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Prospectus for the Central Indiana Transportation, Distribution, and Logistics Cluster

PREPARED FOR: THE CENTRAL INDIANA CORPORATE PARTNERSHIP

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October 2001

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Executive Summary

PREFACE AND INTRODUCTION

As one of their initial efforts, the Central Indiana Corporate Partnership (CICP) retained the Battelle Memorial Institute's Technology Partnership Practice to assist them in developing an overall vision and perspective for the region's economic future. The first results of this effort are contained in the document, *A Prospectus for Economic Clusters: Advanced Manufacturing, Life Sciences, and Information Technology*. In early 2001, CICP once again engaged the Battelle team, this time to examine the Central Indiana region's emerging transportation, distribution, and logistics cluster, building further upon the original cluster development strategies and actions.

The movement of goods, parts, and products between and among suppliers, customers, and consumers is the role of the transportation, distribution, and logistics "cluster." However, there may be some dispute as to whether the

transportation, distribution, and logistics "cluster" can ever be a true economic cluster by standard definitions. Much of this document provides an analysis as to what extent the existing transportation, distribution, and logistics industry in Central Indiana is becoming a true cluster.

Regardless of its regional cluster status, the overall economic impact of the U.S. transportation, distribution, and logistics industry cannot be overlooked. The logistics share of the United States' gross domestic product is estimated to be bigger than that of health care, social security, or defense, with an annual logistics bill in the U.S. of over \$700 billion. A more tangible measure of the economic role of the transportation, distribution, and logistics cluster estimates that product delivery accounts for 10 percent of a product's costs. It is this value to the overall economy that makes the emerging transportation, distribution, and logistics cluster an important cluster for development in Central Indiana.

Methodology for Developing a Prospectus for the Emerging Central Indiana Transportation, Distribution, and Logistics Cluster

- ??Economic Analysis
- ??Competitor Region Assessment
- ??SWOT Review
- ??Interviews and Focus Groups
- ??Development of Strategies and Actions

ECONOMIC ANALYSIS OF THE EMERGING CENTRAL INDIANA TRANSPORTATION, DISTRIBUTION, AND LOGISTICS INDUSTRIES

Definitions and Methodology

For the purposes of this analysis the transportation, distribution, and logistics (TDL) industry is segmented into eight subsectors based on Standard Industrial Classification (SIC) codes: railroads, trucking and courier services, warehousing and storage, air freight, freight transport logistics services, miscellaneous freight transport services,

wholesale distribution - durable goods, and wholesale distribution - non-durable goods. These eight subsectors are defined to cover a broad range of freight transport, unfortunately, like many industries, even these detailed SIC-based definitions fall somewhat short in discretely capturing the functions and structure of the transportation, distribution, and logistics industry.

The transportation, distribution, and logistics industry overall, as well as these eight subsectors are examined, using Dun & Bradstreet MarketPlace data, at the Central Indiana, state of Indiana, and U.S. levels. The definition of Central Indiana includes five Metropolitan Statistical Areas (MSAs): Indianapolis, Lafayette, Kokomo, Muncie, and Bloomington.

Profile of the Transportation, Distribution, & Logistics Industry in Central Indiana

The Central Indiana transportation, distribution, and logistics industry consists of over 6,300 establishments in 2001, down 7.1 percent from 1995. In the same 1995-2001 period, the number of overall private sector establishments (all business sectors) increased by 11.4 percent, indicating that in terms of the number of businesses the TDL industry has not kept pace with the overall growth in the Central Indiana region.

Central Indiana TDL Industry Profile

6,312 establishments
 89,434 employees
 9.8% growth in employment from 1995-2001
 Location quotient of 1.00
 7.4% of private sector employment

Despite the decline in establishments, overall TDL employment in the Central Indiana region grew by 9.8 percent over the 1995-2001 period to 89,434 workers. This growth rate was close to the rate in the entire state of Indiana (9.9 percent) but lagged the U.S. growth rate (15.9

percent). Even with this employment growth, the Central Indiana transportation, distribution, and logistics industry's share of overall private sector employment declined in the 1995-2001 period as overall private sector employment in the Central Indiana region increased by 21.2 percent.

Role of Central Indiana in State of Indiana's TDL Industry

Central Indiana region accounts for:
 35.0% of Indiana's TDL firms;
 40.2% of Indiana's TDL employment; and
 39.8% of Indiana's TDL employment growth between 1995 and 2001.

Regional location quotients (a measure of regional industry specialization or concentration) indicate that despite the visibly high level of transportation,

distribution, and logistics activity in the region, Central Indiana's specialization in the emerging TDL cluster is right at the national average (LQ = 1.00). With an LQ of 0.97, the state of Indiana currently exhibits a concentration level just under that of the overall U.S.

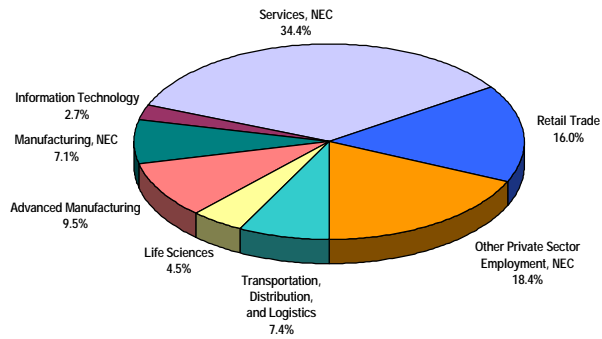
Composition and Specializations of the Central Indiana Transportation, Distribution, & Logistics Industry

From a cluster perspective, defining the transportation, distribution, and logistics industry broadly allows for a more fulsome understanding of the capabilities, potential, and subsector interconnections upon which to develop a cluster strategy for the region.

An illustration of the comparative size of the TDL industry in Central Indiana to other important segments in the regional economy, in terms of employment, provides some context. As shown, the emerging TDL cluster is comparable in size, if not larger, than many of the more “well known” segments of the regional economy. As such, the TDL industry represents a significant segment large enough to warrant its own attention and strategies for growth. To get a better picture of the inherent regional specializations and strengths upon which to build, however, requires a more specific examination of the various individual subsectors.

Further disaggregating the transportation, distribution, and logistics industry shows that the Central Indiana industry is dominated by the wholesale distribution - durable goods subsector. It also shows that the region includes significant numbers of employment in three other subsectors: trucking and courier services, wholesale distribution - non-durable goods, and warehousing and storage. The combination of these four subsectors accounts for over 95 percent of the transportation, distribution, and logistics employment in Central Indiana.

Comparative Size of TDL Industry and Other Segments of the Central Indiana Regional Economy



Note: NEC = Not Elsewhere Classified

The four larger subsectors. Of these larger subsectors, only in trucking and courier services does Central Indiana currently have a significant concentration (location quotient 1.20 or greater), though it declined over the 1995-2001 period. In two of the other larger subsectors, warehousing and storage, and wholesale distribution - durable goods, the Central Indiana region’s concentration is somewhat higher than the U.S. average. Among the

Warehousing and Storage

362 establishments
6,336 employees
90.7% employment growth, '95-'01
Cluster share = 7.1%
Location quotient = 1.10

Wholesale Distribution - Non-Durable

1,288 establishments
17,317 employees
10.7% employment **decline**, '95-'01
Cluster share = 19.4%
Location quotient = 0.71

Wholesale Distribution - Durable

3,454 establishments
41,009 employees
11.2% employment growth, '95-'01
Cluster share = 45.9%
Location quotient = 1.07

Trucking and Courier Services

1,020 establishments
20,773 employees
13.8% employment growth, '95-'01
Cluster share = 23.2%
Location quotient = 1.34

larger subsectors, only in warehousing and storage, did Central Indiana outpace the national employment growth rate over the 1995-2001 period—growing by over 90 percent. While nationally all four of these larger subsectors experienced positive double-digit growth, in Central Indiana the wholesale distribution - non-durable goods subsector actually declined by almost 11 percent in the period.

The four smaller subsectors. Four subsectors, railroads, air freight, freight transport logistics services, and miscellaneous freight transport services, account for less than 5 percent of the total Central Indiana transportation, distribution, and logistics industry employment combined. Currently, all four of these subsectors fail to reach even the U.S. average level of concentration (location quotient = 1.00). In terms of employment growth, the Central Indiana freight transport logistics

Air Freight

??21 establishments
 ??821 employees
 ??33.1% employment **decline**, '95-'01
 ??Cluster share = 0.9%
 ??Location quotient = 0.60

Misc. Freight Transport Services

??10 establishments
 ??172 employees
 ??21.8% employment **decline**, '95-'01
 ??Cluster share = 0.2%
 ??Location quotient = 0.72

services subsector, grew by 84 percent over the 1995-

2001 period, more than double the U.S. growth rate for this subsector. However, beyond this subsector, none of the three remaining smaller subsectors came close to matching the double-digit growth occurring in the subsectors nationally, with two actually experiencing double-digit employment declines.

A further analysis of all eight transportation, distribution, and logistics subsectors against three main sources of industry strength—size, regional

specialization, and growth rate—shows that **no Central Indiana transportation, distribution, and logistics subsector meets all three of these criteria.** However, the trucking and courier services subsector meets two of these criteria as one of the region's largest subsectors with a significant regional concentration.

Subsectors that do not yet constitute regional specializations but that are enjoying rapid employment expansions hold promise as emerging concentrations. Both the freight transport logistics services and the warehousing and storage subsectors fit these criteria.

Finally, subsectors that are large (e.g., both wholesale distribution subsectors) may be important to localized supply chains, to ongoing collaborative efforts, and to long-term economic stability through contributing employment, payroll, and real estate investments and taxes to the regional economy.

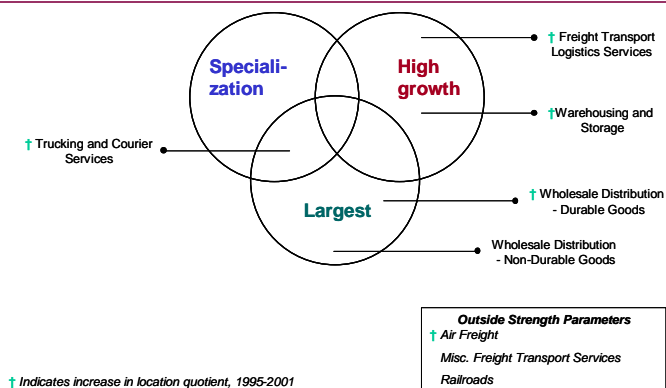
Freight Transport Logistics Services

??134 establishments
 ??1,617 employees
 ??84.0% employment growth, '95-'01
 ??Cluster share = 1.8%
 ??Location quotient = 0.71

Railroads

?? 23 establishments
 ?? 1,359 employees
 ?? 6.1% employment growth, '95-'01
 ?? Cluster share = 1.5%
 ?? Location quotient = 0.90

Central Indiana Transportation, Distribution, & Logistics Subsector Strengths



COMPETITOR REGIONS: IDEAS FOR DEVELOPING CENTRAL INDIANA'S TRANSPORTATION, DISTRIBUTION, AND LOGISTICS CLUSTER

To gain a more complete understanding of the potential for the Central Indiana transportation, distribution, and logistics industry to become a full-fledged cluster, a number of competitor regions are examined to determine how the Central Indiana region related to the competitive landscape and to briefly characterize activities supporting the transportation, distribution, and logistics cluster in these regions.

Characteristics of the Competitor Regions

The Central Indiana (Indianapolis) region appears to be holding its own in the logistics portion of its economy in terms of capabilities and infrastructure. The Central Indiana region has the third largest enplaned revenue per capita, behind only Memphis and Louisville, the two premier regions for air freight and logistics activity in the nation based on the headquarter locations of FedEx and UPS in each of the respective locations. The availability of four major U.S. interstate highways crossing the region positions Central Indiana as one of the better locations for trucking and courier services among the competitor regions.

There has been a visible increase in the amount of warehouse and distribution space in the Indianapolis region, as evidenced by the number of “big boxes” being built in the region. Nevertheless, as a percentage of overall industrial real estate, this amount is equal to or lower than most of the competitor regions, although higher than the U.S. as a whole. Due to the State’s “inventory tax,” much of the Central Indiana warehouse space is involved in the storage and distribution of finished goods inventory. Since finished goods inventory may be stored exempt from the “inventory tax,” and given the lower operating costs and availability of land, large footprint warehouses are developing that will not require substantial employment to operate them.

Central Indiana does not have a single dominant transportation, distribution, and logistics employer, suggesting that the regional industry is composed of numerous smaller companies rather than one specific “anchor” powerhouse. In addition to these smaller TDL firms, Central Indiana has a substantial, though difficult to quantify, “embedded” TDL workforce within its larger manufacturers forming what could be considered a critical mass of cluster-related employment. However, based on the size and concentration of transportation, distribution, and logistics employment, the industry is not considered a significant cluster and with regional industry employment growth lagging behind national growth, even this level of concentration is in jeopardy for the future.

Regional Cluster Support Activities

Given the substantial size, growth, and concentration of the transportation, distribution, and logistics cluster in these competitor regions, the Battelle team examined the “character” of these regions to discern what types of TDL-specific supportive elements exist. Based on this examination a number ideas, many common to a number of regions, were found across three broad categories, that Central Indiana may wish to consider in building the region’s emerging transportation, distribution, and logistics cluster.

Potential Ideas for Enhancing Central Indiana's TDL Cluster

Marketing and Economic Development

- ??Develop specific marketing materials touting the region's TDL strengths and capabilities.
- ??Work to attract national and international TDL-related industry conferences.
- ??Develop an overall regional economic strategy that links industry clusters with regional infrastructure.
- ??Leverage "anchor" TDL firms to grow and enhance the region's cluster.

Infrastructure and Real Estate Development

- ??Continually develop multi-modal capabilities.
- ??Extend these multi-modal capabilities directly to industrial parks.

Education and Workforce Development

- ??Develop partnerships with higher education that include research, education, and student employment aspects.
- ??Develop internship programs for higher education students.
- ??Develop a TDL career academy or otherwise begin engaging students at the high school level about possible TDL careers.
- ??Position regional industry association to coordinate industry involvement in the development and use of higher education programming.
- ??Develop TDL-related courses for the Internet or using other off-site capabilities.

The assessment of various competitor regions' characteristics demonstrates that Central Indiana, though a successful transportation, distribution, and logistics industry region, still has a long way to go to become one of the nation's premier TDL regions. However, by examining the supporting infrastructure that these regions are developing, Central Indiana may begin to determine the requisite supporting infrastructure needed to develop the emerging transportation, distribution, and logistics cluster in the region.

STRENGTHS, WEAKNESSES, OPPORTUNITIES, AND THREATS (SWOT) ANALYSIS

The Battelle team attempted to identify the strengths, weaknesses, threats, and opportunities the Central Indiana transportation, distribution, and logistics cluster. This was accomplished through numerous in-person and telephone interviews with cluster firms, economic and real estate development organizations, and university faculty. Additionally, an industry focus group session was held to review a draft of this analysis. To supplement these discussions the team also reviewed other studies and reports and reviewed additional secondary data.

Strengths

- ??Location, location, location.
- ??Excellent highway access.
- ??Significant air freight capabilities.
- ??Foreign Trade Zone program.

- ??Many locally headquartered firms are national leaders in the industry.
- ??There exists some regional “cluster” working relationships—as both service “supplier” to local industry and in working relationships among members.
- ??Significant concentration in the trucking & courier services subsector.
- ??Business-friendly government.
- ??Costs of doing business and costs of living are low.
- ??Purdue University’s strengths in research related to supply chain management and “advanced” or “higher end” logistics.

Weaknesses

- ??Limited industry cohesiveness, linkages, and networking among firms in the region.
- ??Negative public perception based on a narrow view of the transportation, distribution, and logistics industry in Central Indiana.
- ??Lacking in both number and skills of employees, with employee turnover a problem in some subsectors.
- ??Little connection and limited knowledge and understanding between industry and higher education.
- ??No large, “flagship” or “anchor” transportation, distribution, and logistics employer in Central Indiana.
- ??Newer information technologies and e-logistics not a driving factor in Central Indiana operations or as the basis for regional firms.
- ??Few local TDL industry consultants.
- ??Inventory tax.
- ??Lack of southwest continuation of I-69.
- ??Lack of direct flights out of Indianapolis International Airport.

Threats

- ??Pressures on the entire transportation system due to terrorist attack and response.
- ??Economic slowdown and declines in technology sector.
- ??Competitor regions are strongly developing and supporting their transportation, distribution, and logistics clusters.
- ??Continual cost pressures.
- ??Potential declines in planning and logistics activities within Central Indiana.
- ??Costs of “time zone” and “daylight savings time” issue.
- ??Changing distribution patterns of population growth and characteristics of the workforce in the region.
- ??Lack of water transportation subsector may inhibit “global-oriented” growth.
- ??Future of rail service to the Central Indiana region.

Opportunities

- ??Build upon dual-mode strengths of the region.
- ??Pursue more active ties between industry and the education community.
- ??Build on other existing and emerging cluster strengths relative to the emerging transportation, distribution, and logistics cluster.
- ??Build upon important presence of Federal Express to develop “anchor” TDL firm.

STRATEGIES AND ACTIONS TO DEVELOP CENTRAL INDIANA’S EMERGING TRANSPORTATION, DISTRIBUTION, AND LOGISTICS CLUSTER

Unlike the life sciences and advanced manufacturing clusters previously examined in the Central Indiana region, the transportation, distribution, and logistics cluster, while obviously a long-standing element of the regional economy, is still, like the region’s information technology industry, in its infancy as a true industry cluster, and can only be considered a potentially emerging cluster.

Vision and Mission

Given the early-stage of “cluster” development within the Central Indiana transportation, distribution, and logistics industry, defining a vision and mission is somewhat difficult, yet highly desirable to help shape the progression of this potentially emerging cluster over the coming decade. A suggested vision is for Central Indiana to become:

A leading mid-American center for transportation, distribution, and logistics.

Ten years from now outsiders to the region should recognize Central Indiana for the following characteristics:

Central Indiana is a leading and innovative center with strong growth in the value-added portions of the transportation, distribution, and logistics industry emphasizing efficient, timely, and cost effective services increasingly enhanced through the development and application of new technologies. This emerging role has been enhanced through supporting and assisting the region’s existing and emerging clusters in manufacturing, life sciences, and information technologies, as well as becoming a strong center for the transportation, distribution, and logistics industry nationally.

