



Project Report
**Logistics Industry Economic Linkage
Analysis**

Prepared for
**Rockford/RMAP Regional Freight
Transportation Study**

Rockford, Illinois

Submitted by
**Economics Research Associates, an AECOM
company (ERA)**

August 2009

ERA Project No. 18309

Table of Contents

I. Summary of Findings..... 4
 Analysis of Rockford Area Transportation Sector Economic Linkages 4
 Lessons Learned from Other Logistics Hubs 8

II. Rockford Economic Linkage Analysis 10
 IMPLAN Social Accounting Matrices (SAM) 10
 SAM Example..... 12
 Insights from the SAM 12
 Industries 13
 Metrics of Interest 14
 SAM Results 16
 Air & Rail Industry Notes 31

III. Logistics Hub Case Studies 33
 Employment Growth Comparison 33
 Data Source..... 33
 Summary of Employment 33
 Detailed Charts..... 36
 Review of Selected Logistics Hub Developments 39
 Rickenbacker Intermodal Terminal 39
 UPS Worldport & Louisville-Area Logistics 41
 Alliance Airport 43

IV. The Auto Industry Summary..... 47

Index of Tables/Figures

| | |
|---|----|
| Table 1. Change in Industry Total Output, 2001-2007 (Values in \$ millions) | 5 |
| Table 2. Total Output (\$ millions) | 16 |
| Table 3. Change in Total Output (\$ millions)..... | 16 |
| Table 4. Transportation as a Share of the Economy (Geographically centered)..... | 17 |
| Table 5. Total Commodity Supply (\$ millions)..... | 17 |
| Table 6. Total Commodity Demand (\$ millions) | 18 |
| Table 7. Commodity Supply-Demand Ratio | 18 |
| Table 8. Regional Purchase Coefficient | 19 |
| Table 9. Regional Sales Coefficient | 19 |
| Table 10. Domestic Exports (\$ millions)..... | 20 |
| Table 11. Foreign Exports (\$ millions)..... | 20 |
| Table 12. Total Imports (\$ millions)..... | 20 |
| Table 13. Change in Total Imports (values in \$ millions)..... | 20 |
| Table 14. Indirect Multipliers (Measured as indirect impact for each \$1 direct impact) | 21 |
| Table 15. Induced Multipliers (Measured as induced impact for each \$1 direct impact) | 22 |
| Table 16. Commodity Inputs, Warehousing | 23 |
| Table 17. Commodity Inputs, Air Transportation (Inputs in \$ millions) | 24 |
| Table 18. Commodity Inputs, Truck Transportation (Inputs in \$ millions)..... | 24 |
| Table 19. Commodity Inputs, Courier Services (Inputs in \$ millions) | 25 |
| Table 20. Top Commodity Inputs, Rail Transportation (Inputs in \$ millions) | 25 |
| Table 21. Top Commodity Imports, Warehousing (\$ millions)..... | 26 |
| Table 22. Top Commodity Imports, Air Transportation (\$ millions) | 26 |
| Table 23. Top Commodity Imports, Truck Transportation | 27 |
| Table 24. Top Commodity Imports, Courier Services..... | 27 |
| Table 25. Top Commodity Imports, Rail Transportation | 28 |
| Table 26. Industry Expenditures on Warehousing (\$ millions) | 29 |
| Table 27. Industry Expenditures on Air Transportation (\$ millions)..... | 29 |
| Table 28. Industry Expenditure on Truck Transportation (\$ millions) | 30 |
| Table 29. Industry Expenditure on Courier Services (\$ millions)..... | 30 |
| Table 30. Industry Expenditure on Rail Transportation (\$ millions)..... | 31 |
| Table 31. Total Employment, All Sectors | 36 |
| Table 32. Employment, NAICS 481-Air Transportation..... | 37 |
| Table 33. Employment, NAICS 484-Truck Transportation | 37 |
| Table 34. Employment, NAICS 488-Support Activities for Transportation | 37 |
| Table 35. Employment, NAICS 492-Couriers and Messengers | 37 |
| Table 36. Employment, NAICS 493-Warehousing and Storage..... | 37 |
| Table 37. Employment, Sum of Logistics Sectors..... | 38 |
| Table 38. Employees in Logistics Industry, Per 1,000 Total Employees | 38 |
| Table 39. Compound Annual Growth Rate by Sector, 2001 to 2007 | 38 |

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Every reasonable effort has been made to ensure that the data contained in this report are accurate as of the date of this study; however, factors exist that are outside the control of Economics Research Associates, an AECOM company (ERA) and that may affect the estimates and/or projections noted herein. This study is based on estimates, assumptions and other information developed by Economics Research Associates from its independent research effort, general knowledge of the industry, and information provided by and consultations with the client and the client's representatives. No responsibility is assumed for inaccuracies in reporting by the client, the client's agent and representatives, or any other data source used in preparing or presenting this study.

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This study is qualified in its entirety by, and should be considered in light of, these limitations, conditions and considerations.

I. Summary of Findings

The AECOM Transportation team has completed this economic linkage analysis for the northern Illinois freight transportation network to better understand industry relationships as part of the overall regional freight transportation study. This document aims to clarify two main freight study goals:

- 1) To describe the current economic linkage between transportation industries and the broader economy, as well as show how these ties have evolved over the recent past
- 2) To highlight potential areas for strategic investment in freight transportation infrastructure within the region, with a focus on transportation support services and business linkages which have either the potential to grow stronger, or have been successful in areas with similar situations to Rockford.

As part of the overall analysis scope, the AECOM team evaluated agreed upon economic development metrics to investigate the linkages between transportation industry segments and the broader economy centered upon Rockford, Illinois. This effort included a detailed analysis of the IMPLAN economic impact model system, a review of Rockford area transportation infrastructure and shipper locations, and a case study analysis of three major domestic logistics hubs with comparable characteristics to Rockford. A summary of core findings is presented in this section of the report with supporting documentation described in subsequent sections.

The area of concentration for the study effort in this report is the Rockford global inland port area. The Rockford inland port consists of infrastructure from three major freight modal alternatives: airport, railroad, and highway systems. Geographically, the main focus of the regional freight transportation study encompasses transportation infrastructure and facilities including the Rockford airport, proposed rail consolidation to the east of the airport and track systems within 3 to 5 miles, and major arterial highway connections to I-39, I-90, Highway 20, and Illinois Route 251. Furthermore, business locations and access to these locations are important features within the context of the overall system.

Analysis of Rockford Area Transportation Sector Economic Linkages

AECOM examined the economic linkages between select transportation sectors in the Rockford area and the broader economy to understand the interdependence between industries. Using IMPLAN economic impact model data from years 2001 and 2007, AECOM analyzed these linkages within the local economy for the air transportation, rail transportation, truck transportation, warehousing and

storage, water transportation, and courier and messenger industries. The metrics investigated during this portion of the analysis include the following:

- Total output
- Total commodity supply and demand
- Regional purchase and sales coefficients
- Domestic and foreign exports
- Indirect and induced economic multipliers (economic growth measures related to industries buying from other industries, as well as induced household spending derived from household income generated from a development)
- Commodity demand

Rockford Logistics Industry Growth, 2001-2007

The examination of the above listed metrics showed significant growth, measured in output dollar value, in overall logistics industry sectors between 2001 and 2007. This finding was also supported by a subsequent employment growth analysis. The following table shows growth in total output for selected transportation sectors for Winnebago and Boone counties, as well as the State of Illinois which is used here as a benchmark. Over the study period, total output grew significantly across logistics sectors in Winnebago County including a 20% annual growth rate for air transportation industry output, a 12% annual growth rate for rail transportation industry output, and a 15% annual growth rate in warehousing and storage industry output. Boone County also saw increases in logistics industry output, especially in the warehousing and storage industry, which grew at a 36% annual rate over the period.

Table 1. Change in Industry Total Output, 2001-2007 (Values in \$ millions)

| | Winnebago County | | Boone County | | Both Counties | | State of Illinois | |
|--------------------------|------------------|---------|--------------|---------|---------------|---------|-------------------|---------|
| | Value | Percent | Value | Percent | Value | Percent | Value | Percent |
| Air Transportation | 32.1 | 20% | 0.5 | | 32.5 | 20% | 1,914 | 3% |
| Rail Transportation | 3.5 | 12% | 0.6 | 2% | 4.1 | 6% | 2,565 | 13% |
| Water Transportation | 0.9 | | 0.0 | | 0.9 | | 131 | 2% |
| Truck Transportation | 57.8 | 4% | 14.2 | 6% | 72.1 | 5% | 3,259 | 5% |
| Support activities, etc. | 10.0 | 5% | 32.0 | | 42.1 | 16% | 272 | 1% |
| Couriers and Messengers | -3.2 | 0% | 0.3 | | -2.8 | 0% | -271 | -2% |
| Warehousing & Storage | 34.5 | 15% | 8.7 | 36% | 43.2 | 16% | 1,297 | 8% |
| All Industries | 4,343 | 4% | 1,171 | 5% | 5,514 | 4% | 318,316 | 5% |

Source: IMPLAN, AECOM

In addition to growth in output for logistics industries within the region, other core findings from the analysis of economic linkages within the Rockford area include:

- Transportation investments will aid in industry attraction by providing improved access for industrial operations

- Logistics sectors grew at a faster pace than the overall economy across all three study areas including notable Winnebago County growth in air transportation, rail transportation, and warehousing and storage sectors.
- The ratio of total commodity supply to total commodity demand, a metric gauging how fully the local market satisfies local demand, increased for air transportation and warehousing and storage sectors in Winnebago County from 2001 and 2007. This is a sign that local suppliers have been attracted to the area as a result of local transportation demand levels.
- Supply-demand ratio levels in the Rockford area are generally lower than those at the state level indicating less economic industry integration in Rockford compared with the state benchmark. This is not surprising considering the state is considered well-integrated in these sectors. However, it could be an indication that further economic integration may be possible which would likely increase the efficiency of the goods movement system and decrease the costs to shippers and consumers, and may foreshadow a growth in local employment.
- Total import levels for logistics industries decreased over the study period, another indication of a regional trend towards greater integration.
- Logistics industries within the study area currently import a significant quantity of commodity inputs from other regions including management and administrative resources, manufactured products, and contract employment. Some of these identified import sectors may be strategic areas of focus for company recruitment in the future.
- Expenditures on transportation and logistics services in the Rockford area come from a variety of local, regional, and external industries – one notable industry that purchases transportation services is the motor vehicle parts manufacturing industry.
- Power generation, motor vehicle parts manufacturing, and food production companies are both significant purchasers of rail and other modal forms of transportation within the study area. Specific to the air freight industry, pharmaceutical/biotech/healthcare businesses are major purchasers as well.
- Intermodal linkages between truck and rail transportation modes have increased over the study period, where modal investments complement the connecting transportation assets.

Logistics Metrics for the Rockford MSA

The analysis of key logistics metrics contained in this report provides a view of recent area growth in the logistics industry as a whole, as well as a set of measurable impacts to monitor moving forward with the planning and economic development efforts underway. As such, the following key metrics are highlighted for the region:

- Logistics industries grew at a much faster rate than the broader economy at all three study area levels (Boone and Winnebago counties, and the State of Illinois).

- The state's rail transportation industry experienced strong growth, doubling over the time period studied (2001-2007). Winnebago County's rail transportation industry fared almost as well, increasing from \$3.7 million in total output to over \$7 million. This measurement only includes the output generated based on area industry employment activity and is probably under-represented as an economic benefit because of the nature of the rail industry (employment concentrated in major origin and destination areas such as Chicago).
- Warehousing and Storage was a growth sector for each study area. Boone County's industry blossomed from \$1.6 million in 2001 to over \$10 million in 2007. The industry more than doubled in Winnebago County as well.
- Boone County's primary contribution to the logistics industry is in trucking, and more recently, support activities for transportation.
- Almost every logistics sector gained relative importance in both Winnebago and Boone counties.

Rockford Rail and Air Industry

The importance of the freight transportation industry to Rockford businesses is significant, and rail and air freight industries within the region contribute to the economic competitiveness of local businesses. Some highlights of the linkage analysis specific to rail and air freight include:

- In both 2001 and 2007, power generation is the number one customer of rail transportation firms – by a wide margin. In 2001, the power generation industry accounted for one-quarter of business spending on rail transportation, or three times higher than any other single industry. The second largest customer in 2001 was the motor vehicle parts manufacturing industry. Power generation companies in the area purchase goods such as oil, natural gas, coal, petroleum, and wind turbines. These firms spend most of their dollars on rail and pipeline transportation.
- From 2001 to 2007, motor vehicle parts manufacturers went from representing 8 percent of rail firms' business revenues to 3 percent. These businesses decreased from the second-largest source of rail revenue to the seventh-largest, and the total output contributed fell from \$2.2 million to \$1.5 million.
- Truck transportation firms are significant customers of rail transportation firms in the area, representing a portion of the region's intermodal linkages. In 2007, truck transportation firms represented 6.6 percent of rail firms' business inputs, up from 4 percent in 2001.
- The food production industry is a key customer of rail transportation firms. The top twelve overall industry purchasers of rail transportation in the area includes: candy manufacturers; cookie, cracker, and pasta manufacturers; snack food manufacturers; and dog and cat food manufacturers. Paint and coating manufacturers are also a key customer of the rail transportation industry.

