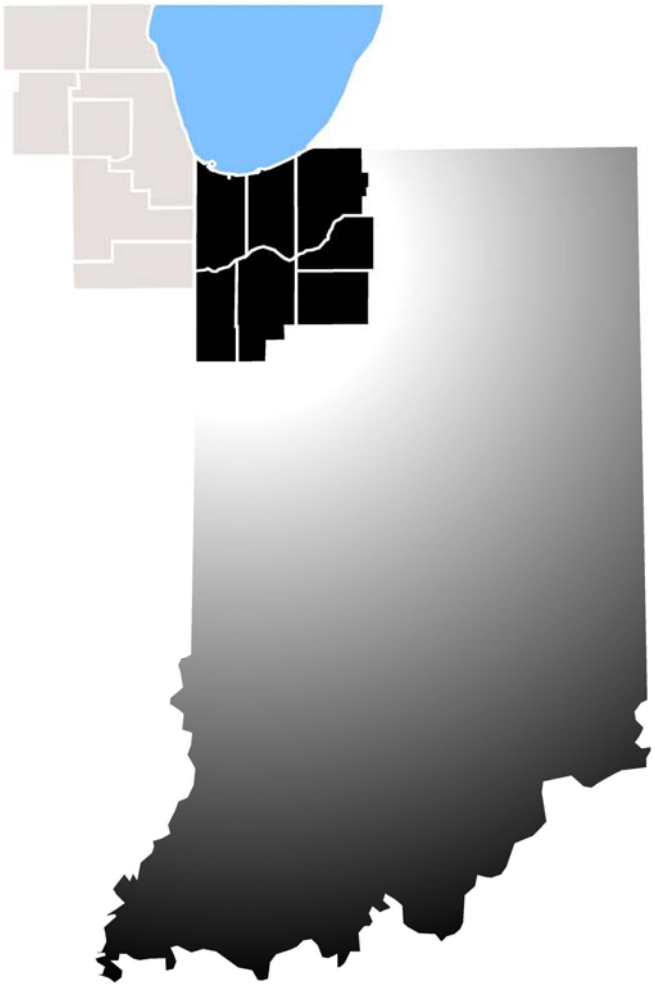
Decade of Promise:
Positioning Northwest Indiana's Workforce for Economic Growth



Submitted by:

The Center of Workforce Innovations
innovativeworkforce.com

Lake County INTEGRATED SERVICES Delivery Board

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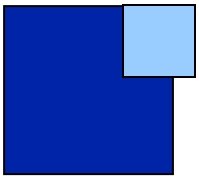
Strategic Skills Initiative

Occupation & Skill Shortages Report 1

We are grateful to the many employers, workers, educators and economists who lent their time and expertise to this first phase of the Strategic Skills Initiative in our Region.

We look forward to their contributions during the coming months as we, together with the State of Indiana, invest in our region's economic future.

We also appreciate the assistance and support provided by the Corporation for a Skilled Workforce in the development of the report and technical assistance provided by Workforce Associates.



Executive Summary

Our Northwest Indiana Region (EGR 1) comprises Jasper, Lake, La Porte, Newton, Porter, Pulaski, and Starke counties, the 838,000 people who live here, the 17,485 businesses that employ them and the many communities that work hard to maintain our quality of life.

Since we border metropolitan Chicago, our location plays a significant role in the industries we maintain, the mobility of our workforce, and the choices we make about investment in our infrastructure, including the workforce.

Our Economy

Our region has experienced jarring economic changes during the past five years. We saw record low unemployment rates and growth across all sectors (except manufacturing) in the late 1990s and into 2000.

The 2001 recession caused 5% of our employment base to disappear in two years, losing nearly 15,000 jobs. By 2005, after three full years of recovery, we had regained only two of every three jobs lost during the brief but severe economic downturn. Other indicators of our economic vulnerability included:

- Increases in poverty levels and increases in free-lunch eligibility across the region;
- Decreases in health insurance coverage for workers and families;
- Bigger gaps between the demand for college educated workers and the supply of these workers in our region; and
- Bigger gaps between our per capita incomes and those of the U.S., which average 8% higher.

While the nation was turning recession into recovery, our State and our region stalled. Our economy was undergoing not just the effects of a boom-and-bust cycle, but fundamental structural change linked to new technologies and increasingly global competition. These factors have dramatically altered the U.S. manufacturing environment. The Manufacturing industry is our region's largest employer, responsible for more than one in seven jobs and nearly 26% of all wages paid to workers in Northwest Indiana.

In 2002, the Center of Workforce Innovations recruited Jennifer Montana, a colleague of renowned economist Michael Porter, as a consultant to assist business and civic leaders in the region with a new Industry Cluster Project. The objective was to identify key economic, industry, and labor market strengths and weaknesses in the region, and develop economic, education, and workforce policies to build an economy offering more opportunity for our region's firms and residents.

We selected the following industries as critical to the region, studied them in depth and compiled our findings in reports:[1]

- Steel (2003)
- Health Care (2004)
- Precision Equipment Manufacturing (2004)
- Wholesale trade/Logistics (2004)
- Professional Services (2004)
- Life Sciences (2005)
- Information Technology (2005)

These reports are available online under resources at: www.innovativeworkforce.com

Indiana's Strategic Skills Initiative

It is in this context the State of Indiana launched the **Strategic Skills Initiative (SSI) project.**

SSI represents a welcome $23 million investment in Indiana's economic success. Its goals include:

- Higher paying jobs for Hoosiers
- More competitive Indiana firms
- Smarter and more skilled Indiana workers
- Effective regional collaboration

The project requires all 11 economic development regions in the State to collaborate in a six-month process intended to assess their economies by:

- Selecting key industries

[1] The findings from these reports are summarized in Table 1 in the Background & Context section of this report.

- Identifying critical occupations
- Determining critical skills
- Identifying "skills gaps"
- Determining the Root Causes of those gaps; and
- Developing solutions.

In our region, this work will result in five separate reports:

- An Occupation and Skills Report (October 2005)
- A Root Cause Report (December 2005)
- Three (industry-specific) Solutions Reports (March 2006).

This report is the first of the SSI reports for Region I, Northwest Indiana. It details the methods used to identify key industries and critical occupations, and addresses a series of related findings that will guide the project's evolution over time.

Methods for Selecting Industries and Occupations

We convened an **Executive Team**, comprising industry, education, and civic leaders in the Region, to plan the project, guide the development of the project's application for resources, and serve as the final arbiter for decisions about the direction and focus of the project.

We participated in the State's six **web-based training sessions** to insure that we could use STATS Indiana and other required data sources effectively.

In collaboration with the Executive Team, we convened a larger group of industry leaders, economic development professionals, and educators, which we call a **Regional Industry Consortium**, to provide broader input into the project and assist project staff in data collection and validation efforts.

We assembled a cross agency project team[2] to conduct all project-related activities. These activities prepared us to conduct a detailed analysis of our region's economy.

[2] Linda Woloshansky, President/CEO of the Center of Workforce Innovations (CWI) and Jim McShane, President/CEO of the Lake County Integrated Service Delivery Board (LCISDB) provided project oversight. John Dube, Matt Hunter, and Tammy Stump (CWI) and Tina Rongers (LCISDB), with the support of Kristin Wolff (CSW) comprised the project team.

Key Industries

In selecting our key industries, we considered many different aspects of our regional industrial landscape:

- Which industries employ the most people?
- Which pay the best?
- Which are growing? How?
- Which will offer the most new jobs in the next few years?
- In which industries do we have a competitive advantage?
- Which industries are interested in building a competitive advantage?
- Which industries are prepared to capitalize on regional, national and global growth trends?
- Which industries have been targeted by state and local economic development experts for growth and development?
- Can we work with firms in the region to positively impact our key industries?
- Is there community support for working with these industries?

Making extensive use of the State's SSI project resource page [http://www.stats.indiana.edu/ssi/reg_page.asp?reg=1], we gave special priority to the following:

- **Employment**—the percentage of total employment the industry contributes to the region.
- **Wages**—both the percentage of total wages the industry contributes to the region, and the average weekly wage associated with jobs in the industry.[3]
- Our ability to **positively impact** the economic health of firms and workers in the industry; and broad-based community and business support.

We also analyzed the results of the ERISS Job Vacancy Survey completed by 361 employers in our area. Of the reported vacancies, 69% were occupations within our three target industries—Health Care, Manufacturing, and TDL.

In addition to our quantitative analysis and formal engagement of the Industry Consortium and Executive Team, we:

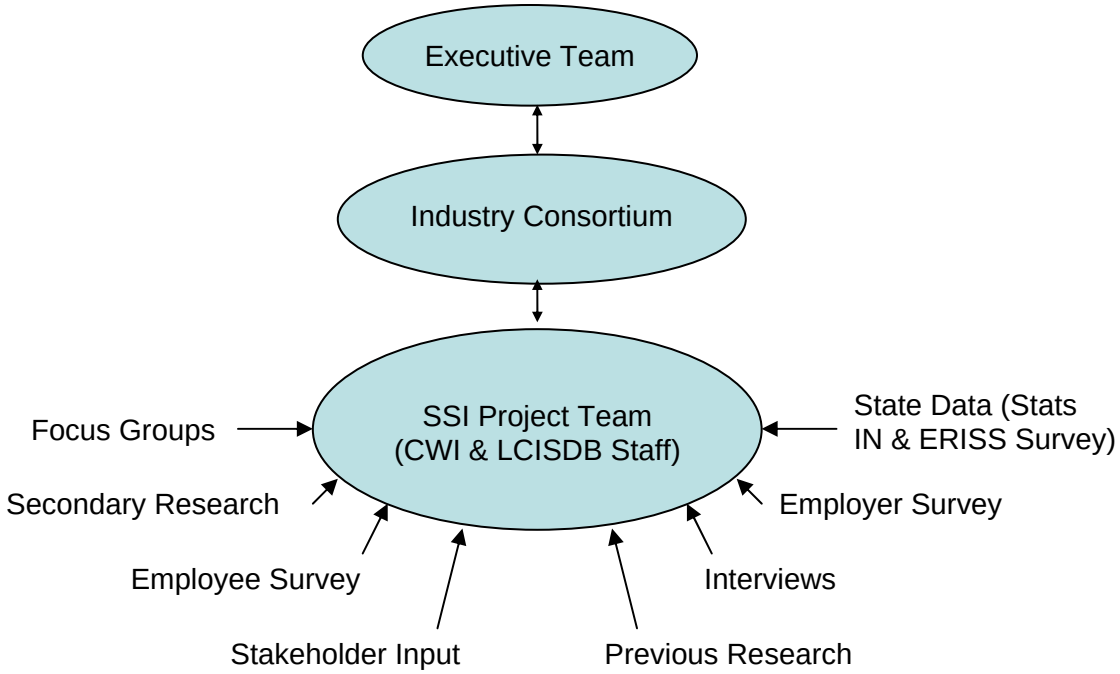
[3] We were looking for an average weekly wage above both the weighted average across all industries ($706.20) and the slightly higher non-weighted weekly wage average across all industries ($745.73).

- Conducted 14 formal interviews with key employers and economic development professionals in the region;
- Completed over 100 informal discussions with employers and key stakeholders in the Region;
- Facilitated three focus groups, one with firms, one with economic development professionals, and one with educators;
- Surveyed 141 firms in the region; and
- Surveyed 158 employees in the region.[4]

After assembling the data we collected through these activities, we worked with our Executive Team and Industry Consortium to validate it through a series of meetings and conference calls that occurred between September 20 and October 5, 2005. The figure Below illustrates our project input and oversight model.

[4] The surveys for employees and employers were conducted in both print and through web-based technologies. They remain open; these numbers were received by October 10, 2005. We anticipate this data will inform the Root Cause analysis more than this report, but it did help validate both industry and occupation selection.

While there were good arguments in favor of many industries,[5] we selected only three. Each industry is identified by name and its two-digit North American Industry



Classification System (NAICS), as follows:

- **Healthcare and Social Services** (62)[6]
- **Manufacturing** (31-33)
- **Transportation, Distribution and Logistics** (42, 48, 49); and

These industries and the critical occupations identified below will be the focus of our Root Cause analysis and subsequent Solutions Reports.

Critical Occupations

Making extensive use of the State's SSI project resources, we considered the following factors in identifying critical occupations:

- Which occupations are in high demand today?
- In which occupations is demand expected to grow?

[5] Our industry stakeholders were not universal in their endorsement of these industries; construction, professional services and hospitality and entertainment were also suggested.
[6] While NAICS code 62 includes social services in addition to health care, we intend to focus on the health care sector. To maintain consistency with the other industries however, we use NAICS code 62 when a two-digit code is required.

- In which occupations are vacancy rates high?[7]
- Which occupations require skills transferable to other occupations and industries in our labor market?
- Which occupations are projected to grow?

We also reviewed many third-party reports and studies that included data on our region. While we did not include all the information we reviewed, we did cite documents that were either very helpful, such as the *Measuring Up* Report, or were very good at framing complex issues in simple ways. They are listed in the bibliography at the end of this report.

Finally, the very fast timeline mandated by this project prompted us to be creative in collecting and validating data. We developed one habit that we plan to maintain: *using every point of contact as an intelligence gathering opportunity*.

We developed an initial list of 25 occupations in our three target industries, narrowing this down to 18 after consulting with our Executive Team and Industry Consortium members.

These occupations employ about 27,000 people in the region at an average wage of nearly $45,000 per year.

Sector	Occupational Title
HEALTH CARE	
	Licensed Practical Nurses & Licensed Vocational Nurses
	Pharmacy Technicians
	Dental Hygienists
	Medical & Clinical Laboratory Technologists
	Registered Nurses
	Pharmacists
	Medical & Health Services Managers
MANUFACTURING	
	Inspectors, Testers, Sorters, Samples, & Weighers
	Welders, Cutters, Solderers, & Brazers
	First-Line Supervisors/Managers of Production & Operating Workers
	Sales Representatives, Wholesale & Manufacturing, Except Technical and Scientific Products
	Mechanical Engineers
TDL	
	Industrial Truck & Tractor Operators
	First-Line Supervisors/Managers of Transportation & Material-Moving Machine & Vehicle Operators
	First-Line Supervisors/Managers of Helpers, Laborers, & Material Movers, Hand
	Bus &Truck Mechanics & Diesel Engine Specialists
	Production, Planning, and Expediting Clerks
	Dispatchers, Except Police, Fire, & Ambulance

[7] For this factor, we used the State of Indiana Job Vacancy Survey conducted by ERISS in summer 2005.

Importantly, many of these occupations lie at the heart of industry-wide changes that have the potential to dramatically improve the competitive position of Northwest Indiana firms. Many require the use of new technologies or demand increased knowledge and skills as compared to only a few years ago. We are confident that focusing on these occupations will help us make a real difference in the quality of jobs available in our region and the productivity and job satisfaction of our Region's talent.

Participation of Regional Consortium

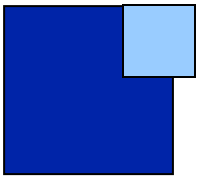
The endorsement of the project by our Executive Committee members is evidenced by the page containing their signatures already included as the cover sheet.

As noted in both Section 1 (Methods) and Section 11 (Selection of Industries), the Consortium and Executive Team members were highly engaged in the process to determine the industries selected. There was a rich conversation and a diverse point of view regarding the economy in the region and which industries should be targeted in an economic growth plan. While comments made regarding specific economic development strategies were forwarded to the appropriate economic development groups, consensus was gained regarding both the industries and occupations by Consortium and Executive Team members.

We appreciate the support of our industry leaders on the SSI project. But the real value of our Consortium and Executive Team lies not on a signature page, or in their project status, but in their shared understanding of the potential of the SSI project and our industry-focused work. Our key stakeholders, including Consortium members, understand that we are experiencing structural economic change. We seek to use SSI not just to ameliorate select skills gaps but to leverage a broader conversation about jobs and work in the 21st Century.

It is our hope that the SSI project can help us change the way our people think about skills, the way our firms think about talent, and the way our communities think about their economic futures.

For more information about the SSI project in Region I, see www.innovativeworkforce.com.



Background & Context

IT WAS 2000. We knew the world was changing; technology was generating new jobs and eliminating or completely redefining old ones; and global trade and advanced communications were bringing new customers and competitors from all over the world.

Whole new business sectors emerged to make use of emerging technologies—bioinformatics, nanotechnology and renewable energies, for example. "Old economy" companies, too, began adopting new technologies such as automated manufacturing and assembly, web-commerce, enterprise resource planning systems and much more.

Economic opportunities for Northwest Indiana firms and homegrown talent seemed infinite.

And then it was 2001 and we faced a severe and protracted recession. Now it is four years later, and one-third of the jobs our region lost during the recession have not been replaced.

What Happened?

THE ECONOMIC DOWNTURN that ushered in the new century exposed the uncomfortable economic vulnerability Northwest Indiana firms, families and communities face in the 21st century global economy.

- Northwest Indiana lost about 5% of its employment base between 2000 and 2002. Many of the lost jobs were family-wage manufacturing jobs on which one in six workers in the region depend. From a peak of 6.6% in 2002, the region's unemployment rate is holding at about 5%.
- Between 2000 and 2001, the region experienced a net loss of 24 firms.
- Despite an increase in the region's population, the size of the labor force *decreased*. While the number of seniors increased, the greatest demographic change was in the 45 to 64 year-old age bracket, which jumped by 3%. Fewer workers are supporting more people in Northwest Indiana than in 2000.
- The percentage of Northwest Indiana students eligible for free or reduced-price lunch (28%) has long been higher than the state average. But during the late 1990s, this figure remained consistent. Since 2000, it has risen sharply by 24%, controlling for population growth. The percentage of

Northwest Indiana students eligible for subsidized lunch in 2004 was nearing 40%, an increase of 9,500 students over what would have been expected based on the region's population growth alone.