Strategies

The realization of this vision and the achievement of this mission will require a number of strategies and actions for Central Indiana to further strengthen and develop its emerging transportation, distribution, and logistics cluster. Three specific strategies include¹:

¹ In addition to these specific transportation, distribution, and logistics strategies many of the strategies and actions developed for Central Indiana’s other industry clusters (especially those for information technology and advanced manufacturing and those related to improving both the entrepreneurial and business environment and the linkages between industry and academia) have relevance and will support and enhance these specific efforts. Please see “**A Prospectus for Economic Clusters: Advanced Manufacturing, Life Sciences, and Information Technology -- Nurturing Central Indiana’s Pillar Industries for 21st Century Midwestern Preeminence.**” Prepared for the Central Indiana Corporate Partnership by Battelle Memorial Institute, December 2000.

- ?? *Develop and improve the cohesiveness of the existing Central Indiana transportation, distribution, and logistics industry.*
- ?? *Improve the connections between the transportation, distribution, and logistics industry and regional higher education.*
- ?? *Work to improve the operating environment for Central Indiana transportation, distribution, and logistics firms.*

There are 10 actions proposed within the three strategies: two require immediate action, six require action in the short-term, and two require action in the mid- to long-term.

Strategy 1: Further develop and improve the cohesiveness of the emerging Central Indiana transportation, distribution, and logistics cluster.

Throughout discussions with representatives of the transportation, distribution, and logistics industry, it became apparent that while many of the precursor activities to becoming a true cluster were in place, the industry cluster itself is still very early in its infancy. One inherent difficulty with the transportation, distribution, and logistics cluster coming into its own is that competition among member companies, due to the nature of the transportation business, is often more intense and much closer to the surface than in other identified clusters in Central Indiana. This overtly competitive nature makes the formative process of the cluster more difficult and typically a more lengthy process. An additional difficulty identified is an overall negative public perception of the industry or subsector elements of the industry.

To overcome these difficulties, a concerted effort must be mounted by the Central Indiana transportation, distribution, and logistics industry leaders to improve upon this perception by developing its image as a true multi-faceted cluster—an image that is truly greater than the sum of its parts. This cluster development process also requires an improved ability to “network” on a professional and corporate level.

Action 1. Further develop industry association(s) to become advocates for the emerging transportation, distribution, and logistics cluster.

This action requires a further exploration of the role that CLM could play in organizing the Central Indiana transportation, distribution, and logistics cluster, providing longer term proactive support for its development, and acting as a public and, if necessary, political advocate for cluster. In order to provide such efforts, an increase in the financial resources available to CLM to hire a full time “director” for the Indianapolis branch is required. If the charter and mandate of the national umbrella CLM organization will not allow such a function, then the option of establishing a separate distinct organization (with strong programmatic ties to CLM and other organizations) should be explored.

Action 2. Develop cohesive image and improve marketing efforts for both internal and external consumption.

Developing this image requires a much broader realization within the cluster that there are benefits that can be accrued to individual corporate members through collective actions. Part of this image development requires a thorough understanding of the niche (or small number of niches) that the Central Indiana cluster can develop further and

become well known for. While this prospectus, provides a base level understanding of these potential niches, cluster representatives themselves need to further explore and define those niches that truly make sense for the long-term growth and sustainability of the cluster in Central Indiana. Once these current (and potential) niches are identified, Central Indiana needs to develop a cohesive and directed marketing effort to sell the message. This marketing effort must be multi-faceted in its approach—directed internally to an Indiana audience and externally to U.S. and global operations and customers.

Strategy 2: Improve the connections between the emerging transportation, distribution, and logistics cluster and regional higher education.

Due to its locational advantages and connectivity, the Central Indiana’s transportation, distribution, and logistics firms could continue to thrive in many respects. However, this becomes increasingly difficult as competitor firms are able to provide higher value-added services through the implementation of knowledge-based or technical solutions. To remain competitive, Central Indiana’s TDL firms will require an increasing level of sophistication—gained through improved connections to the region’s higher education institutions as a source of both an educated and skilled workforce and technical advancements.

Action 3. Develop core curriculum, as well as continuing education programs for logistics professionals, including undergraduate and graduate programs, on-line programs, certificate programs, and more usable educational programming in general.

While business-oriented continuing education is available through many sources, limited transportation, distribution, and logistics specific continuing education is available in the Central Indiana region, and what is available is geared more toward new entrants into the field. Additionally, while more advanced curriculum is available at Purdue, the logistics of traveling to and from West Lafayette is a major obstacle in its use.

The region’s higher education institutions should re-examine, in concert with CLM or equivalent trade association, the curricula available both for those already in the industry and those interested in pursuing careers in the industry. The primary focus should be on occupations and careers needed to make this emerging cluster a higher-value cluster employing higher-skilled, better-paid personnel. It is important, if the transportation, distribution, and logistics cluster is going to succeed in moving towards a more knowledge-based approach, that existing employees have the ability to easily upgrade their skills in both new techniques and new technologies. Ideally, current curriculum, as well as newer coursework, could be integrated into an easily accessible on-line program that transportation, distribution, and logistics professionals could access direct from their jobsites.

Action 4. Improve the marketing of existing transportation, distribution, and logistics related coursework and curriculum to Central Indiana’s firms and students.

As described above, some educational options for regional transportation, distribution, and logistics professionals do exist. However, an understanding of the course content and availability among the transportation, distribution, and logistics companies interviewed

was extremely limited. This is probably caused through a combination of companies not seeking out what is available and institutions not marketing these courses strongly enough and to the correct individuals.

Many solutions exist to easily rectify this situation. For example the Indianapolis chapter of the CLM could provide a website listing the courses available at each of the institutions, with a link to the institution's websites for further information.

Action 5. Develop a more robust internship and co-op program supporting student involvement with the Central Indiana transportation, distribution, and logistics industry.

Many industry representatives are concerned at the small number of students interested in internship or co-op within the transportation, distribution, and logistics industry. Many cited the success of similar programs from some of the nation's leading higher education programs in the TDL-related fields. Most also feel that engaging students in their organizations, and ultimately hiring some of these students, is one way to improve the technical and managerial sophistication of their firms.

The region's trade associations and higher education institutions need to develop a coordinated marketing effort which defines and describes the true educational and longer-term employment opportunities in the emerging Central Indiana transportation, distribution, and logistics cluster—including the interesting challenges that face the industry as it becomes more technologically sophisticated and integrated within supply-chain infrastructures.

Action 6. Encourage the 21st Century Fund to make investments in cutting-edge research related to logistics, supply-chain management, transport informatics and communications, and e-commerce.

The Indiana 21st Century Research and Technology Fund was created in 1999 to provide grants or loans to stimulate the process of diversifying the State's economy by developing and commercializing advanced technologies in Indiana. Its mission is to spur economic development and diversify Indiana's economy so that high-skill and high-wage jobs are created through collaborations between universities and business. To date, the Fund has invested over \$50 million in 46 awards.

However, within these 46 awards, none are directly applicable to the TDL cluster. The current level of technological sophistication within the cluster is relatively low, with relatively few technology providers to the cluster located within Indiana. Given the importance of the transportation, distribution, and logistics cluster to the economy of Central Indiana, as well as the entire State, providing technology research and development resources to those in academia and industry working on novel technological solutions should be strongly encouraged.

Action 7. Develop a multi-university research center focused on logistics and supporting technologies.

There are many higher education institutions in Central Indiana currently involved in transportation, distribution, and logistics-related education and research—each with a somewhat unique niche. These combined niches provide a logical opportunity for the

Central Indiana region to develop a unique research center focused on logistics and supporting technologies (many of which would also find applications within the region's other clusters).

Furthermore, the host schools and departments for these existing efforts offer ties to other core disciplines and research. Beyond these direct links, many additional capabilities of the region's higher education institutions could also be linked into a multi-university research center allowing for varied and unique perspectives to be brought to bear on the technological challenges of the transportation, distribution, and logistics industry.

Action 8. Add the support and assistance of firms in the transportation, distribution, and logistics industry to the mission of the Purdue Technical Assistance Program.

As an outreach function of the School of Engineering, Purdue operates the Technical Assistance Program providing technical and engineering assistance to numerous Indiana manufacturers. Many of the issues facing firms in the emerging Central Indiana transportation, distribution, and logistics cluster are of similar dimension and scope as issues that the TAP effort deals with (e.g., implementing off-the-shelf technologies, warehouse layout, efficiency studies). Modifying the mandate of the TAP program to allow it to assist Indiana's TDL firms, not only would provide a more readily available source of technical assistance, it would also introduce numerous talented students to the career opportunities available within Central Indiana's transportation, distribution, and logistics firms.

Strategy 3: Work to improve the operating environment for Central Indiana transportation, distribution, and logistics firms.

Obviously, both economic development and government agencies have been involved in specific aspects or modes of the industry (e.g., development efforts regarding industrial parks, governmental efforts regarding the trucking industry). However, the emerging Central Indiana transportation, distribution, and logistics cluster has developed to its current state with little direct economic development or governmental attention. Enhancing the future development of this emerging Central Indiana cluster will require a new more coordinated approach. This is especially true given the many TDL impacting large-scale investments and development projects that are breaking ground in the near future or are currently being considered and debated.

Action 9. Build on the reputation, capacity, and future improvements at Indianapolis International Airport.

Given the size and throughput of the Fed Ex facility, the impact that the Indianapolis International Airport (IIA) has on the overall transportation, distribution, and logistics industry in Central Indiana cannot be debated. However, the IIA is positioning itself to substantially increase its air freight capabilities through its efforts to improve its passenger capabilities. Future improvements to the airport site, including the planned new Midfield Terminal, associated realignment of the on site road network, and ultimately the new interstate connection, will significantly improve the ingress and egress of trucking and courier services to facilities located at the airport as traffic bottlenecks (e.g., as one interviewee stated, "malfunction junction") are eliminated.

These changes to IIA could not come at a more opportune time. However, to take full advantage of these planned developments at IIA, the Central Indiana industry as a whole, not just IIA, will have to market these enhanced capacities in order to realize their benefits fully.

Action 10. Develop an economic impacts model of the existing inventory tax on the Indiana TDL cluster (as part of overall tax burden) relative to competitor regions and states.

The personal property tax on inventory is perceived to be a burden to many firms in the Central Indiana region, including those outside of the transportation, distribution, and logistics industry. However, for the emerging TDL cluster, the inventory tax, while a revenue stream for the State, may be factor in keeping some aspects of the industry in a lower-skill and lower-wage mode, potentially retarding the continued development of the cluster. The transportation, distribution, and logistics industry and state and local economic development organizations should provide resources to one of the regional higher education institutions to develop a thorough and thoughtful economic impact model relative to the impact of the inventory tax on the industries and the state and region's economic potential.

Together, these three strategies and their accompanying actions provide the initial steps to begin the process of fully recognizing and developing the emerging transportation, distribution, and logistics cluster in the Central Indiana region.

SUMMARY

The Central Indiana region is currently in the process of building and developing three industry clusters—life science, advanced manufacturing, and the emerging information technology cluster. This Prospectus provides an initial framework for developing an emerging fourth cluster: the transportation, distribution, and logistics cluster.

The transportation, distribution, and logistics industry is a significant employer in the Central Indiana region, yet structurally it is still in its infancy as a cluster. The industry is not overly concentrated in the region and its current growth, while positive, is being outpaced by the industry nationally. Additionally, the Central Indiana region is lagging behind many competitor regions in terms of both cluster structure and growth and the development of supporting mechanisms to assist their cluster's progress.

However, the Central Indiana region has many strengths on which it can build and develop this emerging cluster including a central U.S. location, strong connectivity via air and truck, and overall low costs of operation. Building on these strengths, and taking advantage of opportunities with higher education and connections with the region's other clusters requires the implementation of a proactive set of strategies and actions. These strategies include specific efforts to improve the cohesiveness of the emerging transportation, distribution, and logistics cluster, improving research and educational connections with higher education, and efforts to improve specific aspects of the emerging cluster's operating environment in Central Indiana. The strategies, actions, resources, and priority/time frame are summarized below.

Strategies, Actions, Resources, Priorities

Strategies	Actions	Resources Required	Priority/ Time Frame
Strategy 1: Further develop and improve the cohesiveness of the emerging Central Indiana transportation, distribution, and logistics cluster.	Action 1. Further develop industry association(s) to become advocates for the emerging transportation, distribution, and logistics cluster.	Seed funding of \$200,000-\$250,000 on declining funding basis over three years	Immediate
	Action 2. Develop cohesive image and improve marketing efforts for both internal and external consumption.	\$50,000-\$75,000 to develop strategic plan	Short-term (after Action 1 is initiated)
Strategy 2: Improve the connections between the emerging transportation, distribution, and logistics cluster and regional higher education.	Action 3. Develop core curriculum, as well as continuing education programs for logistics professionals, including undergraduate and graduate programs, on-line programs, certificate programs, and more usable educational programming in general.	Tri-annual survey will cost between \$35,000-\$50,000	Short-term
	Action 4. Improve the marketing of existing transportation, distribution, and logistics related coursework and curriculum to Central Indiana's firms and students.	Make part of operational costs of association	Short-term; after CLM established
	Action 5. Develop a more robust internship and co-op program supporting student involvement with the Central Indiana transportation, distribution, and logistics industry.	Make part of operational costs of association	Short-term; after CLM established
	Action 6. Encourage the 21st Century Fund to make investments in cutting-edge research related to logistics, supply-chain management, transport informatics and communications, and e-commerce.	Part of seed funding for organization	Short-term; after CLM established
	Action 7. Develop a multi-university research center focused on logistics and supporting technologies.	Several million dollars dependent on proposed center plan	Mid-term
	Action 8. Add the support and assistance of firms in the transportation, distribution, and logistics cluster to the mission of the Purdue Technical Assistance Program.	Incremental funding to TAP program based on demand	Mid-term
Strategy 3: Work to improve the operating environment for Central Indiana transportation, distribution, and logistics firms.	Action 9. Build on the reputation, capacity, and future improvements at Indianapolis International Airport.	Staff time and commitment of partners	Immediate
	Action 10. Develop an economic impacts model of the existing inventory tax on the Indiana TDL cluster (as part of overall tax burden) relative to competitor regions and states.	\$75,000-\$100,000	Short-term

Preface

As one of their initial efforts, the Central Indiana Corporate Partnership (CICP) retained the Battelle Memorial Institute's Technology Partnership Practice (TPP), located in Cleveland, Ohio, to assist them in developing an overall vision and perspective for the region's economic future. The first results of this effort are contained in the document, *A Prospectus for Economic Clusters: Advanced Manufacturing, Life Sciences, and Information Technology*.² This document, termed a Prospectus, represents an investment framework for business, philanthropic, education, and public sector support and investments to support the growth and development of these three clusters.

In early 2001, CICP once again engaged the Battelle team, this time to examine the Central Indiana region's emerging transportation, distribution, and logistics cluster, building further upon the original cluster development strategies and actions. The results of this follow-on effort are included in this Prospectus.

PROJECT METHODOLOGY

To complete this Prospectus for the Transportation, Distribution, and Logistics Cluster, Battelle undertook a number of tasks:

- ?? An **economic analysis** of the transportation, distribution, and logistics industry in Central Indiana;
- ?? A **competitor region assessment** determining how well the emerging Central Indiana transportation, distribution, and logistics cluster competes and identifying unique practices regions use to support their cluster;
- ?? Preparation of a **strengths, weaknesses, opportunities, threats (SWOT) review**, much as a business does, for the geographical unit of Central Indiana, and its five MSA region. This analysis is based on numerous interviews with industry representatives, infrastructure and real estate representatives, and higher education.
- ?? Holding of a **focus group** to obtain the input and perspectives of a cross-section of industry representatives.
- ?? Development of specific **strategies and actions** to foster the growth and development of the emerging transportation, distribution, and logistics cluster.

The end product of this process is the Prospectus contained in this document.

² Please see "A Prospectus for Economic Clusters: Advanced Manufacturing, Life Sciences, and Information Technology -- Nurturing Central Indiana's Pillar Industries for 21st Century Midwestern Preeminence." Prepared for the Central Indiana Corporate Partnership by Battelle Memorial Institute, December 2000

Section 1. Introduction

The movement of goods, parts, and products between and among suppliers, customers, and consumers is the role of the transportation, distribution, and logistics “cluster.” However, this description provides a very simplistic concept of what activities the cluster is engaged in. The Council of Logistics Management defines logistics as, “that part of the supply chain process that plans, implements, and controls the efficient, effective flow and storage of goods, services, and related information from the point of origin to the point of consumption in order to meet customers’ requirements.” Given that suppliers, customers, and consumers are located everywhere in the world, in no other industry is the concept and context of a “global economy” more apparent.

There may be some dispute as to whether the transportation, distribution, and logistics “cluster” can ever be a true economic cluster by standard definitions. Most common cluster definitions include four principal components:

1. Geographical concentration
2. Similar, related, or complementary firms
3. Share infrastructure, labor markets, and services
4. Face common opportunities and threats

However, by its inherent “delivery” nature and desire to be close to customers of all types, the transportation, distribution, and logistics industry will typically demonstrate a less concentrated nature than many more highly recognized clusters (e.g., biotechnology in and around Boston and San Diego; information technology around Silicon Valley). However, in terms of its connections to the rest of the economy, the transportation, distribution, and logistics cluster somewhat mimics that of the information technology sector in that, while there are substantial interactions among cluster member firms, its most significant role is the support of other clusters and industries. Additionally, while technologies are allowing companies to conduct business around the world, shipping these products still requires transportation, distribution, and logistics services, and because of these, geography and location are still important elements of the cluster’s structure.

The economic impact of the U.S. transportation, distribution, and logistics industry, however, because of its sheer magnitude cannot be overlooked. The logistics share of the United States’ gross domestic product is estimated to be bigger than that of health care, social security, or defense, with an annual logistics bill in the U.S. of over \$700 billion.³ A more tangible measure of the economic role of the transportation, distribution, and logistics industry estimates that product delivery accounts for 10 percent of a product’s costs.

³ Dr. Yoshi Sheffi, “Top Ten Reasons to Study Logistics,” MIT Center for Transportation Studies.

It is these costs that have led to a recent influx of new technologies into the functions of the transportation, distribution, and logistics industry as firms try to reduce their operating and shipping costs through traditional Just-In-Time (JIT) delivery, overall supply chain management techniques, and more recently e-commerce strategies and cluster firms try to maintain thin profit margins. One development stemming from both the availability of new technologies and the desire of customer firms to get out of the transportation, distribution, and logistics business is the development of third-party logistics firms (3PLs) to which these customers completely outsource their transport and logistics activities. In turn, as these logistics firms have become increasingly sophisticated with their use of information technologies (e.g., Internet, World Wide Web) a new term “e-Logistics” was coined.