- The air transportation industry has also seen revenues from the motor vehicle parts manufacturing industry decline since 2001. In 2001, motor vehicle parts manufacturers were the biggest industry customer of the air transportation industry, representing 7 percent of its business revenues. By 2007, this spending level fell 60 percent to represent only 2 percent of the air transportation industry's revenues. Supplier parks may be one contributing factor.
- Hospitals, health care providers, the US Postal Service, directory and mailing list vendors, wholesalers, and restaurants were among the largest industry customers of area air transportation businesses in both years.
- Petroleum refineries are among the largest recipients of the air transportation industry's expenditures – obviously, spending on fuel is a key input to the process of air transportation. In 2001, such expenditures represented 17 percent of the industry outlays to other firms; by 2007, it became 38 percent. (Note that this is a percentage of spending on goods and services, and excludes labor.) Very little of that spending stays in Winnebago County. It is no surprise to see, then, that the indirect multiplier has fallen for the air transportation industry, as so much more business spending has been going toward fuel from outside of the county.

Lessons Learned from Other Logistics Hubs

AECOM reviewed employment metrics and conducted interviews of stakeholders at three major US logistics hubs to understand the economic development implications related to public and private investments in freight transportation infrastructure the three hubs include. Factors which were considered when choosing case study development areas include the ability to maximize freight industry infrastructure asset value and to maximize access to industry facilities in an effort to promote efficient and economic shipper freight movements. Key points developed during the analysis include:

- Logistics industry infrastructure is most effective when it is linked with a coordinated, broadly engaged planning effort involving partnerships between public and private stakeholders and the community.
- Funding for transportation infrastructure development is generated from private sources as well as federal, state, and local public stakeholders – often times the privately funded portion includes support from railroads and air logistics companies. Commonly, incentive packages from public sources include tax credits, complementary road and rail access and infrastructure improvements, and job training/educational options for company employees.
- The freight logistics industry is competitive, and each of the profiled case study developments is seen to be proactive and innovative when considering strategic investments.

- The logistics industry, area businesses/shippers, and the community as a whole each benefit from a more geographically integrated infrastructure, focused on providing efficient multi-modal transportation alternatives.
- The mitigation of traffic/congestion impacts, as they may arise on local and regional transportation networks, is an important planning factor, economic, and community benefit.
- Warehousing and storage firms and employment experienced consistent high growth rates across all of the case study areas, resulting from efforts to expand freight transportation infrastructure and support capacity.
- Winnebago County exhibited the lowest number of transportation employees per thousand total employees compared with the case study counties. This could be an indication that increased freight transportation industry integration is achievable in the near-term and could have significant positive efficiency and economic results.

Opportunities for the Rockford MSA

- The Rockford MSA demonstrates industry sectors with strong inter-industry relationships, where supply chains are closely connected and investments for transportation infrastructure will resonate throughout the supply chain
- Industry sectors favorably situated within the Rockford MSA, or could be attracted, include aerospace production and research & development, warehouse / distribution centers, industrial machinery manufacturing, metals manufacturing, chemicals and plastics manufacturing, food processing, transportation equipment manufacturing, as well as green technology and alternative energy development and production
- The Rockford MSA demonstrates attributes that are found in the evolving definition of an inland port, an area of significant transportation assets linked across modes and logistics functions
- The value of existing transportation and industrial assets is maximized by transportation investments that increase access to area industries

II. Rockford Economic Linkage Analysis

This section examines the economic linkages between select transportation sectors and the local economies in Boone and Winnebago Counties. Specifically, this analysis will show the extent to which transportation sectors—air, water, truck, freight rail, and related support industries—are integrated with other firms in the local marketplace. We compare economic data from 2001 and 2007. We examine several economic metrics that approach this question in different ways. By comparing several metrics over this time period, we will be able to show the ways in which the industries have shaped and potentially deepened their connections with other local industries.

IMPLAN Social Accounting Matrices (SAM)

The primary tool for this analysis is the IMPLAN economic impact model. Widely used to gauge the economic impact of new local demand, such as a new factory or government spending, the IMPLAN model contains extensive data regarding how well firms are linked to others in a local economy. Its system of social accounts show how dollars flow among various institutions: firms, households, government agencies, and exports and imports.

IMPLAN Social Accounting Matrices (SAM) estimate the trade flows among businesses and other institutions in an economy. These matrices take into account businesses (arranged by industry), households, government agencies, new investment capital, and foreign and domestic trade.

A social accounting matrix can be constructed for any study area. Many of the data sources that are used to construct the matrices are reported by various U.S. government agencies on the county level. Therefore, the smallest advisable study area is the county. In this report, ERA uses study areas for Boone County, Winnebago County, and the entire state of Illinois.

The SAM estimates dollars flowing among institutions in the economy. The following are examples of institutions, as we use the term in this report:

- Firms. Business firms are an institution; in turn, they are divided into over 400 different industries, representing types of firms. These are based on the NAICS code; the industries used in the IMPLAN SAM generally correspond to three-digit NAICS codes. (For example, the “truck transportation” sector corresponds with NAICS 484.) This institution covers local firms only.
- Households. Consistent with the conventions in economics, the “household” is considered the functional economic unit of individuals. Households act as suppliers of labor (individuals work) and as consumers, as individuals buy things from firms. The institution covers local households. Households of different income levels spend their money in different ways, so the SAM groups

them into nine income categories. They are arranged by total household income category. The nine household income categories range from Less Than \$10,000 to Over \$150,000.

- Government. In the IMPLAN model, government institutions are broken down into several different categories. Examples include Federal Government (excluding defense), Federal Government Defense, State & Local Government (excluding public schools), Public Schools, and the like.
- Domestic Trade. Any dollar flows that go into or out of the local study area (the county or the state) are considered domestic trade. A household buying consumer goods from the adjacent county or the business employing workers from another state would all be included in “domestic trade.”
- Foreign Trade. Similar to domestic trade, any dollar flows going out of the U.S. or coming into the U.S. from abroad are counted as foreign trade.
- Other. Other institutions, less important to our analysis, include capital, additions to inventory, and commodities.

The SAM also estimates how these institutions interact with each other. The following are some examples of how funds flow among these institutions:

- Firms to firms: Business firms buy materials to produce their product. Restaurants buy food and supplies. Hotels buy linens and cleaning supplies. Manufacturers buy raw materials. A portion, though never all, of a firm’s revenue goes toward buying things from other firms.
- Firms to households: This is primarily employee compensation. The social accounts consider a household to be a functioning economic unit providing labor to firms in exchange for dollars.
- Households to firms: Households take some of the money they earn from labor and spend it on goods and services provided by firms—groceries, supplies, entertainment, and services.
- Firms to domestic trade: When firms make a product that is purchased by households or other firms outside the local study area, this is considered domestic trade and leaves the local economy.

And so forth. When put completely together, the SAM will account for all the ways in which these institutions shuffle money from one to another—as well as dollars new to the study area and dollars leaving the study area.

The next section shows a simple example of a SAM.

SAM Example

The social accounting matrix is a square matrix, with equal numbers of rows and columns. This structure allows for any institution to send money to any other. Columns show institutions sending money to others; rows show them receiving money. The following is a simple example of a SAM:

| | | This Institution SENDS dollars... | | | Subtotal |
|---------------------------------------|--------------------|-----------------------------------|-----------------|--------------------|----------|
| | | 1 - Firms | 2 - House-holds | 3 - Domestic Trade | |
| This institution RECEIVES dollars.... | 1 - Firms | \$100 [3] | \$200 [1] | \$300 [2] | \$600 |
| | 2 - Households | \$500 [4] | | | \$500 |
| | 3 - Domestic Trade | | \$300 [5] | | \$300 |
| | Subtotal | \$600 | \$500 | \$300 | |

In this over-simplified account, firms receive \$600 total—\$200 from households buying their products [1], \$300 from domestic trade [2]; and \$100 from other firms [3].. In turn, these firms send \$500 to households [4], buying their labor, and \$100 to other firms [3].. After that, households take their \$500 and send them to firms (\$200 worth) [1] and domestic trade (the remaining \$300) [5].

Note that the social accounts balance—that is, firms receive \$600 and send \$600 to other institutions.

The real social accounting matrix is much larger: there are hundreds of rows and columns. The line above called “1-Firms” is expanded into over 400 categories (rows and columns). Households are divided into nine income categories. There are also lines for government, capital, inventory, and other institutions.

Insights from the SAM

Among the 400 categories of firms are several related to transportation. One, for example, is truck transportation. It has its own row and column in this expansive matrix, and the contents of these lines can lend several insights into what happens with the dollars flowing through this industry. For example:

- It is possible to determine how much the industry spends on goods and services in order to produce its product. Some of these will be from local firms, others from outside the study area, and still others from foreign sources. Among local purchases, it is possible to see in what proportions the industry buys goods and services from each of the over 400 categories of firms.
- The supply and demand balance in a local study area can also be studied. For example, the trucking industry based in the study area will do a certain amount of business—some of it satisfied by local clients, others by clients outside the study area. Conversely, local firms and households will spend money on trucking industry. It is possible to tell how much of the trucking product is bought locally and how much of the trucking demand is sourced locally.
- It is also possible to determine how much the industry pays to households in employee compensation.

These examples show how the social accounting matrix can be used to gain specific insights into the practices of firms, households, and other institutions in the local study area. The specific metrics that we examine are set out in detail in the next section.

Throughout the analysis, it is important to keep in mind that all the data are estimates and aggregates of observed conditions and activity. SAMs do not attempt to explain or even estimate the behavior of individual firms or households; only the household category or entire industries of firms. Moreover, many government data are self-reporting, and thus, may not be captured in the same manner as private industries.

Industries

ERA has identified several industries of interest to track in this analysis. Because our primary data source is IMPLAN's social accounting matrix, we are restricted to using industries tracked in this particular model. They roughly align with three-digit NAICS codes. It is also important to note that data are collected by firm, and each firm belongs to one industry. Therefore, although a firm may provide many different services, it is classified in only one industry category. The following are industries we examined in their evaluation.

Air Transportation (NAICS 481). This industry is comprised of air transportation for passengers and cargo on both scheduled and non-scheduled routes. Scheduled air transportation covers the largest part of the industry, including air cargo operations. Non-scheduled service can include both cargo and passengers and comprises general aviation for special, corporate, personal or other unscheduled aviation. This industry does NOT include courier services; see below.

Rail Transportation (NAICS 482). This industry includes both short line and line haul railroads. Line haul railroads operate networks over wide geographic areas with multiple facilities throughout the U.S. Short line railroads are often confined to a small geographic area. This industry also includes passenger rail service.

Truck Transportation. (NAICS 484). The truck transportation industry includes firms that provide over the road freight transportation, usually in a trailer or standard shipping container. This includes local pickup and delivery, sorting, line haul, and terminal operations. It also includes specialized freight trucking, which would be freight that has specialized requirements—whether from a large size to refrigeration requirements, tankers, or other type of special equipment.

Warehousing & Storage (NAICS 493). Firms in this industry primarily provide warehousing and storage to other firms: they do not sell goods to consumers or other businesses. Specialized warehousing is also included (such as refrigeration). These firms can sometimes provide a range of warehouse-related services, such as sorting, packing, order fulfillment, and other logistical services.

Water Transportation (NAICS 483). This industry includes firms that provide deep sea, great lakes, intracoastal, and inland water transportation, including freight.

Couriers and Messengers (NAICS 492). These firms provide delivery of parcels, whether in one city or among different cities. A courier service primarily handles small parcels that can be picked up and delivered by hand—large shipments of commodities, for example, would be handled by a truck or freight rail industry, or by some specialized shipper. Firms in this industry can range from a messenger on bicycle in one city to a large international shipping network like UPS or FedEx. It does not include the postal service.

Metrics of Interest

The metrics that we examine in our analysis are all derived from the social accounting matrix. The simple example should help frame some of the metrics that are below. Many of the metrics we examine arise from ratios and other simple manipulations of the social accounting matrix.

Total Output

These metrics describe the size of the industry. Total output is the value of all goods and services provided by the industry—it is akin to GDP or total revenue for the firm.

Total Commodity Supply, Demand, and Supply-Demand Ratio

These metrics describe how much of a given commodity is made in the local area (very closely related to total output) and compares it to how much is demanded in the local area. These can then be used to create a ratio of supply to demand. This shows whether a region has more or less of a given commodity than its firms and households are demanding. A low ratio shows that there is more demand than local businesses can supply. A high ratio shows there is more supply than the local area demands.

Regional Purchase Coefficient & Regional Sales Coefficient

The previous metrics do not say anything about whether local buyers and local sellers actually meet in the marketplace: it only shows how much is supplied and how much is demanded. The regional purchase coefficient estimates how much of local purchases are indeed sourced by local sellers. Conversely, the regional sales coefficient estimates how much of a local seller's revenues come from local buyers. (Even if the market is in balance, local buyers may choose to buy from out of the region; local sellers may find customers elsewhere, as well.)

Domestic Exports and Foreign Exports

These two metrics quantify the value of goods and services that are exported to other regions or outside the U.S. by local sellers.

Multipliers

The indirect multipliers show how additional dollars in a given industry reverberate throughout the rest of the economy. A high indirect multiplier indicates that the industry has a high level of local suppliers; a low multiplier suggests the opposite. Induced impacts show how additional dollars in an industry reverberate via the spending by employees of the firms.

Commodity Demand

Each of the preceding metrics has a single value per industry. For example, truck transportation has a single dollar amount for value added, a single regional purchase coefficient, and so on. The commodity demand is a list of things that a given industry buys; it expands the "intermediate gross outlay." The intermediate gross outlay shows how much of a firm's dollars go to other businesses; the commodity demand expands that to specify exactly where those dollars go. Due to the size of the SAM, it is possible to show hundreds of different inputs that firms buy. In our analysis, we present the top commodities that firms buy. Therefore, for each industry we study, we will provide a list of the top commodities the firm buys in the local study area. This will show the types of local firms that are most affected by the presence of the industries we are considering.