- The gap between the demand for college-educated adults among the region's employers and the supply of college educated adults in the region increased by an average of 5.7% during the past decade. Every county in the region now has jobs that demand between 3% and 9% more college graduates than live in the county, and the gap between demand and supply is growing.[8]

A number of key statewide challenges have also impacted our economic health:

- Entrepreneurial capacity in Indiana is not as strong as in competitor states. While the state ranked 29th in the Milken Institute's *2004 State Technology and Science Index*, Illinois, Ohio and even Michigan ranked above the Hoosier state, suggesting that technology transfer opportunities leading to new Indiana firms and jobs must be increased. Gary, the largest metro area in Northwest Indiana, ranked 200th out of 200 among U.S. metro areas in a 2002 comparison of start-up opportunities and business climates.
- While Hoosiers fare better than the U.S. average on health insurance coverage (88.5% are insured in Indiana compared to 84.3% nationally), they are losing ground. Sixty-one percent of Indiana residents are covered through employer-provided policies, but employer coverage between 2000 and 2003 declined 6.8%, far more than the U.S. average of 3.8%.[9]
- For the first time in Indiana's history, state revenues declined; in 2001, the decline was small, but in 2002 it was 3.8%. Simultaneous planned increases in education and Medicaid have since created large deficits, reducing revenues and spending flexibility at every level of government.
- Indiana saw the second largest increase in welfare caseloads in the nation between 2000 and 2001.
- The gap between the average per capita income in Indiana compared to that of the nation grew. On average, Indiana residents earn $.92 for every dollar earned by U.S. workers. (Porter County is the only county in the region and one of only five counties in the state where average per capita income equals the U.S. average).

[8] The Center for the Study of Rural America produced this data based on the U.S. Census EEO File 2000 and 1990.
[9] Data on health insurance from *Income, Poverty and Health Insurance Coverage in the U.S. 2004*, a report released by the U.S. Census in August 2005.

What Do We Do?

IN RESPONSE TO THESE DEVELOPMENTS, we could have just complained or attributed our economic woes to dynamics out of our control.

But we didn't.

Recognizing that our region's key industries were experiencing *structural change* and not just cyclical expansion and contraction in Northwest Indiana, business and community leaders began asking fundamental questions of firms, citizens, and communities all over the region:

Where would people work in the future?

How would they work?

What skills would they need?

How will the jobs of the future help support the community we want to live in?

INDUSTRIES & CLUSTERS, WORKERS, & LEARNERS

IN RESPONSE TO FUNDAMENTAL CHANGES evident in the manufacturing industry for over a decade, The Center of Workforce Innovation launched an Industry Cluster Project in 2002. Working with Jennifer Montana, a colleague of Michael Porter, a team of consultants and key civic and business leaders in the region, we identified the region's key industries based on the following criteria:

- Growth (current and projected)
- Wages (average weekly and total payroll)
- Employment (numbers of jobs and percentage of employment)

In an effort to integrate cluster analysis into our project, we also paid attention to "connectedness," the extent to which some industries manifested strong economic linkages to others or were critical components in local supply chains. And in an effort to understand the role of knowledge workers in our economy and prepare for future growth, we considered the concentration of knowledge-intensive jobs that promote transferable skills and enable career mobility.

We selected the following industries as those most critical to the region, conducting research and analysis and completing reports on each of them:

- Steel (2003) (In partnership with LCISDB)
- Health Care (2004)
- Precision Equipment Manufacturing (2004)
- Wholesale Trade/Logistics (2004)
- Professional Services (2004)
- Life Sciences (2005)
- Information Technology (2005)

Key findings from the project are detailed in Table 1.

Mid-way through our industry cluster project, we recognized the need to assemble data on learners in our region, to identify both the numbers of students enrolled in programs likely leading to careers in our key industry clusters and the numbers likely to graduate from those programs. Our 2004 *Report on Learners* identified both gaps (e.g., too few individuals seeking to enter the trades) and positive trends (e.g., large numbers training for select high-demand positions in the health care pipeline).

Three additional reports, one commissioned by the Central Indiana Corporate Partnership (*What Indiana Makes, Makes Indiana* [2005]), one by the Northwest Indiana Quality of Life Council (*Quality of Life Indicators Report [2004]),* and another literacy report published by The Discover Alliance and CWI, (*Raise the Region [2004]*), have helped engage new stakeholders in broad-based discussions about Northwest Indiana's economic, educational, and social future.

Table 1. Industry Cluster Report Findings

	Big Picture Findings	Jobs and/or Skills Identified	Employer Challenges	Connections to workforce system
Precision Equipment Manufacturing: An Overview of Advanced Manufacturing in Northwest Indiana, 2004				
	➢ There was solid growth until 2001, after which the number of firms and employment has been declining. ➢ Wages have continued to increase, however. ➢ A dramatic shift in job skill demands means that mfg is no longer a low skill-high wage job ➢ Employment is declining, but productivity is increasing, thanks to technology	**Skills in demand:** ➢ Computer skills ➢ Computer numerical control ➢ Shop math ➢ Welding **Jobs in Demand** ➢ entry-level assembly/ production/ fabrication laborers ➢ CNC ➢ Welders **Most Critical Jobs** ➢ MIG Welders ➢ Management/ supervisory ➢ Maintenance ➢ Sales ➢ Machinists ➢ Manufacturing Engineers **Hard to Fill Jobs** ➢ Management/supervisory ➢ Assembly/ production/ laborer ➢ Maintenance ➢ Welder	➢ Threats from global forces (including China) ➢ Concern that schools aren't preparing students for increasing amount of technical jobs ➢ Concerns about "soft skills" and "work ethic"	➢ Schools have difficulty placing students for job shadowing/ internships/ etc ➢ Some use WorkOne offices for recruitment, although generally for entry-level rather than skilled positions ➢ Little employer involvement in schools

	Big Picture Findings	Jobs and/or Skills Identified	Employer Challenges	Connections to workforce system
Health Care for Northwest Indiana, 2004				
	➢ One of the fastest growing clusters in NW IN ➢ Healthcare jobs appeal to displaced manufacturing workers due to higher wages than other service jobs ➢ Hospitals are the largest employers but face stiff competition for workers ➢ An aging population means an increase in revenue from Medicare and Medicaid and unreimbursed expenses will erode net margins ➢ Rising number of uninsured complicates financial model ➢ Lower malpractice and worker's compensation rates than in Illinois ➢ Healthcare training providers are at capacity and not able to add more students due to funding restrictions, budget cuts and difficulty in placing students in required practicums	**Most Critical Jobs** ➢ Nurses ➢ Diagnostic imaging/ radiology ➢ Pharmacists ➢ Therapists – occupational, speech, physical ➢ Home health aides/ health techs	➢ Concerns about poor work ethic – not having a good attitude towards patients, not being able to work as a team, not prepared to handle stress of health care setting. Also concerns about poor interpersonal skills.	➢ Work One system not used for recruiting – difficult to use, poor matches ➢ Few employers have an ongoing relationship with a local high school ➢ Increasing opportunities for college students to connect to industry
Wholesale Trade—Durable Goods Driving 21st Century Logistics for Northwest Indiana, 2004				
	➢ Logistics is one of the fastest growing industry clusters in NW IN ➢ Used to be linked with steel mills, but that has changed as steel industry has	**Most Critical Jobs/ Jobs in Demand** ➢ Warehouse picker/packers ➢ Management/ supervisory ➢ Technicians	➢ Employers list flat wage growth, increased drug testing, background	➢ Communication barrier between logistics employers and educators – most

	Big Picture Findings	Jobs and/or Skills Identified	Employer Challenges	Connections to workforce system
	declined, leading employers to diversify ➢ Region is geographically situated to capitalize on flow of good and materials through Chicago, with opportunities for intermodal traffic ➢ Industry is extremely competitive. Most companies are small, but the few larger companies can leverage economies of scale to squeeze out smaller firms. ➢ Buyer's market – customer demands are high, local firms must be able to compete against large national firms ➢ Net margins are extremely low ➢ Outsourcing of activities to third party logistics providers is driving down wages ➢ State's Inventory Tax has been a limiting factor in growth, but steps are being taken to gradually eliminate the tax ➢ High levels of technology are now essential. Require more skilled employees, but fewer of them.	**Skill Deficiencies** ➢ Poor technical skills ➢ Poor work ethic ➢ Poor interpersonal skills ➢ Poor math skills ➢ Skill requirements tend to be lower than many other industries – two tiers of employment, with the majority of jobs being in the unskilled or semi-skilled category requiring only minimal OJT. ➢ Increases in technology use in the industry are increasing skill requirements, however, and the few jobs in the upper tier may have significant skill requirements	checks and regulatory restraints on driver's hours as factors in significant loss of driver workforce in recent years	employers surveyed said that schools do not approach them regarding workforce opportunities for students ➢ Gap is further widened since logistics employers do not actively recruit from placement offices or use internships or school-to-work activities ➢ WorkOne offices more likely to be used for entry-level and semi-skilled positions than for skilled positions
Targeted Industries Report Professional Services, 2004				
	➢ For purposes of the survey, CWI concentrated on firms engaged in accounting, engineering, architecture, computer services and related	**Most Critical Jobs** ➢ Desktop technician ➢ Network administrator ➢ Sales and marketing ➢ Account/ project manager		➢ Most employers have never used a WorkOne office for recruiting and were unaware of

	Big Picture Findings	Jobs and/or Skills Identified	Employer Challenges	Connections to workforce system
	consulting services ➢ Professional services workers are difficult to count, because many/most people in these occupations are employed in other industries ➢ Professional services is increasingly being affected by outsourcing, thanks to global telecommunications infrastructure ➢ Employment in professional services is expected to grow faster than average for most sectors ➢ Professional services firms in the region have been the beneficiaries of small firms outsourcing these non-core activities ➢ Firms tend to be small, with many workers leaving established firms to start their own businesses ➢ The accounting field has been wrought with corporate scandal in recent years (Enron, etc) and the passage of the Sarbanes-Oxley act has increased restrictions and requirements on accounting firms ➢ The engineering sector is facing a decline in students entering post-secondary programs and a worker	**Jobs in Demand** ➢ IT positions ➢ Designer/ CADD technician ➢ Sales **Hard to Fill Jobs** ➢ Sales ➢ Customer service ➢ Accountant **Critical Skills** ➢ Architects, engineers, surveyors and interior designers must be registered and licensed in the state of IN ➢ For IT jobs, MCSE, MCP and Microsoft Office Specialist certifications are desirable ➢ CPA designation is not required for most available accounting jobs, which typically require only a college degree in accounting		services, training funds or other WorkOne partners ➢ Most employers have a relationship with a local college or university and rated school placement offices highly as a source of workers ➢ Internships were highly valued, with two employers requiring them of candidates

	Big Picture Findings	Jobs and/or Skills Identified	Employer Challenges	Connections to workforce system
	shortage is forecast ➢ Architecture employment has benefited from residential housing construction and a growing market for ADA compliant housing to meet the needs of our aging population ➢ Following the tech "bust" demand for computer services is beginning to rise, but it is still a buyer's market with a large number of highly skilled workers available. ➢ IT employment is fast growing, but quickly changing, and successful workers will need to be adaptable and knowledgeable of advances in software and equipment			
IT Talent Search for Northwest Indiana, 2005				
	➢ Many employers have invested in technology, but many have resisted change and investment in computers and people with technical skills ➢ Most IT workers are employed in non-IT firms – nearly all businesses use computers to manage operations, finances and communications ➢ IT outsourcing in the area is going to	**Skills in Demand** ➢ Network engineering ➢ Network administration ➢ Employers report valuing a well rounded education and hands-on experience more than certifications such as MCSE or MCSA ➢ Hiring decisions are made based on the need to meet an	➢ Local employers are "a frustrated lot" – there is enough potential business in the region for them to grow, but competition is fierce and many have clients in other	➢ Employers usually have strong relationships with one or more postsecondary institutions and report success with faculty referrals, job fairs and internships

	Big Picture Findings	Jobs and/or Skills Identified	Employer Challenges	Connections to workforce system
	local IT specific vendors who offer sophisticated services ➢ While employment by IT firms has gone down, it is hard to track employment trends of IT jobs, since so many are in non-IT firms ➢ Also, some of the area's IT workers likely commute to Chicago to work ➢ There is an oversupply of IT workers in the region, so entry level wages can be low	immediate and specific demand from a client, thus they rely on contractors or hire people with ready to go skills **Most Critical Jobs/ Jobs in Demand** ➢ Network engineers ➢ Technicians (network, hardware, desktop) ➢ Network administrators	states ➢ Finding new workers is easy due to oversupply, but depth of knowledge and experience is a challenge	
Life Sciences for Northwest Indiana: Building a Cluster for Clinical Research, 2005				
	➢ Not currently a significant cluster, but there are a few niches that hold promise ➢ Life Sciences is a big growth industry – if the region can capture a share, it will be a huge benefit ➢ Neither LQ or Shift Share analysis show an existing cluster in NW IN – report identifies resources necessary to develop and compete ➢ Cluster definition is not consistent across regions, but includes R&D, Manufacturing, Clinical services, and other services ➢ NW IN's medical-related manufacturing	**Skills in Demand** ➢ Computer skills ➢ Clinical skills ➢ Radiology/ imaging techs **Critical Jobs** ➢ Nursing ➢ Imaging/radiology techs ➢ Pharmacists ➢ Medical techs ➢ Therapists		

	Big Picture Findings	Jobs and/or Skills Identified	Employer Challenges	Connections to workforce system
	sector is much smaller than other regions with life science clusters ➢ Life science infrastructure is preliminary ➢ Wages are high, but skill and education requirements are also high			

A NEW AGENDA FOR NORTHWEST INDIANA

TOGETHER WITH KEY STATE REPORTS, these analytical and community planning efforts have helped us begin to craft a community wide agenda, while catalyzing specific action in important areas. Key components of our regional agenda follow.

WE NEED A COMMUNITY-WIDE VISION FOR NORTHWEST INDIANA'S ECONOMIC FUTURE. Indiana's statewide economic survey revealed that 16% of respondents expressed confidence in the ability of government agencies and economic development organizations to collaborate effectively at the regional level. At the time the survey was conducted, Northwest Indiana did not have a regional economic development entity with dedicated public financing, making it difficult to advance a strategy at this level. Earlier this year, Indiana's state legislature established Northwest Indiana's Regional Development Authority (RDA), which met for the first time on September 26, 2005. The RDA has already been working with key partners, including workforce partners, on a comprehensive economic vision for the region. Specific early RDA discussions, supported by the Center of Workforce Innovations and Lake County Integrated Services Delivery Board, include:

- Development linked to the Gary/Chicago International Airport
- Expansion of Commuter Services in the Region
- Stewardship of the South Shore Line
- Incorporation of an Intermodal Facility

WE NEED A STRATEGY TO SUPPORT INNOVATION AND IMPROVE ENTREPRENEURIALISM among firms in our key industries and clusters, and to seed the industries of the future. While large numbers of manufacturing jobs have disappeared from our region, many of them were low-wage, low skill jobs. Among firms adopting new technologies or quality processes or investing in research and development, there is job growth in select occupations, many of them paying high wages and demanding high skills. Biotech, while small, is a particular bright spot employing nearly 4,000 people in the region, many in new, small firms.

WE NEED TO INVEST IN THE REGION'S TALENT AND ECONOMIC OPPORTUNITY. Too few students in the region graduate from high school; one in four 16 to19 year-olds in Northwest Indiana is neither in school nor working. And fewer graduate from college; in Indiana, a low-income ninth grader has only a 17% chance of graduating high school and enrolling in college.[10] Of students who do enroll and then graduate, too many leave for opportunities elsewhere, whether by relocating entirely or joining the 11% of the Northwest Indiana workforce that commutes to metropolitan Chicago. While talent is

[10] Data from *Closing the College Participation Gap 2003*, a report of the Education Commission of the States.

about more than just a college education, a four-year degree enables individuals to move more easily across industries, up career ladders, or into business for themselves than two-year degrees or skills certificates. We need people with specific skills, but we also need people with degrees.

WE NEED TO INCREASE CAREER EDUCATION STRATEGIES FOR YOUTH. Without a clear understanding of the job opportunities which exist in specific industries, youth and their parents are making decisions about their future without adequate information. Today, a students high school education becomes the foundation of their future career path. Without taking the right classes at the right time, career aspirations may never be realized weakening both the students opportunity to secure the job they desire and the region the opportunity to take advantage of the talent it needs.

WE NEED UNIVERSAL LITERACY IN READING, MATH, TECHNOLOGY AND FINANCE, and not just for young people or second-language speakers. CWI's work on literacy with the Discovery Alliance revealed illiteracy rates range from 9% to 46% in the region. In addition, CWI's 2005 State of the Workforce Report found that workers in the region who had once been literate are finding themselves unprepared for jobs in the current labor market as those jobs become more and more dependent upon technology and communication. Moreover, as firms move away from traditional pension plans and comprehensive health insurance coverage, workers of all ages will have to take an increasing role in planning for their family's economic security.