In the pages that follow, we examine the transportation, distribution, and logistics industry in the Central Indiana region to see how well it has performed, to what extent it is truly becoming a cohesive economic cluster, how well it competes, and what strengths it has upon which to build.

Section 2. Economic Analysis of the Emerging Central Indiana Transportation, Distribution, and Logistics Cluster

INTRODUCTION

This analysis depicts and analyzes the transportation, distribution, and logistics (TDL) industry's role in the economy of the Central Indiana region, examining not only the current situation but also prospects for continuing expansion and avenues for future development.

Industry/Cluster Definitions

Table 1 provides a detailed Standard Industrial Classification (SIC)-based definition using four-, six-, or eight-digit SICs to characterize the transportation, distribution, and logistics industry of the Central Indiana region. For analysis, this characterization is further classified into eight subsectors: railroads, trucking and courier services, warehousing and storage, air freight, freight transport logistics services, miscellaneous freight transport services, wholesale distribution - durable goods, and wholesale distribution - non-durable goods. It should be noted that passenger transportation, while important due to the influence on and applications regarding freight transport, is not included in this analysis when it can be distinctly separated.⁴ Because these eight subsectors are defined to cover a broad range of freight transport, the definition of the transportation, distribution, and logistics industry is highly suitable to the comparison geographic regions as well. It is also important to note, however, that this definition is designed to examine the emerging transportation, distribution, and logistics industry in Central Indiana. It thereby excludes shipping and other forms of water-based freight movement that are extremely important to the overall global transportation, distribution, and logistics industry.

Unfortunately, like many industries, even these detailed SIC-based definitions fall somewhat short in discretely capturing the functions and structure of the transportation, distribution, and logistics industry. For example, larger manufacturers often directly handle their own distribution and logistics functions. Only in those instances where these functions are captured in some form as a visible and distinct company element (e.g., handled in a different location or distinctly classified by Dun & Bradstreet) is it possible to capture it in this analysis. Additionally, there are other firms that are important elements of the transportation, distribution, and logistics industry that, due to the vagaries of the SIC scheme and the constraints it puts on analysis, get classified within other SIC

⁴ Amtrak's Material Handling Center is included in SIC 401 and is therefore included in the analysis. Passenger airlines' "under belly" air freight service is included to extent that these operations are treated as separate activities in the Dun and Bradstreet data.

codes (e.g., IT firms developing logistics software; distribution aspects of large retailers being captured within “retail” SICs).⁵

Table 1. Transportation, Distribution, and Logistics Industry Definition by SIC

	SIC		SIC
Railroad Transportation		Miscellaneous Freight Transport Services	
Railroads	401	Packing and crating	4783-00
Rental of Railroad Cars	474	Containerization of goods for shipping	4783-9901
		Crating goods for shipping	4783-9902
		Cargo loading and unloading services	4789-01
Trucking and Courier Services		Wholesale Distribution, Durable Goods	
Local trucking, without storage	4212	Motor Vehicle, Parts, and Supplies	501
Trucking, except local	4213	Furniture and Homefurnishings	502
Local trucking, with storage	4214	Lumber and Other Construction Materials	503
Courier services, except by air	4215	Professional and Commercial Equipment	504
Trucking Terminal Facilities	4231	Metals and Minerals, Except Petroleum	505
		Electrical Goods	506
		Hardware, Plumbing, Heating Equipment, and Supplies	507
		Machinery, Equipment, and Supplies	508
		Miscellaneous Durable Goods Wholesale	509
Warehousing and Storage		Wholesale Distribution, Non-Durable Goods	
Farm product warehousing and storage	4221	Paper and Paper Products	511
Refrigerated warehousing and storage	4222	Drugs, Proprietarys and Sundries	512
General warehousing and storage, nec	4225-9900	Apparel, Piece Goods, and Notions	513
General warehousing	4225-9901	Groceries and Related Products	514
Miniwarehouse, warehousing	4225-9902	Farm-Product Raw Materials	515
Special warehousing and storage	4226	Chemical and Allied Products	516
		Petroleum and Petroleum Products	517
		Beer, Wine, and Distilled Alcoholic Beverages	518
		Miscellaneous Non-Durable Goods Wholesale	519
Air Freight			
Air cargo carriers, scheduled	4512-9901		
Air courier services	4513		
Air cargo carriers, non-scheduled	4522-9901		
Air freight handling at airports	4581-9901		
Air freight loading and unloading services	4581-9905		
Freight Transport Logistics Services			
Freight transportation arrangement	4731-00		
Transportation agents and brokers	4731-01		
Freight forwarding	4731-02		
Freight consolidation	4731-99		

Even within these eight subsectors, some confusion exists when trying to correctly characterize and categorize a firm’s operations. A significant function within the transportation, distribution, and logistics industry is the “distribution center,” a facility from which product goes to the “final customer” sales source. This distribution center, however, can be either a company-owned facility, or a contracted service, and the final customer sales source can be either a wholesale or a retail operation. This mix leads to distribution centers of varying forms falling into a number of the eight subsectors, including:

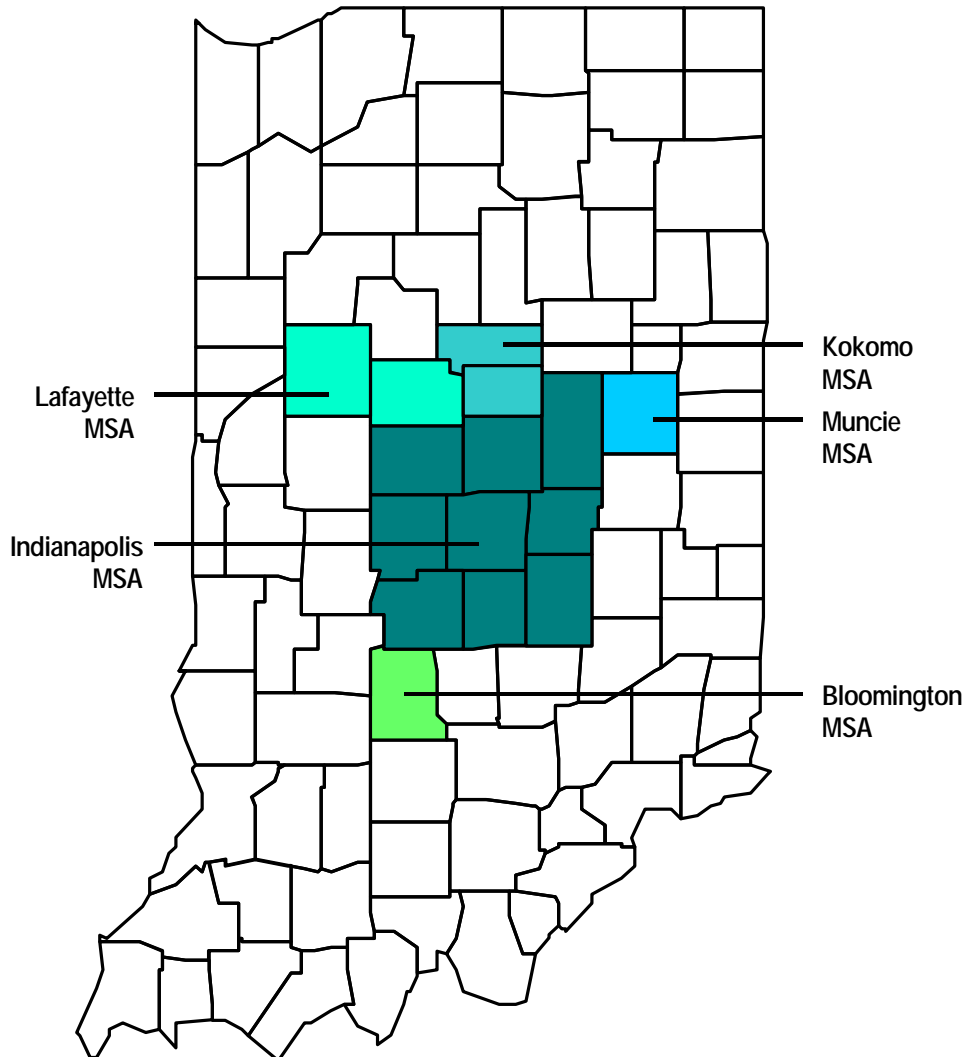
- ?? Warehousing and storage subsector includes both contract-based distribution centers and company-owned warehousing facilities which take raw materials and products in and send final products out to distribution centers;
- ?? Both wholesale distribution subsectors include company owned distribution centers;
- ?? Some companies have both warehousing and distribution center functions in the same location handling different product lines, or raw materials and finished products.

⁵ For example, the Pep Boys Distribution Center is classified under SIC 5531 – Auto and Home Supply Stores instead of under SIC 5013 Wholesale Motor Vehicle Supplies and Parts.

Regional Definition

For the purposes of this analysis, the Central Indiana region, as defined by the Central Indiana Corporate Partnership, is used. This definition includes five Metropolitan Statistical Areas (MSAs) as determined by the United States Census Bureau.⁶ The five MSAs include: Indianapolis, Lafayette, Kokomo, Muncie, and Bloomington, as shown in Figure 1.

Figure 1. Map of Central Indiana Region MSAs



Data and Methodology

This economic analysis uses establishment and employment data obtained from the MarketPlace survey, released on a quarterly basis by the Dun & Bradstreet Corporation, augmented with information from previous studies, industry articles and publications,

⁶ The U.S. Census Bureau determines MSAs on the basis of population density, employment, and commuting patterns.

local stakeholders, and corporate and industry websites. The United States as a whole and the state of Indiana are used as comparison region for assessing the status and development of the emerging TDL cluster in the Central Indiana region. Data for establishments within these three regions were obtained from the fourth quarter release for 1995 and from the third quarter release for 2001.⁷

The strengths of the MarketPlace data for an economic analysis of the transportation, distribution, and logistics industry are fourfold. First, is the ability to distinctly define industrial sectors, as MarketPlace company data is defined to an eight-digit SIC level. This allows for detailed subsector specification, such as the ability to examine only the air cargo and freight aspects of the overall air transportation industry. Second, given the unique nature of railroad employment historically, federal data sources (e.g., Bureau of Labor Statistics ES-202 data, and U.S. Census' County Business Patterns) do not report information on this subsector.⁸ Third, the MarketPlace data's level of currency (publicly available data often has a two to three year lag time in terms of availability) allows more recent changes in the industrial landscape to be captured within the data (e.g., recent plant closures or attractions).⁹ Finally, the ability to examine and combine data at the county, MSA, and State-level allow for ease in studying current employment and economic activity on a regional level and generating geographical comparisons.

These strengths far outweigh any weaknesses in the data. However, the MarketPlace data must be interpreted with some cautions. First, the data are obtained voluntarily from establishments through telephone interviews and since it is voluntary, employment numbers are sometimes withheld.¹⁰ Second, since the individual establishments to be interviewed are most often identified through credit reports or requests for corporate credit, early-stage companies or firms that have not applied for credit are usually not included. Third, the survey coverage has broadened over its period of operation, causing comparisons across a number of years to somewhat exaggerate growth trends, although this is less true in economic sectors, such as the transportation, distribution, and logistics subsectors, receiving constant attention. Fourth, while the coverage of established private-sector firms is now quite thorough, the MarketPlace survey makes no distinction between full- and part-time employment, and hence employment numbers may appear somewhat inflated. Additionally, it should be emphasized that the MarketPlace data refer to establishments, often listing and classifying multiple-site firms (e.g., branch plants, or with regard to this analysis distinct warehouses) as establishments separate from their parent entities.¹¹ Finally, the MarketPlace data's principal use is for marketing purposes and hence the location of some firms may be derived from mailing addresses. This has

⁷ Release dates are the first day of the quarter, hence a third quarter release date is July 1. Since only certain portions of the survey are repeated in any particular quarter, the data should not vary by quarter in any systemic fashion. Throughout the rest of this analysis, the time periods are referenced by year only.

⁸ Historically, railroads were federally chartered and their workers considered federal employees. When the railroads were privatized, they remained exempt from many federal reporting requirements.

⁹ This is also an important consideration, as recent federal comparable data is beginning to be changed over to the North American Industrial Classification System (NAICS) codes that will make comparisons to historical data difficult at best.

¹⁰ This issue is most prevalent in historical data. Where possible, alternate data sources are used by Battelle to fill in for missing data.

¹¹ For the purposes of this analysis, the terms establishment and firm are used interchangeably.

the unfortunate circumstance of possibly overstating counts within urban areas when companies use a post office box in a more recognizable city, or could cause the appearance of establishment closure or attraction if a change is made over time from using such a post office box to having mail delivered to their physical location (or vice versa). This last issue is of less concern when multi-county MSAs are the unit of regional analysis.

These concerns should lead to a further measure of care in interpreting the results, particularly with regard to individual establishments. As is typical with other sources of establishment-level economic data, the information is more reliable in aggregated form. To some extent, these possible surveying irregularities or reporting errors merely mirror the difficulties inherent in defining the continually evolving transportation, distribution, and logistics industry. Fortunately, the purpose of this economic analysis is not impeded: to paint a broad picture of the emerging cluster in the Central Indiana region and reveal particular regional strengths and opportunities for continued growth and development.

PROFILE OF THE TRANSPORTATION, DISTRIBUTION, AND LOGISTICS INDUSTRY IN CENTRAL INDIANA

The Central Indiana transportation, distribution, and logistics industry consists of 6,312 establishments in 2001 – a loss of 482 establishments (7.1 percent) from 1995. In the same, 1995 to 2001 period the number of overall private sector establishments (all business sectors) increased by 11.4 percent, indicating that in terms of the number of businesses the TDL industry has not kept pace with the overall growth in the Central Indiana region. Similarly, the transportation, distribution, and logistics industry lost ground at the State level – losing 1.0 percent of its establishments, while private sector establishments increased by over 41 percent statewide. Meanwhile, the U.S. experienced a slight 2.9 percent growth in the number of transportation, distribution, and logistics firms compared to a 21 percent increase in the number of private sector establishments.

Central Indiana TDL Industry

Central Indiana region accounts for:
??35.0% of Indiana's TDL firms;
??40.2% of Indiana's TDL employment;
and
??39.8% of Indiana's TDL employment
growth between 1995 and 2001.

Table 2. Transportation, Distribution, and Logistics Industry – Summary Data for 1995 and 2001

Metric	Central Indiana Region	Indiana	United States
Firms, 1995	6,794	18,223	915,845
Firms, 2001	6,312	18,041	942,493
Change in number of firms, '95-'01	(482)	(182)	26,648
% Firm growth, '95-'01	-7.1%	-1.0%	2.9%
Employment, 1995	81,473	202,747	8,964,571
Employment, 2001	89,434	222,731	10,390,859
Change in employment, '95-'01	7,961	19,984	1,426,288
% Employment growth, '95-'01	9.8%	9.9%	15.9%
Employees per firm, 1995	12.0	11.1	9.8
Employees per firm, 2001	14.2	12.3	11.0
% Share, private sector employment, 1995	8.2%	8.1%	8.1%
% Share, private sector employment, 2001	7.4%	7.2%	7.4%
Employment location quotient, 1995	1.01	1.00	n.a.
Employment location quotient, 2001	1.00	0.97	n.a.
Change in employment location quotient, '95-'01	(0.01)	(0.03)	n.a.
All private sector activity:			
% Firm growth, '95-'01	11.4%	41.1%	21.0%
% Employment growth, '95-'01	20.8%	23.1%	26.3%
Employees per firm, 2001	15.2	12.9	11.5
Population, 2000	2,131,180	6,080,485	281,421,906
% Population growth, '95-'00	7.8%	5.0%	7.1%

Data sources: Battelle calculations from Dun & Bradstreet *MarketPlace* survey, U. S. Census Bureau.
 Note: n.a. = not applicable.

Despite the decline in establishments, overall TDL employment in the Central Indiana region grew by 9.8 percent from 81,473 workers in 1995 to 89,434 workers in 2001. This growth rate was close to the rate in the entire state of Indiana (9.9 percent) but lagged the U.S. growth rate (15.9 percent). Even with this employment growth, the Central Indiana transportation, distribution, and logistics industry’s share of overall private sector employment declined in the 1995-2001 period as overall private sector employment in the Central Indiana region increased by 21.2 percent. Overall private sector employment also grew at a faster rate at the State and national levels, indicating substantial employment growth in non-transportation, distribution, and logistics sectors of the economy.

Regional location quotients (see Figure 2 for description) indicate that despite the visibly high level of transportation, distribution, and logistics activity in the region the Central Indiana region’s specialization in the emerging TDL cluster is right at the national average (LQ = 1.00). With an LQ of 0.97, the state of Indiana currently exhibits a concentration level just under that of the overall U.S. However, as described in the next section, these “overall” transportation, distribution, and logistics industry numbers mask some of the unique subsector mix of the Central Indiana region.

Figure 2. Location Quotients

Location quotients are a common measure of the concentration of a particular industry or industry sector in a region relative to a reference area. The location quotient consists of the ratio of the share of total regional employment that is in the particular industry and the share of total employment in the reference area that is in the particular industry. It is represented by the formula:

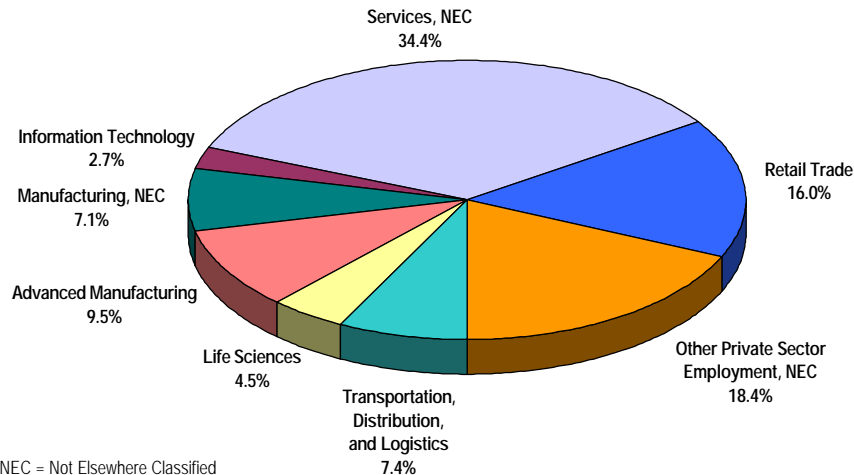
$$\text{Location Quotient} = \frac{\text{regional industry employment} / \text{regional total employment}}{\text{reference area industry employment} / \text{reference area total employment}}$$

A location quotient greater than 1.0 indicates that the region is relatively concentrated in the particular industry, whereas a location quotient less than 1.0 signifies relative under-representation. Throughout this report, location quotients are used to report State and regional industry concentrations relative to the United States. The minimum concentration threshold for declaring a regional specialization is a matter of judgment and varies somewhat in the relevant literature; in this analysis, regional specializations are defined by location quotients of 1.2 or greater.