SAM Results

Total Output

Total output is the total value of goods and services produced in a given industry. It is akin to GDP. Essentially, the tables below show GDP by industry by group:

Table 2. Total Output (\$ millions)

| | Winnebago County | | Boone County | | State of Illinois | |
|--------------------------|------------------|--------|--------------|-------|-------------------|-----------|
| | 2001 | 2007 | 2001 | 2007 | 2001 | 2007 |
| Air Transportation | 16.2 | 48.2 | 0.0 | 0.5 | 9,038 | 10,953 |
| Rail Transportation | 3.7 | 7.3 | 5.5 | 6.1 | 2,408 | 4,973 |
| Water Transportation | 0.0 | 0.9 | 0.0 | 0.0 | 1,179 | 1,310 |
| Truck Transportation | 202.8 | 260.7 | 31.6 | 45.9 | 10,678 | 13,938 |
| Support activities, etc. | 28.8 | 38.8 | 0.0 | 32.0 | 3,360 | 3,632 |
| Couriers and Messengers | 112.2 | 109.1 | 0.0 | 0.3 | 2,061 | 1,790 |
| Warehousing & Storage | 27.4 | 61.9 | 1.6 | 10.3 | 2,295 | 3,592 |
| All Industries | 16,558 | 20,901 | 3,330 | 4,501 | 841,659 | 1,159,975 |

Table 3. Change in Total Output (\$ millions)

| | Winnebago County | | Boone County | | Both Counties | | State of Illinois | |
|--------------------------|------------------|---------|--------------|---------|---------------|---------|-------------------|---------|
| | Value | Percent | Value | Percent | Value | Percent | Value | Percent |
| Air Transportation | 32.1 | 20% | 0.5 | | 32.5 | 20% | 1,914 | 3% |
| Rail Transportation | 3.5 | 12% | 0.6 | 2% | 4.1 | 6% | 2,565 | 13% |
| Water Transportation | 0.9 | | 0.0 | | 0.9 | | 131 | 2% |
| Truck Transportation | 57.8 | 4% | 14.2 | 6% | 72.1 | 5% | 3,259 | 5% |
| Support activities, etc. | 10.0 | 5% | 32.0 | | 42.1 | 16% | 272 | 1% |
| Couriers and Messengers | -3.2 | 0% | 0.3 | | -2.8 | 0% | -271 | -2% |
| Warehousing & Storage | 34.5 | 15% | 8.7 | 36% | 43.2 | 16% | 1,297 | 8% |
| All Industries | 4,343 | 4% | 1,171 | 5% | 5,514 | 4% | 318,316 | 5% |

- Logistics industries grew at a much faster rate than the economy at large in all three study areas. Air Transportation in Winnebago tripled its total output from 2001 to 2007, compared to statewide industry growth of 21 percent.
- The state's rail transportation industry experienced strong growth, doubling over the time period studied. Winnebago County's rail transportation industry fared almost as well, increasing from \$3.7 million in total output to over \$7 million.
- Warehousing & Storage also was a growth industry for each study area. Boone County's industry blossomed from \$1.6 million of business in 2001 to over \$10 million in 2007. The industry in Winnebago County also more than doubled.
- Boone County's primary contribution to the logistics industry is in truck transportation, and, more recently, support activities for transportation.

Total Output as a Percentage of the Economy

The table below shows that transportation industries are between 2.0 and 2.5 percent of their respective economies in Winnebago, Boone, and the state:

Table 4. Transportation as a Share of the Economy (Geographically centered)

| | Winnebago County | | Boone County | | Both Counties | | State of Illinois | |
|---------------------------|------------------|--------------|--------------|--------------|---------------|--------------|-------------------|--------------|
| | 2001 | 2007 | 2001 | 2007 | 2001 | 2007 | 2001 | 2007 |
| Air Transportation | 0.10% | 0.23% | 0.00% | 0.01% | 0.08% | 0.19% | 1.07% | 0.94% |
| Rail Transportation | 0.02% | 0.03% | 0.17% | 0.13% | 0.05% | 0.05% | 0.29% | 0.43% |
| Water Transportation | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.14% | 0.11% |
| Truck Transportation | 1.22% | 1.25% | 0.95% | 1.02% | 1.18% | 1.21% | 1.27% | 1.20% |
| Support activities, etc. | 0.17% | 0.19% | 0.00% | 0.71% | 0.14% | 0.28% | 0.40% | 0.31% |
| Couriers and Messengers | 0.68% | 0.52% | 0.00% | 0.01% | 0.56% | 0.43% | 0.24% | 0.15% |
| Warehousing & Storage | 0.17% | 0.30% | 0.05% | 0.23% | 0.15% | 0.28% | 0.27% | 0.31% |
| Transportation Industries | 2.36% | 2.52% | 1.16% | 2.11% | 2.16% | 2.45% | 2.36% | 2.52% |

- Almost every sector gained relative importance in the economy in Winnebago and Boone County.
- The transportation industries as a group gained as a percentage of the state economy, but gains in warehousing and rail transportation were offset by losses in the five other sectors.

Total Commodity Supply & Total Commodity Demand

Total Commodity Supply refers to the production of a given commodity (good or service) in the study area. It is very similar to total output, and indeed we see that it is similar to total output. Total Commodity Demand shows how much of a given good or service is purchased by other firms or households in the given study area. Neither of these metrics makes any comment on whether the buyers and sellers meet in the marketplace—it only measures what firms and households are buying and what they are producing.

Table 5. Total Commodity Supply (\$ millions)

| | Winnebago County | | Boone County | | State of Illinois | | |
|--------------------------|------------------|--------|--------------|-------|-------------------|---------|-----------|
| | 2001 | 2007 | 2001 | 2007 | 2001 | 2007 | |
| Air Transportation | 19.0 | 50.5 | 0.0 | 0.0 | 2.3 | 9,369 | 11,164 |
| Rail Transportation | 4.4 | 8.3 | 5.5 | 5.5 | 6.9 | 2,482 | 5,076 |
| Water Transportation | 0.2 | 1.5 | 0.0 | 0.0 | 0.5 | 1,200 | 1,364 |
| Truck Transportation | 204.2 | 265.8 | 31.6 | 31.6 | 50.1 | 10,834 | 14,421 |
| Support activities, etc. | 27.5 | 34.9 | 0.6 | 0.6 | 25.5 | 3,106 | 3,035 |
| Couriers and Messengers | 112.2 | 109.1 | 0.0 | 0.0 | 0.3 | 2,069 | 1,790 |
| Warehousing & Storage | 27.5 | 61.9 | 1.6 | 1.6 | 10.3 | 2,301 | 3,592 |
| All Industries | 16,928 | 21,418 | 3,368 | 3,368 | 4,577 | 856,494 | 1,186,320 |

Table 6. Total Commodity Demand (\$ millions)

| | <u>Winnebago County</u> | | <u>Boone County</u> | | <u>State of Illinois</u> | |
|--------------------------|-------------------------|--------|---------------------|-------|--------------------------|-----------|
| | 2001 | 2007 | 2001 | 2007 | 2001 | 2007 |
| Air Transportation | 106.9 | 115.3 | 18.7 | 19.6 | 5,789 | 6,872 |
| Rail Transportation | 34.4 | 55.3 | 6.5 | 16.1 | 1,698 | 3,451 |
| Water Transportation | 23.1 | 17.9 | 2.6 | 3.4 | 1,168 | 1,375 |
| Truck Transportation | 194.3 | 234.5 | 46.1 | 59.6 | 9,068 | 11,913 |
| Support activities, etc. | 26.0 | 33.1 | 2.9 | 4.2 | 2,532 | 2,615 |
| Couriers and Messengers | 55.3 | 51.7 | 6.0 | 6.8 | 3,051 | 3,022 |
| Warehousing & Storage | 43.8 | 57.8 | 7.5 | 7.8 | 1,708 | 2,581 |
| All Industries | 16,680 | 21,323 | 5,067 | 6,677 | 839,607 | 1,171,099 |

Table 7. Commodity Supply-Demand Ratio

| | <u>Winnebago County</u> | | <u>Boone County</u> | | <u>State of Illinois</u> | |
|--------------------------|-------------------------|------|---------------------|------|--------------------------|------|
| | 2001 | 2007 | 2001 | 2007 | 2001 | 2007 |
| Air Transportation | 0.2 | 0.4 | 0.0 | 0.1 | 1.0 | 1.0 |
| Rail Transportation | 0.1 | 0.1 | 0.7 | 0.4 | 1.0 | 1.0 |
| Water Transportation | 0.0 | 0.1 | 0.0 | 0.1 | 0.8 | 0.7 |
| Truck Transportation | 1.0 | 1.0 | 0.6 | 0.8 | 1.0 | 1.0 |
| Support activities, etc. | 0.9 | 0.9 | 0.2 | 1.0 | 1.0 | 1.0 |
| Couriers and Messengers | 1.0 | 1.0 | 0.0 | 0.0 | 0.7 | 0.5 |
| Warehousing & Storage | 0.6 | 1.0 | 0.2 | 1.0 | 1.0 | 1.0 |

The supply-demand ratio is an indicator of how well balanced, locally, a given industry is. The closer to 1.0, the closer the market is to well-satisfied. (Values where supply exceeds demand are shown as 1.0.) The table above shows that, particularly in the case of air transportation, logistics industries moved toward satiating local demand more fully. Shortened and more efficient supply chains can lead to local employment growth, e.g., the Chrysler Supplier Park.

In this ratio, supply is the numerator and demand is the denominator. Therefore, if much more product is demanded than is supplied, the ratio will be low. A low ratio in this table means that local firms must look elsewhere to buy their products.

ERA notes that air transportation and warehousing & storage made gains in this ratio Winnebago County. This means that local suppliers are likely to have been attracted to the county as a result of the local demand. As one would expect, the larger the study area, the closer the markets are to being balanced. The state has many more values closer to 1.0.

Regional Purchase Coefficient & Regional Sales Coefficient (RPC & RSC)

The metrics above compared the total amount of supply and the total amount of demand, but RPC and RSC measure whether the buyers and sellers actually met in the marketplace.

The regional purchase coefficient and regional sales coefficient describe the extent to which local buyers and sellers (respectively) buy and sell products with other local firms. High values for the RPC and RSC indicate that industries are well-integrated with each other. The RPC and RSC are scaled from 0 to 1.

Table 8. Regional Purchase Coefficient

| | Winnebago County | | Boone County | | State of Illinois | |
|--------------------------|------------------|------|--------------|------|-------------------|------|
| | 2001 | 2007 | 2001 | 2007 | 2001 | 2007 |
| Air Transportation | 0.15 | 0.38 | 0.00 | 0.12 | 0.46 | 0.46 |
| Rail Transportation | 0.11 | 0.14 | 0.73 | 0.40 | 1.00 | 1.00 |
| Water Transportation | 0.01 | 0.07 | 0.00 | 0.14 | 0.82 | 0.67 |
| Truck Transportation | 0.97 | 1.00 | 0.63 | 0.80 | 1.00 | 1.00 |
| Support activities, etc. | 0.70 | 0.70 | 0.20 | 0.70 | 0.70 | 0.70 |
| Couriers and Messengers | 0.70 | 0.70 | 0.00 | 0.04 | 0.68 | 0.52 |
| Warehousing & Storage | 0.62 | 1.00 | 0.22 | 1.00 | 1.00 | 1.00 |

In the table above, air transportation had a RPC of 0.15 in 2001 and 0.38 in 2007. This means that local buyers who required these services spent 15 percent of their dollars locally in 2001 and 38 percent of their dollars locally in 2007. Again, one expects the RPC to be higher with larger study areas, and they often are.

Table 9. Regional Sales Coefficient

| | Winnebago County | | Boone County | | State of Illinois | |
|--------------------------|------------------|------|--------------|------|-------------------|------|
| | 2001 | 2007 | 2001 | 2007 | 2001 | 2007 |
| Air Transportation | 0.85 | 0.87 | 0.00 | 0.97 | 0.29 | 0.28 |
| Rail Transportation | 0.88 | 0.94 | 0.86 | 0.94 | 0.68 | 0.68 |
| Water Transportation | 1.00 | 0.79 | 1.00 | 1.00 | 0.80 | 0.67 |
| Truck Transportation | 0.93 | 0.88 | 0.93 | 0.95 | 0.84 | 0.83 |
| Support activities, etc. | 0.66 | 0.66 | 1.00 | 0.12 | 0.57 | 0.60 |
| Couriers and Messengers | 0.34 | 0.33 | 1.00 | 0.88 | 1.00 | 0.88 |
| Warehousing & Storage | 0.99 | 0.93 | 0.99 | 0.76 | 0.74 | 0.72 |

Why are regional sales coefficients higher than regional purchase coefficients? The RSC corresponds with sellers (or, supply). The RPC corresponds with buyers (or, demand). Recall from previous tables that supply is much lower than demand: that is, firms and households want more of these commodities than what is produced there. It is only logical to expect that sellers, who face a very large pool of buyers, can satisfy many of their sales locally. By contrast, buyers, who all compete for relatively small pool of suppliers, must look elsewhere. And in fact it is true: the RSC is higher than the RPC in most industries. The exceptions are the industries that have a supply-demand ratio near or equal to 1.0, namely couriers and support activities.

