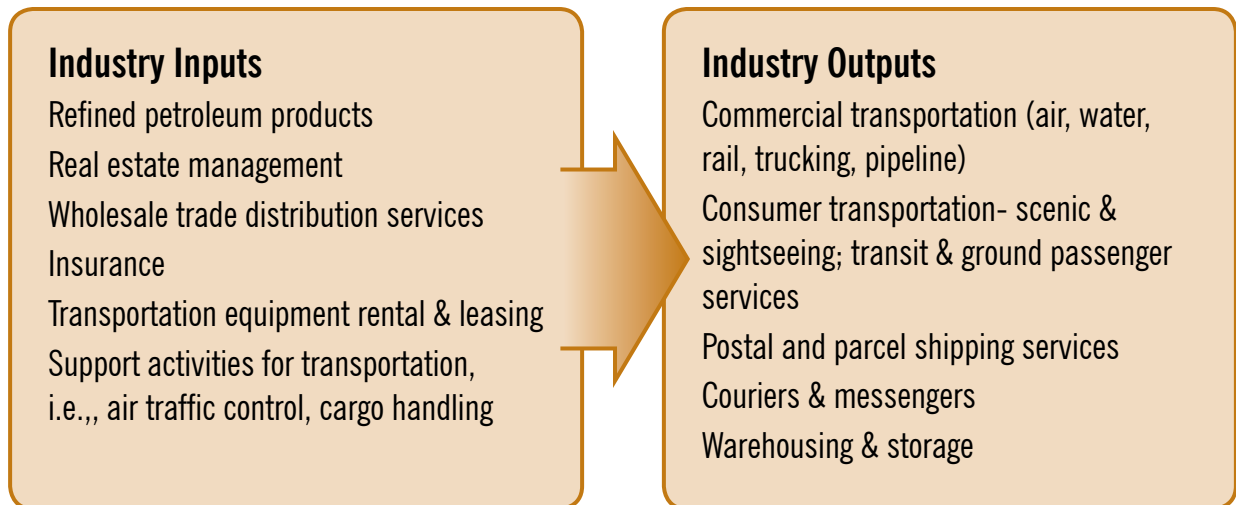
Employment (2015) = **49,188**
 Employment Trend (2009–2015) = **+5.5%**
 Location Quotient (2015) = **1.3**

CLUSTER SUMMARY

Consumer and industrial products warehousing, distribution, transportation and logistics is a significant industrial cluster in DeKalb County. It includes transportation by ground, water, air, and pipelines; wholesale merchants; courier and messenger services; packing, packaging and labeling services; warehousing; and logistics consulting services (Figure 1). In 2015, it employed over 2,100 workers in 7.5 million square feet of space. For example, 3M maintains a 2.5 million square foot facility employing over 1,000 workers. Target Corporation operates a 1.5 million square foot distribution center employing 750. Nestle employs 250 at its 860,000 square foot facility and Goodyear operates a one million square foot facility with 125 associates.

Related to transportation, logistics and distribution are several supplier industries which provide products and services necessary for production. According to IMPLAN data, 7.9% of production costs are in refined petroleum products used as fuel. Support activities such as advertising, public relations, and related services and management of companies and enterprises each represent 6.0% of production costs. Some sectors are interdependent, such as air traffic control with air transportation and warehousing and storage with truck transportation.

Figure 1: Transportation, Logistics, and Distribution Cluster Input and Output Examples



Source: Adapted from 2015 IMPLAN data and U.S. Bureau of Labor Statistics, *Industries at a Glance*, 2017.

REGIONAL OVERVIEW

The transportation, logistics and distribution cluster in the Reference Region, which includes DeKalb and adjoining counties, consisted of 3,916 business firms in 2015 and employed 48,918 (Figure 2). This cluster also had a higher than average concentration of economic activity (firms and jobs) in the region when compared to the nation's economic activity in this cluster overall. Employment in the transportation, logistics and distribution cluster grew by 7.6% between 2009 and 2015 in DeKalb County and the employment location quotient increased from 1.0 to 1.1. Regional employment also increased, albeit at a more modest pace (5.5%) and the employment concentration went from 1.1 to 1.2.