COMPOSITION AND SPECIALIZATIONS OF THE CENTRAL INDIANA TRANSPORTATION, DISTRIBUTION, AND LOGISTICS INDUSTRY

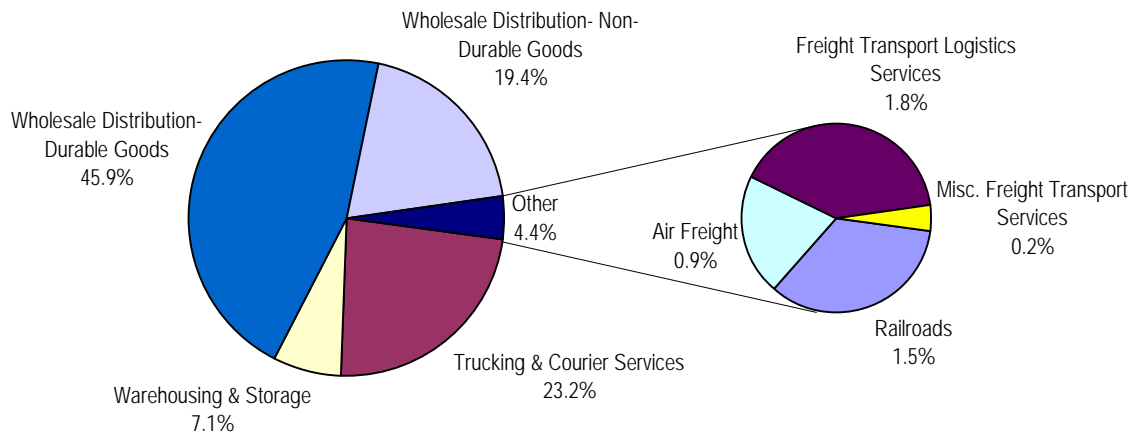
From a cluster perspective, defining the transportation, distribution, and logistics industry broadly allows for a more fulsome understanding of the capabilities, potential, and subsector interconnections upon which to develop a cluster strategy for the region. For context, Figure 3 provides an illustration of the comparative size of the TDL industry in Central Indiana to other important segments in the regional economy, in terms of employment. As shown, the emerging TDL cluster is comparable in size, if not larger, than many of the more “well known” segments of the regional economy. As such, the TDL industry represents a significant segment large enough to warrant its own attention and strategies for growth. To get a better picture of the inherent regional specializations and strengths upon which to build, however, requires a more specific examination of the various individual subsectors.

Figure 3. Comparative Size of TDL Industry and Other Segments of the Central Indiana Regional Economy



Further disaggregating the transportation, distribution, and logistics industry (as shown in Figure 4) shows that the industry is dominated by the wholesale distribution - durable goods subsector. It also shows that the region includes significant numbers of employment in three other subsectors: trucking and courier services, wholesale distribution - non-durable goods, and warehousing and storage. The combination of these four subsectors accounts for over 95 percent of the transportation, distribution, and logistics employment in Central Indiana.

Figure 4. Distribution of Central Indiana’s Transportation, Distribution, and Logistics Employment by Subsector



Unfortunately, it is difficult to obtain reliable sales (or other financial) information from any data source. This lack of data makes it difficult to directly gauge the overall financial impact of the transportation, distribution, and logistics industry on the Central Indiana regional economy, or the relative economic importance of each subsector.

Table 3, on the next page, details each of the eight subsectors of the transportation, distribution, and logistics industry for the Central Indiana region, the state of Indiana and for the U.S. A discussion of each subsector, including a short list of example establishments operating in Central Indiana, follows the table.

Table 3. Transportation, Distribution, and Logistics Subsector Data, 1995 and 2001

	Railroads	Trucking & Courier Services	Warehousing and Storage	Air Freight	Freight Transport Logistics Services	Misc. Freight Transport Services	Wholesale Distribution-Durable Goods	Wholesale Distribution-Non-Durable Goods
Central Indiana Region								
Firms, 2001	23	1,020	362	21	134	10	3,454	1,288
% Firm growth, '95-'01	9.5%	5.4%	13.1%	-25.0%	35.4%	-9.1%	-10.6%	-13.2%
Employment, 2001	1,359	20,773	6,366	821	1,617	172	41,009	17,317
% Employment growth, '95-'01	6.1%	13.8%	90.7%	-33.1%	84.0%	-21.8%	11.2%	-10.7%
% Share, TDL employment, 1995	1.6%	22.4%	4.1%	1.5%	1.1%	0.3%	45.3%	23.8%
% Share, TDL employment, 2001	1.5%	23.2%	7.1%	0.9%	1.8%	0.2%	45.9%	19.4%
Employment location quotient, 1995	0.94	1.42	0.67	1.02	0.52	1.50	1.03	0.86
Employment location quotient, 2001	0.90	1.34	1.10	0.60	0.71	0.72	1.07	0.71
Change in employment location quotient, '95-'01	(0.04)	(0.08)	0.43	(0.42)	0.19	(0.78)	0.04	(0.15)
Indiana								
Firms, 2001	113	3,864	1,044	41	329	23	8,826	3,801
% Firm growth, '95-'01	48.7%	15.0%	17.6%	-6.8%	38.2%	4.5%	-5.4%	-10.8%
Employment, 2001	6,079	55,167	15,221	1,327	6,485	319	94,968	43,165
% Employment growth, '95-'01	33.5%	12.2%	40.5%	-14.4%	29.0%	16.0%	10.7%	-5.2%
% Share, TDL employment, 1995	2.2%	24.2%	5.3%	0.8%	2.5%	0.1%	42.3%	22.5%
% Share, TDL employment, 2001	2.7%	24.8%	6.8%	0.6%	2.9%	0.1%	42.6%	19.4%
Employment location quotient, 1995	1.32	1.52	0.86	0.51	1.17	0.75	0.95	0.80
Employment location quotient, 2001	1.56	1.38	1.02	0.38	1.11	0.52	0.97	0.69
Change in employment location quotient, '95-'01	0.24	(0.14)	0.16	(0.13)	(0.06)	(0.23)	0.02	(0.11)
United States								
Firms, 2001	4,036	153,048	42,770	3,439	22,585	1,832	466,346	248,437
% Firm growth, '95-'01	18.6%	23.8%	7.7%	5.8%	19.4%	37.0%	-0.8%	-2.7%
Employment, 2001	175,851	1,803,008	673,792	158,268	265,118	27,558	4,442,258	2,845,006
% Employment growth, '95-'01	15.9%	25.9%	21.6%	17.8%	39.6%	69.2%	11.9%	13.0%
% Share, TDL employment, 1995	1.7%	16.0%	6.2%	1.5%	2.1%	0.2%	44.3%	28.1%
% Share, TDL employment, 2001	1.7%	17.4%	6.5%	1.5%	2.6%	0.3%	42.8%	27.4%

Data source: Battelle calculations from Dun & Bradstreet *MarketPlace* survey.

Railroads

The railroads subsector within Central Indiana accounts for 23 establishments and 1,359 employees, up 6.1 percent in the 1999-2001 time period. Much of the overall employment is accounted for by Amtrak's Material Handling facility located in Beech Grove.¹² This facility alone accounts for well over half of the subsector's employment in the region. State-level employment in the subsector grew by 33.5 percent to just under 6,100 employees, while nationally the subsector grew by just under 16 percent. With an employment growth rate less than one-third of the U.S. rate, the concentration level of the subsector in Central Indiana declined slightly and is still less concentrated in the region than it is at the national level (LQ = 0.90) and far less concentrated than it is in the State overall (Indiana railroads subsector LQ = 1.56).

Example Central Indiana Establishments

- ?? Amtrak Material Handling
- ?? CSX Transportation
- ?? The Indiana Rail Road Company
- ?? Norfolk Southern Corporation

¹² This facility is actually Amtrak's national preventative maintenance and repair operations. Every passenger car and locomotive in the Amtrak system comes through this facility on a roughly 120-day cleaning and preventative maintenance cycle.

Trucking and Courier Services

The trucking and courier services subsector is by far the largest non-wholesale subsector in the Central Indiana transportation, distribution, and logistics industry—in terms of both firms and employment. Currently, the subsector includes 1,020 firms, up 5.4 percent from 1995. These firms employ slightly less than 21,000 workers in 2001, an increase of 13.8 percent over the 1995 level, making it the second largest transportation, distribution, and logistics subsector in the region. This holds true at the State level as well with 3,864 firms and employment of 55,167. The employment growth in this subsector has also increased its share of the overall transportation, distribution, and logistics industry employment in both the Central Indiana region (up from 22.4 percent in 1995 to 23.2 percent in 2001) and at the State level (up from 24.2 percent in 1995 to 24.8 percent in 2001). However, even with this double-digit employment growth, the regional and State trucking and courier services subsectors have not kept pace with the 25.9 percent growth at the national level. This strong national subsector growth actually caused the concentration levels at the regional and State level to decline during the 1995-2001 period. In Central Indiana, the trucking and courier services LQ declined from 1.42 to 1.34 (still significant however), and the LQ declined from 1.58 to 1.38 for the state of Indiana (also significant).

Example Central Indiana Establishments

- ??American Freightways
- ??Burlington Motor Carriers
- ??CCX/Con-Way Central Express
- ??Celadon Trucking Services
- ??Consolidated Freightways
- ??CTI Logistix
- ??Federal Express (FedEx Ground)
- ??Liquid Transport Corporation
- ??United Parcel Service
- ??Vitran Express
- ??Yellow Freight System

Warehousing and Storage

The warehousing and storage subsector is the fourth largest of the Central Indiana transportation, distribution, and logistics subsectors accounting for 362 firms and 6,366 employees. The subsector also experienced double-digit growth in both number of firms and total employment. During the 1995-2001 period the number of subsector firms grew by 13.1 percent, outpacing the 7.7 percent national firm growth but less than the 17.6 percent growth of the State's firms. Employment, however, increased dramatically within the Central Indiana warehousing and storage subsector, increasing by 90.7 percent in the period – far outpacing both the State and national employment growth rates (40.5 percent and 21.6 percent, respectively). This employment growth led to both an increase in the subsector's share of the overall transportation, distribution, and logistics industry and a 43 “point” increase in its regional concentration (LQ increased from 0.67 in 1995 to 1.10 in 2001).

Example Central Indiana Establishments

- ??AAA Warehouse
- ??Americold Logistics
- ??APL Logistics
- ??Caterpillar Logistics Services
- ??CS Integrated Retail Services
- ??Delphi-Automotive Systems
- ??Interstate Warehousing
- ??Marsh Supermarkets
- ??ODC Integrated Logistics
- ??Raytheon Aircraft Services

Air Freight

The air freight subsector is the second smallest subsector, in terms of total employment, in the Central Indiana transportation, distribution, and logistics industry. Additionally, over the 1995-2001 period, the Central Indiana air freight subsector had the largest percent decline in both firms and employment. The number of firms declined by 25.0 percent to 21 firms. The number of air freight employees declined by 33.1 percent to 821. Not surprisingly, the state of Indiana also had declines in both firms and employment during this period (to 41 firms and 1,327 employees in 2001). During this period, however, the number of U.S. air freight establishments increased by 5.8 percent and U.S. employment in the subsector increased by 21.6 percent.

Example Central Indiana Establishments

??Airborne Express
??Emery Worldwide
??Federal Express (Fed Ex Air)
??Towne Air Freight

Freight Transport Logistics Services

The freight transport logistics services subsector, while one of the four smaller subsectors in terms of total employment in Central Indiana, also experienced double-digit growth over the 1995-2001 period. The subsector includes 134 firms (up 35.4 percent since 1995) and 1,617 employees (up 84.0 percent). This employment growth led to an increase in the subsector's concentration in the region (from 0.52 in 1995 to 0.71 in 2001), but it is still below the U.S. average. The freight transport logistics services subsector also experienced double-digit growth in both firms and employment in the state of Indiana overall and in the U.S. However, due to the level of growth in the subsector outside of Indiana, the concentration level for the State as a whole actually fell slightly during the 1995-2001 period.

Example Central Indiana Establishments

??Hub Group
??Langham Transport Services
??MegaSys
??Red Ball Forwarders
??Venture Logistics

Miscellaneous Freight Transport Services

As the smallest of all the transportation, distribution, and logistics subsectors, the miscellaneous freight transport services subsector accounts for only 10 firms and only 172 employees, with both of these totals falling during the 1995-2001 time period. While small in size, in 1995 this subsector exhibited a significant regional concentration with a location quotient of 1.50. However, the employment decline over the six-year period reduced the concentration measure to only 0.72 in 2001. This subsector, however, demonstrated substantial growth at the national level during this period – with employment growing by 69.2 percent and the number firms increasing by 37.0 percent.

Example Central Indiana Establishments

??Prime Distribution Services
??Specialty Processing
??Ternes Packaging
??LSI

Wholesale Distribution - Durable Goods

The wholesale distribution - durable goods subsector is by far the largest single subsector across all three regions—accounting for over 40 percent of the transportation, distribution, and logistics industry in Central Indiana, the state of Indiana, and the U.S. The subsector includes 3,454 establishments in Central Indiana and just over 41,000 workers. During the 1995-2001 period, while the number of establishments decreased by 10.6 percent, the number of employees actually increased by 11.2 percent. While this employment growth increased the subsector's regional concentration somewhat, it still remains only slightly more concentrated in Central Indiana than in the U.S. (LQ = 1.07).

Declines in the number of establishments (though at rates substantially less than Central Indiana) and increases in subsector employment also occurred in the State and the U.S.

Example Central Indiana Establishments

- ??Aearo Corporation
- ??Balkamp/NAPA
- ??Brightpoint
- ??Guidant Sales Corporation
- ??Handleman Company
- ??Henry Schein
- ??Hewlett Packard
- ??Kirby Risk Servicecenter
- ??MacAllister Machinery
- ??Xerox Corporation

Wholesale Distribution - Non-Durable Goods

The Central Indiana wholesale distribution - non-durable goods subsector is the second largest subsector in terms of establishments (1,288) but the third largest subsector in terms of employment (17,317). During the 1995-2001 period both establishments and employment experienced double-digit decreases—a 13.2 percent drop in the number of establishments and 10.7 percent decline in employment. Nationally, employment in this subsector actually increased by 13.0 percent over the period.

Example Central Indiana Establishments

- ??Bindley Western Industries
- ??CVS Distribution Center
- ??Marsh Supermarkets
- ??Mays Chemical Company
- ??Meyer Plastics
- ??Piazza Produce
- ??Sysco Food Services

Key TDL Subsector Strengths in the Central Indiana Region

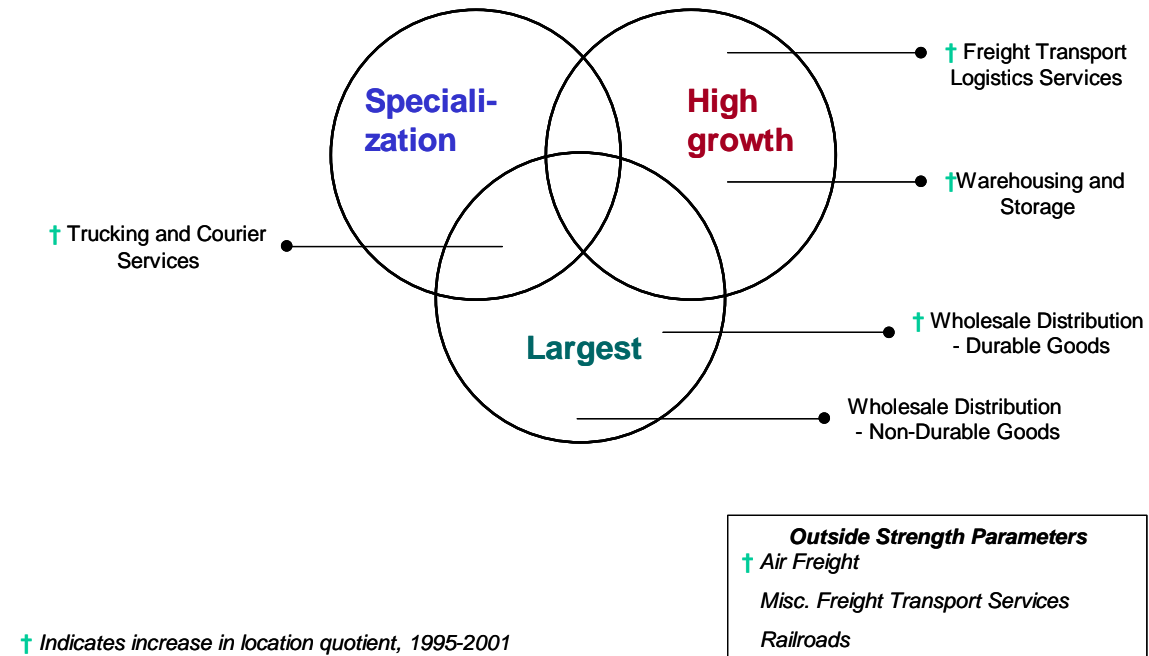
Figures 5 and 6 provide an illustration of the eight transportation, distribution, and logistics subsectors classified by three main sources of industry strength—size, regional specialization, and growth rate—for the Central Indiana region (Figure 5) and the state of Indiana (Figure 6).¹³ The most robust base for the development and expansion of the emerging transportation, distribution, and logistics cluster is likely to consist of those subsectors that constitute regional specializations, contribute substantial employment and activity to the region, and are growing faster than national trends or overall regional economic activity.

In the Central Indiana region, no transportation, distribution, and logistics subsector meets all three of these criteria. However, the trucking and courier services

¹³ The three criteria for inclusion are: (1) Specialization—location quotient ≥ 1.2 . (2) Largest—more than 15,000 employees for the Central Indiana region and more than 45,000 employees for the state of Indiana. (3) High Growth—growth rate for the subsector is greater than the U.S. subsector growth.

subsector meets two of these criteria as one of the region’s largest subsectors with a significant regional concentration.