Table 10. Domestic Exports (\$ millions)

| | <u>Winnebago County</u> | | <u>Boone County</u> | | <u>State of Illinois</u> | |
|--------------------------|-------------------------|-------|---------------------|-------|--------------------------|---------|
| | 2001 | 2007 | 2001 | 2007 | 2001 | 2007 |
| Air Transportation | 0.0 | 0.0 | 0.0 | 0.0 | 5,116 | 6,543 |
| Rail Transportation | 0.0 | 0.0 | 0.0 | 0.0 | 457 | 1,280 |
| Water Transportation | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 0 |
| Truck Transportation | 0.0 | 16.3 | 0.0 | 0.0 | 966 | 1,702 |
| Support activities, etc. | 6.0 | 6.9 | 0.0 | 18.6 | 945 | 756 |
| Couriers and Messengers | 73.5 | 59.9 | 0.0 | 0.0 | 0 | 0 |
| Warehousing & Storage | 0.0 | 3.4 | 0.0 | 2.4 | 562 | 970 |
| All Industries | 6,090 | 7,507 | 1,367 | 1,597 | 221,907 | 312,197 |

Table 11. Foreign Exports (\$ millions)

| | <u>Winnebago County</u> | | <u>Boone County</u> | | <u>State of Illinois</u> | |
|--------------------------|-------------------------|-------|---------------------|------|--------------------------|--------|
| | 2001 | 2007 | 2001 | 2007 | 2001 | 2007 |
| Air Transportation | 2.8 | 6.4 | 0.0 | 0.1 | 1,578 | 1,446 |
| Rail Transportation | 0.5 | 0.5 | 0.7 | 0.4 | 327 | 344 |
| Water Transportation | 0.0 | 0.3 | 0.0 | 0.0 | 238 | 445 |
| Truck Transportation | 15.2 | 15.1 | 2.4 | 2.7 | 799 | 806 |
| Support activities, etc. | 3.3 | 4.8 | 0.0 | 4.0 | 389 | 449 |
| Couriers and Messengers | 0.0 | 12.9 | 0.0 | 0.0 | 0 | 212 |
| Warehousing & Storage | 0.4 | 0.7 | 0.0 | 0.1 | 31 | 42 |
| All Industries | 1,346 | 1,657 | 243 | 572 | 47,846 | 73,692 |

Table 12. Total Imports (\$ millions)

| | <u>Winnebago County</u> | | <u>Boone County</u> | | <u>State of Illinois</u> | |
|--------------------------|-------------------------|-------|---------------------|-------|--------------------------|---------|
| | 2001 | 2007 | 2001 | 2007 | 2001 | 2007 |
| Air Transportation | 90.7 | 71.2 | 18.7 | 17.4 | 3,114 | 3,697 |
| Rail Transportation | 30.5 | 47.5 | 1.7 | 9.6 | 0 | 0 |
| Water Transportation | 22.9 | 16.7 | 2.6 | 2.9 | 206 | 456 |
| Truck Transportation | 5.2 | 0.0 | 16.8 | 12.1 | 0 | 0 |
| Support activities, etc. | 7.8 | 9.9 | 2.3 | 1.3 | 760 | 785 |
| Couriers and Messengers | 16.6 | 15.5 | 5.9 | 6.5 | 982 | 1,444 |
| Warehousing & Storage | 16.7 | 0.0 | 5.8 | 0.0 | 0 | 0 |
| All Industries | 7,189 | 9,069 | 3,308 | 4,269 | 252,866 | 370,668 |

Table 13. Change in Total Imports (values in \$ millions)

| | <u>Winnebago County</u> | | <u>Boone County</u> | | <u>Both Counties</u> | | <u>State of Illinois</u> | |
|--------------------------|-------------------------|---------|---------------------|---------|----------------------|---------|--------------------------|---------|
| | Value | Percent | Value | Percent | Value | Percent | Value | Percent |
| Air Transportation | -19.5 | -4% | -1.3 | -1% | -20.8 | -3% | 583 | 3% |
| Rail Transportation | 16.9 | 8% | 7.9 | 33% | 24.8 | 10% | 0 | |
| Water Transportation | -6.1 | -5% | 0.4 | 2% | -5.8 | -4% | 250 | 14% |
| Truck Transportation | -5.2 | -100% | -4.8 | -5% | -10.0 | -10% | 0 | |
| Support activities, etc. | 2.1 | 4% | -1.0 | -9% | 1.1 | 2% | 25 | 1% |
| Couriers and Messengers | -1.1 | -1% | 0.5 | 1% | -0.6 | 0% | 462 | 7% |
| Warehousing & Storage | -16.7 | -100% | -5.8 | -100% | -22.5 | -100% | 0 | |
| All Industries | 1,880 | 4% | 960 | 4% | 2,840 | 4% | 117,802 | 7% |

Total imports in logistics, over this period, went down in general, consistent with our existing findings that supply and demand are, in general, becoming more balanced in these industries.

Multipliers

Many of the above metrics are indicators of how the industries interact with each other and with other counties in the U.S. The economic impact multiplier is the most succinct summary of this indication. In general, a higher multiplier means that new business to firms in a given industry has a higher effect on the local economy than it would have previously. However, it should be noted that a smaller multiplier over time may simply represent a variety of factors, observable and not observable, and can be caused by things entirely out of control of the policymakers or even the business leaders in the area. (Think of an industry that is somewhat in balance. Then, suppose the industry expands its production in the market area, but must source many of its inputs from outside the study area. The multiplier would probably decrease—but it’s still better than not having the industry expand at all.)

Below we present indirect and induced multipliers. The indirect multiplier indicates the extent to which firms buy from other firms in the local study area. These rise in three of seven industries in Winnebago County and in six of seven in Boone County. The induced multipliers indicate the extent to which the economy benefits by the employees of these firms having higher incomes—which they re-spend in the economy on goods and services. The induced multipliers rise in six of seven industries in Winnebago County and five of seven industries in Boone County.

Table 14. Indirect Multipliers (Measured as indirect impact for each \$1 direct impact)

| | <u>Winnebago County</u> | | <u>Boone County</u> | | <u>State of Illinois</u> | |
|--------------------------|-------------------------|------|---------------------|------|--------------------------|------|
| | 2001 | 2007 | 2001 | 2007 | 2001 | 2007 |
| Air Transportation | 0.39 | 0.27 | 0.00 | 0.20 | 0.54 | 0.59 |
| Rail Transportation | 0.18 | 0.27 | 0.10 | 0.16 | 0.46 | 0.51 |
| Water Transportation | 0.00 | 0.43 | 0.00 | 0.00 | 0.68 | 0.52 |
| Truck Transportation | 0.37 | 0.33 | 0.16 | 0.18 | 0.58 | 0.53 |
| Support activities, etc. | 0.28 | 0.24 | 0.00 | 0.14 | 0.41 | 0.27 |
| Couriers and Messengers | 0.37 | 0.12 | 0.00 | 0.07 | 0.48 | 0.24 |
| Warehousing & Storage | 0.16 | 0.29 | 0.10 | 0.17 | 0.24 | 0.31 |

Table 15. Induced Multipliers (Measured as induced impact for each \$1 direct impact)

| | <u>Winnebago County</u> | | <u>Boone County</u> | | <u>State of Illinois</u> | |
|--------------------------|-------------------------|------|---------------------|------|--------------------------|------|
| | 2001 | 2007 | 2001 | 2007 | 2001 | 2007 |
| Air Transportation | 0.28 | 0.30 | 0.00 | 0.06 | 0.47 | 0.41 |
| Rail Transportation | 0.33 | 0.26 | 0.11 | 0.11 | 0.45 | 0.39 |
| Water Transportation | 0.00 | 0.23 | 0.00 | 0.00 | 0.33 | 0.31 |
| Truck Transportation | 0.30 | 0.36 | 0.10 | 0.15 | 0.44 | 0.51 |
| Support activities, etc. | 0.37 | 0.46 | 0.00 | 0.21 | 0.55 | 0.64 |
| Couriers and Messengers | 0.27 | 0.42 | 0.00 | 0.26 | 0.46 | 0.62 |
| Warehousing & Storage | 0.41 | 0.42 | 0.16 | 0.19 | 0.57 | 0.62 |

Commodity Inputs & Imports

For four industries, we detail the commodity inputs and commodity imports. The tables below refer to Winnebago County in the year 2007.

Commodity inputs are the goods and services the industry buys in order to produce its product. (These are all part of the social accounting matrix.) The industries we have considered have about one hundred to 150 commodity inputs. In the tables below, we choose the top twelve industries for each category. The metrics included in his table are the following:

- **Gross absorption coefficient.** This is the percentage of each \$1 in industry outlay that is dedicated to a given input. Recall that not all of an industry’s dollar goes toward other firms: some portion goes toward employee compensation, dividends, taxes, etc. Therefore, the gross absorption coefficients usually add up to .25 or .75.
- **Gross inputs.** Based on the size of the industry, this is the amount, in millions of dollars, that the entire industry spends on a given commodity. Whereas the gross absorption coefficient measures how much of each dollar goes to a certain commodity, the gross input says how many dollars that is. For example, if an industry spends \$1 million in total outlay, and the gross absorption coefficient for a given commodity is .02, then the gross input is \$20,000. In other words, the industry spends 2 percent of its dollars on this commodity, and it adds up to \$20,000 in total spending.
- **Regional absorption coefficient.** Similar to the gross absorption coefficient, this describes the percentage of one dollar spent on a given commodity in the local study area. It will be some portion of the gross absorption coefficient. In the example above, if an industry’s gross absorption coefficient is .02 and it spends half of that in the local study area, then its regional absorption coefficient is .01.

- Regional inputs.** Regional inputs describe the dollar amount of spending on a given commodity in the local study area. It is derived by multiplying the regional absorption coefficient by the industry's total output. Again, in the example above, the regional input would be \$10,000; that is, the industry in question spends \$20,000 on a given commodity, \$10,000 of which is spent in the local study area.

Table 16. Commodity Inputs, Warehousing

| NAICS | Commodity | Gross Absorption Coefficient | Gross Inputs (\$ millions) | Regional Absorption Coefficient | Regional Inputs (\$ millions) |
|-------|---|------------------------------|----------------------------|---------------------------------|-------------------------------|
| 531 | Real Estate | 0.070 | 4.32 | 0.041 | 2.56 |
| 493 | Warehousing and Storage | 0.047 | 2.93 | 0.047 | 2.93 |
| 2211 | Electric power generation, transmission, and distribution | 0.025 | 1.58 | 0.019 | 1.2 |
| 491 | U.S. Postal Service | 0.013 | 0.8 | 0.010 | 0.6 |
| 55 | Management of companies and enterprises | 0.012 | 0.74 | 0.001 | 0.06 |
| 492 | Couriers and messengers | 0.011 | 0.71 | 0.008 | 0.5 |
| 5613 | Employment services | 0.010 | 0.63 | 0.008 | 0.5 |
| 5241 | Insurance carriers | 0.009 | 0.56 | 0.006 | 0.38 |
| 3363 | Motor vehicle parts manufacturing | 0.009 | 0.55 | 0.005 | 0.3 |
| 32411 | Petroleum Refineries | 0.009 | 0.54 | 0.000 | 0 |
| 42 | Wholesale trade | 0.009 | 0.54 | 0.008 | 0.51 |
| 5617 | Services to buildings and dwellings | 0.008 | 0.51 | 0.006 | 0.39 |
| | Total Commodity Demand | 0.369 | 22.816 | 0.234 | 14.51 |

Table 17. Commodity Inputs, Air Transportation (Inputs in \$ millions)

| NAICS | Commodity | Gross Absorption Coefficient | Gross Inputs | Regional Absorption Coefficient | Regional Inputs |
|------------------------|---|------------------------------|--------------|---------------------------------|-----------------|
| 32411 | Petroleum Refineries | 0.234 | 11.31 | 0.001 | 0.03 |
| 487, 488 | Scenic and sightseeing transportation and support activities for transportation | 0.078 | 3.75 | 0.054 | 2.62 |
| 5324 | Commercial and industrial machinery and equipment rental and leasing | 0.043 | 2.06 | 0.020 | 0.99 |
| 722 | Food services and drinking places | 0.037 | 1.8 | 0.031 | 1.51 |
| 5615 | Travel arrangement and reservation services | 0.034 | 1.66 | 0.011 | 0.54 |
| 531 | Real Estate | 0.024 | 1.16 | 0.014 | 0.69 |
| 5241 | Insurance carriers | 0.018 | 0.85 | 0.012 | 0.58 |
| 517 | Telecommunications | 0.012 | 0.6 | 0.006 | 0.3 |
| 42 | Wholesale trade | 0.012 | 0.56 | 0.011 | 0.53 |
| 336411 | Aircraft manufacturing | 0.011 | 0.54 | 0.000 | 0 |
| 336413 | Other aircraft parts and auxiliary equipment manufacturing | 0.010 | 0.49 | 0.007 | 0.33 |
| 5418 | Advertising and related services | 0.010 | 0.46 | 0.008 | 0.37 |
| Total Commodity Demand | | 0.616 | 29.713 | 0.209 | 10.08 |

Table 18. Commodity Inputs, Truck Transportation (Inputs in \$ millions)

| NAICS | Commodity | Gross Absorption Coefficient | Gross Inputs | Regional Absorption Coefficient | Regional Inputs |
|-------------------------|---|------------------------------|--------------|---------------------------------|-----------------|
| 484 | Truck transportation | 0.048 | 12.5 | 0.048 | 12.5 |
| 491 | U.S. Postal Service | 0.040 | 10.49 | 0.030 | 7.87 |
| 492 | Couriers and messengers | 0.036 | 9.31 | 0.025 | 6.52 |
| 5241 | Insurance carriers | 0.035 | 9.17 | 0.024 | 6.25 |
| 5613 | Employment services | 0.024 | 6.35 | 0.019 | 5.08 |
| 42 | Wholesale trade | 0.015 | 3.85 | 0.014 | 3.66 |
| 487, 488 | Scenic and sightseeing transportation and support activities for transportation | 0.016 | 4.28 | 0.011 | 2.99 |
| 3363 | Motor vehicle parts manufacturing | 0.020 | 5.14 | 0.011 | 2.76 |
| 493 | Warehousing and Storage | 0.009 | 2.27 | 0.009 | 2.27 |
| 531 | Real Estate | 0.014 | 3.77 | 0.009 | 2.23 |
| 5617 | Services to buildings and dwellings | 0.007 | 1.93 | 0.006 | 1.47 |
| 81111-2, 811191, 811198 | Automotive repair and maintenance, except car washes | 0.006 | 1.64 | 0.005 | 1.4 |
| Total Commodity Demand | | 0.499 | 130.144 | 0.262 | 68.16 |