Location Quotients (LQs) are used to evaluate local business development opportunities. LQs are the ratio of the employment percentage represented by a given industry in the county to the percentage that industry represents in the nation. A ratio greater than 1.0 = higher local concentration and a likelihood of exports from the county; a ratio less than 1.0 may suggest goods or services are imported into the region.

Figure 2: Summary Characteristics of the Transportation, Logistics, and Distribution Cluster

Indicator	DeKalb County	Reference Region
Number of Firms (2015)	159	3,916
Firm Change (2009-2015)	12.0%	9.8%
Firm Location Quotient (2015)	1.0	1.3
Employment (2015)	2,433	49,188
Employment Change (2009-2015)	7.6%	5.5%
Employment Location Quotient (2015)	1.1	1.2

Source: U.S. Bureau of Labor Statistics, *Quarterly Census of Employment and Wages, 2015*.

Sub-sectors in the transportation, logistics, and distribution cluster represented in DeKalb County include postal service, pipeline transportation, truck transportation, and others (Figure 3).

Figure 3: Transportation, Logistics, and Distribution Sub-Sectors Based on Employment Concentration

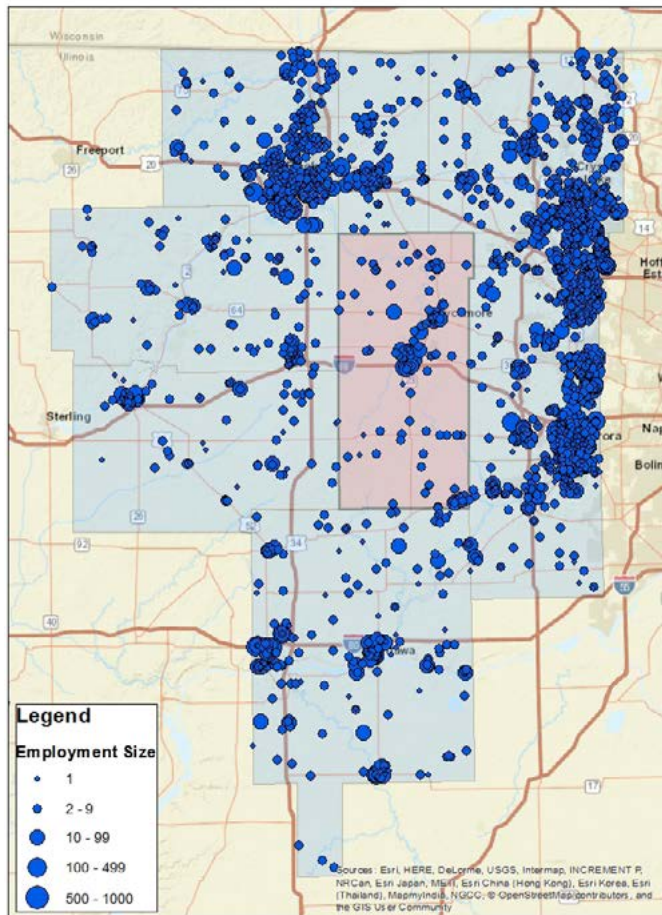
Sub-sector Description	Establishments LQ	Employment LQ
Total Industry	1.4	0.9
Postal service	2.2	0.9
Air transportation	0.7	Disclosure
Truck transportation	1.9	2.1
Transit and ground passenger transportation	1.1	Disclosure
Pipeline transportation	1.5	Disclosure
Support activities for transportation	0.9	0.2
Couriers and messengers	0.7	Disclosure
Warehousing and storage	0.5	Disclosure

Source: U.S. Bureau of Labor Statistics, *Quarterly Census of Employment and Wages, 2015*.