Figure 5. Central Indiana Transportation, Distribution, & Logistics Subsector Strengths



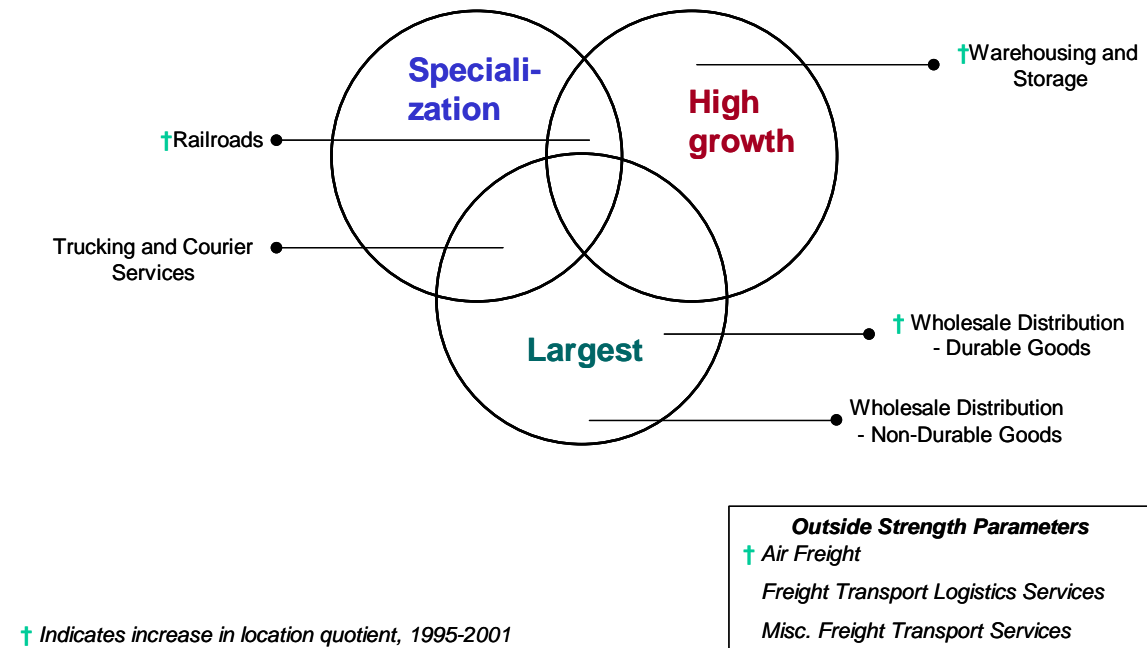
Subsectors that do not yet constitute regional specializations but that are enjoying rapid employment expansions hold promise as emerging concentrations. Both the freight transport logistics services and the warehousing and storage subsectors fit these criteria.

Finally, subsectors that are large (e.g., both wholesale distribution subsectors) may be important to localized supply chains, to ongoing collaborative efforts, and to long-term economic stability through contributing employment, payroll, and real estate investments and taxes to the regional economy.

For overall comparison, Figure 6, on the next page, provides an illustration of the eight transportation, distribution, and logistics subsectors within the state of Indiana, again classified by size, regional specialization, and growth rate. As with the Central Indiana region’s subsectors, no TDL subsector meets all three strength criteria at the overall State level.

Examining the strengths of these State-level subsectors can reveal some potential strategies for further developing specific subsectors within the emerging TDL cluster in the Central Indiana region. For example, within the state of Indiana the railroads subsector exhibits both specialization and high growth. Yet, at the Central Indiana regional level the railroads subsector fails to meet any of the three strength parameters – indicating that Central Indiana is being bypassed by resurgence of this subsector in the State. Also, of note, the freight transport logistics services subsector meets the high growth parameter within the Central Indiana region but not within the overall state of Indiana analysis.

Figure 6. State of Indiana Transportation, Distribution, & Logistics Subsector Strengths



THE EMERGING CENTRAL INDIANA TRANSPORTATION, DISTRIBUTION, AND LOGISTICS CLUSTER: SUMMARY AND CONCLUSIONS

The emerging Central Indiana transportation, distribution, and logistics cluster is a substantial and established part of the regional economy accounting for 7.4 percent of the region’s private sector employment – larger than many “higher profile” regional industries. The TDL industry is growing in the region, but has not seen the same level of growth as it has nationally, and its growth is less than the overall Central Indiana private sector employment growth rate. The location quotient or concentration measure for the Central Indiana TDL industry is 1.00 indicating that its concentration is the same as the national average. In short, the Central Indiana transportation, distribution, and logistics industry is another potential emerging cluster much like the emerging information technology cluster identified in Battelle’s earlier study for the Central Indiana Corporate Partnership.

Similar to most regions, the largest Central Indiana subsectors are wholesale distribution (both durable and non-durable subsectors) and the trucking and courier services subsector. In terms of employment growth rate, two subsectors—warehousing and storage and freight transportation logistics services—have grown dramatically over the last six years. However, in terms of the number of new jobs, the leading subsectors include wholesale distribution - durable goods (over 4,100 jobs), warehousing and storage (over 3,000 jobs), and trucking and courier services (over 2,500 jobs). Both miscellaneous freight transport services and trucking and courier services exhibited significant employment concentrations in 1995 (both with location quotients over 1.4).

However, by 2001, only the trucking and courier services subsector continues to represent a significant regional concentration.

The results of this economic analysis suggest that the Central Indiana region needs to further develop the transportation, distribution, and logistics industry to:

- ?? Exploit the trend in outsourcing logistics functions to continue substantial growth in freight transport logistics services subsector.
- ?? Grow and develop additional capabilities in logistics, transport planning, and other value-added services to support and leverage future growth in region's warehousing and storage subsector.
- ?? Support the continued growth, through economic and infrastructure policies, of the substantial trucking and courier services subsector, to both enhance the cluster and support the region's other important clusters.
- ?? Increase the critical mass of transportation, distribution, and logistics industry firms in Central Indiana and their interactions among each other to develop this emerging economic cluster more fully.

Section 3. Competitor Regions: Ideas for Central Indiana’s Emerging Transportation, Distribution, and Logistics Cluster

INTRODUCTION

To gain a more complete understanding of the potential for the Central Indiana transportation, distribution, and logistics industry to become a full-fledged cluster, the Battelle team also examined a number of competitor regions. This purpose of this examination is twofold: 1) to determine how the Central Indiana region related to the competitive landscape; and 2) to briefly characterize activities supporting the transportation, distribution, and logistics cluster in these regions.

CHARACTERISTICS OF THE COMPETITOR REGIONS

Capabilities and Infrastructure

Given the scope of the competitor regions, the Indianapolis region appears to be holding its own in the logistics portion of its economy according to Table 4.¹⁴ With an average population size compared to the other regions and a similarly average population increase of about 16 percent in the last ten years, Indianapolis still has the third largest enplaned revenue per capita. Central Indiana is third only to Memphis and Louisville, the two premier regions for air freight and logistics activity in the nation based on the headquarter locations of FedEx and UPS in each of the respective locations.

Table 4. Infrastructure Comparison Among Competitor Regions

City	Core MSA Population, 2000	%Chg. 1990-2000	US DoT Hub Class	Total Enplaned Revenue-Tons, 1999	Enplaned Revenue-Tons Per Capita	# of Intersecting U.S. Interstates*	% of Industrial Real Estate Considered to be Warehouse & Distribution (U.S. Average = 59%)
Atlanta, GA	4,112,198	39%	Large	392,698	0.10	3	90%
Chicago, IL	8,272,768	12%	Large	499,120	0.06	6	70%
Cincinnati, OH	1,646,395	8%	Large	234,317	0.14	3	15%
Columbus, OH	1,540,157	14%	Medium	34,919	0.02	2	80%
Dallas-Fort Worth, TX*	5,221,801	29%	Large	504,680	0.10	4	77%
Denver, CO	2,109,282	30%	Large	229,968	0.11	3	60%
Indianapolis, IN	1,607,486	16%	Medium	784,876	0.49	4	70%
Kansas City, MO	1,776,062	12%	Medium	84,625	0.05	3	70%
Louisville, KY	1,025,598	8%	Medium	820,385	0.80	3	90%
Memphis, TN	1,135,614	13%	Medium	1,319,683	1.16	2	75%
Minneapolis-St. Paul, MN	2,968,806	17%	Large	198,417	0.07	2	60%
Nashville, TN	1,231,311	25%	Medium	22,759	0.02	3	80%
Oklahoma City, OK	1,083,346	13%	Medium	23,954	0.02	3	75%
Salt Lake City, UT	1,333,914	24%	Large	159,869	0.12	3	70%
St. Louis, MO	2,603,607	4%	Large	105,999	0.04	3	70%

*Note: Does Not Include Belt/Loop Routes

¹⁴ Data included in Table 4 was collected from a variety of sources for which much of the data was reported at the “city” level; hence, the discussion describes the Indianapolis region.

The availability of four major U.S. interstate highways crossing the region positions Indianapolis as one of the better locations for trucking and courier services among the competitor regions examined (second only to Chicago and tied with Dallas-Fort Worth). This added benefit for companies permits a product to travel in virtually any direction and reach 67 percent of the U.S. population within two days. This added logistics advantage, in addition to Indianapolis's central U.S. location, offers companies a very attractive competitive advantage over other regions.

There has been a visible increase in the amount of warehouse and distribution space in the Indianapolis region, as evidenced by the number of "big boxes" being built in the region. Nevertheless, as a percentage of overall industrial real estate, this amount is equal to or lower than most of the competitor regions, although higher than the U.S. as a whole.

Indianapolis is more involved in warehousing and distribution functions than many parts of the U.S. However, the region also has a substantial number of large footprint manufacturers (e.g., Eli Lilly, automotive industry) as part of the overall industrial real estate mix, thereby reducing its warehouse and distribution percentage somewhat. Due to the State's "inventory tax," much of the Central Indiana region's warehouse space is involved in the storage and distribution of finished goods inventory. Since finished goods inventory may be stored exempt from the "inventory tax," and given the lower operating costs and availability of land, large footprint warehouses are developing that will not require substantial employment to operate them.

Regional Cluster Comparisons

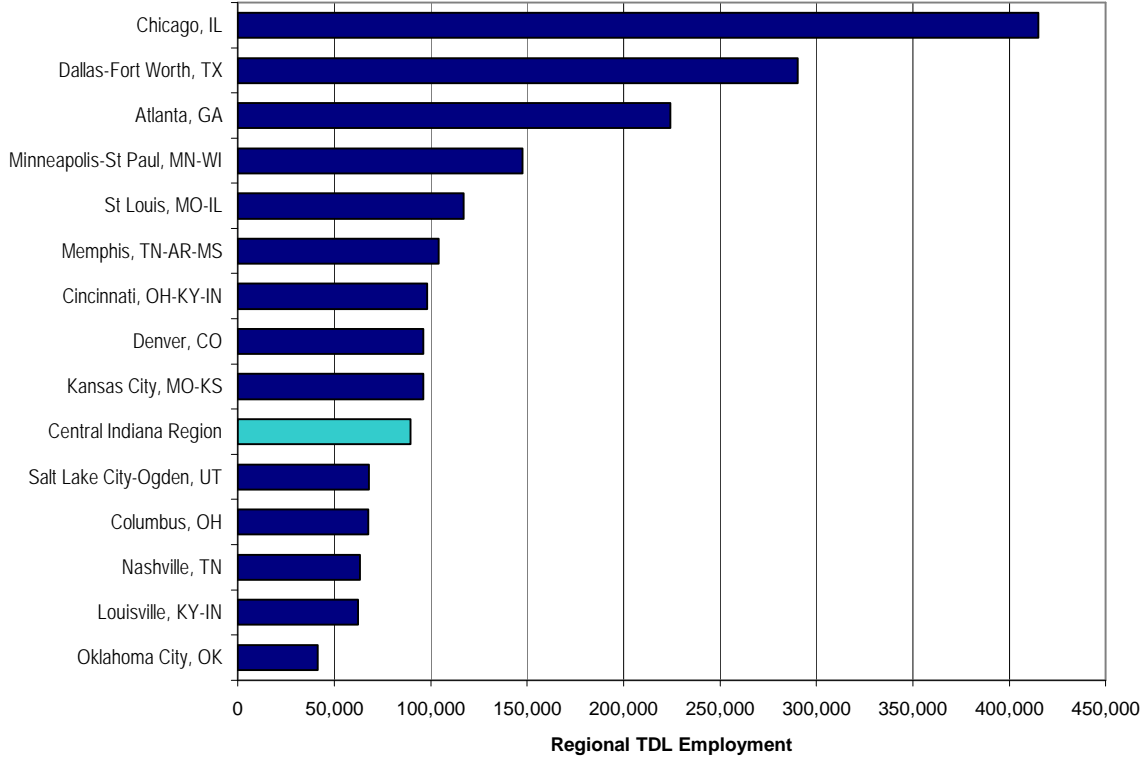
With approximately 90,000 employees in the Central Indiana transportation, distribution and logistics industry, the emerging cluster is competitive in employment size with other regions with logistics specializations. However, Central Indiana does not have a single dominant transportation, distribution, and logistics employer, suggesting that the regional industry is composed of numerous smaller companies rather than one specific "anchor" powerhouse. In addition to these smaller TDL firms, Central Indiana has a substantial, though difficult to quantify, "embedded" TDL workforce within its larger manufacturers forming what could be considered a critical mass of cluster-related employment.

By not relying on any one particular company, the Central Indiana region is growing a diverse and solid base from which to build. It is also interesting to compare Central Indiana's industry employment to that of other major logistics hubs in Louisville, Nashville and Columbus. Despite the UPS headquarters location in Louisville, Central Indiana's total TDL employment remains ahead of Louisville and four other major TDL locations.

There are other advantages of this diversity of companies within the industry, compared with that of other single company dominated locales. For example, while Memphis has more than 100,000 workers in the TDL industry, approximately 40,000 are FedEx employees. Any FedEx specific difficulty will have a dramatic impact on the overall industry in Memphis. With less reliance on any one particular operation, Central Indiana has been able to insulate itself from sudden and major economic repercussions contingent on the success of any single company. However, having an "anchor" TDL employer of this size can be an advantage as it also provides a strong industry-related regional

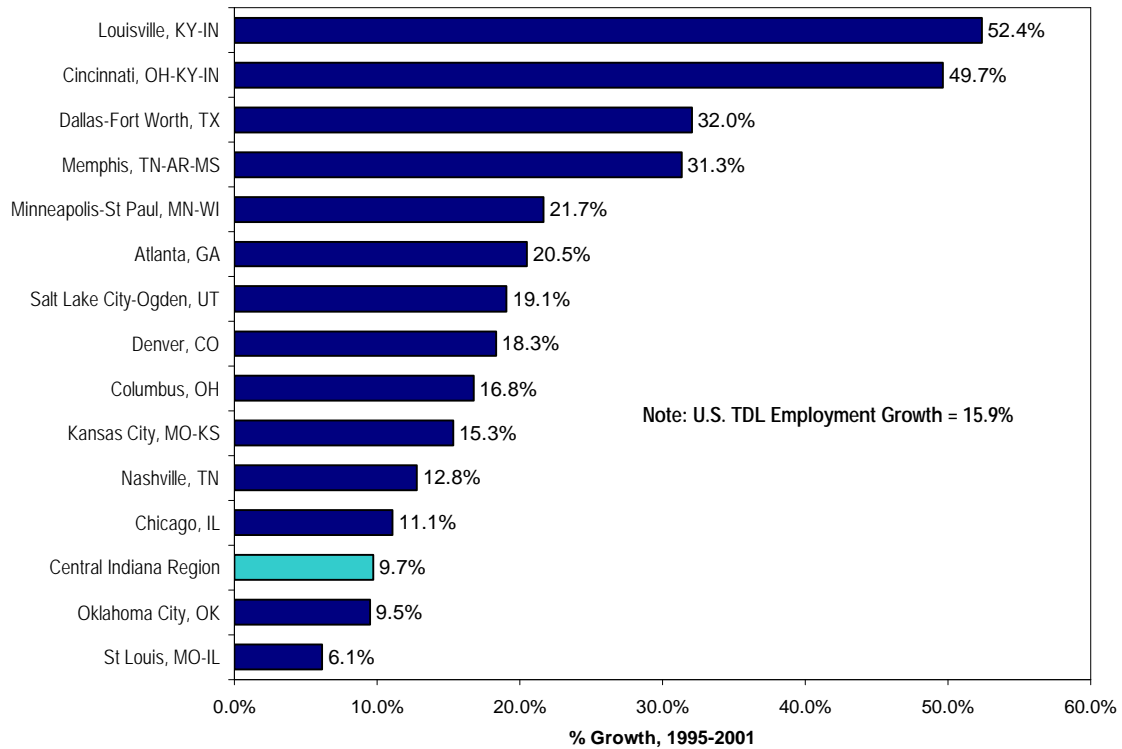
workforce base and provides the significant level of demand and clout needed to generate supportive services and infrastructure

Figure 7. Comparison of Transportation, Distribution, and Logistics Cluster Employment Among Competitor Regions, 2001.