Table 19. Commodity Inputs, Courier Services (Inputs in \$ millions)

| NAICS | Commodity | Gross Absorption Coefficient | Gross Inputs | Regional Absorption Coefficient | Regional Inputs |
|-------------------------------|---|------------------------------|---------------|---------------------------------|-----------------|
| 32411 | Petroleum Refineries | 0.077 | 8.4 | 0.000 | 0.03 |
| 491 | U.S. Postal Service | 0.014 | 1.49 | 0.010 | 1.12 |
| 55 | Management of companies and enterprises | 0.013 | 1.41 | 0.001 | 0.12 |
| 492 | Couriers and messengers | 0.012 | 1.32 | 0.008 | 0.93 |
| 487, 488 | Scenic and sightseeing transportation and support activities for transportation | 0.012 | 1.31 | 0.008 | 0.92 |
| 531 | Real Estate | 0.012 | 1.26 | 0.007 | 0.75 |
| 5613 | Employment services | 0.010 | 1.04 | 0.008 | 0.83 |
| 42 | Wholesale trade | 0.008 | 0.9 | 0.008 | 0.85 |
| 5611 | Office administrative services | 0.006 | 0.64 | 0.001 | 0.06 |
| 5241 | Insurance carriers | 0.006 | 0.63 | 0.004 | 0.43 |
| 53221-2, 53229, 5323 | General and consumer goods rental except video tapes and discs | 0.005 | 0.54 | 0.004 | 0.4 |
| 5617 | Services to buildings and dwellings | 0.005 | 0.54 | 0.004 | 0.41 |
| Total Commodity Demand | | 0.237 | 25.855 | 0.098 | 10.72 |

Table 20. Top Commodity Inputs, Rail Transportation (Inputs in \$ millions)

| NAICS | Commodity | Gross Absorption Coefficient | Gross Inputs | Regional Absorption Coefficient | Regional Inputs |
|-------------------------------|--|------------------------------|--------------|---------------------------------|-----------------|
| 32411 | Petroleum Refineries | 0.059 | 0.43 | 0.000 | 0 |
| 23* | Maintenance and repair construction of nonresidential | 0.054 | 0.39 | 0.054 | 0.39 |
| 5324 | Commercial and industrial machinery and equipment rental and leasing | 0.051 | 0.37 | 0.024 | 0.18 |
| 3365 | Railroad rolling stock manufacturing | 0.050 | 0.36 | 0.000 | 0 |
| 5222-3 | Nondepository credit intermediation and related activities | 0.044 | 0.32 | 0.023 | 0.17 |
| 523 | Securities, commodity contracts, investments, and related activities | 0.039 | 0.28 | 0.017 | 0.13 |
| 3211 | Sawmills and wood preservation | 0.013 | 0.1 | 0.002 | 0.01 |
| 42 | Wholesale trade | 0.013 | 0.1 | 0.012 | 0.09 |
| 541512 | Computer systems design services | 0.012 | 0.09 | 0.002 | 0.01 |
| 5411 | Legal services | 0.010 | 0.08 | 0.008 | 0.05 |
| 5412 | Accounting, tax preparation, bookkeeping, and payroll services | 0.010 | 0.07 | 0.008 | 0.06 |
| 5615 | Travel arrangement and reservation services | 0.009 | 0.07 | 0.003 | 0.02 |
| Total Commodity Demand | | 0.481 | 3.492 | 0.213 | 1.54 |

Commodity imports are related. In these tables, we present the goods and services that each industry imports in the largest quantities. That is, the industries are sorted by external input, which is gross

input minus regional input. This table describes the production inputs that are sourced mainly from outside the study area. All figures in these tables are in millions of dollars.

Table 21. Top Commodity Imports, Warehousing (\$ millions)

| NAICS | Commodity | Gross Inputs | Regional Inputs | External Inputs |
|--------------|---|--------------|-----------------|-----------------|
| 531 | Real Estate | 4.32 | 2.56 | 1.76 |
| 55 | Management of companies and enterprises | 0.74 | 0.06 | 0.68 |
| 32411 | Petroleum Refineries | 0.54 | 0 | 0.54 |
| 5611 | Office administrative services | 0.45 | 0.04 | 0.41 |
| 2211 | Electric power generation, transmission, and distribution | 1.58 | 1.2 | 0.38 |
| 3363 | Motor vehicle parts manufacturing | 0.55 | 0.3 | 0.25 |
| 32592, 32599 | All other chemical product and preparation manufacturing | 0.28 | 0.04 | 0.24 |
| 54161, 54163 | Management, scientific, and technical consulting services | 0.33 | 0.1 | 0.23 |
| 492 | Couriers and messengers | 0.71 | 0.5 | 0.21 |
| 491 | U.S. Postal Service | 0.8 | 0.6 | 0.2 |
| 517 | Telecommunications | 0.39 | 0.19 | 0.2 |
| 333921-4 | Material handling equipment manufacturing | 0.3 | 0.11 | 0.19 |

Table 22. Top Commodity Imports, Air Transportation (\$ millions)

| NAICS | Commodity | Gross Inputs | Regional Inputs | External Inputs |
|----------|---|--------------|-----------------|-----------------|
| 32411 | Petroleum Refineries | 11.31 | 0.03 | 11.28 |
| 487, 488 | Scenic and sightseeing transportation and support activities for transportation | 3.75 | 2.62 | 1.13 |
| 5615 | Travel arrangement and reservation services | 1.66 | 0.54 | 1.12 |
| 5324 | Commercial and industrial machinery and equipment rental and leasing | 2.06 | 0.99 | 1.07 |
| 722 | Food services and drinking places | 0.54 | 0 | 0.54 |
| 531 | Real Estate | 1.16 | 0.69 | 0.47 |
| 517 | Telecommunications | 0.6 | 0.3 | 0.3 |
| 722 | Food services and drinking places | 1.8 | 1.51 | 0.29 |
| 5241 | Insurance carriers | 0.85 | 0.58 | 0.27 |
| 55 | Management of companies and enterprises | 0.25 | 0.02 | 0.23 |
| 336413 | Other aircraft parts and auxiliary equipment manufacturing | 0.49 | 0.33 | 0.16 |
| 33271 | Machine shops | 0.34 | 0.24 | 0.1 |

Table 23. Top Commodity Imports, Truck Transportation

| NAICS | Commodity | Gross Inputs | Regional Inputs | External Inputs |
|----------|---|--------------|-----------------|-----------------|
| 32411 | Petroleum Refineries | 27.27 | 0.08 | 27.19 |
| 5611 | Office administrative services | 3.85 | 0.35 | 3.5 |
| 5241 | Insurance carriers | 9.17 | 6.25 | 2.92 |
| 492 | Couriers and messengers | 9.31 | 6.52 | 2.79 |
| 55 | Management of companies and enterprises | 2.99 | 0.26 | 2.73 |
| 491 | U.S. Postal Service | 10.49 | 7.87 | 2.62 |
| | 333 Transport by rail | 3.02 | 0.42 | 2.6 |
| 3363 | Motor vehicle parts manufacturing | 5.14 | 2.76 | 2.38 |
| 531 | Real Estate | 3.77 | 2.23 | 1.54 |
| 487, 488 | Scenic and sightseeing transportation and support activities for transportation | 4.28 | 2.99 | 1.29 |
| 5613 | Employment services | 6.35 | 5.08 | 1.27 |
| 32621 | Tire manufacturing | 1.18 | 0 | 1.18 |

Table 24. Top Commodity Imports, Courier Services

| NAICS | Commodity | Gross Inputs | Regional Inputs | External Inputs |
|----------|---|--------------|-----------------|-----------------|
| 32411 | Petroleum Refineries | 8.4 | 0.03 | 8.37 |
| 55 | Management of companies and enterprises | 1.41 | 0.12 | 1.29 |
| 5611 | Office administrative services | 0.64 | 0.06 | 0.58 |
| 531 | Real Estate | 1.26 | 0.75 | 0.51 |
| 492 | Couriers and messengers | 1.32 | 0.93 | 0.39 |
| 487, 488 | Scenic and sightseeing transportation and support activities for transportation | 1.31 | 0.92 | 0.39 |
| 491 | U.S. Postal Service | 1.49 | 1.12 | 0.37 |
| 517 | Telecommunications | 0.53 | 0.26 | 0.27 |
| 32621 | Tire manufacturing | 0.23 | 0 | 0.23 |
| 5613 | Employment services | 1.04 | 0.83 | 0.21 |
| 5241 | Insurance carriers | 0.63 | 0.43 | 0.2 |
| 336411 | Aircraft manufacturing | 0.18 | 0 | 0.18 |

Table 25. Top Commodity Imports, Rail Transportation

| NAICS | Commodity | Gross Inputs | Regional Inputs | External Input |
|----------------|--|--------------|-----------------|----------------|
| 32411 | Petroleum Refineries | 0.43 | 0 | 0.43 |
| 3365 | Railroad rolling stock manufacturing | 0.36 | 0 | 0.36 |
| 5324 | Commercial and industrial machinery and equipment rental and leasing | 0.37 | 0.18 | 0.19 |
| 523 | Securities, commodity contracts, investments, and related activities | 0.28 | 0.13 | 0.15 |
| 5222-3 | Nondepository credit intermediation and related activities | 0.32 | 0.17 | 0.15 |
| 3211 | Sawmills and wood preservation | 0.1 | 0.01 | 0.09 |
| 541512 | Computer systems design services | 0.09 | 0.01 | 0.08 |
| 33151 | Ferrous metal foundries | 0.06 | 0 | 0.06 |
| 5615 | Travel arrangement and reservation services | 0.07 | 0.02 | 0.05 |
| 541513, 541519 | Other computer related services, including facilities management | 0.04 | 0.01 | 0.03 |
| 482 | Rail Transportation | 0.03 | 0 | 0.03 |
| 3311 | Iron and steel mills and ferroalloy manufacturing | 0.02 | 0 | 0.02 |

Industry Expenditures

The tables below show the various industries that buy the services of our select transportation industries. Whereas above, the tables showed where transportation industries sent their dollars, the tables below show where they get their dollars. The industries listed below are the customers of the logistics industry in Winnebago County. As above, there are usually over one hundred industries that buy the services of any given transportation industry. For convenience, we list the top twelve, sorted by “Gross Input,” which is the amount spent by the industry listed.

Table 26. Industry Expenditures on Warehousing (Inputs in \$ millions)

| NAICS | Sector | GAC | Gross Inputs | Regional Inputs |
|----------|---|--------------|--------------|-----------------|
| 42 | Wholesale Trade | 0.010 | 10.58 | 10.58 |
| 333995-6 | Fluid power process machinery | 0.003 | 2.96 | 2.96 |
| 493 | Warehousing and storage | 0.047 | 2.93 | 2.93 |
| 484 | Truck Transportation | 0.009 | 2.27 | 2.27 |
| 445 | Retail - Food and beverage | 0.011 | 2.12 | 2.12 |
| 453 | Retail - Miscellaneous | 0.012 | 2.11 | 2.11 |
| 452 | Retail - General merchandise | 0.011 | 2.08 | 2.08 |
| 33272 | Turned product and screw, nut, and bolt manufacturing | 0.003 | 1.45 | 1.45 |
| 444 | Retail - Building material and garden supply | 0.010 | 1.20 | 1.20 |
| 3363 | Motor vehicle parts manufacturing | 0.002 | 0.93 | 0.93 |
| 33271 | Machine shops | 0.004 | 0.85 | 0.85 |
| 623 | Hospitals | 0.001 | 0.84 | 0.84 |
| | Total Industries | 0.717 | 54.13 | 54.13 |

Table 27. Industry Expenditures on Air Transportation (Inputs in \$ millions)

| NAICS | Sector | GAC | Gross Inputs | Regional Inputs |
|--------------|---|--------------|--------------|-----------------|
| 42 | Wholesale Trade | 0.002 | 1.94 | 0.74 |
| 5613 | Employment services | 0.006 | 1.16 | 0.44 |
| 6211-3 | Offices of physicians, dentists, and other health practitioners | 0.002 | 1.07 | 0.41 |
| 5619 | Other support services | 0.004 | 1.02 | 0.39 |
| 722 | Food services and drinking places | 0.002 | 0.97 | 0.37 |
| 33271 | Machine shops | 0.004 | 0.89 | 0.34 |
| 5614 | Business support services | 0.008 | 0.89 | 0.34 |
| 51114, 51119 | Directory, mailing list, and other publishers | 0.008 | 0.85 | 0.32 |
| 491 | Postal Service | 0.010 | 0.84 | 0.32 |
| 33272 | Turned product and screw, nut, and bolt manufacturing | 0.002 | 0.83 | 0.32 |
| 521, 5221 | Monetary authorities and depository credit intermediation | 0.002 | 0.82 | 0.32 |
| 3363 | Motor vehicle parts manufacturing | 0.002 | 0.75 | 0.29 |
| | Total Industries | 0.607 | 35.91 | 13.74 |