Data for employment in some transportation sub-sectors is suppressed due to having a small number of firms, but the two largest sub-sectors with published employment data in DeKalb County are truck transportation and postal service. Of the 1,264 transportation, logistics, and distribution jobs in DeKalb County, 830 jobs (65.7%) are in trucking and 151 jobs (11.9%) are in the public postal service.

Transportation, logistics and distribution cluster is represented by a number of large and mid-size distribution centers, including 3M, UPS, Target, Lowe's Home Improvement, Nestle, Goodyear and Fastenal (Figure 4). Companies are most concentrated around the communities of Rockford and Belvidere, as well as in the eastern parts of Kane, Kendall and McHenry counties from Crystal Lake to Aurora. There are also smaller concentrations along the I-80 and I-88 corridors. In DeKalb County, the greatest concentration of companies are in DeKalb and Sycamore.

Figure 4. Transportation, Logistics, and Distribution Cluster, Firms by Employment Size, DeKalb County and Reference Region



Source: *Decisiondata.net, 2017.*

The largest transportation company in the region is Emery Air Inc. based in Rockford, with 1,000 employees. Emery Air provides a range of air transportation services for businesses, including private flights, air shipping, and aircraft maintenance. Another major employer is an air traffic control center in Aurora, which is managed by the Federal Aviation Administration and employs 800. Peacock Foods LLC, in Geneva, employs 300 as a contract manufacturer and shipper of food for national corporations such as McDonald's and Hillshire Farms.

Several large and mid-sized transportation companies are also located in DeKalb County (Figure 5). Target converted their regional distribution center serving the Greater Chicago region into an upstream distribution center serving one-third of the country and employs 1,000 workers. 3M employs 950 workers in five facilities totaling 2.5 million square feet. Industrial and consumer products from throughout the U.S. are packed and shipped to five continents through the DeKalb distribution campus. Nestle, Panduit and Goodyear also distribute products throughout the region and country from their DeKalb facilities.

United Parcel Service has a distribution center in the city of DeKalb, offering ground and air shipment of packages, including returns. First Student Inc. offers busing services for local public schools, as well as charter school bus rentals for group events. The transportation sector also includes public post offices, with the United States Postal Service branch in DeKalb employing 64 workers. Blackhawk Moving & Storage Inc. in Sycamore offers comprehensive relocation services for households, businesses, and governments, including handling and transporting possessions across states.

INDUSTRY CLUSTER PROFILE

Figure 5: Major Employers in the Transportation, Logistics, and Distribution Cluster, DeKalb County

Business Name	Employees	City	Industry Description
Target	1,000	DeKalb	Retail Consumer Products
3M	950	DeKalb	Industrial and Consumer Adhesive and Diversified Products
Nestle	250	DeKalb	Consumer Food and Beverage Products
United Parcel Service Inc.	158	DeKalb	Couriers & Express Delivery Services
First Student Inc.	150	DeKalb	Charter Buses
Goodyear	125	DeKalb	Tire Distribution
United States Postal Service	64	DeKalb	Postal Service
Blackhawk Moving & Storage Inc.	45	Sycamore	General, Long-Distance Freight Trucking

Source: DeKalb County Economic Development Corporation and Dun & Bradstreet, Inc., 2017.

INDUSTRY TRENDS

Environmental regulation is changing the trucking industry. EPA mandates improving fuel efficiency for heavy trucks, which affects trucks, built after 2013, and full long-term compliance with EPA mandates would nearly double the fuel efficiency of heavy trucks by 2027. Trucking companies have a vested interest in reducing fuel expenses, but some have expressed concerns for the ability of truck manufacturers to design vehicles with continuously improving fuel efficiency. On-demand trucking is also changing the way goods are shipped. Like the popular Uber application for consumer ride sharing, applications are now being used to connect shippers and carriers as needed. On-demand trucking reduces administrative costs and allows shippers to employ new carriers. Several opportunities exist within the transportation, logistics, and distribution cluster for DeKalb County. Tablet computers are becoming more widespread in the trucking industry, streamlining delivery of products. Many in-vehicle tablets include basic management and dispatch software, but others now include bar code readers, signature recording, and attaching radio frequency identification tags. Improvements in portable technology allow some truckers to expand their services by becoming couriers, providing logistics services, or working for larger carriers.