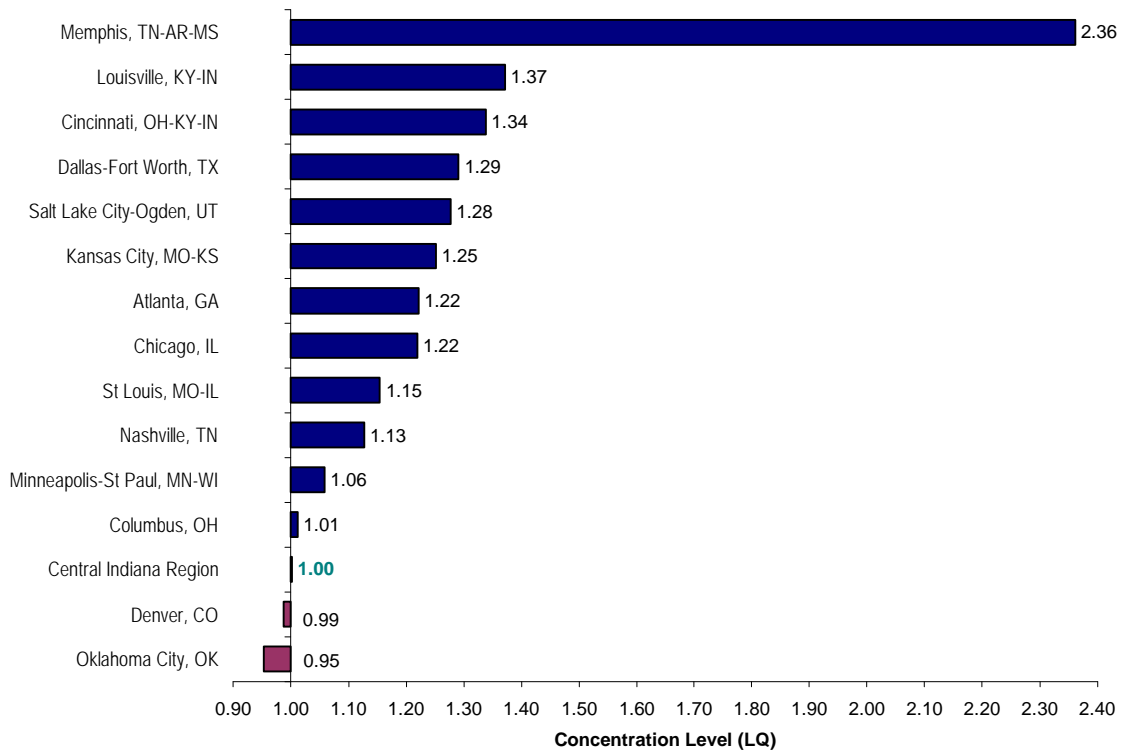
Perhaps more importantly, the national growth in the transportation, distribution and logistics industry grew 15.9 percent from 1995-2001 while the Central Indiana region grew at a rate of only 9.7 percent over the same timeframe. Despite Central Indiana’s concentration of employment in this industry versus that of competitor regions, its growth over this six year period has been weaker. Although Central Indiana usurped Oklahoma City and St. Louis, every other region grew faster than Central Indiana did—many over twice as fast. Again, the two major company hubs in Louisville and Memphis grew at rates of 52.4 percent and 31.3 percent respectively, due in large part to the same economic prosperity enjoyed by the nation as a whole, but also due to smaller 1995 cluster employment bases.

Figure 8. Comparison of Transportation, Distribution, and Logistics Cluster Employment Growth Among Competitor Regions, 1995-2001.



The following comparison of regional employment location quotients, illustrate the high concentration of most of the competitor regions in the transportation, distribution, and logistics cluster compared with the remainder of the country. An LQ of 1.00, in Figure 9, signifies that a region is as concentrated in the transportation, distribution and logistics cluster as the rest of the country – which appears to be the case with Central Indiana. With an LQ of 1.00, Central Indiana currently does not possess a significant TDL cluster and with regional industry employment growth lagging behind national growth, even this level of concentration is in jeopardy for the future.

Figure 9. Comparison of Transportation, Distribution, and Logistics Cluster Location Quotients Among Competitor Regions, Based on 2001 Employment.



REGIONAL CLUSTER SUPPORT ACTIVITIES

Given the substantial size, growth, and concentration of the transportation, distribution, and logistics cluster in these competitor regions, the Battelle team examined the “character” of these regions to discern what types of TDL-specific supportive elements exist. The following describes significant and unique elements across three broad categories that Central Indiana may wish to consider in building the region’s emerging transportation, distribution, and logistics cluster.

Regional Marketing and Economic Development

Efforts describe unique context and approaches to regional economic development and attraction marketing, where the importance and strength of the region’s transportation, distribution, and logistics is a major emphasis of the effort.

Atlanta, Georgia MSA

?? Due to its emerging notoriety as a major logistics hub, Atlanta has landed the North American Warehousing & Distribution Exposition & Conference (NAWDEC) through 2003.

Cincinnati, Ohio-Kentucky-Indiana MSA

?? The Cincinnati region, through the Cincinnati Metropolitan Growth Alliance and the Greater Cincinnati Chamber of Commerce, recently completed a new framework for

conceptualizing the region that focuses on the social and economic interconnectedness of the region regardless of political or state boundaries. Among the various layers of analysis is an emphasis on Cincinnati's role in the "super region" transportation network—as the largest (using their definition) transportation node in a regional network that includes Columbus, Ohio; Louisville, Kentucky; and Indianapolis, Indiana.

Columbus, Ohio MSA

?? The Greater Columbus Inland Port Commission (GCIP), formed in 1992, is a group of local businesses, government agencies, and economic development organizations focused on the transportation, distribution, and logistics cluster by helping companies move freight faster, cheaper, and more efficiently. The GCIP advocates on issues such as extended rail access and highway development, and builds national and international awareness of Greater Columbus' logistical advantages. Through committees, the GCIP is involved in the use of information technologies by the TDL industry, promoting and enhancing the quality of the region's TDL workforce, and works to improve the region's infrastructure resources.

Dallas-Fort Worth Texas MSA(s)

?? The North Texas Commission (NTC), a non-profit group whose purpose is to enhance and promote the economic vitality and quality of life of the Dallas-Fort Worth Metroplex, has taken an active role in the marketing and development of the Dallas-Fort Worth transportation, distribution, and logistics cluster. Their efforts include national and international marketing efforts (including a specialized 20 page logistics brochure), support for infrastructure improvements, working with area educational institutions to make available additional logistics education courses and seminars, helping to organize, promote, and provide scholarships to the biannual North Texas Logistics Forum, working with the region's Convention and Visitors Bureaus to attract logistics trade shows and expos, and assisting the staff at Dallas-Fort Worth International Airport with the formation of a new chapter of the Air Cargo Association in the region.

Memphis, Tennessee-Arkansas-Mississippi MSA

?? In July 2001, the Memphis Area Chamber of Commerce released the results of a study of the Greater Memphis area and its connections to the surrounding region. As part of this effort, an inventory of transportation and distribution assets was developed. Additionally, recommendations were made to develop an integrated multi-modal super-hub linking the Memphis International Airport with trucking, rail, and water transport systems, develop a Regional Logistics Authority, create an integrated metro transportation strategy linking both sides of the Mississippi, and building an earthquake resistant bridge across the Mississippi River.

?? The availability of the FedEx hub is a major factor in attracting companies to the region, as this key anchor has allowed Memphis to attain a critical mass of logistics and distribution firms. This critical mass is described by the Memphis Area Chamber of Commerce in a full-page advertisement, in publications such as Inbound Logistics magazine, touting Memphis as "North America's Logistics Center." The ad describes

the infrastructure availability (e.g., world's largest cargo airport and new World Runway; inland river port; five Class I intermodal railroads). Interestingly, the FedEx hub itself is not mentioned.

St. Louis, Missouri-Illinois MSA

?? Recently, the St. Louis Regional Chamber and Growth Association (RCGA) was active in recruiting Aesculap, Inc. from San Francisco to St. Louis by touting its strengths in logistics and distribution. Aesculap, Inc. is growing and has customers around the country, making the St. Louis location in the middle of the country even more attractive. In addition, the company saw the “high-quality, well-educated work force and the affordable, available, and various types of commercial space” as advantages to lowering shipping costs and improving customer response time.

Regional Infrastructure and Real Estate Development

Efforts describe unique initiatives and programs focused on specific improvements to the regional infrastructure allowing a region to grow and develop its transportation, distribution, and logistics cluster.

Columbus, Ohio MSA

?? Due to both Norfolk Southern and CSX providing rail service to Greater Columbus with three intermodal ramps capable of handling 400,000 lifts annually, the region has developed as a natural container center concentration. It has more container lifts than any other city in the Midwest, except Chicago.

St. Louis, Missouri-Illinois MSA

?? Gateway Commerce Center, marketed as the “Midwest’s Premier Distribution and Business Community” is a large scale industrial park which combines standard truck and rail distribution facilities, and Foreign Trade Zone subzone status, with the adjoining Norfolk Southern Railroad’s Triple Crown Services bi-modal terminal. Facility (specializing in TOFC/piggy-back and road-railer services).

Regional Education and Workforce Development

Efforts describe unique initiatives and programs focused on improving both the skills and availability of workers for the transportation, distribution, and logistics cluster.

Atlanta, Georgia, MSA

?? Long renowned as one of the premier higher education institutions in the logistics field, Georgia Tech’s Logistics Institute continues to explore connections with industry. Recently, Manhattan Associates (an IT firm specializing in software for warehouses and distribution services) relocated to Atlanta. In order to ensure a strong flow of skilled workers into their operations, Manhattan Associates invested \$1.5 million to endow a chair in the Institute, sponsors faculty research, and pays for faculty sabbaticals to run in-house research projects. This level of interaction has helped attract numerous employees to Manhattan Associates, as 23 percent of their employees are Georgia Tech graduates.

Columbus, Ohio MSA

?? The Workforce Development staff at the Greater Columbus Chamber recently delivered a presentation on the IT/Logistics Career Academy, as well as some exciting opportunities for companies to institute internships in logistics, at the Greater Columbus Inland Port's quarterly meeting. The Chamber sponsors the IT/Logistics Career Academy as part of its Workforce Development initiative to ensure a labor supply in Greater Columbus that meets the needs of employers now and in the future.

Denver, Colorado MSA

?? The Delta Nu Alpha Professional organization has led the way in developing a statewide transportation and logistics initiative, initially identified by industry leaders and further developed into an educational project. Since then, three other organizations, The American Society of Transportation and Logistics, The Denver Transportation Club, and The Council of Logistics Management have adopted the program for their educational initiatives. Teachers have received certification and industry training in this field. The partnership crosses traditional 2+2+2 Tech Prep boundaries by linking the marketing program at the high school level, with the management degree at the community college with an area of concentration in logistics, to the Bachelor's degree in Intermodal Transportation at Denver University, and a potential link to the Master's Degree at Denver University.

?? The Denver Transportation Club is a non-profit Colorado corporation that represents the transportation industry on issues of public policy as it relates to the industry in the Denver region. Additionally, it sponsors numerous social events, offers advice to members seeking assistance with transportation related problems, distributes a Bi-monthly magazine regarding transportation issues and a calendar of events, networking opportunities and an employment job matching program. Most importantly, however, it offers educational services focusing attention on the logistics industry. It sponsors educational events and programs, including an annual Operation Stimulus conference, regular educational seminars for members, college and vocational transportation and logistics programs, and the DECA transportation program for area high schools. The DTC also underwrites a number of annual scholarships for Colorado college students pursuing careers in the field of transportation and logistics. The Club also contributes time, materials, money, and instructors in connection with numerous college credit-level courses in Transportation and Logistics through the Community College of Denver. Of course, the Club also takes on the added responsibility of representing the industry locally.

Louisville, Kentucky MSA

?? A few years ago, UPS had to consider leaving Louisville for another location based on significant space and labor constraints—UPS would require 2.7 million more square feet of space at the Airport facility as well as a new package distribution center with a total cost exceeding \$1.2 billion. In order to allow them to remain and expand in Louisville and meet the additional workforce demand, state and local officials teamed up with UPS to form the Metropolitan College project offering workers the opportunity to attend one of three local colleges free of charge. In addition to the

tuition reimbursement, students received a book allowance, housing stipend, signing bonus, the same benefits package offered to other UPS employees, and \$8.50/hour for their shift work. The costs of the program are split among the schools, the state and local governments, and UPS itself.

Minneapolis, Minnesota MSA

?? The College of Management at Metropolitan State University offers an extremely comprehensive purchasing and logistics and supply chain program. The faculty is comprised of a team of industry-recognized experts that brings a thorough understanding of what it takes to contribute to the success of the enterprise. All courses are offered in classroom and on Internet at both undergraduate and graduate levels. This additional benefit of Internet accessibility adds to the University's commitment to staying on the cutting edge of developments in the industry.

SUMMARY

This assessment of various competitor region's characteristics demonstrates that Central Indiana, though a successful transportation, distribution, and logistics industry region, still has a long way to go to become one the nation's premier TDL regions. However, by examining the supporting infrastructure that these regions are developing, Central Indiana may begin to determine the requisite supporting infrastructure needed to develop the emerging transportation, distribution, and logistics cluster in the region.

Section 4. Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis

INTRODUCTION

The Battelle team attempted to identify the strengths, weaknesses, opportunities, and threats facing the Central Indiana transportation, distribution, and logistics cluster. This was accomplished through numerous in-person and telephone interviews with cluster firms, economic and real estate development organizations, and university faculty. Additionally, an industry focus group session was held to review a draft of this analysis. To supplement these discussions the team also reviewed other studies and reports and reviewed additional secondary data.

In preparing their business plans, businesses undertake a similar SWOT analysis that identifies their internal strengths and weaknesses, takes into account external factors, including markets and opportunities, and adverse events and threats as well. Central Indiana, as defined in an earlier section, is examined in this analysis much as a business would examine itself.¹⁵

It should be noted that, in some cases, perceptions are included in this SWOT that, however accurate, reflect the climate within which progress can be made in growing and developing the transportation, distribution, and logistics cluster.

STRENGTHS

Strengths are factors internal to the region upon which to build and strengthen its emerging industry clusters:

Location, location, location.

The Central Indiana region is geographically located to reach approximately 67 percent of the U.S. population in a one-day, two driver truck trip. Additionally, Indianapolis provides a unique node linking east-west interstates with the proposed NAFTA Corridor/I-69 Extension.

Excellent highway access.

Within the Central Indiana region is the convergence of four major U.S. interstates (I-70, I-65, I-74, and I-69) into the I-465 beltway providing for seven arteries into and out of the greater Indianapolis region. State four-lane divided highways also provide additional road capacity to the network. However, the ability to handle rush-hour traffic on these arteries is an important concern.

¹⁵ Unlike traditional strategic plans, we discuss the pieces of the SWOT analysis in the order of Strengths, Weaknesses, Threats, and Opportunities as it is often these opportunities that lead directly into Strategies and Actions for the region to pursue.

Significant air freight capabilities.

The Central Indiana region is home to the second largest FedEx hub in the world (second only to the Memphis headquarters). With this and other activities, the Indianapolis International Airport (IIA) is the 3rd largest U.S. airport in terms of freight and mail revenue-tons in the country, 8th largest in terms of total cargo tonnage, and the fastest growing (12.4 percent) in terms of tonnage between 1999 and 2000. Worldwide, IAA ranks 17th in terms of total cargo tonnage. Additionally, interviewees felt the operation of the airport by BAA (private airport operations corporation) was an overall strength in terms of getting things accomplished at the airport.

Foreign Trade Zone program.

The Central Indiana region includes the Indianapolis Foreign Trade Zone (FTZ). The FTZ, based at the Indianapolis International Airport, also includes numerous subzones located throughout the Central Indiana region – typically allowing specific manufacturers to take advantage of the FTZ benefits. However, given the programs success, little capability currently exists for expansion, as most airport based property within the FTZ is currently occupied.

Many locally headquartered firms are national leaders in the industry.

Central Indiana headquartered trucking company Celadon Trucking is one of the 10 largest trucking companies in the country. Liquid Transport Corporation is the 12th largest tank truck company in the country. Burlington Motor Carriers, Celadon Trucking, and Vitran Express were named to *Inbound Logistics* magazine's "Top 100 Motor Carriers" in September 2001, and both Langham Transport Services and MegaSys were named to the magazine's "Top 100 Third Party Logistics Providers" (3PLs) in July 2001.

There exists some regional "cluster" working relationships—as both service "supplier" to local industry and in working relationships among members.

Part of the formal definition of an industry cluster includes significant supplier-customer transactions that support and self-reinforce the ability of the cluster to exist. Within the Central Indiana region, many of the interviewees cited working relationships with other Central Indiana transportation, distribution, and logistics industry firms, as well as important links to the region's manufacturing base.

Significant concentration in the trucking and courier services subsector.

The Central Indiana region includes over 1,000 establishments providing direct trucking services, including courier, LTL and full load operations. These firms account for close to 21,000 employees in 2001; increasing by almost 14 percent since 1995.

Business-friendly government.

Industry representatives cited recent positive relationships, experiences, and accessibility with both the City of Indianapolis government, as well as State government, and found in the past year relationships improving considerably with the City.

Costs of doing business and costs of living are low.

Many interviewees cited the lower costs of the region (compared to other places they have worked, other regions in which they operate, or their knowledge of competing regions) as a key strength of the Central Indiana region. Also, the strong Midwest work ethic was often cited as a strength for the region.

Purdue University's strengths in research related to supply chain management and "advanced" or "higher end" logistics.

Interviewees recognized the strength and capabilities of Purdue University in the supply chain management arena. However, there was limited knowledge of the merging of these research efforts into the Laboratory for Extended Enterprises at Purdue (LEEAP) effort. Additionally, interviewees felt that there are many operational issues that higher education could assist with but that these industry challenges were less academically interesting, and hence find it difficult to make contact and obtain assistance.

WEAKNESSES

These are factors internal to the region that limit the region's cluster growth:

Limited industry cohesiveness, linkages, and networking among firms in the region.

While the Central Indiana region's life sciences, information technology, and manufacturing industries have found value in working together, members of the transportation, distribution, and logistics industry currently have limited interactions among themselves. With the exception of the Indianapolis chapter of the Council for Logistics Management (CLM), most industry groups are mode specific (e.g., Indiana Motor Trucking Association) and hence are not well organized to undertake, develop, and promote a cross-cutting "cluster-based" effort that links several industry segments together.

Negative public perception based on a narrow view of the transportation, distribution, and logistics industry in Central Indiana.

Interviewees felt that perception of the overall industry was driven primarily by a negative perception of the trucking industry—in terms of both skill level and attributes of drivers and the traffic congestion caused on the numerous interstates. It was agreed that the public had little real understanding or appreciation of emerging cluster's role in the Central Indiana economy. Nor is there much understanding of its characteristics beyond trucking.

Lacking in both number and skills of employees, with employee turnover a problem in some subsectors.

While the recent economic slowdown has eased the situation somewhat, most interviewees were concerned at the lack of suitable employment candidates for their operations. This was felt in terms of general suitability, basic education, and work ethic at the lower end skill requirements and the overall lack of skilled and experienced

candidates for positions requiring higher skill levels. Important and unique to this industry is the concern over the lack of experienced truck drivers. Additionally, employee turnover is seen as a problem by some interviewees, most particularly those with warehouse operations.

Little connection and limited knowledge and understanding between industry and higher education.

Most interviewees have little, if any, connection with Central Indiana's institutions of higher education, though some provided opportunities for student field trips. Most felt higher education efforts are too academic to meet their needs. At the same time there appears to be limited knowledge of existing educational efforts aimed at the transportation, distribution, and logistics industry, although some industry leaders are currently working the Kelley School of Business at IUPUI to address some of their needs.