Table 28. Industry Expenditure on Truck Transportation (Inputs in \$ millions)

| NAICS | Sector | GAC | Gross Inputs | Regional Inputs |
|----------------|--|-------|--------------|-----------------|
| 484 | Truck Transportation | 0.048 | 12.50 | 12.50 |
| 334111 | Fluid power process machinery | 0.010 | 10.38 | 10.38 |
| 23 | Construction of new residential permanent site single- and multi-family structures | 0.020 | 7.11 | 7.11 |
| 3363 | Motor vehicle parts manufacturing | 0.012 | 5.94 | 5.94 |
| 333515 | Cutting tool and machine tool accessory manufacturing | 0.026 | 5.24 | 5.24 |
| 311511-2 | Fluid milk and butter manufacturing | 0.028 | 5.04 | 5.04 |
| 42 | Wholesale trade | 0.004 | 4.07 | 4.07 |
| 33272 | Turned product and screw, nut, and bolt manufacturing | 0.009 | 4.02 | 4.02 |
| 31191 | Snack food manufacturing | 0.030 | 3.64 | 3.64 |
| 32732 | Ready-mix concrete manufacturing | 0.102 | 3.58 | 3.58 |
| 722 | Food services and drinking places | 0.007 | 3.23 | 3.23 |
| 23 | Construction of new nonresidential commercial and health care structures | 0.009 | 3.09 | 3.09 |
| Total Industry | | 2.698 | 158.41 | 158.41 |

Table 29. Industry Expenditure on Courier Services (Inputs in \$ millions)

| NAICS | Sector | GAC | Gross Inputs | Regional Inputs |
|------------------|---|-------|--------------|-----------------|
| 42 | Wholesale Trade | 0.013 | 13.27 | 9.29 |
| 484 | Truck Transportation | 0.036 | 9.31 | 6.52 |
| 51114, 51119 | Directory, mailing list, and other publishers | 0.019 | 2.03 | 1.42 |
| 5614 | Business support services | 0.014 | 1.59 | 1.12 |
| 487488 | Scenic and sightseeing transportation and support activities for transportation | 0.037 | 1.45 | 1.01 |
| 5619 | Other support services | 0.006 | 1.44 | 1.01 |
| 492 | Couriers and messengers | 0.012 | 1.32 | 0.93 |
| 445 | Retail - Food and beverage | 0.005 | 1.04 | 0.73 |
| 442 | Retail - Motor vehicle and parts | 0.006 | 1.04 | 0.73 |
| 452 | Retail - General merchandise | 0.006 | 1.02 | 0.71 |
| 51112 | Newspaper publishers | 0.015 | 0.90 | 0.63 |
| 8134, 8139 | Grantmaking, giving, and social advocacy organizations | 0.010 | 0.76 | 0.53 |
| Total Industries | | 0.532 | 48.91 | 34.24 |

Table 30. Industry Expenditure on Rail Transportation (Inputs in \$ millions)

| NAICS | Sector | Gross Absorption Coefficient | Gross Inputs | Regional Inputs |
|-------------------------|--|------------------------------|--------------|-----------------|
| 2212 | Electric power generation, transmission, and distribution | 0.022 | 8.50 | 1.20 |
| 484 | Truck Transportation | 0.012 | 3.02 | 0.43 |
| 31134 | Nonchocolate confectionery manufacturing | 0.011 | 2.48 | 0.35 |
| 32551 | Paint and coating manufacturing | 0.013 | 1.77 | 0.25 |
| 32221 | Paperboard container manufacturing | 0.016 | 1.76 | 0.25 |
| 333995-6 | Fluid power process machinery | 0.002 | 1.68 | 0.24 |
| 3363 | Motor vehicle parts manufacturing | 0.003 | 1.46 | 0.21 |
| 32561 | Soap and cleaning compound manufacturing | 0.008 | 1.37 | 0.19 |
| 311111 | Dog and cat food manufacturing | 0.022 | 1.23 | 0.17 |
| 31182 | Cookie, cracker, and pasta manufacturing | 0.014 | 1.07 | 0.15 |
| 31191 | Snack food manufacturing | 0.008 | 0.98 | 0.14 |
| 23 | Construction of new residential permanent site single- and multi-family structures | 0.002 | 0.84 | 0.12 |
| Total Industries | | 0.747 | 46.00 | 6.47 |

In many cases, the industry listed above roughly corresponds to the good or service being transported. For example, “Motor Vehicle Parts Manufacturing” industry is a key customer in several industries. This likely indicates that the product being shipped or stored is motor vehicle parts. A key exception is the top customer of rail transportation, Electric Power Generation. This energy-intensive industry, in turn, buys (and likely requires shipment of) significant amounts of petroleum, coal, natural gas, and similar energy products.

Rail & Air Industry Notes

AECOM has been able to make some limited comparisons of the inputs and outputs of the air transportation and rail transportation sectors from 2001 to 2007 for the geographic area. We should caution here that economies are consistently in flux and the changes we observe can be due to a variety of factors beyond our current understanding. Even so, we can draw some broad conclusions about how the industry has changed over that period.

Rail

- In both 2001 and 2007, power generation is the number one customer of rail transportation firms—by a wide margin. In 2001, it represented 25 percent of intermediate (business) spending on rail transportation, or three times higher than the next-nearest industry, motor vehicle parts manufacturing. Power generation firms in this county consume goods such as oil, natural gas,

coal, petroleum, and wind turbines. These firms spend most of their transportation dollars on pipeline and rail transportation.

- From 2001 to 2007, motor vehicle parts manufacturers went from representing 8 percent of rail firms' business revenues to 3 percent. They went from the second-largest source of rail revenue to the seventh-highest, as they contributed just \$1.5 million in output in 2007, as compared with \$2.2 million in 2001.
- Truck transportation firms are customers of rail transportation firms. This relationship is part of the region's intermodal linkages. In 2001, truck transportation firms represented about 4 percent of the rail firms' business inputs; by 2007, that had risen to 6.6 percent.
- The food production industry is a key customer of rail transportation firms. The top twelve industries for rail transportation firms include candy (nonchocolate confectionary) manufacturers; cookie, cracker, and pasta manufacturers; snack food manufacturers; and dog and cat food manufacturers. Paint and coating manufacturers are also a key customer of this industry.

Air

- The air transportation industry has also seen revenues from motor vehicle parts manufacturers decline. In 2001, motor vehicle parts manufacturers were the biggest industry customer of the air transportation industry, representing 7 percent of its business revenues. By 2007, the spending by motor vehicle parts manufacturers on air transportation fell by 60 percent and represented just 2 percent of the air transportation industry's business revenues. Supplier parks may be one contributing factor.
- Hospitals, health care providers, the U.S. Postal Service, directory and mailing list vendors, wholesalers, and restaurants were among the largest customers of air transportation in both years.
- Petroleum refineries are among the largest recipients of the air transportation industry's expenditures—obviously spending on fuel is a key input to the process of air transportation. In 2001, such expenditures represented 17 percent of industry outlays to other firms; by 2007, it became 38 percent. (Note that this is a percentage of spending on goods and services and excludes labor.) Very little of that spending stays in Winnebago County. It is no surprise to see, then, that the indirect multiplier has fallen for the air transportation industry, as so much more business spending has been going toward fuel from out of the county.

III. Logistics Hub Case Studies

Employment Growth Comparison

This section describes employment in select logistics industries for the following counties:

- Jefferson County, Kentucky (Louisville)
- Franklin County, Ohio (Columbus)
- Tarrant County, Texas (Fort Worth)
- Dallas County, Texas (Dallas)
- Winnebago County, Illinois (Rockford)

The purpose of this section is to compare Winnebago County with the other case study cities to gauge the relative prominence of logistics industries here, as compared with other cities known to be intermodal hubs. The beginning of the section includes charts that depict the overall trends. More specific tables are included in the appendix.

Data Source

The data source for this section is the Bureau of Labor Statistics. The Covered Employment and Wages (CEW) is a quarterly report that shows the number of employees in a given industry, by county. The source of the data is from state unemployment insurance. The data are collected consistently across all geographies and are arranged by NAICS code. In this section, we detail five NAICS codes:

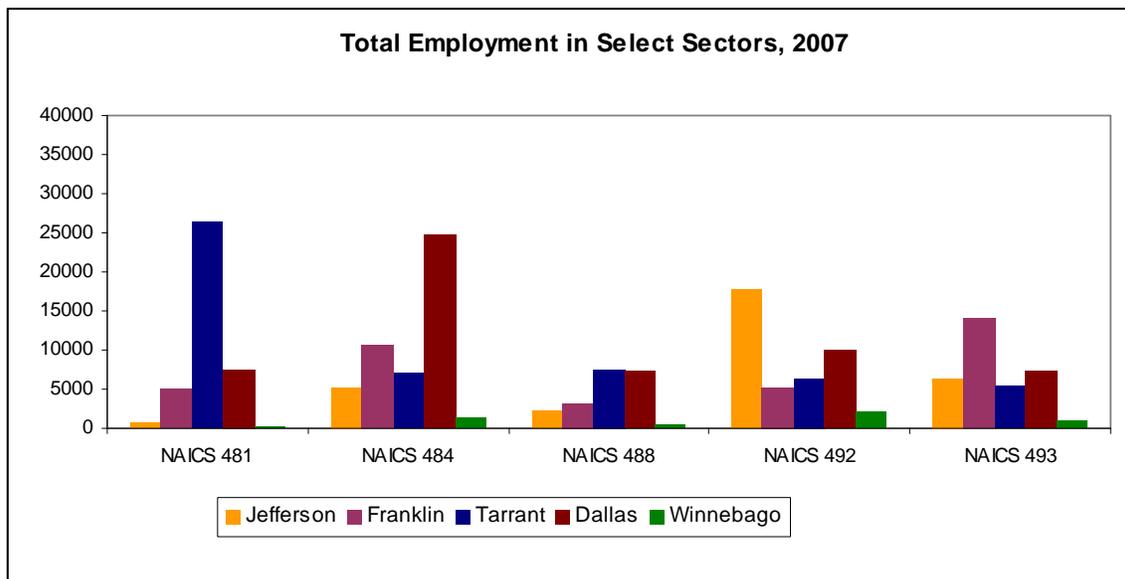
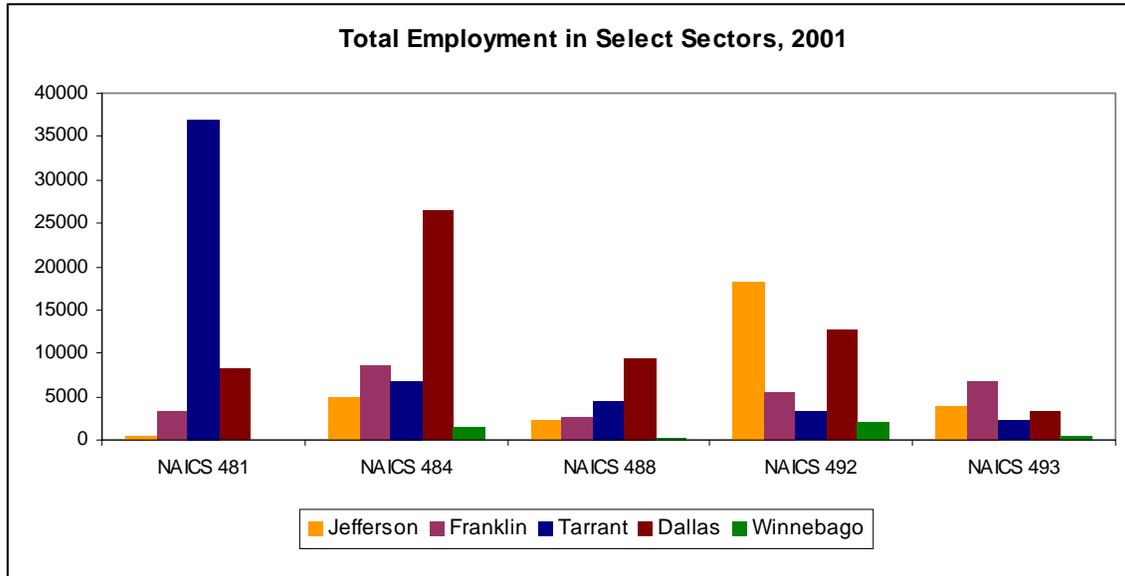
- NAICS 481 is Air Transportation
- NAICS 484 is Truck Transportation
- NAICS 488 is Support Activities for Transportation
- NAICS 492 is Couriers and Messengers
- NAICS 493 is Warehousing and Storage

Data for rail industry employees is not available with this data source because rail industry employees have their own pension and unemployment programs administered.

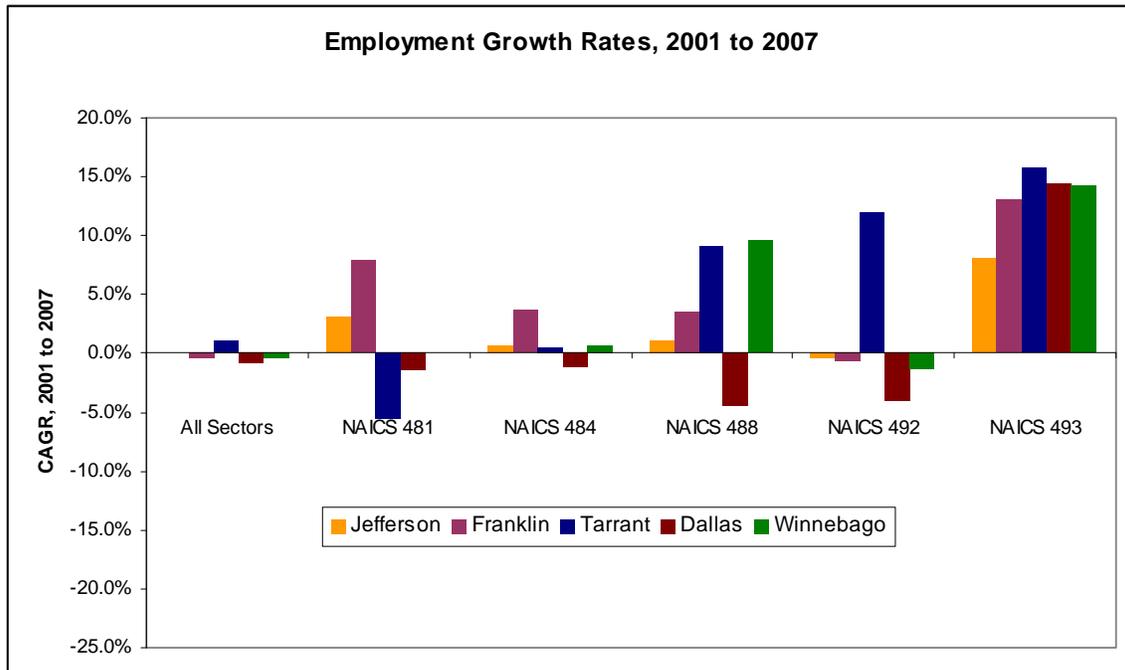
The measure we use for growth is the compound annual growth rate, or CAGR. It measures the rate of annual growth, compounded year by year. (Like compound interest, it measures growth upon previous growth.)