The transportation, logistics, and distribution cluster benefits from the growth of e-commerce. As more consumers make online purchases, online retailers need to ship more products. Increased online shopping, including the purchase of international goods, is increasing demand for overseas shipping.

Environmental regulations are driving the development of heavy trucks that run on alternative fuels such as liquefied natural gas. Transitioning to alternative fuels requires a significant initial investment, but the investment can be recouped in long-term fuel cost savings. Carrier companies with natural-gas-powered vehicles sometimes have a competitive advantage as shipping companies pressure carriers to use them to reduce transportation costs and meet their own environmental sustainability targets.

Autonomous personal automobiles are currently in development and that technology could eventually apply to commercial freight vehicles. Driverless trucks and unmanned cargo ships are currently being designed. Autonomous vehicles will reduce the need for vehicle crews and support systems, but significant technological and regulatory obstacles remain before they can be used.

Robotics is also impacting warehouses and distribution centers. Many warehousing tasks have historically been done manually because machines have been prohibitively expensive and immobile. However, cost decreases and improvements in computing power and sensors are making machines more suitable for handling goods to be shipped. Uses of robotics in warehousing include driverless forklifts, automated shuttles that retrieve goods for workers, and computerized arms that lift and locate designated items. These machines require significant up-front investment, but they can reduce labor/operational costs, prevent accidents, and improve order accuracy.

SUPPLY CHAIN

This analysis examines three aspects of supply chain: the value of supply chain inputs; the amount of inputs being produced outside DeKalb County for the industry segments studied (represented in most cases by the gap between total input purchases and inputs purchased within the region); and stages along the supply chain that are areas of competitive advantage or that provide an opportunity to attract businesses. Areas with large gaps in the transportation, logistics, and distribution supply chain represent opportunities for DeKalb County to capture the most value from a specific stage in the production or delivery of products and services. This

may inform strategy by indicating where along the value chain an investment will have the highest impact on the regional economy and may indicate opportunities for business retention or expansion. Conversely, stages along the supply chain that are underperforming also offer opportunities for business attraction and/or entrepreneurship. It is important when reviewing data relating to industry inputs to compare both the supply gap as well as the total value of inputs, as certain services or components that maintain a high percentage may be of low value to the regional economy. Similarly, certain inputs, regardless of the total value purchased outside the region, may be of high strategic importance to the region in efforts to build a stronger industry cluster.

Supply Chain

An essential component for an industry sector is the local supply chain. While not all inputs (goods or services) that an industry sector needs can be produced in the local economy, it is desirable to meet as many of the sector's needs locally as possible. This analysis reveals the source and amount of purchases among the unique niches within an industry. Identifying total industry economic outputs and areas outside the region from which goods and services are being purchased helps determine which areas of the industry supply chains are strongest. It also assists in identifying the best growth opportunities for DeKalb County.

The supply chain information provided shows estimated flows of trade both within DeKalb County and from outside the region that support transportation, logistics, and distribution-related industries. The key sectors that may be appropriate targets for expansion appear as imports (gaps) from outside the county, but still within the industry cluster (Figure 6). These gaps are then analyzed in terms of county strengths and potential areas for targeting and support and are placed into a supply chain framework to determine the stages of the supply chain with the strongest presence in DeKalb County. To fully develop the transportation, logistics, and distribution cluster, economic developers in DeKalb County should consider sectors without a strong regional presence now but having significant development potential.