No large, “flagship” or “anchor” transportation, distribution, and logistics employer in Central Indiana.

While many well known transportation, distribution, and logistics companies have substantial operations and headquarters in Central Indiana (e.g. FedEx, Celadon Trucking, Burlington Motor Freight) the region lacks a large, flagship TDL employer that by their sheer size command a level of attention and respect for their role in economy of the region (e.g., FedEx in Memphis, UPS in Louisville, BNSF Railroad in Fort Worth).

Newer information technologies and e-logistics not a driving factor in Central Indiana operations or as the basis for regional firms.

Many of Central Indiana's distribution centers are using some form of off-the-shelf or internally developed warehouse management system. While there are a few examples of Central Indiana firms becoming more sophisticated in their use of technologies, most do not see the technologies significantly driving their operations. Most firms will only engage in proven technologies acting as “fast followers” rather than leaders in implementing new technologies. Additionally, there are only a handful of IT firms or other firms in the region specializing in technology areas relevant to the transportation, distribution, and logistics industry.

Few local TDL industry consultants.

Most interviewees cited a lack of availability within the region of operational or internal infrastructure assistance for the transportation, distribution, and logistics industry. Of those that did use such services (e.g., for WMS enhancements; other IT-related investments; warehouse layout modifications), most used firms or consultants from outside the Central Indiana region.

Inventory tax.

Indiana's inventory tax (actually personal property tax on inventory) is seen as a significant financial burden and barrier to the growth of this emerging cluster, according to those interviewed. While various attempts have been made at the State level to improve the situation, little long-term progress has been made. Indiana is one of only 10

states still imposing this type of tax. Additionally, beyond the financial burden, the interviewees felt that the eligibility requirements for the “Interstate Inventory Tax Exception” (e.g., if the inventory is a finished good in original packaging) contributes to the low value-added nature of the warehousing functions in Central Indiana. This tax jeopardizes the growth of the existing TDL and manufacturing industries as well as the opportunity to attract such companies to the region.

Lack of southwest continuation of I-69.

Many interviewees indicated that an extension of I-69 to the southwest, as part of the proposed NAFTA Corridor, would be desirable. However, most stated that the lack of such a route to date has not been an undue hindrance in their current operations, in that the destinations that are sought in the southwesterly direction can still be reached effectively through alternative routes, and there is concern over the opportunity costs both positive and negative regarding the development of this route.

Lack of direct flights out of Indianapolis International Airport.

The lack of direct flights impacts the transportation, distribution, and logistics in two ways. First, this lack of flights increases time and costs for in-person business transactions, an important issue when competing with other more sizeable hubs. Second, the lack of flights limits the number of lifts and thereby the amount of under-belly freight that can be sent out on passenger aircraft. Additionally, the use of smaller “regional jets” as part of a feeder system limits the amount of belly space available for cargo.

THREATS

Threats are outside factors and forces, typically beyond the control of the region, that threaten the underlying vitality and potential of the emerging Central Indiana transportation, distribution, and logistics cluster. Key threats identified included:

Pressures on the entire transportation system due to terrorist attack and response.

The terrorist attacks in New York City and Washington D.C. will have a far reaching impact on the entire U.S. and global transportation system and an obvious impact on the transportation, distribution, and logistics industry. Security, though already tight regarding air freight services, will be increased. Additionally, with the overall reduction in numbers of flights and the bankruptcy of some carriers, the number of lifts available to move air freight will definitely be reduced in the short-run. Some of this overall air freight reduction, however, may be picked up through an increased reliance on trucking and courier services to move freight within the U.S.

Economic slowdown and declines in technology sector.

The overall slowdown of the U.S. economy negatively impacts the transportation, distribution, and logistics industry due to declines in demand for its services. Of note is the additional impact that declines in the technology sector have had, where decreasing technology purchases have caused a decline in the shipment of higher value products via air freight.

Competitor regions are strongly developing and supporting their transportation, distribution, and logistics clusters.

Many of the regions that are likely competitors for transportation, distribution, and logistics industry development have taken a much more proactive response to grow and support the industry. For example, a Columbus, Ohio initiative called the Greater Columbus Inland Port, is involved in numerous activities including actively marketing the region as a transportation, distribution, and logistics hub and working with industry to develop an IT/Logistics Career Academy. Cincinnati is working on a Metro Region economic strategy building on its transportation assets as one of its principal strengths. Memphis actively markets its region as a prime transportation, distribution, and logistics location in trade journals and economic development publications.

Continual cost pressures.

The cost of moving goods has not dropped as fast as the cost of producing goods has, making transportation, distribution, and logistics costs an increasingly larger share of final product costs. Pressure to reduce these costs will keep most wages low in the industry in the short-run but will ultimately force the increased use of technology to increase productivity and through-put in the long-run.

Potential declines in planning and logistics activities within Central Indiana.

Many interviewees felt that the true impact of technology on the transportation, distribution, and logistics industry would be most felt in the transport planning and logistics roles. Given both the increase in “big box” distribution centers and the decline in the number of corporate headquarters in the region, there is concern that firms outside the region will increasingly perform these logistics and “planning” roles.

Costs of “time zone” and “daylight savings time” issue.

Many interviewees described significant costs involved and substantial employee turnover due to operational adjustments required during times when Indiana was “out of sync” with parts of the country.

Changing distribution patterns of population growth and characteristics of the workforce in the region.

While the Central Indiana region as a whole has exceeded the State and U.S. in terms of population growth over the 1995 to 2000 period, the changing dynamics of this population growth has impacted the workforce of the transportation, distribution, and logistics industry. Much of this regional population growth has occurred outside the I-465 beltway. Additionally, much of this new population consists of recent immigrants, most notably a substantial increase in the Hispanic population. This had led to barriers in both getting new workers to the company locations and language-based issues.

Lack of water transportation subsector may inhibit “global-oriented” growth.

Global transportation is dominated by multi-modal container-based efforts. This year containers became the largest multi-modal function carried out by U.S. railroads, surpassing piggybacking of truck trailers for the first time. With the lack of both a

traditional port and substantial container facilities in the region, Central Indiana runs the risk of being bypassed by the “containerization” of global commerce.

Future of rail service to the Central Indiana region.

By most accounts, rail service to the Central Indiana region is lacking in both physical infrastructure and competition, with a few interviewees citing the Conrail split (with CSX taking over most Central Indiana operations) as part of the problem. While CSX does provide some intermodal service out of the Avon yard, most intermodal connection and traffic bypasses the Central Indiana region for CSX’s Evansville intermodal operations. Indianapolis is not currently a city served by the CSX Intermodal NAFTA Express Shipments service. With the exception of bulk shipments, this lack of strong rail service has not hindered most transportation, distribution, and logistics companies. Typically, costs of having to truck freight to Chicago is more than made up for in cheaper rail connections out of the Chicago rail hub.

OPPORTUNITIES

Opportunities deal with factors external to the region upon which to take advantage to further develop the region’s emerging transportation, distribution, and logistics cluster:

Build upon dual-mode strengths of the region.

Central Indiana has long been seen as an important location for the trucking subsector. The significant presence of FedEx further increases the spotlight put on the region as a transportation, distribution, and logistics center. Efforts to package and market these joint capabilities will be important for long-term growth. Airport expansion plans, including both highway connectivity and the Midfield Terminal, will provide additional opportunities to build upon these strengths as the highway-airport interconnection becomes increasingly important to long-term success of the industry. Recent developments in freight aircraft also make it possible for larger aircraft to easily reach Central Indiana from Asia and Europe to take further advantage of the Indianapolis International Airport.

Pursue more active ties between industry and the education community.

Not unlike most industry sectors, the transportation, distribution, and logistics industry includes jobs that cover a broad range of skill and experience requirements. Central Indiana possesses a myriad of education resources capable of addressing this continuum of skill requirements—from Goodwill Industries and similar organizations at the semi-skilled level to Purdue University and IUPUI at the Bachelor’s degree level and beyond. Additionally, beyond workforce development, higher education institutions could play a much more active role in the research and development of new technologies relevant to the region’s TDL industry and assist in the implementation of these technologies.

Build on other existing and emerging cluster strengths relative to the emerging transportation, distribution, and logistics cluster.

Many of Central Indiana’s existing clusters have substantial embedded distribution and logistics functions (e.g., Eli Lilly, Cummins, Big 3). Given the strengths in these other clusters, Central Indiana should work to capture an increasing share of the distribution and logistics functions of these companies, as well as work to capture additional levels of the logistics planning function.

Build upon important presence of Federal Express to develop “anchor” TDL firm.

The emerging Central Indiana transportation, distribution, and logistics cluster has the important credential of having the second largest Federal Express hub. With Federal Express’ plans for future growth, operations at the Indianapolis hub are expected to continue to grow. With Federal Express’ size, sophistication, market presence, and global reach, the Central Indiana region should assist as much as possible in building the size, capacity, and employment base of Federal Express in the region, enabling it to play an “anchor” role in the emerging TDL cluster.

SUMMARY

This SWOT analysis demonstrates that Central Indiana has a number of strengths from which to position itself as a leading region in the transportation, distribution, and logistics industry. It also identifies the threats and weaknesses that need to be addressed and overcome in order to achieve this leadership level. The next section identifies the strategies based on this SWOT analysis.

Section 5. Strategies and Actions to Develop Central Indiana’s Emerging Transportation, Distribution, and Logistics Cluster

INTRODUCTION

Unlike the life sciences and advanced manufacturing clusters previously examined in the Central Indiana region, the transportation, distribution, and logistics cluster, while obviously a long-standing element of the regional economy, is still, like the region’s information technology industry, in its infancy as a true industry cluster, and can only be considered a potentially emerging cluster.

Given this status, the objectives and methods of further growing and developing the cluster will consist of somewhat more “higher level” strategies than many of the specific strategies and actions developed for previous clusters.

VISION AND MISSION

Given the early-stage of “cluster” development within the Central Indiana transportation, distribution, and logistics industry, defining a vision and mission is somewhat difficult, yet highly desirable to help shape the progression of this potentially emerging cluster over the coming decade. A suggested vision is for Central Indiana to become:

A leading mid-American center for transportation, distribution, and logistics.

Ten years from now outsiders to the region should recognize Central Indiana for the following characteristics:

Central Indiana is a leading and innovative center with strong growth in the value-added portions of the transportation, distribution, and logistics industry emphasizing efficient, timely, and cost effective services increasingly enhanced through the development and application of new technologies. This emerging role has been enhanced through supporting and assisting the region’s existing and emerging clusters in manufacturing, life sciences, and information technologies, as well as becoming a strong center for the transportation, distribution, and logistics industry nationally.

STRATEGIES

The realization of this vision and the achievement of this mission will require a number of strategies and actions for Central Indiana to further strengthen and develop its emerging transportation, distribution, and logistics cluster. Three specific strategies include:

- ?? *Develop and improve the cohesiveness of the existing Central Indiana transportation, distribution, and logistics industry.*
- ?? *Improve the connections between the transportation, distribution, and logistics industry and regional higher education.*
- ?? *Work to improve the operating environment for Central Indiana transportation, distribution, and logistics firms.*

These three strategies are discussed in the pages that follow. In addition to these specific transportation, distribution, and logistics strategies, many of the strategies and actions developed for Central Indiana's other industry clusters (especially those for information technology and advanced manufacturing and those related to improving both the entrepreneurial and business environment and the linkages between industry and academia) have relevance and will support and enhance these specific efforts.¹⁶

There are 10 actions proposed within the three strategies. For each action item, we identify the lead organization(s), the key partners, the resources needed to implement the action, and the action's priority and general timeframe for implementation.¹⁷ Of these 10 actions, two require immediate action, six require action in the short-term, and two require action in the mid- to long-term.

STRATEGY 1: FURTHER DEVELOP AND IMPROVE THE COHESIVENESS OF THE EMERGING CENTRAL INDIANA TRANSPORTATION, DISTRIBUTION, AND LOGISTICS CLUSTER

Background and Strategy Overview

Throughout discussions with representatives of the transportation, distribution, and logistics industry, it became apparent that while many of the precursor activities to becoming a true cluster were in place, the industry cluster itself is still very early in its infancy—as evidenced by companies only recently beginning to think of other members of the “cluster” in strategic operational terms.

¹⁶ Please see “**A Prospectus for Economic Clusters: Advanced Manufacturing, Life Sciences, and Information Technology -- Nurturing Central Indiana's Pillar Industries for 21st Century Midwestern Preeminence.**” Prepared for the Central Indiana Corporate Partnership by Battelle Memorial Institute, December 2000.

¹⁷ Priority/Time Frame is broken into three categories: immediate, which means over the next 18 months; short-term, which means the next 18-36 months; and mid- to long-term, which is the next 36-60 months.

One inherent difficulty with the transportation, distribution, and logistics cluster coming into its own is that competition among member companies, due to the nature of the transportation business, is often more intense and much closer to the surface than in other identified clusters in Central Indiana. This overtly competitive nature makes the formative process of the cluster more difficult and typically a more lengthy process. An additional difficulty identified is an overall negative public perception of the industry or subsector elements of the industry.

This perception is limiting along many fronts:

- ?? While the various high tech clusters are portrayed and seen in a positive light by the media, general public, and government officials, the TDL industry struggles to gain similar acceptance even though it is a significant part of the Central Indiana regional economy and similar to many manufacturers in terms of working environment and operations.
- ?? Workforce issues, while a challenge for most industries, is further compounded by these negative perceptions of the industry, as even “white collar” positions are often difficult to fill. These perceptions also make it difficult to move into a more knowledge-intensive mode as students look to other industries for their career path. This in turn makes it difficult to find higher level “logistics skills” within recent graduates, limiting companies’ abilities to move “up-tech,” and hence, further reinforcing the lower skill and lower wage reputation of the industry.

To overcome these difficulties, a concerted effort must be mounted by the Central Indiana transportation, distribution, and logistics industry leaders to improve upon this perception by developing its image as a true multi-faceted cluster—an image that is truly greater than the sum of its parts. This cluster development process also requires an improved ability to “network” on a professional and corporate level.

Currently, only the Indianapolis chapter of the Council for Logistics Management (CLM) provides some level of cross-industry or cross-subsector networking. However, the current capabilities of CLM to meet these higher-level needs are limited by the fact that it is a completely volunteer organization, with limited financial resources.

Action 1. Further develop industry association(s) to become advocates for the emerging transportation, distribution, and logistics cluster.

Fostering the emergence of an industry cluster is a significant undertaking. The level of support and staffing maintained by the lead organizations for the life sciences (the Indiana Health Industry Forum) and information technology (the Indiana Information Technology Association) provides evidence of this fact. Both organizations operate with a full time Executive Director and varying levels of staff support.

Performing this function for the transportation, distribution, and logistics industry as a whole could be an even more substantial undertaking—as both geography (there are pockets of TDL firms in other regions of Indiana, e.g., Fort Wayne, Evansville, Gary) and the existence of many statewide organizations (e.g., Council for Logistics Management, Indiana Motor Trucking Association, Indiana Warehousemen’s Association, International Society of Logistics, etc.) may provide barriers to implementation. This latter point leads

to the conclusion that initiating yet another organization to focus on the cluster as a whole may meet with limited success.

However, throughout the Battelle team’s interviews and discussions, only one organization was mentioned with frequency across the broad spectrum of participants and subsectors—the Council for Logistics Management. This group has attracted a broad-based membership including industry and higher education, from customers to service providers. However, as discussed earlier the CLM is a chapter of a national organization and operates locally on a completely volunteer basis.

This action requires a further exploration of the role that CLM could play in organizing the Central Indiana transportation, distribution, and logistics cluster, providing longer term proactive support for its development, and acting as a public and, if necessary, political advocate for cluster. In order to provide such efforts, an increase in the financial resources available to CLM to hire a full time “director” for the Indianapolis branch is required. If the charter and mandate of the national umbrella CLM organization will not allow such a function, then the option of establishing a separate distinct organization (with strong programmatic ties to CLM and other organizations) should be explored.

Regardless of the organizational entity, one area that needs specific attention is the more fulsome career networking experience. Interviewees described limited access for mid-level managers and technical staff to come together to discuss issues of common importance (e.g., issues regarding implementing warehouse management systems). Similarly, while students are welcome within CLM and other organizations, involvement has been limited to date (though much of this student issue is related to the distance of Purdue in West Lafayette, from much of the industry in and around Marion County).

Partners	?? CLM or equivalent “cluster organization” needs to prepare short proposal for funding for permanent staff
Resources Required	?? Seed funding of \$200,000-\$250,000 on declining funding basis over three years
Priority/Time Frame	?? Immediate

Action 2. Develop cohesive image and improve marketing efforts for both internal and external consumption.

Developing a cohesive image for the emerging Central Indiana transportation, distribution, and logistics cluster is more than coming up with a slogan, logo, and marketing materials (though these may ultimately be tools upon which to portray and relay this image). Developing this image requires a much broader realization within the cluster that there are benefits that can be accrued to individual corporate members through collective actions. Part of this image development requires a thorough understanding of the niche (or small number of niches) that the Central Indiana cluster can develop further and become well known for. While this prospectus provides a base level understanding of these potential niches, cluster representatives themselves need to further explore and define those niches that truly make sense for the long-term growth and sustainability of the cluster in Central Indiana. For example, while obviously the Central Indiana region offers lower costs of operations than many of the country’s

transportation, distribution, and logistics hubs, is this “low cost” niche the only one the region’s cluster wants to portray?

Once these current (and potential) niches are identified, Central Indiana needs to develop a cohesive and directed marketing effort to sell the message. This marketing effort must be multi-faceted in its approach—directed internally to an Indiana audience and externally to U.S. and global operations and customers. The internal message should strive to reveal the true positives of the cluster in terms of employment base, role in the regional economy, and potential career avenues. The external message should describe to potential customers (and companies willing to relocate to or establish a branch or regional presence) how firms in the Central Indiana cluster provide high-value-added and sophisticated services while still offering a lower-cost operating environment.

In short, a full strategic plan for this emerging cluster should be developed, undertaken in conjunction with the industry association proposed in the previous action item. This plan should explore and validate the specific niches that the emerging Central Indiana transportation, distribution, and logistics cluster could pursue.

Partners	?? CLM or another similar organization
Resources Required	?? \$50,000-\$75,000 to develop strategic plan
Priority/Time Frame	?? Short-term (after Action 1 is initiated)

STRATEGY 2: IMPROVE THE CONNECTIONS BETWEEN THE EMERGING TRANSPORTATION, DISTRIBUTION, AND LOGISTICS CLUSTER AND REGIONAL HIGHER EDUCATION.