WE NEED IMPROVED CONNECTIONS BETWEEN WORK AND LEARNING OVER A LIFETIME, including help for students in understanding what work requires. In Indiana, only 3.2% of working adults are enrolled in any post-secondary education or training, compared to 5.4% in top performing states.[11] While these figures are not available regionally, we do know that the 2000 Census found only 4.8% of adults over 25 (working and non-working) enrolled in education in Northwest Indiana, compared to 7% statewide. In two counties in the region, the percentage was under 2.5%. We need to both increase the demand for learning among adults and help colleges and professional schools make learning more accessible to them.

WE NEED SOLUTIONS TO THE PROBLEM OUR EMPLOYERS CALL "WORK ETHIC." This is the single most frequently cited workforce challenge across firms in all industries (regardless of size) in our region. We know that this subject requires closer review as it reflects changing attitudes, norms, and expectations about work among both firms and workers. We have recently launched the *Work Ethic Certification Program*, a pilot project that helps high school juniors and seniors understand the importance of discipline, punctuality, attendance, and other practical skills in the workplace.

[11] These figures are found in the *2004 Measuring Up Report* published by the National Center for Public Policy and Higher Education.

WE NEED TO IMPROVE OUR EFFICIENCY AND EFFECTIVENESS, WHILE INSURING QUALITY, in delivering economic development, business assistance, and workforce services to firms in our region. Business at *WorkOne* offices has increased by 147% from program year 2004, and more users are returning for additional services. The offices have partnered with placement firms to offer additional services to individual customers and redesigned business service plans are in place. These are positive trends, although we know that improvements in quality and efficiency are still needed. More broadly, the launch of the RDA has provided an opportunity for business service organizations in the region to re-think how they do business. We anticipate system-wide improvements over time.

INDIANA'S STRATEGIC SKILLS INITIATIVE

IT IS IN THIS LANDSCAPE, THE CENTER OF WORKFORCE INNOVATIONS AND LAKE COUNTY INTEGRATED SERVICES DELIVERY BOARD, IN PARTNERSHIP WITH THE STATE OF INDIANA, HAS LAUNCHED THIS *STRATEGIC SKILL INITIATIVE* (SSI).

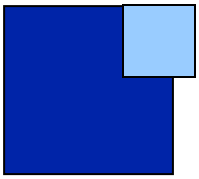
Our region's ultimate goals mirror those of the SSI project: more competitive firms, better jobs at higher wages, smarter workers and a plan for building talent, and an economy that supports it.

While there is no single magic bullet for solving the complex economic and workforce issues we identify in this report, we see significant value in the SSI project. We look to Indiana's SSI to:

- Create an updated inventory of shortage occupations across our region's key industries.
- Identify specific skills shortages across occupations and key industries and trends that will impact those shortages in the near future.
- Engage firms in uncovering the root causes of mismatches between supply and demand in our labor market.
- Develop solutions that will both leverage public and private investments of time and resources, and make a real difference for firms, workers, and communities in the region.
- Lay the foundation for a collaborative, regional approach to Indiana's critical workforce and economic challenges.

The change we seek is measured in economic terms, but its roots are cultural. Today, nearly two of every three Indiana residents say the state as a whole rates fair to poor in its ability to respond to change. We know that the economy we seek to build requires adaptability.

CHANGE IS HARD. BUT WE'RE READY. Together with our partners, we are committed to making a difference in Northwest Indiana—one job, one firm, one community at a time.



Section I: Methodology

In our region, Northwest Indiana, we used the SSI project to build our overall capacity in two critical areas:

- Collecting, analyzing, managing, interpreting and disseminating labor market information; and
- Building a shared economic identity as a region.

Toward these ends, we followed the state guidelines in establishing a framework for our research, focusing on the following 22 issues:

1. Industry size by employment and wage.
2. Wages across industries.
3. Growth across industries (by wages, number of establishments, employment).
4. Projected job growth within industries (by occupation).
5. Comparative advantage of industries.
6. Potential competitive advantage of industries.
7. Industry trends and context.
8. Economic development efforts targeting specific industries.
9. Occupations critical to key industries (by size).
10. Occupational growth projections.
11. Wages and compensation trends by occupation.
12. Training, education and skill needs for critical occupations.
13. Licensing and certification requirements by occupation.
14. Shortages by occupation.
15. Specific employer analysis.
16. Size of labor force with skills needed in critical occupations.
17. Age of workforce with needed skills.
18. Employment status of workforce with needed skills.

19. Projections of growth in workforce with needed skills.
20. Post-education and training plans and activities of workforce with needed skills enrolled in post-secondary education or training.
21. Workforce mobility.
22. Self-sufficiency income requirements.

In addressing these issues, we relied heavily on the resources suggested by the State and the tools aggregated on the statewide SSI project web-site [http://www.stats.indiana.edu/ssi/reg_page.asp?reg=1].

Our SSI work was completed by a team comprising the Center of Workforce Innovations and Lake County Integrated Services Delivery Board staff, supported by a CSW consultant. Our decisions were guided by a regional Industry Consortium, and key decisions were made by the Executive Team, a subset of the Consortium. Members of these groups are listed by name and affiliation on page 36 and 38 respectively. Key stakeholder groups we engaged in this project included:

- Northwest Indiana Forum (NWIF)
- Northwest Indiana Regional Planning Commission (NIRPC)
- The Kankakee-Iroquois Regional Planning Commission (K-IRPC)
- KV Works (KV)
- Workforce Development Services (WDS)
- Regional Development Authority[12]
- Regional Development Corporation (RDC)
- Porter County Economic Development Alliance
- La Porte County Economic Development Partnership Alliance
- Quality of Life Council (QLC)
- Northwest Indiana Study Council
- Northwest Indiana Chamber Executives Association

[12] This organization did not formally come into being until September 2005, but we were coordinating with the key leaders responsible for its launch.

Web-based Workshops

To facilitate data collection at the regional level, the State developed six web-based workshops as a part of the SSI project. We completed all of them on the following schedule:

- **Session 1: Overview**, Tuesday, September 13, 2005
- **Session 2: Outline of the Report,** Tuesday, September 20, 2005
- **Session 3: Identifying Key Industries and their Growth Potential**, Tuesday, September 20, 2005
- **Session 4: Identifying Critical Occupations and Skills** (Demand), Tuesday, September 27, 2005
- **Session 5: Identifying Critical Occupations and Skills** (Supply), Monday, October 3, 2005
- **Session 6: All Together Now: Compiling, Validating, and Writing**, Monday, October 10, 2005

Because we sought to emphasize the capacity building aspect of SSI, we opened the workshops to staff who do not generally participate in labor market research and programming. For us, these workshops helped staff not directly involved in data analysis understand the nature of this work and the scope and scale of the SSI project so they could communicate its importance to partners in their own networks.

In addition, we were all able to see the evolution of some of the state tools now available to assist in our work; *STATS Indiana*, for example, has become more comprehensive and user-friendly over time. Staff that had not used these tools previously have a better understanding of the resources available to them. The workshops gave our people the opportunity to see how these tools might be useful to them, not just for the SSI project, but in the work they do everyday.

Finally, we appreciated the opportunity to practice using web-based collaboration tools. We have experimented with them before, but will rely on them with increasing frequency in the future. Just as the State SSI team saved us time by avoiding lengthy trips to the state capital, we plan to save our employers and stakeholders time, when appropriate, by relying on new technologies and interactive collaboration tools. Participating in web-based events hosted by others helps us make better decisions about when to use these technologies for our own work.

Quantitative Data Collection

We found the collection of tools the state assembled to support the SSI project more than adequate for quantitatively addressing the 22 issue areas comprising the focus of this first report.

We used these tools extensively:

- To ascertain both current and future estimates of jobs, occupations, skills and their concentrations in the industries important to our region;
- To determine current and projected numbers of workers with skills in high demand across industries and within critical occupations, as well as their locations and demographic characteristics;
- To locate other sources of data that helped to provide context for our work, such as information on industry trends, income and poverty levels and educational attainment; and
- To inform our selection of key industries and occupations and critical skills.

Selecting Key Industries & Clusters

We selected three key industries as areas of focus for the SSI project: **Healthcare, Manufacturing and Transportation, Distribution and Logistics (TDL)**. But we suspect that as we move into the Root Cause and Solutions phases of the SSI project, clusters, with these industries at their foundations, will feature more prominently.

The term “Industries,” as used in this report, refers to groups of firms officially recognized by the Bureau of Labor Statistics (BLS) and recognized in the North American Industrial Classification System (NAICS). The classification system is not perfect; it cannot distinguish between firms that outsource non-core functions, for example, from those who retain them in-house. But firms in the same classification code tend to *do* similar things-—manufacture, trade or distribute, for example—even though their products and services vastly differ.

The term “Industry clusters,” on the other hand, refers to groups of firms that interact in a region or area because of the product or service they produce or deliver. In Northwest Indiana, for example, the steel industry is the foundation of a cluster of firms that manufacture, mold, distribute, market, and assemble steel. The product or services, and the specialized knowledge required to make the steel business competitive, is what firms in clusters have in common, not a set of work activities.

Our statistical tools and surveys are much better at collecting data on industries than on clusters. As a result, our methods are biased toward industries. But we know from experience that once firms begin to engage in solutions, clusters tend to emerge as the preferred organizing vehicles. This is because, fundamentally, firms are interested in how their products or services get manufactured, assembled or delivered better and faster; workforce solutions are only a means toward that end. A supply chain approach (clusters) can generate more dramatic impact than a firm-based one, especially for small or mid-sized firms.

As a result, this report generally uses the term “industry” (e.g. *Manufacturing Industry*) narrowly, referring to a NAICS code. Exceptions are noted. When we use the word “industry” alone, with no modifier, we are referring to groups of firms broadly (e.g., employers). We suspect that “cluster” may be used with increasing frequency during the next two phases of the SSI project.

We selected our key industries based on their current or potential future impact on our region’s economy. We considered size, employment, income, knowledge assets, and partner agency or organizations’ interests in our selection.

Our quantitative analysis led us initially to four key industries—Construction, Health Care, Manufacturing, and TDL. Our qualitative work, together with the guidance of our Industry Consortium, helped us narrow our selection to three: **Health Care, Manufacturing** and **TDL**.

Specific Employers by Six-Digit NAICS Industry Code

The listing of employers within the three industries is provided under separate cover due to the intellectual property sub-lease agreement signed in order to obtain this information.

Selecting Critical Occupations and Skill Sets

There are many critical occupations and skills sets in our target industries. We relied on quantitative analysis to identify approximately 25 occupations based on their current and projected demand, wages, and skill sets.

Based on the guidance of our Industry Consortium and additional qualitative data collection, we narrowed the list to 18 occupations. These are identified and discussed in detail in Sections III and IV of this report.

While we understand the importance of critical skill sets in relation to critical occupations (e.g., the skills sets that are most lacking in important occupations are critical), our

Industry Consortium felt it was also important to look across the labor market for skills sets that would be transferable across industries, since that would help individuals and employers both inside industries and across the economy and would lessen the negative effective of fluctuating demand in "sensitive" industries.[13]

In addition, we are concerned about preparing our workforce to compete in the 21st century knowledge economy. While our regional economy requires fewer knowledge workers than competitor regions, we are unable to meet even the current demand for these workers. Yet, we would like to see that demand (employers) increase—and it is—so that the supply (people) would have more incentive to meet it. Higher skills levels "raise the bar" on workforce competitiveness across the region. If we meet this demand, our more skilled workforce will have more choices and move more easily through our labor market, despite its volatility. If we do not, our workers, firms, and economy will remain vulnerable.

We selected our critical occupations and skill sets with these perspectives in mind.

Our selected occupations meet the basic selection criteria—they pay well, offer career mobility and are in high demand. But they represent jobs that technology will likely change or where the use of technology will become more prevalent, such as Operators, Mechanics, Production Specialists, Lab Technologists, and Pharmacy Technicians. In looking at the skills requirements of our 18 selected occupations, critical thinking, math, and science feature prominently.

The Job Vacancy Survey

We used the job vacancy survey primarily for validating our quantitative and qualitative analysis. Nearly 70% of the entire job vacancies reported in the survey were in the industries we selected (i.e., Health Care, Manufacturing, and TDL). The average vacancy rate for the specific occupations we selected was 4% or 1,037 total jobs (an average of 58 jobs per occupation). Our selected occupations account for more than one in four jobs reported vacant in the region. Our secondary source data confirmed these findings, as did our Industry Consortium and Executive Team.

Qualitative Data Collection

While we completed all the SSI required quantitative analysis, for our region *qualitative* data collection was also very important.

[13] Specific examples include health care occupations requiring skills that are also the foundation of life science occupations.

First, we are building an identity as an economic region across a geographic area that is not accustomed to thinking of itself as a cohesive region. The more we are able to talk to people and engage them in shared initiatives, the more effective regional level planning will become. We know this is not short-term work, and every point of contact matters.

Second, we have invested considerable time and effort engaging regional employers in our industry Cluster Initiative. This project used methods similar to SSI to examine the following industries:

- Steel (2003)
- Health Care (2004)
- Precision Equipment Manufacturing (2004)
- Wholesale Trade/Logistics (2004)
- Professional Services (2004)
- Life Sciences (2005)
- Information Technology (2005)

We published reports on all of these industries, and developed posters for display in schools, colleges, firms, professional associations, and industry and public environments. And we were beginning to engage our industry stakeholders in developing pilot projects and programs to advance key recommendations in these reports.

Then Indiana launched the State's Strategic Skills Initiative. On the one hand, our region was delighted with the timing of this major planned investment in skills, since we had already developed ideas about potential programs and projects as a result of our Industry Cluster project. But on the other hand, key industry stakeholders balked at what felt to them like a duplicative data collection effort.

We therefore focused our industry engagement in on three sets of activities:

1. Validating the quantitative data collected through SSI and updating the data they provided as a part of the Industry Cluster project;
2. Engaging their employees through surveys[14] and focus groups, a component that was not part of the initial Industry Cluster work; and
3. Increasing the use of electronic and phone based communications. Because our region is now larger than in past years, it is more difficult to

[14] While surveys are obviously also quantitative, we included a number of open ended questions which have proven quite useful.

pull people together in person. Therefore, we are reinventing the way we work, relying on more frequent electronic and web-based communications together with fewer, but longer and more substantive, face to face meetings.

Specific qualitative data collection efforts toward these ends included:

- **Formal interviews** with key stakeholders. We conducted formal interviews with 14 employers and economic development professionals between August 22 and September 30, 2005.
- **Informal discussions** with key stakeholders. We contacted over 100 industry professionals, education, and workforce professionals, and community leaders, to ask them about their experiences and those of their clients over the past four years. We specifically discussed the SSI project and initial findings, and asked for their input.
- **Focus Groups** with employers, economic development professionals, students, job-seekers and workers. We conducted three focus groups with high school teachers and counselors, a cross section of industry executives, and key economic development professionals in the region. We are planning another six during the Root Cause & Solutions phases of the project.
- **Electronic and paper surveys for employers.** We disseminated paper surveys to key industry associations and one-on-one to employers in key industries, and links to our electronic survey to key business membership organizations with requests to share with members. By October 11, 2005, 141 surveys had been completed (the survey is still live and responses are still coming in).
- **Electronic and paper surveys for employees.** We disseminated paper surveys to employers attending our meetings and focus groups and sent links to our electronic survey to professional associations and union representatives with requests to share with colleagues. By October 11, 2005, 158 employees had completed surveys. A sample survey is included in this report as Appendix A.

Other Sources of Data

We also reviewed many third-party reports and studies that included data on our region. While we did not include all the information we reviewed, we did cite documents that

were either very helpful, such as the *Measuring Up* Report, or were very good at framing complex issues in simple ways. These are listed in Appendix B (Bibliography).

Finally, the very fast timeline mandated by this project prompted us to be creative in collecting and validating data. We developed one habit that we plan to maintain—using every point of contact as an intelligence gathering opportunity. Early in the project, our team decided that data collection would have to occur both within assigned project tasks and also through existing day-to-day work. We placed interview protocols on our walls near our phones and used them religiously with individuals we talked to who could lend their insight and expertise to the project.

We also carried these protocols with us, in our briefcases and cars, to use remotely. While these interviews were not formal ones, we learned much from them. Our contacts offered to help with surveys, lent their professional and personal opinions, led us to secondary data sources, and simply cheered us on.

Communication like this will eventually help our region's non-workforce, education, and economic development professionals understand the importance of these issues.

Aggregating Data and Writing Report 1

We divided responsibility for data collection and analysis among the core team members[15] and then convened as a group through a series of phone calls and meetings to work through the meaning of the data and identity inconsistencies—these will be explored in the Root Cause Analysis.

We then shared responsibility for writing the final report.

Chronology of Methods & Activities

Shortly after the SSI project was announced in summer of 2005, the Center of Workforce Innovations (CWI) and the Lake County Integrated Services Delivery Board (LCISDB) convened a *Planning Consortia* to take responsibility for the project's launch. This group included:

- Deb Butterfield, President, Greater Valparaiso chamber of Commerce and Officer, Valparaiso Economic Development Corporation
- John Greaves, U.S.WA 6787, former President of the Northwest Indiana Chapter of the AFL-CIO and current Program Chair for Manufacturing Industrial Technology with Ivy Tech Community College of Indiana

[15] Core team members included staff of The Center of Workforce Innovations, The Lake County Integrated Services Delivery Board and The Corporation for a Skilled Workforce.

- Vincent Galbiati, Executive Director, Northwest Indiana Forum
- Harold Foster, President of Tugtel Communications and former Chairman of the Gary Chamber of Commerce
- Dr. Jeff Jones, Assistance Vice Chancellor for Engagement at Purdue University North Central
- Colleen Reilly, Director of Communications and Public Affairs for NIPSCO (public utility serving Northern Indiana)
- Jennifer Whaley, the Executive Director for Newton County Economic Development

This group became the project's *Executive Team*. They met twice in July (on the 13th and 29th) to guide the development of the Region's SSI application and to nominate and recruit industry representatives, educators and workforce experts to join the region's *Industry Consortium*.