Regional Inputs

The dollar value of production inputs that are purchased from businesses within the DeKalb County region.

Gross Inputs

Total dollar amount of inputs used by the industry within each sector.

Regional Supply Gap

Difference between gross and county inputs: a sizeable gap value indicates that a large amount of inputs are imported into the region, rather than produced within.

Figure 6: DeKalb County Key Supply Chain Gaps, Transportation, Logistics, and Distribution Cluster (\$ Millions)

Industry Description	Local Supply Gap	Local Inputs	Gross Inputs	% Purchased Outside of County
Transportation, Logistics and Distribution Cluster	-\$36.7	\$40.1	\$76.9	47.8%
Real Estate	-17.9	14.3	32.2	55.6
Management of Companies and Enterprises	-15.5	3.6	19.2	81.1
Insurance Carriers	-10.1	0.6	10.7	94.4
Advertising, public relations, and related services	-6.2	13.2	19.4	31.8
Management consulting services	-5.0	1.3	6.3	79.0
Petroleum refineries	-5.0	20.5	25.4	19.5
Electric power transmission and distribution	-4.9	0.0	4.9	100.0
Non-depository credit intermediation and related activities	-3.8	1.0	4.8	78.4
Lessors of nonfinancial intangible assets	-3.2	0.1	3.3	95.6

Source: IMPLAN, 2015.

INDUSTRY CLUSTER PROFILE

For example, the transportation, logistics and distribution cluster require \$25.4 million in gross inputs (i.e., the products or services required to create a finished output) from refined petroleum products. However, only \$20.5 million of this commodity is produced in the County with the balance being purchased elsewhere. However, the potential to close this gap locally is limited due to natural resource constraints. Another, more actionable supply gap in the County exists in management consulting services, which requires \$6.3 million in gross inputs, but only \$1.3 million is purchased locally. This suggests an opportunity for existing local firms or new businesses to fill more of the demand for this service.

Freight Transportation Arrangement (NAICS Sector 488510)

This industry comprises establishments engaged primarily in arranging transportation of freight between shippers and carriers. This sector includes freight forwarders, shipping agents, and customs brokers.

WORKFORCE REQUIREMENT, SUPPLY AND DEMAND

Retaining a skilled local workforce has been an ongoing issue for employers across all industry sectors, including in transportation, logistics, and distribution. The challenge of finding and retaining skilled workers has stemmed from the impending retirement of experienced workers in the baby boom generation. Even as industry employment has experienced a net decline over the past decades (a trend expected to continue), the succeeding generations of potential workers are comparatively small because of recent demographic trends.

The largest employee age group in the transportation, logistics, and distribution cluster in DeKalb County is pre-retirees ages 45-64 at 48.7% (Figure 7). This age group includes baby boomers and represent experienced workers that will need to be replaced in the future. Nearly 6.0% of transportation employees are currently of retirement age, and 38.9% are of prime working ages 25-44. Lower annual wages for employees under age 25 could be explained by limited experience.

Figure 7: Transportation and Logistics Cluster Employment and Wages by Age Group, DeKalb County

Age Group	Percent of Total Employment	Average Annual Earnings*
Under 25	6.7%	\$44,949
25-44	38.9	56,881
45-64	48.7	59,807
65+	5.7	46,973

Source: U.S. Census Bureau, Quarterly Workforce Indicators, 2015.

* Note: Although the words “wages” and “earnings” are often used interchangeably, the differences between the two can be significant. Wages refers to compensation paid by an employer on an hourly, weekly or monthly basis. Earnings can include wages paid by an employer but also other sources such as interest, dividends, and contractor or business income.