Background and Strategy Overview

Due to its locational advantages and connectivity, the Central Indiana’s transportation, distribution, and logistics firms could continue to thrive in many respects. However, this becomes increasingly difficult as competitor firms are able to provide higher value-added services through the implementation of knowledge-based or technical solutions. To remain competitive, Central Indiana’s TDL firms will require an increasing level of sophistication—gained through improved connections to the region’s higher education institutions as a source of both an educated and skilled workforce and technical advancements.

While no Central Indiana college or university has a nationally-recognized transportation or logistics program such as the Material and Logistics Management program at Michigan State University or the Logistics Management program at Georgia Tech, most of the institutions in the region offer some relevant coursework and a few have program offerings specifically directed toward the transportation, distribution, and logistics field—though most industry representatives were completely unaware of their existence. For example:

IUPUI

- ?? Offers a Bachelor's degree in Business with a three-course concentration in Marketing and Distribution Management, through the Kelley School of Business, designed to prepare students for careers in the field of transportation and logistics. The curriculum focuses on the role that distribution and transportation plays in making a company profitable by making goods available in a timely manner. The courses touch on subjects including distribution channels, rate negotiations and rate making, transportation regulation, transportation economics and public policy, customer service standards, and other topics.
- ?? The Kelley School of Business hosts the annual L.L. Waters Indiana Transportation/Logistics Conference. This conference gives transportation and logistics management companies across the nation an opportunity to interact with students, professors, and other industry members while learning about the latest developments in the field.

IVY TECH

- ?? Offers a two-year Associate's degree in Logistics Management within its Business Administration program.
- ?? Has a Logistics Management Career Program (continuing education) that includes coursework in Supply Chain Management, Planning and Operating the Logistics Systems, and Advanced Topics in Logistics Management.

PURDUE

- ?? Offers a Bachelor's degree in Industrial Distribution giving students a background in industrial technology, distribution management, and business management. The coursework is geared toward effective distribution management policies with courses in warehouse and inventory control, distribution management, logistics and supply chain management as well as other business courses. Currently this program is highly focused on preparing individuals to work as sales engineers for larger manufacturers that operate distribution networks (e.g., Caterpillar, Cummins, Big 3).
- ?? The Krannert School of Business is becoming increasingly involved in logistics and supply chain management through their own efforts, as well as those of industry. Perhaps no industry recognizes the importance of effective supply chain and logistics management more than the automotive industry. Ford Motor Company recognized this in 1998 when it gave the majority of its \$700,000 gift to the School of Management and the Krannert Graduate School of Management for the study of supply chain and logistics management. A total of \$250,000, or almost 36 percent of their donation, was earmarked for improving logistics management at the University.¹⁸

¹⁸ While this is a positive sign for the University in terms of how a major industrial giant sees their logistics program, it may have a potentially negative impact on the region as these outside companies are likely to be the ones hiring these students upon graduation, drawing them outside of Indiana and adding to the current "brain drain." Additionally, it is somewhat troublesome that firms from outside the state of Indiana have better knowledge of these programs than Indiana firms do.

- ?? Recently professors in the Krannert School of Business have also implemented an e-business program as a minor concentration within the Master's degree program. The concentration attempts to capture the business strategies of the "new economy" and focuses on business-to-business applications and operations.
- ?? In terms of research, the Laboratory for Extended Enterprises at Purdue (LEEAP) is a relatively new multi-disciplinary research center that currently involves faculty from the departments of industrial engineering, chemical engineering, management, and agricultural economics. Current research includes supply chain partnerships, scaleable enterprises, the role of information in supply chain management, multi-location inventory management, reverse logistics, and production planning with remanufacturing. The LEEAP program is supported through a combination of internal university funds, National Science Foundation Center support, and industrial contracts with the automotive industry and other advanced manufacturers.

While these various programs provide some educational options for students and continuing education options for transportation, distribution, and logistics professionals, interviewees knew very little of these programs. Of those that were recognized, most interviewees felt that much of the content of these programs was too academic in nature.

Action 3. Develop core curriculum, as well as continuing education programs for logistics professionals, including undergraduate and graduate programs, on-line programs, certificate programs, and more usable educational programming in general.

While business-oriented continuing education is available through many sources, limited transportation, distribution, and logistics specific continuing education is available in the Central Indiana region, and what is available is geared more toward new entrants into the field. Additionally, while more advanced curriculum is available at Purdue, the logistics of traveling to and from West Lafayette is a major obstacle in its use.

The region's higher education institutions should re-examine, in concert with CLM or equivalent trade association, the curricula available both for those already in the industry and those interested in pursuing careers in the industry. The primary focus should be on occupations and careers needed to make this emerging cluster a higher-value cluster employing higher-skilled, better-paid personnel. Emphasis should also be put on addressing the future talent pool of workers needed by the cluster. This future-looking effort should be supplemented by periodic (every three years) surveys of the education and training needs of individuals working in the industry to identify gaps and needs for continuing education and training.

It is important, if the transportation, distribution, and logistics cluster is going to succeed in moving towards a more knowledge-based approach, that existing employees have the ability to easily upgrade their skills in both new techniques and new technologies. Ideally, current curriculum, as well as newer coursework, could be integrated into an easily accessible on-line program that transportation, distribution, and logistics professionals could access direct from their jobsites. Additionally, these on-line courses, and traditional classroom coursework, should be combined into appropriate "certificate" programs to allow students the ability to document mastery of these new subjects and

technologies. Finally, programs and curriculum must cover the *full spectrum* of real-world issues faced by the region’s transportation, distribution, and logistics professionals—from introductory courses for new entrants in the field, to new technologies and managerial techniques for distribution center managers and professionals, to Chief Logistics Officers of Fortune 500 companies.

Partners	?? Region’s higher education institutions
Resources Required	?? Tri-annual survey will cost between \$35,000-\$50,000
Priority/Time Frame	?? Short-term

Action 4. Improve the marketing of existing transportation, distribution, and logistics related coursework and curriculum to Central Indiana’s firms and students.

As described above, some educational options for regional transportation, distribution, and logistics professionals do exist. However, an understanding of the course content and availability among the transportation, distribution, and logistics companies interviewed was extremely limited. This is probably caused through a combination of companies not seeking out what is available and institutions not marketing these courses strongly enough and to the correct individuals.

Many solutions exist to easily rectify this situation. For example the Indianapolis chapter of the CLM could provide a website listing the courses available at each of the institutions, with a link to the institution’s websites for further information. Additionally, a number of industry representatives welcomed the idea of providing insight and perspective as a guest speaker within these courses, which would provide companies further understanding of what educational opportunities are available at the region’s higher education institutions.

Partners	?? CLM or equivalent organization can play outreach role for higher education and industry
Resources Required	?? Make part of operational costs of association
Priority/Time Frame	?? Short-term; after “cluster organization” established

Action 5. Develop a more robust internship and co-op program supporting student involvement with the Central Indiana transportation, distribution, and logistics industry.

Many industry representatives are concerned at the small number of students interested in internship or co-op within the transportation, distribution, and logistics industry. Many cited the success of similar programs from some of the nation’s leading higher education programs in the TDL-related fields. Most also feel that engaging students in their organizations, and ultimately hiring some of these students, is one way to improve the technical and managerial sophistication of their firms. However, they were unsure of how to improve the interest level as they fight the general negative perceptions of the industry.

The region’s trade associations and higher education institutions need to develop a coordinated marketing effort which defines and describes the true educational and longer-term employment opportunities in the emerging Central Indiana transportation,

distribution, and logistics cluster—including the interesting challenges that face the industry as it becomes more technologically sophisticated and integrated within supply-chain infrastructures. This internship and career day could build on the existing efforts of the annual L.L. Waters Indiana Transportation/Logistics Conference.

Partners	?? CLM or equivalent, regional higher education
Resources Required	?? Make part of operational costs of association
Priority/Time Frame	?? Short-term; after CLM established

Action 6. Encourage the 21st Century Fund to make investments in cutting-edge research related to logistics, supply-chain management, transport informatics and communications, and e-commerce.

The Indiana 21st Century Research and Technology Fund was created in 1999 to provide grants or loans to stimulate the process of diversifying the State’s economy by developing and commercializing advanced technologies in Indiana. Its mission is to spur economic development and diversify Indiana’s economy so that high-skill and high-wage jobs are created through collaborations between universities and business. To date, the Fund has invested over \$50 million in 46 awards, many in the life sciences and information technologies.

However, as was detailed in Figure 3, Central Indiana employment within the transportation, distribution, and logistics cluster is more than these two “high-tech” clusters combined—yet within these 46 awards, none are directly applicable to the TDL cluster. As described earlier the current level of technological sophistication within the cluster is relatively low, with relatively few technology providers to the cluster located within Indiana. Given the importance of the transportation, distribution, and logistics cluster to the economy of Central Indiana, as well as the entire State, providing technology research and development resources to those in academia and industry working on novel technological solutions should be strongly encouraged.

Partners	?? Engage trade association to assist members in becoming aware of and applying for funds and to nurture partnerships with higher education
Resources Required	?? Part of seed funding for organization
Priority/Time Frame	?? Short-term; after “cluster organization” established

Action 7. Develop a multi-university research center focused on logistics and supporting technologies.

As described above, there are many higher education institutions in Central Indiana currently involved in transportation, distribution, and logistics-related education and research—each with a somewhat unique niche. These combined niches provide a logical opportunity for the Central Indiana region to develop a unique research center focused on logistics and supporting technologies (many of which would also find applications within the region’s other clusters).

Furthermore, the host schools and departments for these existing efforts (e.g., Krannert School of Management and School of Engineering at Purdue; Kelley School of Business

at IUPUI, etc.) offer ties to other core disciplines and research. Beyond these direct links, many additional capabilities of the region’s higher education institutions could also be linked into a multi-university research center allowing for varied and unique perspectives to be brought to bear on the technological challenges of the transportation, distribution, and logistics industry. For example, the Indiana University School of Informatics could play a key role in developing technologies, protocols, and standards related to the use of large amounts of transportation and logistics data. Additionally, research into high-speed internet applications and logistics models could be developed jointly by Indiana University and Purdue University using the Abilene backbone’s speed and connectivity.

Partners	?? Higher education institutions
Resources Required	?? Several million dollars dependent on proposed center plan
Priority/Time Frame	?? Mid- to long-term

Action 8. Add the support and assistance of firms in the transportation, distribution, and logistics industry to the mission of the Purdue Technical Assistance Program.

As an outreach function of the School of Engineering, Purdue operates the Technical Assistance Program providing technical and engineering assistance to numerous Indiana manufacturers. Many of the issues facing firms in the emerging Central Indiana transportation, distribution, and logistics cluster are of similar dimension and scope as issues that the TAP effort deals with (e.g., implementing off-the-shelf technologies, warehouse layout, efficiency studies). These efforts, also often involve the use of students to perform much of the fieldwork. Modifying the mandate of the TAP program to allow it to assist Indiana’s TDL firms, not only would provide a more readily available source of technical assistance, it would also introduce numerous talented students to the career opportunities available within Central Indiana’s transportation, distribution, and logistics firms.

Partners	?? State of Indiana, Purdue University College of Engineering
Resources Required	?? Incremental funding to TAP program based on demand
Priority/Time Frame	?? Mid- to long-term

STRATEGY 3: WORK TO IMPROVE THE OPERATING ENVIRONMENT FOR CENTRAL INDIANA TRANSPORTATION, DISTRIBUTION, AND LOGISTICS FIRMS.

Background and Strategy Overview

Obviously, both economic development and government agencies have been involved in specific aspects or modes of the industry (e.g., development efforts regarding industrial parks, governmental efforts regarding the trucking industry). However, the emerging

Central Indiana transportation, distribution, and logistics cluster has developed to its current state with little direct economic development or governmental attention. Enhancing the future development of this emerging Central Indiana cluster will require a new more coordinated approach. This is especially true given the many TDL impacting large-scale investments and development projects that are breaking ground in the near future or are currently being considered and debated.

Action 9. Build on the reputation, capacity, and future improvements at Indianapolis International Airport.

Given the size and throughput of the Fed Ex facility, the impact that the Indianapolis International Airport (IIA) has on the overall transportation, distribution, and logistics industry in Central Indiana cannot be debated. However, the IIA is positioning itself to substantially increase its air freight capabilities through its efforts to improve its passenger capabilities. Currently, IIA has one of the most extensive runway capabilities of any U.S. airport outside the major passenger carrier hubs (e.g., New York, Chicago, etc.) Representatives interviewed for this study have stated that IIA can easily handle any current cargo jet and will be able to handle new larger cargo jets that will be operational in the near term. Additionally, future improvements to the airport site, including the planned new Midfield Terminal, associated realignment of the on site road network, and ultimately the new interstate connection, will significantly improve the ingress and egress of trucking and courier services to facilities located at the airport as traffic bottlenecks (e.g., as one interviewee stated, “malfunction junction”) are eliminated.

These changes to IIA could not come at a more opportune time. In the global movement of freight, the on-going rationalization of transport costs is increasingly causing air freight and trucking and courier services firms to form unique alliances. It becomes more cost effective to operate a few larger air cargo hubs and truck freight from the airports to smaller surrounding cities than to fly directly into these cities as part of a more extensive hub and spoke system. This is causing a new concern regarding highway access across all major air freight hubs. Both Louisville and Memphis have recently improved interstate access to their airports.

However, to take full advantage of these planned developments at IIA the Central Indiana industry as a whole, not just IIA, will have to market these enhanced capacities in order to realize their benefits fully. Additionally, as the final plans are developed for these airport enhancements, attention must be given to the needs of both on-site and off-site transportation, distribution, and logistics industry firms, including provisions for additional on-site Foreign Trade Zone facilities.

Partners	?? Industry, airport, state and local governments
Resources Required	?? Staff time and commitment of partners
Priority/Time Frame	?? Immediate

Action 10. Develop an economic impacts model of the existing inventory tax on the Indiana TDL cluster (as part of overall tax burden) relative to competitor regions and states.

The personal property tax on inventory is perceived to be a burden to many firms in the Central Indiana region, including those outside of the transportation, distribution, and logistics industry. However, for the emerging TDL cluster, the inventory tax, while a revenue stream for the State, may be factor in keeping some aspects of the industry in a lower-skill and lower-wage mode, potentially retarding the continued development of the cluster. A number of studies and analyses have been performed weighing the overall financial impacts of the “inventory tax.” However, these studies do not focus on the impacts on tax revenue generation, skill and wage mix, and business development and attraction relative to a specific industry, and fail to make any recommendations on potential tax exemptions or credits that might be applied to foster the growth and development of an industry.

The transportation, distribution, and logistics industry and state and local economic development organizations should provide resources to one of the regional higher education institutions to develop a thorough and thoughtful economic impact model relative to the impact of the inventory tax on the industries and the State and region’s economic potential.

Partners	?? Commission study through CICIP
Resources Required	?? \$75,000-\$100,000
Priority/Time Frame	?? Short-term

Together, these three strategies and their accompanying actions provide the initial steps to begin the process of fully recognizing and developing the emerging transportation, distribution, and logistics cluster in the Central Indiana region.

Summary

The Central Indiana region is currently in the process of building and developing three industry clusters—life science, advanced manufacturing, and the emerging information technology cluster. This document develops a Prospectus for an emerging fourth cluster: the transportation, distribution, and logistics cluster.

The transportation, distribution, and logistics industry is a significant employer in the Central Indiana region, yet structurally it is still in its infancy as a cluster. The industry is not overly concentrated in the region and its current growth, while positive, is being outpaced by the industry nationally. Additionally, the Central Indiana region is lagging behind many competitor regions in terms of both cluster structure and growth and the development of supporting mechanisms to assist their cluster's progress.

However, the Central Indiana region has many strengths on which it can build and develop this emerging cluster including central U.S. location, strong connectivity via air and truck, and overall low costs of operation. Building on these strengths, and taking advantage of opportunities with higher education and connections with the region's other clusters requires the implementation of a proactive set of strategies and actions. These strategies include specific efforts to improve the cohesiveness of the emerging transportation, distribution, and logistics cluster, improving research and educational connections with higher education, and efforts to improve specific aspects of the emerging cluster's operating environment in Central Indiana. The strategies, actions, resources, and priority/time frame are detailed in the table on the next page.

Table 5. Strategies, Actions, Resources, Priorities

Strategies	Actions	Resources Required	Priority/ Time Frame
Strategy 1: Further develop and improve the cohesiveness of the emerging Central Indiana transportation, distribution, and logistics cluster.	Action 1. Further develop industry association(s) to become advocates for the emerging transportation, distribution, and logistics cluster.	Seed funding of \$200,000-\$250,000 on declining funding basis over three years	Immediate
	Action 2. Develop cohesive image and improve marketing efforts for both internal and external consumption.	\$50,000-\$75,000 to develop strategic plan	Short-term (after Action 1 is initiated)
Strategy 2: Improve the connections between the emerging transportation, distribution, and logistics cluster and regional higher education.	Action 3. Develop core curriculum, as well as continuing education programs for logistics professionals, including undergraduate and graduate programs, on-line programs, certificate programs, and more usable educational programming in general.	Tri-annual survey will cost between \$35,000-\$50,000	Short-term
	Action 4. Improve the marketing of existing transportation, distribution, and logistics related coursework and curriculum to Central Indiana's firms and students.	Make part of operational costs of association	Short-term; after CLM established
	Action 5. Develop a more robust internship and co-op program supporting student involvement with the Central Indiana transportation, distribution, and logistics industry.	Make part of operational costs of association	Short-term; after CLM established
	Action 6. Encourage the 21st Century Fund to make investments in cutting-edge research related to logistics, supply-chain management, transport informatics and communications, and e-commerce.	Part of seed funding for organization	Short-term; after CLM established
	Action 7. Develop a multi-university research center focused on logistics and supporting technologies.	Several million dollars dependent on proposed center plan	Mid-term
	Action 8. Add the support and assistance of firms in the transportation, distribution, and logistics cluster to the mission of the Purdue Technical Assistance Program.	Incremental funding to TAP program based on demand	Mid-term
Strategy 3: Work to improve the operating environment for Central Indiana transportation, distribution, and logistics firms.	Action 9. Build on the reputation, capacity, and future improvements at Indianapolis International Airport.	Staff time and commitment of partners	Immediate
	Action 10. Develop an economic impacts model of the existing inventory tax on the Indiana TDL cluster (as part of overall tax burden) relative to competitor regions and states.	\$75,000-\$100,000	Short-term