Operationally, the *Industry Consortium* provided broad-based input on the project, and the smaller *Executive Team* guided operations and took responsibility for decision-making between meetings.

The Executive Team met for a third time on August 23 to develop a work plan based on the submitted SSI application, and to plan project oversight.

At the same time, Industry Consortium members were engaged by email and telephone, meeting in person for the first time on September 20, 2005 for a three-hour work-session. At the end of the work-session, Consortium members were given packets of (anonymous) surveys with instructions to place them in the mailboxes of high-performing employees in hard-to-fill critical positions.

In addition, we asked Consortium Members to review and be prepared to validate or challenges the Industry Data we provided (to inform Report #1) within 48 hours. We then contacted all of them 48 hours later to solicit input on our processes and findings to date.

During the next week (September 26-30, 2005), we contacted tens of key stakeholders in the region—from firms and schools to trade associations and the *Quality of Life Council* asking for help with interviews, focus groups and surveys, and validating our findings to date.

By September 30, we provided our Executive Team with the data we had collected, and asked for their help in selecting our key industries. In a series of conference calls convened between September 30 and October 4, they validated the findings and narrowed our industry target list to three: **Healthcare**, **Manufacturing** and **Transportation, Distribution and Logistics.**

Although our surveys remain live, we had to establish a cut-off date for analysis to include relevant findings in this report. We collected survey data through October 11, 2005, data collected after that date will be included in the Root Causes analysis and used to validate (or challenge) our findings to date.

From October 11, 2005 to present, we have been assembling the report, sending pieces to key stakeholders as they are completed for review, input and validation or challenge.

During the second week in November, we will launch the Root Cause Phase of the SSI project. We feel confident that our survey data will give us very useful information to use in engaging our employers and stakeholders more broadly and we look forward to learning from their insight and expertise.

Industry Consortium Members

Name	Company	County
HEALTH CARE		
Amy Bean	Pulaski Hospital	Pulaski
Tony Ferracane	Community Hospital System	Lake
Gary Mitchell	Opportunity Enterprises	NWI*
Connie Ford	La Porte County Hospital	La Porte
IT		
Greg Scasny	Golden Technologies	Porter
Richard Barnes	Hokey Spokes	Lake
TDL		
Bob Ernth	NICTD	NWI
Travis Colbaugh	Smith Transport	Jasper
MANUFACTURING		
Scott Farrisee	The Chicago Faucet Company	La Porte
Steve Wagner	Local 1010	Lake
Jim Hicks	JW Hicks	NWI
Jim Wozniak	Mittal Steel	NWI
PROFESSIONAL SERVICE		
Mike Baird	Mercantile Bank	NWI
Bill Joiner	Structure Resources	Lake
LIFE SCIENCES		
P. Scott Bening	Monsol LLC	NWI
ENTERTAINMENT/HOSPITALITY		
Charlotte Cook Hawkins	Trump Casino	Lake
EDUCATION		
Dr. Dee Haklin	Ivy Tech Community College	NWI
AGRICULTURE		
Matt Gibson	Gibson Farms	Newton

Section II: Selection and Definition of Key Industries and/or Clusters

TOGETHER WITH OUR PARTNERS AND STAKEHOLDERS in the region who helped implement our cluster study project, we have learned a much about our regional industrial base during the past three years.

This knowledge and experience, combined with the quantitative analysis we completed as a part of the SSI project provided a well-rounded picture of the opportunities in our economy and labor market. While there were good arguments in favor of many industries, we selected three. Each is identified by name and two-digit North American Industry Classification System (NAICS) as follows:

- **Health Care and Social Services** (62)[16]
- **Manufacturing** (31-33)
- **Transportation, Distribution and Logistics** (42, 48, 49); and

In selecting our key industries, we considered many different aspects of all of our regional industrial landscape:

- Which industries employ the most people?
- Which pay the best?
- Which are growing? How?
- Which will offer the most new jobs in the next few years?
- In which industries do we have a competitive advantage?
- Which industries are interested in building a competitive advantage?
- Which industries are prepared to capitalize on regional, national and global growth trends?
- Which industries have been targeted by state and local economic development experts for growth and development?
- Can we work with firms in the region to positively impact our key industries?

[16] While NAICS code 62 includes social services in addition to health care, we intend to focus on the health care sector. To maintain consistency with the other industries, however, we use NAICS code 62 when a two-digit code is required.

- Is there community support for working with these industries?
- While all of these factors are important, they are not all *equally* important. As explained below, we prioritized four factors in determining our key industries:
- Employment—the percentage of total employment the industry contributes to the region
- Wages—both the percentage of total wages the industry contributes to the region, and the average weekly wage associated with jobs in the industry[17]
- Our ability to positively impact the economic health of firms and workers in the industry; and
- Broad-based community and business support.

Employment & Wages

EMPLOYMENT AND WAGES WERE CRITICAL FACTORS IN IDENTIFYING OUR KEY INDUSTRIES.

Our region has experienced significant job loss during the past three years—over 5,000 (net) jobs comprising nearly 2% of our industrial base. Much of this job loss has occurred in our largest industry, manufacturing, which employs 9,000 fewer people today than it did three years ago. Despite these overall reductions, manufacturing firms are hiring for specific high-paying positions.

We learned this during our manufacturing cluster study work. At the public launch of our Manufacturing report this year, a panel of experts from major Northwest Indiana manufacturing firms that included *Emerson Power Transmission Corporation, Sullair, Swiss Controls* and *Tri-State Manufacturing* all agreed—the future of the industry is bright, but it will rely on fewer more skilled people in better paying and more demanding positions.

Stephen Oswald (Sullair) observed that his company no longer focuses on selling the product, but on delivering solutions to customers. “We’re hiring!” he said, explaining that his firm is looking for smart people who embrace change and can commit themselves to improving the company and its products and services.

This shift in our economic landscape—and in the needs and challenges of firms in our major industries—means three things:

[17] We were looking for an average weekly wage above both the weighted average across all industries ($706.20) and the slightly higher non-weighted weekly wage average across all industries ($745.73).

- We need to understand the new demands for talent in our manufacturing industry so that we can invest in a human capital strategy that enhances its competitive position. We know we're likely to see fewer jobs over time, but if we're smart, they might also be better jobs.
- We need to identify other industries *offering good jobs* that can absorb large numbers of people who are either leaving manufacturing or who are no longer entering the field.
- We need to explain the dynamics of our local labor market to young people so they can make choices leading to great careers—in Northwest Indiana.

As a result, in our region the number of jobs an industry offers and how much those jobs pay were critical in our selection of key industries.

A comparison of major industries identified by two-digit NAICS codes (Table II.1) points to five industries that both employ large number of our residents and pay a large percentage of the total wages our workers earn.

- **Health Care and Social Assistance** has grown steadily over the past decade and now employs more than one in ten workers in the region (13.5%), up nearly 1,000 jobs in the past year. Moreover, the industry is responsible for 14% of the wages earned in the region, second only to manufacturing.
- **Manufacturing**, despite recent job losses, employs one in six Northwest Indiana workers (15.8%) and remains the largest source of jobs in the region. Importantly, these jobs pay nearly 26% of the wages earned in the region.
- We treat **Wholesale Trade** (42) and **Transportation and Warehousing** (48-49) as a single industry called **Transportation, Distribution and Logistics** (TDL). We opted for this approach both because the combination more accurately reflects what the industry does—distribute goods—and because we seek to align our work with ongoing work in the region.[18] TDL represents 7.6% of the employment in the region and 9% of the wages. Importantly, we understand that TDL and manufacturing are inextricably linked through local, regional and global supply chains. To the extent our region's TDL industry is efficient and effective; our

[18] The recently launched Regional Development Authority has identified the TDL industry as a primary focus of their work, and Purdue University Calumet is currently researching the industry and plans to release a detailed report in partnership with LCISDB and inventory by the end of the year. Finally, we share a regional distribution system with neighboring Chicago, which has also made the TDL industry an economic and workforce priority.

manufacturers have a competitive advantage over peers dependent on poorly developed TDL infrastructures elsewhere.

- **Construction** also plays an increasingly important role in the region's economy, employing 6.4% of workers whose wages comprise 8.1% of those earned in the region.
- **Educational Services** is also major source of jobs, employing nearly one in ten workers (9.1%); and **Accommodation and Food Services** is nearly as large, employing one in eleven (8.1%). But both industries pay lower than average wages. Accommodation and Food Services in particular maintains the largest gap—employing 8.1% of the workforce but paying only 2.6% of the wages.

Table II.1 Comparing Northwest Indiana Industries (Employment & Wages)

NAICS	Industry	% of Employment (2004)	% of Wages (2004)	Avg. Weekly Wage (2004, Q4)
	All Industries			$706.20
11	Agriculture, Forestry, Fishing and Hunting	0.6%	0.4%	$553.78
21	Mining	0.2%	0.3%	$1,110.22
22	Utilities	0.8%	1.6%	$1,287.58
23	Construction	6.4%	8.1%	$910.61
31-33	Manufacturing	15.8%	25.9%	$1,181.36
42	Wholesale Trade	3.4%	4.3%	$965.22
44-45	Retail Trade	12.7%	7.9%	$430.19
48-49	Transportation and Warehousing	4.2%	4.7%	$792.62
51	Information	1.3%	1.3%	$658.74
52	Finance and Insurance	2.5%	2.8%	$748.17
53	Real Estate and Rental and Leasing	1.2%	0.8%	$512.21
54	Professional, Scientific, and Technical Services	2.8%	3.2%	$849.02
55	Management of Companies and Enterprises	0.5%	1.0%	$1,360.32
56	Administrative and Support and Waste Management and Remediation Services	4.5%	3.0%	$447.06
61	Educational Services	9.1%	8.2%	$572.61
62	Health Care and Social Services	13.5%	14.0%	$776.43
71	Arts, Entertainment, and Recreation	3.3%	2.7%	$524.17
72	Accommodation and Food Services	8.1%	2.6%	$217.35
81	Other Services(Except Public Administration)	3.6%	2.2%	$416.92
92	Public Administration	5.5%	5.1%	$636.18
99	Unallocated	0.0%	0.0%	$709.62

Source: Stats Indiana, 2005

Current & Future Growth

GROWTH—THE DEGREE TO WHICH AN INDUSTRY IS ADDING VALUE TO OUR ECONOMY—is also an important determinant of the industry's importance in our region. But "growth" is a more nuanced term than "size," and harder to measure.

One way to determine the likelihood of growth is to look backwards at growth trends to date. Table II.2 identifies industries in the region by their two-digit NAICS codes and illustrates the changes in the size of these industries since 2001, measured by the number of jobs.

We can see that overall, industries declined by 1.6% or 5,170 jobs. Industries that lost the most jobs during this time include: manufacturing (-8,977), retail trade (-1,420) and information technology (-683). Manufacturing and information technology lost the largest percentages of jobs, 15.4% and 14.1% respectively.

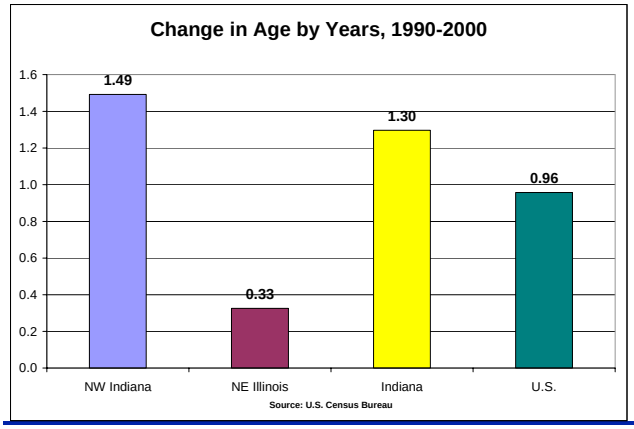
Industries that gained significant numbers of jobs during this generally weak economic cycle include: health care (3,763), administrative support and waste management (720), education (465), construction (588) and professional, scientific and technical services (504).

As a percentage of employment, health care (9.7%), management (8.5%) and professional, scientific and technical services (6%) saw the greatest gains.

But that's not the whole story.

We know that Northwest Indiana's population is older on average than the state or U.S. average, and is aging faster. Figure 1 (below) compares the change in average age (in years over a decade) in Northwest Indiana to that of the state, the U.S. and neighboring Northeast Illinois!

Northwest Indiana is aging slightly faster than the state, 50% faster than the U.S. as a whole, and more than twice as fast as Northeast Illinois.



With nearly one out of every two Northwest Indiana workers over 45, and more than one in ten over 55, we know that there will be many job openings in industries that may not be experiencing growth overall, but will need to replace large numbers of older workers.

Figure 1

Table II.2 Changes in the Size of Northwest Indiana's Industries 2001-2004

NAICS	Industry	# of Firms (2004)	Average Employment		Numerical Change in Employment	Percent Change in Employment
			2001	2004		
	Total	17,783	319,462	314,292	-5,170	-1.6%
11	Agriculture, Forestry, Fishing and Hunting	142	1,792	1,757	-35	-2.0%
21	Mining	26	662	638	-24	-3.6%
22	Utilities	25	2,655*	2,497	-158	-6.0%
23	Construction	2,167	19,474	20,062	588	3.0%
31-33	Manufacturing	872	58,479	49,502	-8,977	-15.4%
42	Wholesale Trade	1,122	11,351	10,758	-593	-5.2%
44-45	Retail Trade	2,785	41,365	39,945	-1,420	-3.4%
48-49	Transportation and Warehousing	692	12,729	13,095	366	2.9%
51	Information	219	4,852	4,169	-683	-14.1%
52	Finance and Insurance	1,009	7,838	7,940	102	1.3%
53	Real Estate and Rental and Leasing	679	4,100	3,640	-460	-11.2%
54	Professional, Scientific, and Technical Services	1,454	8,373	8,877	504	6.0%
55	Management of Companies and Enterprises	58	1,383	1,500	117	8.5%
56	Administrative and Support and Waste Management and Remediation Services	806	13,576	14,296	720	5.3%
61	Educational Services	393	28,086	28,551	465	1.7%
62	Health Care and Social Services	1,740	38,652	42,415	3,763	9.7%
71	Arts, Entertainment, and Recreation	198	10,536	10,515	-21	-0.2%
72	Accommodation and Food Services	1,497	24,442	25,422	980	4.0%
81	Other Services(Except Public Administration)	1,638	11,458	11,300	-158	-1.4%
92	Public Administration	250	17,436	17,397	-39	-0.2%

* Data was not available for 2001. The number cited here was employment in 2002.
Source: Stats Indiana

For example, Table II.3 shows the overall decline in manufacturing employment since 2001. But Table II.3 reveals that in Primary Metals Manufacturing alone—over 10% of the region's total employment base—nearly one in four workers is over 55. This

explains why the region will need to cultivate nearly 300 metals industry workers each year even while the industry's demand for new workers remains flat (Table II.5).[19]

While this analysis suggests the potential for rising wages for the region's workers, who will be older, more experienced and fewer in number as the "baby boomers" begin to retire, it also means that the region will have to compete on skills and talent, or firms will be tempted to locate or recruit from neighboring regions where there are more and cheaper workers available to fill high-demand jobs.

Table II.3 Select Industry Sub-sectors Employing Large Numbers of Older Workers in Northwest Indiana

	Indiana				Northwest Indiana			
	# of Employees	% of Total Emp	# of Workers 55+	% of Workers 55+	# of Employees	% of Total Emp	# of Workers 55+	% of Workers 55+
237 Heavy and Civil Engineering Construction	16,466	0.7%	2,196	13.3%	1,137	0.7%	156	13.7%
331 Primary Metal Manufacturing	53,517	2.2%	9,874	18.5%	18,187	10.9%	3,872	21.3%
332 Fabricated Metal Product Manufacturing	57,638	2.4%	8,608	14.9%	1,825	1.1%	250	13.7%
333 Machinery Manufacturing	43,330	1.8%	7,538	17.4%	638	0.4%	104	16.3%
423 Merchant Wholesalers, Durable Goods	74,142	3.1%	11,101	15.0%	4,582	2.8%	801	17.5%
484 Truck Transportation	47,255	2.0%	8,612	18.2%	3,897	2.3%	560	14.4%
485 Transit and Ground Passenger Transportation	3,498	0.1%	1,021	29.2%	703	0.4%	141	20.1%
488 Support Activities for Transportation	6,360	0.3%	830	13.1%	393	0.2%	0 or na	0 or na
611 Educational Services	39,249	1.6%	7,731	19.7%	1,863	1.1%	451	24.2%
621 Ambulatory Health Care Services	101,103	4.2%	14,118	14.0%	9,401	5.6%	1,489	15.8%

[19] While this analysis points to rising wages for the region's workers, who will be older and more experienced and fewer in number as the "baby boomers" begin to retire, it also means that the region will have to compete on skills and talent, or firms will be tempted to locate or recruit from neighboring regions where there are more and cheaper workers available to fill high-demand jobs.

	Indiana				Northwest Indiana			
	# of Employees	% of Total Emp	# of Workers 55+	% of Workers 55+	# of Employees	% of Total Emp	# of Workers 55+	% of Workers 55+
622 Hospitals	101,218	4.2%	13,746	13.6%	10,758	6.5%	1,662	15.4%
813 Religious, Grantmaking, Civic, Professional, and Similar Organizations	28,178	1.2%	5,762	20.4%	2,292	1.4%	588	25.7%

Source: U.S. Census Bureau Local Employment Dynamics

Growth viewed this way—by projected job openings resulting from industry expansion *and* job replacement—our analysis points to significant job opportunity and career potential for Northwest Indiana workers in industries that may be shrinking overall.