Approximately 64.6% of employment in the cluster is in transportation and material moving occupations (Figure 8), including packing, packaging, material moving and fork lift operators which are all essential to the transportation, logistics, and distribution industry in DeKalb County. The next largest occupational category is office and administrative support occupations, with 17.2% of employment. Both occupation types typically have lower wages, but this cluster plays a critical role in the supply chains of other industries. Ensuring that appropriately skilled transportation, logistics, and distribution workers are available at competitive compensation rates will be critical to maintaining the cluster in the region.

INDUSTRY CLUSTER PROFILE

Figure 8: National Transportation and Logistics Cluster Staffing Patterns

Occupation Type	Share of Cluster Employment	County Median Wage All Industries	Region Median Wage
Transportation and material moving occupations	64.6%	\$30,549	\$29,674
Office and administrative support occupations	17.2	31,712	32,235
Installation, maintenance, and repair occupations	6.2	43,979	46,192
Management occupations	3.3	81,756	81,279
Business and financial operations occupations	1.9	51,504	55,661
Production occupations	1.7	33,079	34,430
Sales and related occupations	1.6	23,246	23,692
All other, i.e., protective service, computer operation	3.6	44,666	45,314

Source: U.S. Bureau of Labor Statistics and Illinois Department of Employment Security, Occupational Employment Statistics, 2016.

A challenge for employers is the looming demand for replacement workers as older workers retire. The Illinois Department of Employment Security estimates that 1,044 openings for transportation workers will become available per year between 2012 and 2022, with a slight majority coming from replacements (Figure 9).

Figure 9: Occupational Employment, Projected Demand by Selected Worker Classification, Local Workforce Area 5*

Occupation Type	Employment		Employment Change, 2012-2022		Average Annual Job Openings		
	2012	2022	Number	Percent	Growth	Replacements	Total
Total, All Occupations	282,136	333,489	51,353	18.2%	5,215	6,645	11,860
Office & Administrative Support	38,831	44,430	5,599	14.4	585	876	1,461
Sales & Related	29,095	34,025	4,930	16.9	494	896	1,390
Production	27,431	31,295	3,864	14.1	417	543	960
Transportation & Material Moving	21,834	26,920	5,086	23.3	509	535	1,044
Management	18,935	21,456	2,521	13.3	271	380	651
Business & Financial Operations	10,482	12,916	2,434	23.2	244	203	447
Personal Care & Service	9,296	11,064	1,768	19.0	178	217	395
Installation, Maintenance & Repair	9,150	10,794	1,644	18.0	164	206	370
Arts/Design/Entertainment, Sports/Media	3,806	4,358	552	14.5	56	92	148

Source: Illinois Department of Employment Security, 2012-2022 Employment Projections.

*Local Workforce Area 5 includes the counties of DeKalb, Kane, and Kendall. Items do not sum to total because not all occupations are listed.

Due to competition with surrounding metro areas for workers with specific skills or experience, compensation levels are a concern for local businesses. The estimated average annual wage for transportation workers is \$30,549 in DeKalb County compared to \$29,674 in the region. Wages for transportation workers are higher in DeKalb County than in other areas with a high concentration of transportation, logistics, and distribution firms, such as the Rockford MSA and Elgin. This could put local employers at a competitive advantage relative to other areas offering comparable jobs at lower wages. Given the intense competition for skilled workers, companies will need to monitor compensation trends to recruit and retain qualified employees.

ECONOMIC IMPACT

For every 100 jobs created in the transportation, logistics and distribution cluster in DeKalb County, an additional 61 jobs are supported or created in other industry sectors. This also results in the generation of another \$13.4 million in value-added, as well as an additional \$6.4 million in employee compensation (Figure 10).

For every 100 jobs created in the transportation, logistics and distribution cluster in Reference Region, an additional 71 jobs are supported or created in other industry sectors. This also results in the generation of another \$15.8 million in value-added, as well as an additional \$7.6 million in employee compensation. Further development of this cluster will expand the impacts the sector already generates in DeKalb County.