Summary of Employment

The two charts below show the absolute levels of employment for the select transportation sectors in the counties studied.

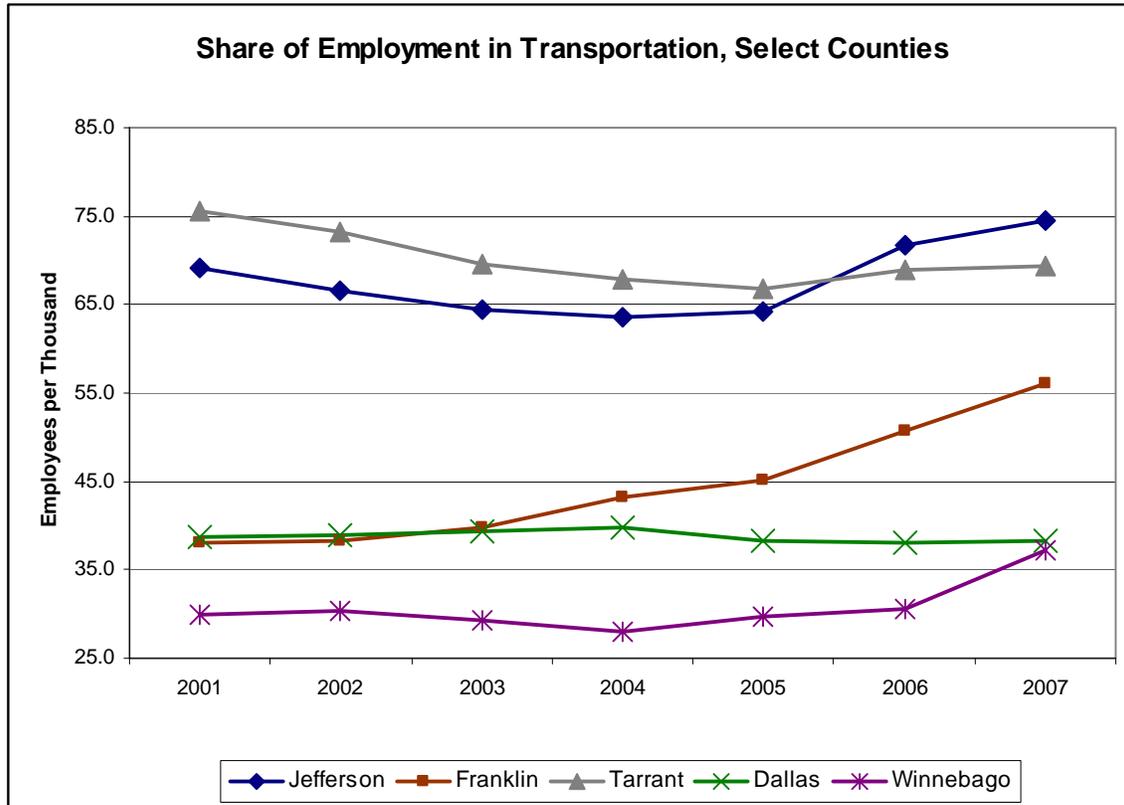


In most cases, the general relationship among the industries is the same in 2007 as it was in 2001. NAICS 493 as an industry is much larger. Tarrant lost about 10,000 jobs in air transportation. The chart below shows the growth rate of the different industries by county:



The chart above sheds some more light on the changes in the industry. NAICS 493 Warehousing and Storage gained jobs in every county. Growth in NAICS 493 was faster than growth in any other sector, for each county. Across all transportation industries studied, Franklin County grew jobs by 6.2 percent per year, compounded annually; Winnebago by 3.4 percent; Jefferson by 1.3 percent. The other counties, Dallas and Tarrant, lost small numbers of jobs from 2001 to 2007.

The chart below shows the employment in all logistics industries (NAICS 481, 484, 488, 492, and 493 put together) in relationship with employment as a whole. The chart shows the number of employees in these industries per 1,000 employees overall. A high level indicates that the logistics industries make up a *high percentage* of local jobs; a low level indicates a low percentage of local jobs.



Winnebago County is at the bottom, with between 29 and 37 jobs per 1,000 being in the logistics industries covered, as compared with about 63 to 75 per 1,000 in Jefferson County. Franklin County showed the highest growth in this measure—that is, logistics became relatively more important at a faster pace in Franklin than in other counties studied. The only other significant change over this period is the change from 2006 to 2007 in Winnebago County.

Detailed Charts

The tables that follow provide the background data from the CEW analysis:

Table 31. Total Employment, All Sectors

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | CAGR |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-------|
| Jefferson | 431,347 | 420,812 | 416,429 | 416,405 | 422,090 | 427,519 | 432,745 | 0.1% |
| Franklin | 702,628 | 695,970 | 685,061 | 684,527 | 681,167 | 681,289 | 688,252 | -0.3% |
| Tarrant | 709,162 | 699,411 | 689,291 | 698,067 | 714,342 | 738,810 | 758,236 | 1.1% |
| Dallas | 1,550,835 | 1,484,479 | 1,438,514 | 1,433,214 | 1,422,252 | 1,456,811 | 1,480,465 | -0.8% |
| Winnebago | 139,815 | 137,735 | 135,668 | 136,620 | 135,789 | 135,943 | 137,087 | -0.3% |

Table 32. Employment, NAICS 481-Air Transportation

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | CAGR |
|-----------|--------|--------|--------|--------|--------|--------|--------|-------|
| Jefferson | 474 | 513 | 496 | 554 | 587 | 602 | 570 | 3.1% |
| Franklin | 3,243 | 3,996 | 3,934 | 3,839 | 4,263 | 4,718 | 5,109 | 7.9% |
| Tarrant | 36,966 | 34,590 | 31,157 | 29,668 | 24,708 | 26,346 | 26,283 | -5.5% |
| Dallas | 8,265 | 7,967 | 7,990 | 8,260 | 7,507 | 7,149 | 7,608 | -1.4% |
| Winnebago | | 146 | | | | | 283 | 14.2% |

Table 33. Employment, NAICS 484-Truck Transportation

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | CAGR |
|-----------|--------|--------|--------|--------|--------|--------|--------|-------|
| Jefferson | 4,956 | 4,734 | 4,692 | 4,785 | 4,951 | 5,112 | 5,157 | 0.7% |
| Franklin | 8,675 | 8,881 | 9,124 | 8,983 | 8,912 | 8,790 | 10,772 | 3.7% |
| Tarrant | 6,766 | 6,703 | 6,606 | 6,319 | 6,106 | 6,473 | 6,966 | 0.5% |
| Dallas | 26,396 | 24,346 | 23,350 | 23,723 | 24,807 | 25,332 | 24,718 | -1.1% |
| Winnebago | 1,338 | 1,357 | 1,268 | 1,294 | 1,305 | 1,360 | 1,397 | 0.7% |

Table 34. Employment, NAICS 488-Support Activities for Transportation

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | CAGR |
|-----------|-------|-------|-------|-------|-------|-------|-------|-------|
| Jefferson | 2,235 | 1,986 | 1,930 | 2,024 | 1,986 | 2,161 | 2,384 | 1.1% |
| Franklin | 2,617 | 2,604 | 2,846 | 3,118 | 3,368 | 3,196 | 3,235 | 3.6% |
| Tarrant | 4,414 | 4,409 | 4,723 | 5,083 | 6,935 | 7,138 | 7,427 | 9.1% |
| Dallas | 9,508 | 8,727 | 7,819 | 8,064 | 6,423 | 7,248 | 7,203 | -4.5% |
| Winnebago | 274 | 225 | 309 | 302 | 518 | 449 | 476 | 9.6% |

Table 35. Employment, NAICS 492-Couriers and Messengers

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | CAGR |
|-----------|--------|--------|--------|--------|--------|--------|--------|-------|
| Jefferson | 18,182 | 16,229 | 15,189 | 14,587 | 14,984 | 17,217 | 17,825 | -0.3% |
| Franklin | 5,476 | 5,187 | 4,968 | 4,841 | 4,769 | 5,064 | 5,240 | -0.7% |
| Tarrant | 3,254 | 3,178 | 3,229 | 3,338 | 6,323 | 6,418 | 6,447 | 12.1% |
| Dallas | 12,648 | 11,804 | 11,969 | 11,651 | 9,530 | 9,882 | 9,897 | -4.0% |
| Winnebago | 2,111 | 1,947 | 1,825 | 1,867 | 1,768 | 1,878 | 1,954 | -1.3% |

Table 36. Employment, NAICS 493-Warehousing and Storage

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | CAGR |
|-----------|-------|-------|-------|-------|-------|--------|--------|-------|
| Jefferson | 3,974 | 4,558 | 4,480 | 4,517 | 4,595 | 5,609 | 6,336 | 8.1% |
| Franklin | 6,792 | 5,978 | 6,355 | 8,750 | 9,485 | 12,856 | 14,196 | 13.1% |
| Tarrant | 2,253 | 2,338 | 2,293 | 2,953 | 3,689 | 4,561 | 5,407 | 15.7% |
| Dallas | 3,263 | 4,841 | 5,569 | 5,458 | 6,033 | 5,896 | 7,333 | 14.4% |
| Winnebago | 449 | 511 | 568 | 373 | 441 | 477 | 997 | 14.2% |

Table 37. Employment, Sum of Logistics Sectors

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | CAGR |
|-----------|--------|--------|--------|--------|--------|--------|--------|-------|
| Jefferson | 29,821 | 28,020 | 26,787 | 26,467 | 27,103 | 30,701 | 32,272 | 1.3% |
| Franklin | 26,803 | 26,646 | 27,227 | 29,531 | 30,797 | 34,624 | 38,552 | 6.2% |
| Tarrant | 53,653 | 51,218 | 48,008 | 47,361 | 47,761 | 50,936 | 52,530 | -0.4% |
| Dallas | 60,080 | 57,685 | 56,697 | 57,156 | 54,300 | 55,507 | 56,759 | -0.9% |
| Winnebago | 4,172 | 4,186 | 3,970 | 3,836 | 4,032 | 4,164 | 5,107 | 3.4% |

Table 38. Employees in Logistics Industry, Per 1,000 Total Employees

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|-----------|------|------|------|------|------|------|------|
| Jefferson | 69.1 | 66.6 | 64.3 | 63.6 | 64.2 | 71.8 | 74.6 |
| Franklin | 38.1 | 38.3 | 39.7 | 43.1 | 45.2 | 50.8 | 56.0 |
| Tarrant | 75.7 | 73.2 | 69.6 | 67.8 | 66.9 | 68.9 | 69.3 |
| Dallas | 38.7 | 38.9 | 39.4 | 39.9 | 38.2 | 38.1 | 38.3 |
| Winnebago | 29.8 | 30.4 | 29.3 | 28.1 | 29.7 | 30.6 | 37.3 |

Table 39. Compound Annual Growth Rate by Sector, 2001 to 2007

| | All Sectors | NAICS 481 | NAICS 484 | NAICS 488 | NAICS 492 | NAICS 493 |
|-----------|-------------|-----------|-----------|-----------|-----------|-----------|
| Jefferson | 0.1% | 3.1% | 0.7% | 1.1% | -0.3% | 8.1% |
| Franklin | -0.3% | 7.9% | 3.7% | 3.6% | -0.7% | 13.1% |
| Tarrant | 1.1% | -5.5% | 0.5% | 9.1% | 12.1% | 15.7% |
| Dallas | -0.8% | -1.4% | -1.1% | -4.5% | -4.0% | 14.4% |
| Winnebago | -0.3% | | 0.7% | 9.6% | -1.3% | 14.2% |

Review of Selected Logistics Hub Developments

Rickenbacker Intermodal Terminal

Rickenbacker Intermodal Terminal is a new intermodal facility operated by Norfolk Southern Railroad, adjacent to the Rickenbacker Airport in Columbus, Ohio. It is a rail-to-truck intermodal facility that can accommodate 250,000 containers per year (and can be expanded to accommodate 400,000 in later phases). The facility replaces Norfolk Southern's Discovery Park Terminal, which had been built to accommodate 140,000, but was operating over capacity. Plans for re-use of the Discovery Park Terminal call for a Triple Crown Road Railer operations which would require little if any capital investment and conversion cost.

The Rickenbacker terminal is a key part of two strategies: Norfolk Southern's Heartland Corridor strategy, developing links between Norfolk, Virginia and the Midwest; and Columbus, Ohio's regional strategy to support its logistics and transportation industries.