Projected Openings in Key Industries

OUR TARGET INDUSTRIES—each growing at a different rate—project over 7,000 openings in between 2002-2012: approximately 2,800 in Health Care, 2,400 in Manufacturing and 1,900 in TDL. For job projections by occupational titles, see Appendix C[20]

More specifically, in **Health Care**, we identified nine occupational categories projected to offer more than 50 or more openings per year (due to growth and replacement combined). Two of these are technician positions and the remaining seven are linked to patient care. The three positions projected to offer the most annual openings identified by their Standard Occupational Codes (SOCs) are: Healthcare Practitioners and Technical Occupations, Health Diagnosing and Treating Practitioners and Healthcare Support Occupation. These occupations together with their projected new and replacement openings are listed in Table II.5.

[20] Appendix C lists only projections where annual openings equal 50 or more positions.

Table II.5 Projected Job Openings in Top 3 Occupational Categories

SOC Code	Occupation	Projected openings due to growth (annual)	Projected openings due to replacement (annual)	Total projected openings (annual) from growth and employment[21]
HEALTH CARE				
29000003900	Healthcare Practitioners and Technical Occupations	320	350	670
29100003910	Health Diagnosing and Treating Practitioners	200	220	420
31000004590	Healthcare Support Occupations	180	110	300
Total projected openings				1,380
MANUFACTURING				
51000008810	Production Occupations	60	760	820
51400009080	Metal and Plastic Workers	10	280	280
51900009940	Other Production Occupations	20	200	220
Total projected openings				1,330
TRANSPORTATION, DISTRIBUTION, & LOGISTICS				
53000010320	Transportation and Material Moving Occupations	130	630	750
49000008120	Installation, Maintenance and Repair Occupations	50	420	460
53300010450	Motor Vehicle Operators	110	190	300
Total projected openings				1,510
Total projected annual openings in these 9 occupational categories				4,220

Data sources: Indiana Business Research Center based on ES202 data, U.S. Bureau of Labor Statistics, provided by: Indiana Business Research Center, IU Kelley School of Business

[21] This column identifies the total number of openings from growth and replacement through 2012, annualized for each year. The number in the rows across, therefore, do not always add up to zero, either because the demand is expected to shrink over time or because productivity is expected to increase.

In **Manufacturing**, we identified eight occupational categories projected to offer more than 50 openings or more annually: four supervisory, two in production, two in assembly and two specialist occupational categories.

The three categories projected to offer the most annul openings include: Production Occupations, Metal and Plastics Workers and Other Production Occupations. The numbers of projected openings associated with these occupational categories are listed in Table 6.

In **Transportation, Distribution & Logistics (TDL),** we identified four occupational categories projected to offer more than 50 or more openings annually: three driver or operator categories and one maintenance and repair category.

The three categories projected to offer the largest number of openings include: Transportation and Material Moving Occupations; Installation, Maintenance and Repair Occupations and Motor Vehicle Operators. Table II.4 provides the numbers of projected openings in each of these occupational categories.

Of the 4,220 projected annual openings in these nine occupational categories, 75% (3,165) are replacement openings, indicating the unique significance of replacement job-growth in a region like Northwest Indiana.

Our analysis reveals another important point—the projected occupational categories identified in Table II.5 reflect many different kinds of jobs, skill levels and points in a career path. This suggests that a workforce strategy that includes elements of placement, training *and* career advancement across firms, industries, or even within clusters may be an effective way to alleviate shortages that may compromise the competitiveness of firms in our key industries.

Related Findings

FINALLY, AN IMPORTANT TREND WITH THE POTENTIAL TO IMPACT OUR UNDERSTANDING OF WORKFORCE CHALLENGES in industry emerged in our interviews, surveys and focus groups with employers—the flattening of hierarchies, redefining of jobs and reductions in job categories firms are implementing all over our region.

Northwest Indiana firms are not unique in this regard. Much of the auto industry has moved to more general and flexible job categories—the famous **Ford Rouge Plant**, for example, opened five years ago with 25 different jobs on the assembly floor and today there is one—a “manufacturing technician” who works as part of a team and does many different kinds of jobs.

During one of our focus groups, Jim Wozniak from **Mittal Steel** reported that he had just successfully negotiated with the unions to reduce the number of job classifications from 30 to five. His peers in the room applauded.

> "It was hard—and a long time in coming," he said, "The move toward flexibility reflects a change in philosophy for the whole firm—and for our industry. We used to hire for strength, but now we look for brainpower. We want nothing less than two-year degrees and people who are able to work flexibly. We are downsizing our narrowly defined position. There's a lot more multitasking for everyone now, me included."

This shift has several key implications.

First, it is likely to change the way we count jobs and skills. It will be more difficult to apply the standard SOC codes to jobs in ways that accurately reflect the skills requirements and task orientation. As a result, our long-term occupational projections may be outdated sooner than we think.

Second, and more importantly, it will change the nature job-hunting for many individuals. Increasingly, job seekers of diverse ages and backgrounds will be expected to demonstrate both their existing skills and their willingness to learn. Employers are shifting the hiring question from "Can this person do the job?" to "Can I deploy this person where and when I need her/him?"

Third, it will change the demand for training—especially job-related training. Employers will be looking for degrees and certificates not just as evidence of skill but as evidence of *ability to learn*. They will increasingly demand "threshold skills levels" (like degrees) rather than specific skill sets because different specific skill set requirements will evolve over time or change entirely as workers shift to different jobs with or across teams, divisions or departments. This may mean an increased demand for degrees of all kinds—employers are looking for people who have invested in their own skills and made a commitment to learn before they seek work. It may also mean an increased demand for modularized, short-term, on-demand training one individual (or small group) at a time.

Collectively, these complexities—the challenge of *meaningfully* measuring growth, the importance of externalities like aging on growth projections, and structural change within industries that change their behavior—made "growth" a less compelling factor in our selection of industries than either industry size (by employment) or share of paid wages.

Competitive Advantage

HOW CAN A REGION CREATE AND SUSTAIN A COMPETITIVE ADVANTAGE?

Having grown out of firm-level analysis, it first emphasized three sources of advantage: access to resources, ability to turn resources into products-in demand, and ability to distribute those products at a profit.

Michael Porter has since emphasized the role of strategy and popularized the application of "competitive advantage" to analyses of states, regions, cities and industries or clusters. His model points to four sources of advantage:

- **Inputs:** human, financial and natural resources, physical, administrative and information/technology infrastructure.
- **Demand conditions:** customer expectations, knowledge, information and behavior.
- **Local context:** legal protections, healthy competition.
- **Support infrastructure:** efficient suppliers with specialized knowledge and effective relationships with key industries and firms (this last factor is the critical differentiator between firm or industry-level analysis and cluster-based analysis).

Recent competitive advantage debates have emphasized the roles of technology and human capital as key determinants of overall competitive advantage.

Technology's importance can hardly be exaggerated. Technology is an increasingly important component of the infrastructure that makes all the elements of competitive advantage function more effectively and efficiently. Technology in the form of GIS can help us identify new natural resources. Web-based technologies can help carry the right information to the right customers and facilitate their purchases. Technology makes interactions between firms, customers, and other stakeholders more accurate and efficient. And technology helps firms integrate their supply chains.

More controversially, people are also in the forefront of debates about competitive advantage. On the one hand as technologies spread, they begin to level the playing field, forcing firms and industries to differentiate themselves on the basis of innovation—by either meeting new needs, or meeting existing needs in new and better ways. And the source of innovation is people with good ideas who can make them work.

On the other hand, innovation can results in less expensive technology replacing more expensive people, potentially increasing firms' productivity but shrinking the number of people they need, the number of jobs they offer, and the wages they are willing to pay.

This raises challenges for even the most competitive communities—how do you invest in skills and talent that increase competitive advantage and attract business without creating the underemployment that can happen to talent-laden communities in a slow economic cycle?

Ultimately, from the perspective of a region (or other geographic entity) competitive advantage is about the ability of traded sector[22] firms and industries maximizing their regional assets—including schools, professional and trade associations, and reputations and relationships—to increase their product or service quality and efficiency, advance their own innovation capacity, and grow their market shares, profitably.

One way to measure the competitive advantage of an industry is to determine its location quotient, which measures the concentration of industry employment (and firms or jobs) relative to other geographic areas.

Table II.6 shows the concentration of major industries (by number of establishments) in Northwest Indiana relative to their concentrations in the rest of the state, in the mid-west and in the U.S. For further explanation of 'Location Quotients', see Appendix E.

While not a perfect measure of competitive advantage, this analysis does suggest that the region maintains key industry strengths and weaknesses.

Table II.6 Concentrations of NW IN Industries as Reflected by Location Quotients of Business Establishments

NAICS	Industry	Establish-ments	LQ (IN base)	LQ (Midwest base)	LQ (U.S. base)
0	Total	16,388	1	1	1
44-45	Retail Trade	2,506	1.12	1.19	1.25
23	Construction	1,963	1.05	1.19	1.22
62	Health Care and Social Services	1,636	1.26	1.21	1.23
81	Other Services(Except Public Admin)	1,518	1.1	0.97	0.71
72	Accommodation and Food Services	1,370	1.1	1.17	1.25
54	Professional, Scientific, & Technical Services	1,342	0.9	0.8	0.78
42	Wholesale Trade	1,036	0.74	0.87	0.9
52	Finance and Insurance	946	0.9	1.07	1.08
31-33	Manufacturing	828	0.84	0.99	1.16
56	Administrative and Support and Waste Management and Remediation Services	723	0.89	0.93	0.88
48-49	Transportation and Warehousing	643	1.09	1.34	1.43

[22] Traded sector refers to firms in sectors whose markets lie primarily outside the local area. When such firms trade, they bring in more capital than they expend and are therefore more valuable to the region than the sums of their wages or taxes paid.

NAICS	Industry	Establish-ments	LQ (IN base)	LQ (Midwest base)	LQ (U.S. base)
53	Real Estate and Rental and Leasing	631	1.04	0.89	0.96
61	Educational Services	369	1.29	1.35	1.34
92	Public Administration	242	0.77	1.14	0.95
51	Information	202	0.78	0.69	0.7
71	Arts, Entertainment, and Recreation	185	0.89	0.71	0.78
11	Agriculture, Forestry, Fishing & Hunting	136	1	1.3	0.72
55	Management of Companies & Enterprises	53	0.6	0.74	0.67
21	Mining	24	0.64	0.85	0.49

Potential Industry Strengths & Weaknesses

FIRM-LEVEL INDUSTRY CONCENTRATION

As shown in Table II.7, compared to the State of Indiana,[23] only two industries show significant concentrations by firm at the two-digit NAICS code level: Health Care and Social Services, with a 26% greater concentration of establishments than the state average; and Educational Services with a 29% greater concentration.[24] Mining at only two-thirds the average concentration of the state average and Management at 60% are two areas of particular weakness relative to the state.

Compared to the Midwest, Transportation and Warehousing and Educational Services show higher concentrations of firms, at 34% and 35% over the Midwest average respectively. Information at 60% of the Midwest average is the only obvious under-concentrated industry at the two-digit NAICS code level.

Compared to the U.S., Transportation and Warehousing—at 1.43 times the average U.S. concentration—is the only industry that stands out as significantly more concentrated by number of establishments. Information, again, is the most under-concentrated industry in Northwest Indiana, compared to the U.S. average.

Looking at change in these concentrations over time (2001-2004), we can see that regional influences played a relatively strong role in the change in numbers of

[23] Figures in this section may diverge somewhat from those reported earlier because job growth numbers used to determine location quotients were aggregated by quarter, while numbers used to measure industry growth by employment were compiled annually.
[24] At the three-digit NAICS code level, the highest concentrations are in Petroleum and Coal Manufacturing and Pipeline Transport, but since the number of establishments is so small, these numbers are not as relevant as those in other industries and sub-sectors.

establishments in: Wholesale Trade (positively), Manufacturing (negatively), Waste Management (negatively), Transportation and Warehousing (negatively), Educational Services (negatively) and Agriculture (positively).[25]

National influences played a strong role in changing regional industry concentrations in the following industries: Health Care Services (positively); Professional, Scientific and Technical Services (positively); Wholesales Trade (positively), Manufacturing (positively), Transportation and Warehousing (positively), Real Estate (positively) and Educational Services (positively).

Finally, dynamics within the industry were responsible changes in industry concentration in the following: Retail Trade (negatively); Wholesale Trade (negatively); Transportation and Warehousing (negatively); Transportation and Warehousing (negatively); Public Administration (negatively); Information (negatively); and Agriculture (negatively).

Changes in the number of establishments tell us something about economic shifts over time, but are less important than shifts in the concentration of jobs.

JOB-LEVEL CONCENTRATIONS BY INDUSTRY

A SIMILAR PICTURE EMERGES USING JOBS AS THE UNIT OF ANALYSIS IN ASSESSING CONCENTRATION. Table II.8 shows location quotients as indicators of job concentration (by industry) in Northwest Indiana compared to the state, the Midwest and the U.S. We have used two-digit NAICS codes in Table II.8 to illustrate this comparison.[26]

With the exception of Primary Metals Manufacturing, which is extremely concentrated in Northwest Indiana (both by establishments and jobs), only Arts and Entertainment, Agriculture and Construction jobs are significantly more concentrated in the region than in the State of Indiana—116%, 48% and 46% respectively—and only Finance and Insurance is significantly less concentrated at 71% of the state average.

Comparatively, Northwest Indiana jobs in Construction, Agriculture, Arts and Entertainment are more concentrated—46%, 48% and 116%, respectively—than jobs in these industries in the Midwest region. Only Finance and Insurance and Professional Scientific and Technical Services stand out as significantly less concentrated, employing half as many of these workers as the Midwest as a whole. Predictably, Primary Metals shows extreme concentration, employing ten times more people than the Midwest average.

[25] "Positively" and "negatively" describe only the direction of the regional influence on industry concentration; these are not assessments of the overall positive or negative impact of the change in concentrations.
[26] We did include Primary Metal Manufacturing (331) in this table because of its extreme concentration.

Compared to the U.S., Northwest Indiana's job concentration in Arts and Entertainment is about double the average, while Manufacturing jobs are about 50% more concentrated. Four industries show far less job concentration than the U.S. average: Finance and Insurance, Professional, Scientific and Technical Services and Mining employ about half as many workers as the U.S. average; and Agriculture employs about two-thirds as many.

Looking at the change in job concentrations across industries between 2001 and 2004, we find significant increases in job concentration in the follow industries:

- Health Care and Social Services (+4,342)
- Construction (+3,933)
- Accommodation and Food Service (+2,394)
- Administrative Support and Waste Management (+2,039
- Transportation and Warehousing (+928)
- We find significant decreases in job concentration in these industries:
- Manufacturing (-10,278)
- Primary Metals (-8,274)
- Information (-758)

The key dynamics driving these changes are as follows:

- In Health Care, 73% of the increase in job concentration is linked to industry growth, about 16% to national increases and the remainder to growth in the region.
- In Construction, about half the increase in job concentration is linked to the region. Changes in the industry also played a significant role, while national concentration shifts were far less important.
- In Accommodation and Food Services, 76% of the change in job concentration is linked to changes in the industry. Regional growth accounts for barely 5% of the change, while national growth accounts for the remainder.
- In Administrative Support and Waste Management Services, 62% of the increase in job concentration is linked to changes in the region. Less than 10% of the change is linked to national growth and the rest, to the industry.
- Transportation and Warehousing revealed different factors pulling in different directions—an increase in concentration by 1,204 jobs was linked

to changes in the region, but changes in the industry decreased that figure by 511.

- In Manufacturing, the change in job concentration—downward—was almost all due to changes within the industry itself—if the industry had held neutral, the change in job concentration would have been positive by 11 jobs, rather than -10,278. The same is true for Information, which would have gained 82 jobs.
- In Primary Metals, 81% of the decrease can be explained by industry-level changes.

Overall, a location quotient and shift-share analyses underscore the importance of some key sectors, but does not present the entire picture. For more information on location quotient, see Appendix E. For more information on shift-share analysis, see Appendix F.