Figure 10. Economic Impact Summary of 100 New Jobs Created in the Transportation, Logistics and Distribution Cluster, DeKalb County and Reference Region

Indicator	Direct Effect	Indirect Effect	Induced Effect	Total Effect	Multiplier
Employment (DeKalb County only)	100	29	32	161	1.61
Value-Added (DeKalb County only)	\$9,378,496	\$2,060,676	\$1,961,239	\$13,400,411	1.43
Employee Compensation (DeKalb County only)	\$4,533,005	\$972,296	\$898,664	\$6,403,966	1.41
Employment (Reference Region)	100	36	36	171	1.71
Value-Added (Reference Region)	\$10,398,923	\$2,777,994	\$2,635,166	\$15,812,083	1.52
Employee Compensation (Reference Region)	\$4,956,691	\$1,410,486	\$1,217,198	\$7,584,375	1.53

Source: IMPLAN, 2015.

The industries most affected by job creation in the transportation, logistics and distribution cluster in DeKalb County include employment services, real estate and limited service restaurants (Figure 11). These job impacts are the result of business-to-business purchases by companies within the cluster, as well as by the household spending of their employees.

Figure 11. Employment Impacts of 100 New Jobs Created in the Transportation, Logistics and Distribution Cluster on Other Industries, DeKalb County

Industry Impacted in DeKalb County	Jobs
Total, All Affected Industries	61
Employment services	4
Real estate	4
Limited-service restaurants	3
Full-service restaurants	2
Postal service	2
Hospitals	2
All other industries	44

Source: IMPLAN, 2015.

Similar impacts can be measured in the Reference Region where the industries most affected by job creation in the transportation, logistics and distribution cluster also include employment services, real estate and limited service restaurants though the number of jobs created or supported differs somewhat (Figure 12.)

INDUSTRY CLUSTER PROFILE

Figure 12. Employment Impacts of 100 New Jobs Created in the Transportation, Logistics and Distribution Cluster on Other Industries, Reference Region

Industry Impacted in Reference Region	Job
Total, All Affected Industries	71
Real estate	5
Employment services	4
Limited-service restaurants	2
Full-service restaurants	2
Hospitals	2
Postal service	2
Retail - General merchandise stores	2
Services to buildings	2
All other industries	39

Source: IMPLAN, 2015.

KEY TAKEAWAYS

- » The transportation, logistics and distribution cluster in DeKalb County has a concentration of firms that is commensurate with the national average and an employment concentration 1.1 times the national average. The surrounding region also ranks above the national average in concentration of business establishments. Employment in the transportation sector has increased moderately in DeKalb and surrounding counties since 2009.
- » The transportation, logistics and distribution cluster in DeKalb County is specialized in truck transportation and has the potential for further development based on their supply chain relationships to other industries in the region or the surrounding metro areas.
- » Opportunities likely exist for providers of transportation support services to work with transportation and warehousing companies to develop new locally-sourced services. However, more work will be necessary to identify and develop those opportunities.
- » The emergence of autonomous, computerized “smart machines” presents an opportunity for warehousing companies nationally, but especially in DeKalb County with potential technology transfer from the NIU College of Engineering. Further research is needed to determine the viability of such opportunities.
- » The expected wave of retiring baby boomers will create most of the demand for new workers. Since other industries will experience the same challenges, competition for skilled workers will be brisk given the relatively limited number of available younger workers.
- » The transportation, logistics and distribution cluster in DeKalb County supports 2,433 jobs and contributes for \$393.5 million to the county’s economy. In the Reference Region, the cluster supports 49,188 jobs and contributes for \$7.3 billion to the county’s economy.



NORTHERN ILLINOIS UNIVERSITY

**Center for
Governmental Studies**

Outreach Engagement and Regional Development

148 N. Third Street, DeKalb, IL 60115 · 815-753-1907

**BUILDING STRONGER REGIONS THROUGH
INNOVATION AND COLLABORATION**

www.cgs.niu.edu