Heartland Corridor Strategy

Norfolk Southern railroad responded to high demand for shipping containers by adopting a Heartland Corridor Strategy to accommodate double-stacked trains on a popular route from Norfolk, through West Virginia and Ohio, and to Chicago. Various bridge tunnels along this route could not accommodate trains with intermodal containers stacked two high; therefore, any double stacked trains had to take a circuitous route through Toledo, a route that added hundreds of miles. The Heartland Strategy renovates these bridge tunnels to accommodate double-stacked trains. It also required more intermodal capacity in Columbus, as the existing facility, the Discovery Park Terminal, was operating above capacity.

Therefore, a new intermodal yard in Columbus made business sense for Norfolk Southern. The first phase of the project can accommodate 250,000 containers per year in its 175 acres, with the ability to expand to 300 acres and 400,000 containers. The railroad contributed \$20 million toward the \$68 million total cost to develop the intermodal terminal. The entire Heartland Corridor strategy is scheduled to be completed in 2010.

Columbus Regional Strategy

At the same time, the Columbus region was able to see a strategic opportunity to expand the Rickenbacker Airport area into an even greater logistics hub. Already a Foreign Trade Zone, which allows companies operating within the area to escape customs on imported goods, the area had seen

some growth in warehousing and other logistics companies. The Columbus Regional Airport Authority, the holder of the FTZ, was the main public-sector driver of the project. It worked closely with Norfolk Southern to build public support, gain regulatory approvals, and apply for federal funding. (There was over \$30 million in federal participation under SAFETEA-LU, the 2005 federal transportation bill, and Rickenbacker is applying for stimulus funding.)

The regional leaders also recognized the real estate and economic development opportunities that would arise from an even more integrated Rickenbacker. Already a warehousing and air shipping hub, Rickenbacker would become a tri-modal facility—with plenty of available land for economic development. (CSX also serves Rickenbacker, but not with an intermodal terminal.) The Columbus airport authority partnered with a real estate firm and a local construction firm to develop Rickenbacker Global Logistics Park, a 1,500-acre development that can potentially see up to 29 million square feet of warehouse or industrial space. (It is currently developing the third of 30 potential buildings, spread over five campuses.)

In what is known as the Rickenbacker Area, there are 38 million square feet of existing industrial development, 23 million of which are in the Foreign Trade Zone. Many of the companies in the area are e-commerce firms that take advantage of the airport to ship high-value products to their customers in a short time period.

Other Project Metrics

The project broke ground in 2005 and was completed in 2008. State highway funding was available for ancillary—off-campus—improvements in roadways and traffic, the so-called “last mile.” Six Norfolk Southern trains serve the Intermodal Terminal today—four between Columbus and Chicago; two between Norfolk and Columbus. The terminal is located 18 miles from downtown Columbus, so it is able to draw on the region’s labor force, but avoids many of the costly land and (roadway) traffic congestion issues that come with being closer to a city center. The land for the Rickenbacker Terminal was owned primarily by the Columbus airport authority; some small parts had to be acquired from private land owners by Norfolk Southern. This type of flexibility allowed Norfolk Southern to build an intermodal terminal that could be expanded from 175 to 300 acres and also plan for a potential trucking yard nearby.

Hurdles to Funding

Any freight rail transportation project necessarily affects a lot of stakeholders and likely requires some type of government participation in funding. The Rickenbacker Intermodal terminal was no different, as it involved funding from the city of Columbus, the state, and the federal government. Norfolk Southern invested \$20 million. In addition, it required participation from various civic organizations to

build public support—not just support for funding, but also for the regulatory changes and approvals that would be necessary.

Advisory committees and meetings with a number of stakeholders helped build public consensus: governments at the city, county and state level; metropolitan planning agencies; and key private sector leaders, including the railroad and surrounding businesses.

In addition, the project involved an economic impact assessment that quantified the regional economic benefit, including the potential for job creation in higher wage industries. The study prepared for Rickenbacker estimated over 20,000 jobs, 34 million square feet of potential warehouse development, and \$800 million in additional tax revenue over a 30 year time period. It quantified the potential cost savings to local shippers, a reduction in truck-miles on state highways, and environmental benefits of more efficient logistics. These reports helped build the fiscal case for public involvement in the project.

UPS Worldport & Louisville-Area Logistics

The centerpiece of Louisville, Kentucky's logistics industry is the UPS Worldport, the shipping giant's main U.S. shipping hub and the centerpiece of its global shipping network. The 5.2 million square-foot complex sorts hundreds of thousands of packages per hour.

Capacity & Recent Expansion

UPS has recently completed the second stage of a three-stage expansion at Louisville, estimated at \$1 billion in construction costs. The space expanded from 4 million square feet to 5.2 million square feet. There are now 70 aircraft on-wing parking spots, up from 26, cutting critical costs and minutes in the process of loading airplanes. The hourly sorting capacity expanded from 304,000 to 350,000 and will expand further to 416,000 packages per hour.

The recent expansions have taken place due to the demand for international and domestic express business shipments. The third phase was estimated to be completed in May 2010, but it will be delayed until the economy turns around and demand picks up again.

The partnership between UPS and Greater Louisville Inc. included several government incentives for the recent \$1 billion expansion. The state provided \$51 million in incentives, whereby the firm can recapture individual income taxes paid to employees for a limited period. The corporate income tax has been credited for a period of 10 years, and UPS can recoup the sales tax paid on construction materials.

In addition, the city agreed to extend the “Metro College” program. Employees of UPS—including part time employees—are eligible for full tuition reimbursement at the University of Louisville or Jefferson Community & Technical College. It is funded by UPS, the state, and the Louisville metro government. Both the state and city guaranteed continued participation in Metro College as part of the incentives for the expansion.

Economic Development

With over 20,000 employees, UPS is by far the region’s biggest employer. It is also a unique employer, insofar as it employs a very high ratio of part time employees, mainly college students, to work overnight hours. The recent expansion was estimated to add about \$100 million in payroll, split among 1,300 new full time employees and 3,700 part time employees.

Greater Louisville Inc. the organization that includes the chamber of commerce and the economic development corporation, estimates that 135 companies with \$400 million in payroll have located to Louisville because of the UPS presence. These include traditional retailers (Guess, Ann Taylor, Linens N Things), e-commerce (Zappos, Cafepress.com), technology (Acer, Asus, Toshiba, Best Buy’s Geek Squad City computer repair), and biosciences companies (Genentech, Amgen, Johnson & Johnson). These biosciences companies have used their proximity to UPS to ship highly time-sensitive and patient-customized drugs.

The next three largest employers are all in health care: Humana, Norton Healthcare, and Jewish Hospital combine to employ 24,000. The region’s manufacturing economy is dominated by two major companies: Ford has two plants that produce its pickup trucks and SUVs and employ almost 6,000; and GE Consumer Products produces large home appliances in the region, employing about 5,00.

Logistics Industry

The Louisville region is served by CSX and Norfolk Southern, but there is no intermodal component in the region. Greater Louisville Inc. is in the process of commissioning an economic study to bring to the railroads to demonstrate potential capacity; however, there have been no serious talks of an intermodal investment.

UPS itself has been an innovator in logistics with its Supply Chain solutions. This business line has become a vendor for many consumer goods companies, fulfilling duties that had traditionally been the responsibility of a retailer or manufacturer. For example, it fills online orders for a clothing company and it handles all repairs for Toshiba computers. (Many companies do not disclose that UPS fills these roles for them.)

The proximity of UPS also attracts companies with special shipping requirements—whether it would be time-sensitive or temperature-controlled. (These often include pharmaceutical or biosciences companies.) Ford is in the process of adapting its assembly facility to produce smaller cars with alternative fuels, so the region is looking forward to new types of suppliers. It already has a number of Tier 1 suppliers that supports Ford.

Greater Louisville Inc also facilitates a Manufacturing & Logistics Network, which has 120 member firms, and lobbies for the industry in Louisville metro government, Frankfort, and Washington. The network is also a business networking effort. The most recent legislative victory for the logistics industry in the region is the series of bridges approved over the Ohio River, connecting Indiana and Kentucky.

Alliance Airport

Alliance Airport is a city-owned airport in Fort Worth, Texas, that had been built as a partnership between the city of Fort Worth, the FAA, and the Hillwood Development Company. For Hillwood, the airport was the first piece of a multi-decade development plan that would turn the Alliance airport area into a regional center for logistics, a major employment node, a shopping destination, and even the site of thousands of residential homes. For the city of Fort Worth, it promised significant economic benefits in a part of the city where there was abundant land for development even outside the boundaries of the Hillwood project. After 18 months of construction, Alliance Airport opened in December 1989.

Hillwood has been credited with devising a development plan and, by and large, sticking to it. The 17,000-acre master planned development known as Alliance includes:

- An inland port, called Alliance Global Logistics, billed as the world's first "inland port." It includes Fort Worth Alliance Airport, FedEx's Southwest sorting hub, an American Airlines Maintenance Facility, and BNSF Railway's Alliance Intermodal center. The airport, which already is billed as the largest industrial airport with 220 operations per day, is getting a runway expansion to 11,000 feet. (Its two runways are 9,600 and 8,220 feet now.)
- 29 million square feet of commercial real estate, including office, data centers, destination retail, community retail, and entertainment.
- 7,000 single family homes and 288 apartments.

Employment in Alliance

With all the companies included, the Alliance development is home to 28,000 employees and over 200 companies. It boasts twelve 3PL or freight forwarding companies within its boundaries. Office

development includes both corporate campuses (dozens of Fortune 500 companies are located there), data centers, and multi-tenant buildings. There has been significant build-to-suit industrial development, but tenants can lease buildings as well. Smaller developments within Alliance cater to the needs of specific companies:

- Large-scale industrial and distribution users that require rail access and easy access to I-35. (Union Pacific also serves Alliance.)
- Distribution centers with direct access to BNSF intermodal yard and the future transloading and container storage facilities.
- A light manufacturing development for high-tech and aviation support industries.
- The airport includes cross-dock capabilities and direct runway access.

There is also a 75,000 square foot development with retail, restaurants, and small office space. The Cabela's on site draws 4 million visitors, the most popular location in the chain. Alliance Town Center offers 625,000 square feet of lifestyle center shopping.

Outside the boundaries of Alliance, the "Gateway Corridor" along I-35 includes more industrial, distribution, and office space.

Economic Development

There are several tax incentive and abatement programs in place for the Alliance Area, though local officials note that the Alliance developers often recruit companies without benefit of any public assistance. The land assembly was done privately by Hillwood. Tax increment financing has been used on occasion (including Cabelas) and public agencies have invested in infrastructure; however, that is viewed as the exception.

There are several standing tax provisions that make the area advantageous to logistics businesses:

- It is in a Foreign Trade Zone, with a US Customs Centralized Examination Station on site.
- There is a state "Freeport Tax Exemption," which allows companies to avoid paying tax on inventory that leaves the site within 175 days. This exemption applies to city, county, and school district tax.
- The airport is owned by the city and all on-airport operations (including the American Airlines maintenance facility) are exempt from city tax.
- Texas has no tax on personal income.

BNSF Intermodal Terminal

Shortly after the airport opened, the Santa Fe railway built an automotive yard near Alliance Airport. By 1994, it built a 150,000-lift intermodal facility, considered large for the time. As intermodal

container traffic grew, so did the demand for services at Alliance. In 2007, BNSF launched a \$32 million expansion at its Alliance Yard. The project introduced the Automated Gate System (AGS) for processing intermodal trains, as well as additional staging areas; there are now six 8,000-foot storage tracks. It added several new trucking lanes and the lift capacity expanded significantly. Its current capacity is 600,000 lifts per year (usage reached 540,000 last year) and it can be expanded to accommodate 2 million lifts. It currently serves 13 double-stacked trains per day. A transloading facility is planned immediately adjacent to the intermodal yard. In addition, a container storage facility is also planned for nearby.

The intermodal terminal has attracted retailers like J.C. Penney and Michaels Stores, which have a significant distribution presence nearby.

IV. The Auto Industry Summary

Employment Growth

The Rockford area has historically had a significant automobile manufacturing industry presence, largely driven by the Belvidere Chrysler plant and its network of suppliers. The automobile parts manufacturing industry declined significantly during the study period from 2001 through 2007. Total industry output fell from \$873 million in 2001 to \$642 million in 2007. Furthermore, regional industry employment decreased at an even more significant level, from 3,699 employees to 2,003 in 2007. This represented nearly a 50% drop in regional industry employment over a six-year period.

While the dramatic decrease in parts manufacturing has certainly hurt the Rockford area's economy overall, efforts are ongoing to re-position the regional economy with the purchase and reopening of the Chrysler Belvidere plant, supporting the assumption the plant will remain in operation. The region's supplier network is in transition, focusing more on greater value-added goods and services which still fit within the historic regional areas of expertise, including automobile hydraulic systems, aircraft engines, etc. These industries are even more dependent on the region's transportation system to acquire material inputs and export finished products economically, reliably, and on a just-in-time basis.

There is an opportunity for Rockford to assist the regional supplier network in the future by facilitating competitive positioning. In addition to the auto manufacturing industry, the significant concentration of other manufacturing industries in the Rockford area also rely on the area transportation system. These industries include food manufacturing, aerospace manufacturing, and biotechnology/pharmaceuticals.

Looking at the logistics framework for the region, industry linkage analysis revealed under-developed rail and air freight industries within the region with businesses needing to source transportation services outside of the area. Many of these industries are essential to the re-positioning of the regional economy. Furthermore, a query of industrial properties in the Rockford area revealed only 9% of total industrial square footage had direct rail access, and many of these buildings were older. In comparison, in the Chicago metro area, an estimated 13.9% of total industrial square footage was rail-served. Experience indicates that improvement of industrial access to rail infrastructure, effective consolidation of transportation/logistics support services, and the facilitation of multi-

modal transfer of goods will improve the economic competitiveness of the major regional industry concentrations.