Table II.7 Shifts in Industry Concentrations Measured by Number of Establishments 2001-2004

NAICS	Industry	Establish-ments	Estab LQ (IN base)	Estab LQ (Midwest base)	Estab LQ (U.S. base)	Change	National Growth	Industry Mix	Regional Shift
0	Total	16,388	1	1	1	850	1,100	-292	41
44-45	Retail Trade	2,506	1.12	1.19	1.25	22	176	-189	35
23	Construction	1,963	1.05	1.19	1.22	185	126	26	32
62	Health Care and Social Services	1,636	1.26	1.21	1.23	144	106	40	-2
81	Other Services(Except Public Admin)	1,518	1.1	0.97	0.71	31	105	-39	-35
72	Accommodation and Food Services	1,370	1.1	1.17	1.25	96	90	18	-13
54	Professional, Scientific, and Technical Srvs	1,342	0.9	0.8	0.78	144	85	21	38
42	Wholesale Trade	1,036	0.74	0.87	0.9	70	69	-56	57
52	Finance and Insurance	946	0.9	1.07	1.08	81	61	29	-9
31-33	Manufacturing	828	0.84	0.99	1.16	-34	61	-124	29
56	Administrative & Support & Waste Management & Remediation Srvs	723	0.89	0.93	0.88	35	49	16	-30
48-49	Transportation and Warehousing	643	1.09	1.34	1.43	-24	47	-40	-31
53	Real Estate and Rental and Leasing	631	1.04	0.89	0.96	40	42	22	-24
61	Educational Services	369	1.29	1.35	1.34	15	25	31	-41
92	Public Administration	242	0.77	1.14	0.95	6	17	-15	5
51	Information	202	0.78	0.69	0.7	-11	15	-25	-1
71	Arts, Entertainment, and Recreation	185	0.89	0.71	0.78	33	11	8	14
11	Agriculture, Forestry, Fishing & Hunting	136	1	1.3	0.72	13	9	-15	19
55	Management of Companies & Enterprises	53	0.6	0.74	0.67	6	3	1	1
21	Mining	24	0.64	0.85	0.49	-3	2	-2	-3

N/A = This item is not available. This is due to non-disclosure requirements, or because a calculation could not be created.
Data sources: Indiana Business Research Center based on ES202 data, U.S. Bureau of Labor Statistics.
Provided by: Indiana Business Research Center, IU Kelley School of Business

Table II.8 Shifts in Concentrations of NW IN Industries As Reflected by Location Quotients of Jobs in the Region 2001-2004

NAICS	Industry	Jobs	Jobs LQ (IN base)	Jobs LQ (Midwest base)	Jobs LQ (U.S. base)	Jobs Change	Jobs National Growth	Jobs Industry Mix	Jobs Regional Shift
0	Total	319,426	1	1	1	3,643	5,890	-1,268	-656
62	Health Care and Social Services	42,674	1.13	1.02	1.1	4,342	721	3,181	439
23	Construction	21,106	1.27	1.46	1.19	3,933	323	1,589	2,020
72	Accommodation and Food Services	25,507	0.99	1.09	0.98	2,394	435	1,835	124
56	Administrative and Support and Waste Management and Remediation Services	14,872	0.86	0.8	0.75	2,039	242	517	1,280
48-49	Transportation and Warehousing	13,427	0.96	1	1.05	928	235	-511	1,204
61	Educational Services	30,977	1.11	1.02	1.06	847	567	1,622	-1,342
92	Public Administration	17,125	1.21	1.08	0.99	363	315	100	-52
11	Agriculture, Forestry, Fishing & Hunting	1,810	1.4	1.48	0.66	358	27	143	188
52	Finance and Insurance	7,980	0.71	0.5	0.56	133	148	459	-473
71	Arts, Entertainment, and Recreation	10,106	2.14	2.16	1.95	132	188	967	-1,022
54	Professional, Scientific, and Technical Services	8,618	0.87	0.52	0.51	94	160	-268	201
81	Other Services(Except Public Admin)	11,353	1.23	1.08	1.07	74	212	16	-154
44-45	Retail Trade	40,827	1.08	1.12	1.07	-14	769	557	-1,340
21	Mining	593	0.83	0.97	0.46	-55	12	6	-73
53	Real Estate and Rental and Leasing	3,603	0.9	0.72	0.69	-173	71	127	-371
42	Wholesale Trade	10,820	0.81	0.77	0.78	-612	215	-430	-397
51	Information	4,135	0.79	0.55	0.53	-758	92	-840	-10
331	Primary Metal Manufacturing	20,340	3.8	11.05	17.81	-8,274	539	-6,711	-2,102
31-33	Manufacturing	49,787	0.78	1.21	1.43	-10,278	1,131	-10,289	-1,120

N/A = This item is not available. This is due to non-disclosure requirements, or because a calculation could not be created.
Data sources: Indiana Business Research Center based on ES202 data, U.S. Bureau of Labor Statistics.
Provided by: Indiana Business Research Center, IU Kelley School of Business.

Industry Trends

WE IDENTIFIED THREE[27] INTERRELATED INDUSTRY TRENDS Northwest Indiana firms and industries are embracing to enhance their competitive advantage. Many other firms in the region *could* take advantage of them

INTEGRATING NEW TECHNOLOGIES AND ADVANCED COMMUNICATION SYSTEMS

FIRMS IMPLEMENT NEW TECHNOLOGIES TO DO ONE OF TWO THINGS: 1) do existing and required work better—more effectively or efficiently; and 2) do things that were not possible in the absence of the new technologies and create more value for the firm and its customers. In both cases, technology is used to drive up productivity by generating more value sold per employee.

In the manufacturing sector, despite the perceived implementation of new technologies, productivity increases have lagged—19 other states are ahead of Indiana in manufacturing productivity. In our region, firms have been cautious in introducing sweeping new technologies that would support productivity improvements, realizing that these changes would likely result in both job loss and increased demand for talent they already have trouble recruiting in the current labor market.

In TDL, there is great concern about the implementation of new technologies and intelligence systems relying on Radio Frequency Identification (RFID) and Geographical Information Systems (GIS) and liability issues as supply chain relationship become more closely linked. There is also tremendous opportunity to use these technologies to overcome unrelated industry challenges—such as the price of fuel—in this energy-price sensitive[28] industry.

In Health Care, technology plays a critical role in at least three ways: 1) the collection, management and distribution of medical information (including insurance and billing systems); 2) the use of new technologies to conduct the practice of medicine; and 3) the use of technologies in R&D, whether the development of new approaches for treating disease, new tools and equipment, or new partnerships (e.g., supply chains) that improve Health Care Industry or firm productivity.

Across our key industries, new technologies can help:

[27] Clearly, there are many ways to identify and describe industry trends. We selected three that bear a close relationship to workforce and lend themselves to collaborative solutions.
[28] Sensitive as it is used here refers to the impact a change in an important variable has on an industry. In this case, the increase in fuel costs over the past year has raised the costs of every step of manufacturing and distribution.

- Lower labor costs by automating repetitive and predictable tasks.
- Facilitate integration of supply chains between parts manufacturers, assemblers, OEMs, distributors, wholesalers, retailers and service providers.
- Enable trade outside the region—even for small firms.[29]
- Increase productivity across firms and industries (even if they change nothing else operationally).
- Measure and improve quality.
- Support relationships with customers all over the world.

While many firms in our region are working hard to make effective use of technology and improve their competitiveness, we encountered firms during our SSI research that lacked web-sites or email, and whose operations had not changed substantially for decades. They are holding themselves, their employees, and our region back.

IDENTIFYING UNIQUE WAYS TO ADD VALUE IN KEY INDUSTRIES

THE REASON INNOVATION IS CRITICALLY IMPORTANT IS BECAUSE AMERICAN FIRMS ARE INCREASINGLY UNABLE TO COMPETE ON PRICE ALONE. As globalization has opened new markets around the world, it has also created competitors whose labor costs are far lower than those in the U.S. This has forced many American firms and industries to identify the products and services they are uniquely good at making or delivering, and get even better at serving these markets.

We see this dynamic at work in our industries and firms across our region.

- **Professor Chenn Qian Zhou** is leading a project on fluid dynamics at Purdue University. The project—intended to improve the performance of blast furnaces in Northwest Indiana's most concentrated manufacturing industry—steel. The project, supported by Indiana's 21st Century Venture Fund, maintains direct ties to business through Mittal Steel's staff scientist Shank Balajee, who is also working on the project seeking to take advantage of the enormous increase in global demand for steel as Asia's largest countries (India, China) industrialize.

[29] This is a particular concern in our region where only 1% of the 141 firms completing our survey by October 11 reported that they traded outside the U.S.; 72% reported that their products or services are used or consumed in Indiana. We do not claim the survey is representative but the results certainly suggest that opportunities exit to help firms identify non-Indiana markets.

- **The Purdue Research Foundation** recently launched the 48,000 square foot *Purdue Technology Center* in Merrillville. Open less than one year, the Center already hosts companies seeking to capitalize on emerging technologies in energy and information technology—of great interest to manufacturing and TDL industries across our region—as well as pharmaceuticals and homeland security products.
- **Indiana University Northwest's (IUN) Health Research Institute** announced in Spring 2005 seeks to facilitate collaboration among Health Care Industry researchers from across the region so that new products, services, and care innovations can be implemented and commercialized more quickly and new applications developed more effectively. The Center will locate at the IUN Gary campus.

While these efforts are clearly linked to specific industries, industry professionals, planners, policy makers and researchers increasingly understand that there is cluster aspect of these efforts as well—locating innovative people together speeds new product development and seeds the discovery of applications inside and outside target industries that were never imagined by inventors of original technologies.

We have an interest in supporting these efforts and in keeping them in the forefront of the minds of leaders and executives in firms and industries unconnected to them. For Northwest Indiana—which has struggled to change its traditional, low-tech, anti-entrepreneurial image—these initiatives are as valuable as examples of what is possible in our region as for the products they will eventually create.

COMPETING FOR TOP-NOTCH TALENT

NORTHWEST INDIANA FIRMS AND INDUSTRIES KNOW THAT THE CHANGES THEY ARE EXPERIENCING ARE NOT SHORT-TERM—an "up-tick in the economy" is not the solution. They are searching for sources of sustainable competitive advantage. And one of the most important of these is people.

- People with deep specialized knowledge that is hard to duplicate are the source of innovation that creates unique high-margin products and services.
- People who are entrepreneurial can take advantage of new market opportunities they see inside the supply chains of major firms and industries or, concentrating knowledge that is difficult for competitors to replicate.

- People with problems solving and critical thinking skills look for solutions to customers challenges, enhancing the agility and inventiveness of their firms.
- People with communication skills help insure that knowledge and expertise gets to the people who need it, helping their firms perform more effectively and efficiently.
- People who provide services to local residents or hold jobs that are not easily relocated have an important role to play in keeping their firms' productivity high and rising.

But Northwest Indiana is competing with high-quality communities all over the world for such people—job opportunities alone will not attract them or keep them in the region.

Talented people seek *career* opportunity, not just job opportunity. They look for diverse economies that offer career choices and professional development opportunities for family members as well as themselves. They demand high-quality schools, amenities and green spaces. And they need networks—technology networks to help develop and maintain relationships outside the region, and professional and personal networks that help them to grow and thrive locally.[30]

This set of issues—around the challenge of recruiting and developing talent and the appropriate balance between the two—emerged in nearly every interview we conducted, as well as in our focus groups and discussions with Consortium members across firms of all sizes in all industries.

Talent is not the only source of competitive advantage, but it is an important one, and makes almost all others possible.

Our firms understand this—and many are looking for help in developing talent strategies that will carry them into the future.

Our workforce experience and expertise makes these issues excellent ones to organize around inside and outside our key industries.

[30] We are relying on the logic used by Richard Florida in his work on the Creative Class, and that of Daniel Pink in *A Whole New Mind (*2005).

Industries Targeted by Economic Development Organizations and Other Key Stakeholders

STATE-LEVEL INTEREST IN KEY INDUSTRIES

THE STATE OF INDIANA RELEASED *A NEW PATH TO PROGRESS* IN THE SUMMER OF 2005, a Strategic Plan developed by the State Department of Commerce. The plan relies on cluster analysis to identify targets for investment and development.

The state focused on fourteen clusters and created a typology to characterize the opportunities for development within them in different parts of the state.

- A "star" cluster is specialized and becoming more concentrated
- A "mature" cluster is specialized but becoming less concentrated
- An "emerging" cluster is not specialized but is becoming more concentrated (and, therefore, likely to specialize)
- A "transforming" cluster is not specialized and is decreasing in concentration.

Relying on cluster-based analysis rather than the narrower industry-based view and using data from 2001-2003, the report identifies five clusters as "stars" in Northwest Indiana. These include:

- Advanced Manufacturing
- Biomedical/Biotechnical
- Earth Products (mining, glass, etc.)
- Chemicals
- Advanced Logistics

These five clusters are more concentrated in Northwest Indiana than in the rest of the state, and are either growing jobs or offer jobs that pay very well compared to the average in the region.

Arts and entertainment was the only "mature" cluster in Northwest Indiana named in the report.

Four "emerging" Northwest Indiana clusters were cited:

- **Forest and Wood Products**—which added 500 jobs in the region between 2001 and 2003
- **Advanced Materials**—linked to Manufacturing, these jobs pay 160% of the region's average wage
- **Advanced Business Services** and **Information Technology** are both small, but growing, and their services are important infrastructure supports for the key industries in the area, such as Manufacturing.

Table II.9 summarizes the report's findings for Northwest Indiana across all 14 of the state's target clusters.

Table II.9 Region 1 Changes in Employment & Concentration, 2001–2003

Cluster Name	Total Employment 2003	Percent Change in Employment 2001–2003	Cluster Location Quotients 2003	Percent Change in Location Quotients 2001–2003	Average Payroll Wages per Capita 2003
Total All Industries	**257,732**	**-1.4%**	**1.00**	**0.0%**	**33,268**
Specialized, Increasing Concentration					
Advanced Manufacturing	29,099	-12.0%	2.17	2.7%	60,127
Biomedical/Biotechnical (Life Sciences)	34,293	6.7%	1.08	2.2%	34,565
Earth Products	1,847	-3.6%	1.03	5.5%	46,369
Chemicals	5,026	-2.2%	1.01	5.0%	45,942
Advanced Logistics	7,805	-4.1%	1.01	1.0%	36,166
Specialized, Decreasing Concentration					
Arts, Entertainment, Recreation & Visitor Industries	11,460	-4.0%	1.23	-3.4%	22,717
Not Specialized, Increasing Concentration					
Forest & Wood Products	4,598	12.8%	0.82	16.4%	29,981
Advanced Materials	2,699	-5.5%	0.80	10.2%	53,046
Advanced Business Services	10,008	2.6%	0.49	4.0%	39,657
Information Technology	2,665	-13.6%	0.22	0.3%	45,757
Not Specialized, Decreasing Concentration					
Environmental Technology	2,283	-1.8%	0.71	-0.6%	40,636
Educational Services	4,376	2.1%	0.62	-2.7%	28,323
Information, Communications & Media	3,289	-15.2%	0.46	-3.5%	31,992
Agribusiness, Food Processing & Technology	3,414	-7.5%	0.56	-4.4%	36,380

Source: Indiana Economic Development and Purdue University Cooperative Extension Service, from data supplied by the Indiana Business Research Center, January 2005.

Region-Level Interest in Key Industries

We are very excited about the recent launch of the new Regional Development Authority (RDA). The RDA, formally enabled by the state legislature earlier this year, has identified the Transportation, Distribution and Logistics industry (TDL) as one of three key overall priorities—and the only clear industry priority. A detailed industry report is currently under development by Purdue University Calumet.

While no formal release of data has occurred, researchers have identified eight "conjectures." These include:

- TDL is not clearly defined as an industries sector—economic impact may be underestimated using available tools.
- Increasingly, logistics is a strategic function that plays a role in product pricing, supply chain management and customer acquisition and satisfaction.
- Logistics costs are rising, the competitive advantage for firms who do this well is increasing.
- Efficient integration of different modes of transport is critical to the growth of the industry.
- Efficient freight management is central to regional employment growth and competitiveness.
- Technology (e-commerce, radio-frequency, enterprise resource applications) is increasing the integration of supply chains worldwide.
- There is an increasing need for workforce education and training in the industry—at all levels.
- The logistics industry will struggle with sustainability and quality of life issues, and will require a close relationship with community stakeholders to secure competitive advantage.

These interim findings echo those of the Center of Workforce Innovation's TDL Cluster Report, available on www.innovativeworkforce.com., under resources.

We anticipate that the RDA will identify other industries as priorities over time—and we plan to be there to help support the workforce strategy.

Local-level Interest in Key Industries

NIPSCO, the Northwest Indiana Forum and the Northwest Indiana Regional Planning Commission (NIRPC) are three economic development and planning organizations in the region that work across multiple counties rather than for specific communities.

Workforce issues and transportation are key priorities for these organizations.

Finally, at the community level, our Chambers and professional and trade associations echo the industry interests of the state and region. Increasingly, they are interested in both helping today's key industries (e.g., manufacturing) maximize productivity and competitiveness, while laying the groundwork for the industries of the future (e.g., Bio-Science).

Potential Impact and Community Support

Our community has experienced significant change in recent years. The rapid loss of manufacturing jobs—over 15% in three years—has shaken the confidence of workers and families who had long relied upon these jobs.

It's easier to point to the reasons—technology and global competition—than to know what to do.

However, our region is fortunate to have had many people working on solutions—many of them linked to our original industry cluster project work begun four years ago. Our engagement with employers in our industry clusters has already led to industry and public-private collaboration on new projects and programs addressing workplace literacy, skills training and, most recently, a work ethic pilot program.

We now, collectively, have a good idea of which industries are good candidates for engagement on SSI workforce issues—and there are many.

Manufacturing, TDL, Health Care, Construction, BioScience, Information Technology and Business and Professional Services are all excellent candidates for different reasons—from a data point of view.

- The **Health Care** industry is booming—in the U.S. and in Northwest Indiana. The industry has struggled with workforce issues in recent years and is now confronting long-term challenges as it looks down the pipeline at the shortages of graduate's instructors in the field. While boom and bust cycles have been known to occur in the Health Care industry, Indiana's aging population makes cyclical gluts very unlikely. Moreover, there is

considerable cross-over between skills required for many "back-office" Health Care occupations and those required for emerging occupations in the Biotech and Life Sciences industries.

- **Manufacturing**, although shrinking as a share of employment, is absolutely critical to our region's economy. The combination of turnover due to retirement and competitive pressures for new and better products—and the implementation of lean manufacturing processes throughout Northwest Indiana—creates infinite opportunity for innovative workforce initiatives.
- **TDL** is a growing and important industry in the region—and an increasingly strategic asset linked to our manufacturing industries. Its importance to the state and to other economic development entities, and its necessary collaboration with the public sector—it is among the more regulated industries—bodes well for high-impact workforce initiatives.
- **Construction** is also booming, but has the advantage of a sophisticated apprenticeship program guiding skill development at many levels, and a strong regional industry organization—the Construction Advancement Foundation based in Portage.
- **BioScience**, while its numbers are very small today, is growing, and holds much promise for the future, particularly in clinical research and new product development.
- **Information Technology** has decreased precipitously as a percentage of employment, but remains a critical capacity for firms across all other industries—we suspect the recent decline in jobs was at least partially a shift in employment from IT firms to IT jobs in non-IT firms.
- **Business and Professional Services** are growing, and have raised the bar on the skills levels expected in the world of work generally—and many of these services are dependent on the success of the manufacturing firms they serve, whether in Northwest Indiana or elsewhere.

There are opportunities for workforce initiatives in all of these industries—and others.

But, ultimately, it is up to the firms and workers in these industries to want to make a difference through the Strategic Skills Initiative and other programs.

Having worked to establish relationships with industry groups and firms in seven clusters over the past few years, we feel that Manufacturing, TDL and Health Care are currently best positioned to make effective use of the Strategic Skills Initiative in our region—each has major firms actively involved in workforce issues today.

Moreover, each of these industries offers jobs that require skills sets highly transferable both within and across these and other major Northwest Indiana industries. Workforce solutions in these sectors will undoubtedly produce spillover effects throughout our region's economy and workforce.

Community Support for Our Selected industries

WE HAVE ASSURED STAKEHOLDERS IN OUR REGION THAT THIS IS NOT LAST TIME WE WILL BE DOING INDUSTRY-SPECIFIC WORK. We have already established a track record and are confident in this approach as a way of doing business today and into the future.

But we plan to launch SSI with our industry partners in **Manufacturing, TDL and Health Care.**

We interviewed and surveyed firms in these industries—and others—as a part of the SSI data collection effort. Their perspectives and findings are cited throughout the occupation and skills section of the report, but we thought it was important to summarize some of their overall insights, not just those specifically linked to occupations and skills.

We asked 30 employers who participated in our focus groups to complete a brief questionnaire. Among the questions was one that asked about the extent to which skills shortages were responsible for their difficulties finding qualified workers. Another asked about the extent to which they felt skills shortages were the root of the problem.

While 38% reported that "skills have everything to do with the problem," 25% reported that skills are *not* the problem, and 42% reported that skills are a part of them problem. Some version of "work ethic" was cited repeatedly as an important concern by employers across the region, It was further affirmed by the 141 employers who completed our electronic survey.[31] Challenges we attributed to work ethic cited by these employers included: everything from "a desire to show up" to "honesty" and "drive" as well as the phrase "work ethic." We know this is a complex issue that firms, workers, and communities need to know more about.

Another concern local employers raised in both interviews and surveys was "prevailing wage." Manufacturers in particular reported that key employees had found work in Chicago at higher wages than they are able to earn locally. These employers are cautious about Northwest Indiana workforce strategies that may inadvertently benefit their competitors in Northeastern Illinois.

[31] The survey is still live, but for purposes of this report, we compiled data based on the 141 employer responses we had collected by October 11, 2005.

In contrast, several growing Northwest Indiana TDL firms reported explicitly seeking employees in Illinois because they felt the skills and experience of the workers there were better than they could find in Northwest Indiana.

Finally, when asked about their key shortage occupations, 41% of firms responding to the electronic survey indicated that the jobs they cited "have always been hard to fill." Another 36% cited cycles as the norm, reporting that the jobs they identified have been hard to fill from time to time. Only 5% of employers surveyed indicated that the jobs they cited had recently become hard to fill.

We suspect that this is because the requirements are increasing for these jobs faster than the processes employers use to cultivate and attract talent. We will explore these findings further in the Root Cause Phase of the project.

Consortium Input

OUR REGION IS GEOGRAPHICALLY VAST, A TOTAL OF OVER 3,200 SQUARE MILES, stretching from Munster to Morocco and Whiting to Winamac. As a result, we have taken to minimizing the number of face-to-face meetings, but increasing their length, and conducting business by telephone and email as often as possible.

We used this same protocol to staff the governance infrastructure for the SSI project.

We established an Industry Consortium to provide broad-based input on the project, and a smaller Executive Team to guide operations and be accountable for decision-making.

The Executive Team first met on July 13, 2005—and then met again on July 29, 2005—to plan the SSI project approach and develop the draft application. It met again on August 23rd to plan project oversight and protocols for decision-making with the larger Industry Consortium.

At that time, the full Industry Consortium was engaged by email and telephone, but met in person on September 20 for a three-hour work-session. During this session, we:

- Informed members about the SSI project, its status and key objectives;
- Facilitated a discussion about their key workforce issues; and
- Facilitated a debate about the five industries we nominated for consideration as SSI industries—Health Care, Manufacturing, Construction, TDL and Professional Scientific and Technical Services.

The comments of our consortium members about their own workforce issues mirrored those of firms who completed our survey through October 11, 2005:

- Work ethic was the number one issue that prevented employers from meeting their workforce needs
- Degrees—or at least evidence of post-secondary skills and ability to learn—was also frequently cited as a critical workforce issue. Many employers reported having "raised the bar" in anticipation of the integration of new technologies, etc., and then struggled to find applicants who could reach it.

The debate about the selection of industries resulted in stronger cases for Health Care Manufacturing, TDL and than either Construction or Scientific, Professional and Technical Services.

While several consortium members raised questions about the overall economic development approach in the region, most were confident that coordination with the new Regional Development Authority and the Northwest Indiana Forum—both key project partners—would occur soon.

Most Consortium members supported the selection of Manufacturing, TDL and Healthcare with two caveats:

1. That we focus on shortage occupations that require **skills transferable across other industries**; and then
2. That we build in a **focus on entrepreneurial skills**—regardless of industry.

There were other ideas. One member made a case for selecting the Arts and Entertainment industry; another emphasized Banking and Finance. Others expressed some trepidation that by selecting industries in which Chicago was also competitive, we might be training workers for their workforce rather than our own.

At the conclusion of the meeting, we informed all members that we would contact them within 48 hours for any additional input or suggestions, and forward that information to the Executive Committee for a final decision.

We contacted all the members, but no additional input was provided. On September 30, 2005 the Executive Team approved the selection of Health Care, Manufacturing and TDL as the three industries on which the SSI project would focus in Northwest Indiana.

We feel confident in their selection and look forward to exploring root causes and developing solutions around critical challenges in these industries.

Section III: Selection and Definition of Critical Occupations and Skill Sets

Total employment numbers tell us that we have a base of qualified workers across the eighteen occupations. Our assumption is that an employed individual has been deemed "qualified". In 2005, the estimated base of qualified workers in the eighteen critical occupations is 27,436. Projected into year 2012, the base will grow 4% to 28,570. Table III.1 shows employment data from 2002-2012.

Table III.1

Code	Occupational Title	2002 Employment	2005[1] Estimate	2012 Projection	Total Growth	% Change	Replacements	Total Openings
HEALTH CARE								
29-2061	Licensed Practical and Licensed Vocational Nurses	2,200	2248	2,360	160	7%	480	640
29-2052	Pharmacy Technicians	950	1,001	1,120	170	18%	120	290
29-2021	Dental Hygienists	430	472	570	140	33%	40	180
29-2011	Medical and Clinical Laboratory Technologists	300	324	380	80	27%	80	160
29-1111	Registered Nurses	6,630	7,014	7,910	1,280	19%	1,390	2,670
29-1051	Pharmacists	890	932	1,030	140	16%	170	310
11-9111	Medical and Health Services Managers	460	502	600	140	30%	90	230
	Totals	**11,860**	**12,493**	**13,970**	**2,110**	**18%**	**2,370**	**4,480**
MANUFACTURING								
51-9061	Inspectors, Testers, Sorters, Samplers, & Weighers	1,690	1,651	1,560	-130	-8%	390	260
51-4121	Welders, Cutters, Solderers, and Brazers	1,970	1,973	1,980	10	1%	560	570
51-1011	First-Line Supervisors/Managers of Production and Operating Workers	2,660	2,636	2,580	-80	-3%	560	480
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	2,320	2,344	2,400	80	3%	610	690
17-2141	Mechanical Engineers	540	522	480	-60	-11%	150	90
	Totals	**9,180**	**9,126**	**9,000**	**-180**	**-2%**	**2,270**	**2,090**
TDL								
53-7051	Industrial Truck and Tractor Operators	1,930	1,879	1,760	-170	-9%	370	200
53-1031	First-Line Supervisors/Managers of Transportation and Material-Moving Machine and Vehicle Operators	590	593	600	10	2%	140	150
53-1021	First-Line Supervisors/Managers of Helpers, Laborers, and Material Movers, Hand	490	487	480	-10	-2%	120	110
49-3031	Bus/Truck Mechanics and Diesel Engine Specialists	1,000	1,009	1,030	30	3%	260	290
43-5061	Production, Planning, and Expediting Clerks	1,570	1,519	1,400	-170	-11%	380	210
43-5032	Dispatchers, Except Police, Fire, and Ambulance	330	330	330	0	0%	70	70
	Totals	**5,910**	**5,817**	**5,600**	**-310**	**-5%**	**1,340**	**1,030**
	Totals for 3 Industries	**26,950**	**27,436**	**28,570**	**1,620**	**6%**	**5,980**	**7,600**

[1]*Based on straight-line method*
Source: Indiana Workforce Development Agency

From 2002 through 2012, the selected occupations within Health Care, Manufacturing, and TDL are projected to grow at 18%, -2%, and -5% respectively. Although the occupations within Manufacturing and TDL show negative total growth, they both still have a surplus of jobs that need to be filled by year 2012. This is a direct result of the number of replacements[32] needed in each industry, which are 2,270 and 1,340 respectively. And Health Care is strongest yet at 2,370 replacements anticipated for its seven occupations.

Unfortunately, employment figures do not tell us;

- How many individuals are trained in but not working in that occupation or industry.
- How many individuals are trained but not employed.
- Employer satisfaction with workers' occupational performance.

In our discussions with employers in the three key industries, it became very clear that many occupations share many foundational skills that translate well to other occupations and even other industries. For instance, someone who is mechanically inclined and has mastered the basic skills needed for most entry-level logistics occupations would also be well-suited for occupations in manufacturing. Employers tell us that they find workers from a variety of backgrounds, levels of experience, and job readiness.

The occupations that we have determined to be most critical are those that pay a good wage, and have upward mobility within their industries and very portable skill sets. Some occupations require a Bachelor's degree or even graduate level degrees. Others only require short-term or medium-term on-the-job training. We see most of these occupations as gateways to higher-level jobs, either through additional on-the-job training, certification training, or degree programs that complement work experience.

We also chose the following occupations because of the current and projected demand. This need has been corroborated by projections from the Department of Workforce Development, employer surveys and historical data on job vacancies.

As for critical skill sets that cut across multiple occupations, this section includes the top skills for each occupation according to the O*Net database of occupations. Section V offers a rank ordering of the top five occupational skills that are shared by the chosen occupations for Health Care, Manufacturing, and TDL, along with our assessment of critical skill gaps for each industry.

[32] Replacements are "Net replacement" openings. Net replacement openings estimate the difference between the movement of experienced workers who change jobs to enter other occupations, retire, or leave the workforce for other reasons and the movement of experienced workers filling the openings. The openings that remain unfilled by experienced workers are net replacement openings, available to new workforce entrants.

Healthcare – Critical Occupations

In Health Care, Nursing has been an ongoing concern for some time among employers who have difficulty recruiting and retaining people for this occupation. Even though they may employ CNAs, LPNs and RNs, and these occupations are positioned within a well-defined career ladder, the actual training requirements and path to a particular job vary widely. For instance, some RNs have completed an Associates degree, while others may have a Bachelor of Science degree in Nursing or even a Masters degree. Clearly, the more experience and education nurses have, the more employable they should be with increased compensation and responsibilities within their organizations, though that is often not the case in the Northwest Indiana job market since some employers are not willing to pay a premium for a nurse with advanced degrees.

The following table describes the educational requirements for these critical occupations in Healthcare. All of these occupations require appropriate licenses from the State of Indiana.

Table III.2

SOC Code	Occupational Title	Education Requirements
29-2061	Licensed Practical & Licensed Vocational Nurses	Postsecondary vocational training
29-2052	Pharmacy Technicians	Moderate-term on-the-jog training*
29-2021	Dental Hygienists	Associate degree
29-2011	Medical & Clinical Laboratory Technologists	Bachelor's degree
29-1111	Registered Nurses	Associate's degree
29-1051	Pharmacists	First professional degree
11-9111	Medical & Health Services Managers	Work exp. + BA or higher degree

*Increasingly, employers are requiring an Associate's degree in an accredited pharmacy technician program.

Table III.3 Employment, Wages, & Earnings for Occupations in Health Care

SOC	Occupational Title	Employ-ment	Mean Wage	Mean Annual	Entry Wage	Entry Annual
29-2061	Licensed Practical & Licensed Vocational Nurses	2,200	15.96	33,188	12.58	26,161
29-2052	Pharmacy Technicians	950	11.90	24,747	8.02	16,685
29-2021	Dental Hygienists	430	27.40	56,988	24.96	51,927
29-2011	Medical & Clinical Laboratory Technologists	300	21.40	44,521	16.79	34,927
29-111	Registered Nurses	6,630	21.44	44,598	13.28	29,706
29-1051	Pharmacists	890	38.67	80,444	32.24	67,050
11-9111	Medical and Health Services Manager	460	28.23	58,729	18.82	39,141

Source: Indiana Workforce Development Agency, 2004, 2nd quarter.

POSITION DESCRIPTIONS FOR SELECT OCCUPATIONS IN HEALTH CARE

29–2061 LICENSED PRACTICAL & LICENSED VOCATIONAL NURSES

Care for ill, injured, convalescent, or disabled persons in hospitals, nursing homes, clinics, private homes, group homes, and similar institutions. May work under the supervision of a registered nurse. Licensing required.

SKILLS AND CREDENTIALS REQUIRED FOR ENTRY: LPNs should have a caring, sympathetic nature. Employers prefer to hire LPNs who have a strong desire to help others and a genuine concern for patients' welfare. Because work with the sick and injured can be stressful, employers look for LPNs who are emotionally stable. The ability to follow orders and work under close supervision are also important. Applicants must have passed the state licensing exam to qualify for LPN positions.

To work as a licensed practical nurse, workers must:

- Have a high school diploma or GED;
- Graduate from a practical nursing program;
- Complete supervised clinical work experience;
- Pass a national exam;
- Pass a state licensing exam;
- Have good interpersonal skills; and
- Be able to work as part of a team.

Career Pathways to this Occupation

FORMAL EDUCATION

Nursing students can get practical nursing training at a professional technical school or two-year college. Some high schools and hospitals also offer this training. Most practical nursing programs take one year to complete. They include classroom study and supervised clinical practice (patient care). Classroom study includes anatomy, physiology, nutrition, and first aid. As part of the patient care study, students learn to administer drugs to patients.

ON-THE-JOB TRAINING

Nursing students can get clinical work experience in a hospital or clinical setting. They work under the supervision of an experienced nurse.

Work Experience

Potential workers can volunteer in a nursing home or other medical setting to gain practical experience. Work experience as a nursing aide is also very helpful.

Table III.4 Top O*Net Critical Skills

Importance	Skill
94	**Active Listening** — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
93	**Reading Comprehension** — Understanding written sentences and paragraphs in work related documents.
92	**Time Management** — Managing one's own time and the time of others.

Source: http://online.onetcenter.org

29–2052 – Pharmacy Technicians

Prepare medications under the direction of a pharmacist. May measure, mix, and count out, label, and record amounts and dosages of medications..

Skills and credentials required for entry: There are no national and few state requirements for training pharmacy technicians. However, employers often prefer applicants who have completed formal training. Many employers have neither the time nor money to train their own technicians.

Applicants without formal training but with experience working as a pharmacy assistant in a drug store have an advantage. Employers also prefer applicants who get along well with people and know how to serve customers. Experience managing supplies and counting and measuring drugs is also preferred. Any experience using computers is helpful. Becoming certified as a Certified Pharmacy Technician might also help in the hiring process. Employers know that technicians who pass the exam have knowledge and skills.

To work as a pharmacy technician, workers must:

- Have a high school diploma or GED
- Complete on-the-job training or a formal training program; and
- Have a good eye for detail.

Career Pathways to this Occupation

Formal Education

Some pharmacy technicians complete a formal training program. Pharmacy technician programs last one to two y ears. Two-year programs grant an associate's degree. One-year programs grant a certificate. During training, students study medical terminology, pharmaceutical calculations, and pharmacy recordkeeping. They also learn medication names, doses, and uses..

On-the-job Training

Most pharmacy technicians learn their skills on the job from an experienced pharmacy technician. During training, they learn the names and doses of medications; ethics and laws; store policies; and customer service. Many training programs offer internships where students get hands-on experience working in a pharmacy. Interns work under the supervision of experienced technicians or pharmacists.

Table III.5 Top O*Net Critical Skills

Importance	Skill
87	**Active Listening** — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
82	**Speaking** — Talking to others to convey information effectively.
80	**Active Learning** — Understanding the implications of new information for both current and future problem-solving and decision-making.
80	**Service Orientation** — Actively looking for ways to help people.

Source: http://online.onetcenter.org

29-2021 – Dental Hygienists

Clean teeth and examine oral areas, head, and neck for signs of oral disease. May educate patients on oral hygiene, take and develop X-rays, or apply fluoride or sealants.

Skills and credentials required for entry: Dental hygienists must have a state license. One must successfully pass an approved training program and then pass written and clinical exams to receive a license. Employers prefer people who can work well with a variety of people

To work as a dental hygienist, workers must:

- Have a high school diploma or GED;

- Complete a dental hygiene program;
- Pass a state exam to get a license;
- Have good interpersonal skills; and
- Be able to work as part of a team.

Career Pathways to this Occupation

Work Experience

Workers may begin their career as a dental assistant. However, licensing requires a formal education as a dental hygienist that provides adequate preparation for this occupation. Prior work experience is not required.

Formal Education

Most dental hygiene programs take two years to complete and grant an associate degree. Some four-year programs grant a bachelor's or master's degree. Programs are available at professional technical schools, colleges, and dental schools. In a dental hygiene program, students study anatomy, radiology, and nutrition. Students also learn how to use dental tools and equipment. During training, students get hands-on experience working with patients in a clinic. About half of the programs require applicants to complete at least one year of college.

Table III.6 Top O*Net Critical Skills

Importance	Skill
86	**Active Listening** — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
83	**Speaking** — Talking to others to convey information effectively.
78	**Reading Comprehension** — Understanding written sentences and paragraphs in work related documents.
77	**Active Learning** — Understanding the implications of new information for both current and future problem-solving and decision-making.

Source: http://online.onetcenter.org

29-2011 – Medical and Clinical Laboratory Technologists

Perform complex medical laboratory tests for diagnosis, treatment, and prevention of disease. May train or supervise staff. Medical technologists have more training and job responsibilities than medical technicians. They perform more complex tests and often

supervise other laboratory workers. Technologists are often responsible for making sure that testing is done properly. They consult with physicians on what the tests show. Some technologists specialize. Blood bank technologists determine correct blood types for transfusions. Microbiology technologists identify bacteria and other disease organisms. In some labs, technologists conduct research under the supervision of medical researchers.

SKILLS AND CREDENTIALS REQUIRED FOR ENTRY: Employers look for applicants who can pay attention to detail and follow procedures. Employers require applicants for medical technologist jobs to have at least a bachelor's degree. They prefer applicants whose degree is in medical technology or one of the life sciences. National certification is highly valued.

To work as a medical laboratory technologist, workers must:

- Have a high school diploma;
- Have a bachelor's degree in medical technology or life science; and
- Have a good eye for detail.

Career Pathways to this Occupation

FORMAL EDUCATION

Medical laboratory technologists usually have a bachelor's degree in medical technology or a life science. These programs include courses in chemistry, biology, and statistics. Students also learn to conduct and supervise complex medical tests. Hospitals and four-year colleges offer training programs. Some medical lab technologists do not have a bachelor's degree. Instead, they have a combination of formal training, on-the-job training, and special training.

ON-THE-JOB TRAINING

Technicians can become technologists if they get additional training and experience.

In order to become a certified Medical Technologist, the applicant must also complete one year of approved laboratory experience, training, or both, covering several fields of medical laboratory work.

Table III.7 Top O*Net Critical Skills

Importance	Skill
94	**Quality Control Analysis** — Conducting tests and inspections of products, services, or processes to evaluate quality or performance.
88	**Equipment Maintenance** — Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.

Importance	Skill
87	**Reading Comprehension** — Understanding written sentences and paragraphs in work related documents.
84	**Troubleshooting** — Determining causes of operating errors and deciding what to do about it.
81	**Operation and Control** — Controlling operations of equipment or systems.
80	**Operation Monitoring** — Watching gauges, dials, or other indicators to make sure a machine is working properly.
79	**Critical Thinking** — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.
79	**Science** — Using scientific rules and methods to solve problems.

Source: http://online.onetcenter.org

29-1111 - Registered Nurses

Assess patient health problems and needs, develop and implement nursing care plans, and maintain medical records. Administer nursing care to ill, injured, convalescent, or disabled patients. May advise patients on health maintenance and disease prevention or provide case management. Licensing or registration required. Includes advance practice nurses such as: nurse practitioners, clinical nurse specialists, certified nurse midwives, and certified registered nurse anesthetists. Advanced practice nursing is practiced by RNs who have specialized formal, post-basic education and who function in highly autonomous and specialized roles.

SKILLS AND CREDENTIALS REQUIRED FOR ENTRY: Some employers may prefer to hire registered nurses who have a B.S.N. degree. Nursing supervisors are nearly always required to have a B.S.N. degree. Employers prefer to hire nurses who have a strong desire to help others and a genuine concern for patients' welfare. Because work with the sick and injured can be stressful, employers look for nurses who are emotionally stable.

To work as a registered nurse, workers must:

- Graduate from a nursing program;
- Complete supervised clinical work experience;
- Pass a national exam;
- Pass a state licensing exam;
- Be able to work as part of a team; and
- Have good interpersonal skills.

Career Pathways to this Occupation

Formal Education

There are three training options for registered nurses. Nursing students can earn an associate degree in nursing (A.D.N.) that are typically offered by community and two-year colleges as a two-year program. Two, they can earn a bachelor's of science degree in nursing (B.S.N.). from colleges and universities that offer these four-year programs. Three, they can earn a diploma from a hospital that offers these two to three year programs.

In general, graduates of any of the three types of programs qualify for entry-level positions. However, they must also pass national and state exams. Nurses who have a bachelor's degree have more options for jobs.

Nursing students study anatomy, physiology, and chemistry. Near the end of training, they complete a supervised work experience in a hospital. During their clinical work experience, they work in several hospital departments, such as surgery, emergency, and pediatrics.

Work Experience

People can volunteer in a nursing home or other medical setting to get experience. Many RNs began their career as a LPN, Health Aide, Health Technician, Certified Nursing Assistant (CNA), Home Health Assistant (HHA) or other related entry-level occupation.

Table III.8 Top O*Net Critical Skills

Importance	Skill
90	**Active Listening** — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
84	**Reading Comprehension** — Understanding written sentences and paragraphs in work related documents.
82	**Critical Thinking** — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.

Source: http://online.onetcenter.org

29-1051 – Pharmacists

Compound and dispense medications following prescriptions issued by physicians, dentists, or other authorized medical practitioners.

Skills and Credentials Required for Entry: Employers require that pharmacists be licensed in the state where they work. Employers also look for

pharmacists who have good people and communication skills. This is because communication with patients is a very important part of the job.

To work as a pharmacist, workers must:

- Complete at least two years of pre-pharmacy courses in college;
- Graduate from a four-year pharmacy program;
- Complete an internship; and
- Pass a state licensing exam.

Career Pathways to this Occupation

Formal Education

Pharmacy programs take four years to complete and grant a Doctor of Pharmacy (Pharm.D.) degree. These programs teach students to fill prescriptions, advise patients, and confer with physicians and other health workers.

Pharmacy students need at least two years of college-level classes before entering a college of pharmacy. Most students enter pharmacy programs after completing three years of college. Many college programs qualify students for pharmacy college. Regardless of major, they should take courses in math, chemistry, and biology. They also study physics, humanities, and social sciences. They do not have to complete a formal pre-pharmacy program.

On-the-Job Training

While in pharmacy school students receive some real work experience by working as an "extern" in different settings. For example, they may work in a community pharmacy or hospital. After finishing a pharmacy program, students must complete an internship. During the internship, they work under the guidance of a licensed pharmacist.

Many pharmacists begin as pharmacy technicians, who then go on to complete the rest of their formal training to become pharmacists.

Table III.9 Top O*Net Critical Skills

Importance	Skill
84	**Active Listening** — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
84	**Speaking** — Talking to others to convey information effectively.
80	**Reading Comprehension** — Understanding written sentences and paragraphs in work related documents.
74	**Mathematics** — Using mathematics to solve problems.

Importance	Skill
71	**Science** — Using scientific rules and methods to solve problems.
70	**Critical Thinking** — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.

Source: http://online.onetcenter.org

11-9111 – Medical and Health Services Managers

Plan, direct, or coordinate medicine and health services in hospitals, clinics, managed care organizations, public health agencies, or similar organizations. This occupation may be the head of a department, head administrator or even the Chief Executive Officer (CEO).

Skills and credentials required for entry: Extensive skill, knowledge, and experience are needed for these occupations. Many require more than five years of experience. This occupation involves coordinating, training, supervising, or managing the activities of others to accomplish goals. Very advanced communication and organizational skills are required.

To work as a health services managers and administrators, workers must:

- Complete at least a bachelor's degree;
- Have work experience with administrative tasks;
- Have strong communication skills; and
- Be decisive.

Additionally, administrators must be licensed by the Indiana State Board of Health Facility Administrators, the state agency responsible for the licensure of health services administrators in the State of Indiana.

Career Pathways to this Occupation

Health services administrators usually begin by working in clinical or administrative areas. For example, these areas include nursing, finance, or information systems. As they gain experience or additional education, they may be promoted to department head. With additional work experience, they can advance to positions with more responsibility, such as vice-president or CEO.

Formal Education

Health services administrators must have at least a bachelor's degree. However, many have a master's degree. Common areas of study are health services administration,

business administration, and public health. Other possible programs are long-term care administration and health science. Some health services managers and administrators are physicians. Clinical administrators often have a degree in a specialty, such as nursing.

Many colleges and universities offer master's programs in health services administration. Entry into these programs is competitive. Applicants with work experience and a bachelor's degree in business or a health-related field have the best chance of being accepted.

Work Experience

Many health services administrators begin their careers as a nurse or physician. After a working in their profession for years, they switch to administration.

On-the-Job Training

Health services administrators update their knowledge and skills continually. Insurance requirements, laws, medical techniques, and computer technology change quickly. To keep up, managers attend seminars and classes

Table III.10 Top O*Net Critical Skills

Importance	Skill
95	**Active Listening** — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
89	**Reading Comprehension** — Understanding written sentences and paragraphs in work related documents.
86	**Critical Thinking** — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.
84	**Monitoring** — Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.
84	**Speaking** — Talking to others to convey information effectively.

Source: http://online.onetcenter.org

Manufacturing – Critical Occupations

The following table (Table III.11) describes the educational requirements for these critical occupations in Manufacturing.

Table III.11 Educational Requirements for Critical Occupations in Manufacturing

SOC Code	Occupational Title	Education Requirement
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	Moderate-term on-the-job training
51-4121	Welders, Cutters, Solderers, and Brazers	Postsecondary vocational training
51-1011	First-Line Supervisors/Managers of Production and Operating Workers	Work experience in related occupation
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	Moderate-term on-the-job training
17-2141	Mechanical Engineers	Bachelor's degree

Source: Indiana Workforce Development Agency

Table III.12 Employment, Wages and Earnings for Occupations in Manufacturing

SOC	Occupational Title	Employ-ment	Mean Wage	Mean Annual	Entry Wage	Entry Annual
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	1,690	15.38	31,991	10.35	21,527
51-4121	Welders, Cutters, Solderers, and Brazers	1,970	16.55	34,419	11.17	23,241
51-1011	First-Line Supervisors/Managers of Production and Operating Workers	2,660	24.38	50,719	15.58	32,396
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	2,320	23.79	49,490	12.22	25,409
17-2141	Mechanical Engineers	540	32.27	67,129	23.08	48,015

Source: Indiana Workforce Development Agency, 2004, 2nd quarter

51-9061 – Inspectors, Testers, Sorters, Samplers, and Weighers

Inspect, test, sort, sample, or weigh nonagricultural raw materials or processed, machined, fabricated, or assembled parts or products for defects, wear, and deviations from specifications. May use precision measuring instruments and complex test equipment.

SKILLS AND CREDENTIALS REQUIRED FOR ENTRY: Training requirements vary, based on the responsibilities of the inspector, tester, sorter, sampler, or weigher. For workers who perform simple "pass/fail" tests of products, a high school diploma generally is sufficient. Simple jobs may be filled by beginners provided with in-house training. Training for new inspectors may cover the use of special meters, gauges, computers, or other instruments; quality-control techniques; blueprint reading; safety; and reporting requirements. There are some postsecondary training programs in testing, but many employers prefer to train inspectors on the job.

In general, inspectors, testers, sorters, samplers, and weighers need mechanical aptitude, math and communication skills, and good hand-eye coordination and vision. Advancement for these workers frequently takes the form of higher pay. They also may advance to inspector of more complex products, supervisor, or related positions such as purchaser of materials and equipment.

Career pathways to this occupation

Many workers enter this occupation through an orientation and work experience in quality control processes, and on-the-job training. Complex precision-inspecting positions are filled by experienced assemblers, machine operators, or mechanics that already have a thorough knowledge of the products and production processes. To advance to these positions, experienced workers may need training in statistical process control, new automation, or the company's quality assurance policies. As automated inspection equipment becomes more common, computer skills are increasingly important.

Table III.13 Top O*Net Critical Skills

Importance	Skill
82	**Quality Control Analysis** — Conducting tests and inspections of products, services, or processes to evaluate quality or performance.
60	**Mathematics** — Using mathematics to solve problems.
60	**Operation Monitoring** — Watching gauges, dials, or other indicators to make sure a machine is working properly.
60	**Reading Comprehension** — Understanding written sentences and paragraphs in work related documents.
50	**Writing** — Communicating effectively in writing as appropriate for the needs of the audience.

Source: http://online.onetcenter.org

51-4121 – Welders, Cutters, Solderers, and Brazers

Use hand-welding, flame-cutting, hand soldering, or brazing equipment to weld or join metal components or to fill holes, indentations, or seams of fabricated metal products.

Skills and credentials required for entry: Employers prefer applicants who have welding or soldering experience or training. They look for people who have good eyesight, hand-eye coordination, and manual dexterity. The ability to concentrate on detailed work for long periods is also important. Welders should be in good physical shape so they can bend, stoop, and work in awkward positions. Some certifications are available for certain types of welding.

To work as a welder, workers must:

- Have a high school diploma or GED;
- Complete a formal training program;
- Complete on-the-job training; and
- Have a good eye for detail.

Career Pathways to this Occupation

Formal Education

Most welders learn their skills through a formal training program. High schools, professional technical schools, and two-year colleges all offer welding programs. There are also private welding schools and training programs offered by unions. In a training program, they learn: equipment use, flame cutting, arc welding, brazing and soldering.

Training can last a few weeks for low-skilled work. It takes many years to be fully trained.

Some welders go through apprenticeship training. To apply for an apprenticeship, workers must have a high school degree or GED, and be at least 18 years old. Apprenticeship programs usually consist of three to five years of on-the-job training. In addition, each year they receive at least 144 hours of classroom training. They can prepare for an apprenticeship by taking classes at a professional technical or two-year school. Courses in shop, general math, and drafting help prepare students to enter apprenticeship programs. However, these courses are not required to qualify for an apprenticeship.

On-the-Job Training

Some welders learn their skills on the job from an experienced worker. They begin as a helper and gradually learn to operate welding equipment. Some employers will send workers for additional training.

Table III.14 Top O*Net Critical Skills

Importance	Skill
75	**Operation and Control** — Controlling operations of equipment or systems.
70	**Equipment Selection** — Determining the kind of tools and equipment needed to do a job.
50	**Equipment Maintenance** — Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.
50	**Mathematics** — Using mathematics to solve problems.
50	**Operation Monitoring** — Watching gauges, dials, or other indicators to make sure a machine is working properly.

Source: http://online.onetcenter.org

51-1011 – First-Line Supervisors/Managers of Production and Operating Workers

Supervise and coordinate the activities of production and operating workers, such as inspectors, precision workers, machine setters and operators, assemblers, fabricators, and plant and system operators.

Skills and credentials required for entry—Supervisors: Employers look for applicants who have experience and job knowledge. They also look for organizational skills and leadership qualities. In addition, employers look for people who can motivate employees, maintain high morale, and command respect. They also look for people with strong communication and interpersonal skills. Educational requirements vary by industry. Supervisors are often promoted from among the workers they supervise. Successful Supervisors are often promoted to Manager.

Skills and Credentials required for Entry—Managers: Many employers prefer applicants who have a bachelor's degree in engineering and a master's degree in business administration (MBA). However, this combination is rarely required. Some companies hire well-rounded liberal arts graduates. Employers also look for production managers with the ability to compromise, persuade, and negotiate. Excellent communication skills are very important.

To work as a production manager, workers must:

- Complete a bachelor's degree;
- Have supervisory experience;
- Be self-confident and persuasive;
- Have strong communication skills; and

- Be able to direct and motivate people.

To work as a production supervisor, workers must:

- Have at least a high school diploma or GED;
- Have work experience in the occupation being supervised;
- Have good communication skills; and
- Be able to direct and motivate people.

Career Pathways to this Occupation

Some production supervisors and managers work their way up from the ranks. Production line supervisors who are promoted to production managers must have demonstrated leadership qualities. They usually also have taken company training in management and communication skills.

Formal Education – Manager

Production managers usually have a bachelor's degree and related work experience. However, requirements vary widely because there is such a variety of manufacturing plants. The manufacturing processes depend on the product. For instance, a plant making patio furniture is quite different from one making microchips. In general, as products become more complex, managers need more training and experience. A bachelor's degree in engineering and a master's degree in business administration (MBA) is good preparation for this occupation. However, a bachelor's in business plus work experience is sufficient for many management jobs.

Formal Education – Supervisor

Production supervisors learn most of their skills on the job. A high school diploma or GED is the minimum requirement. However, some industries require more training. For example, supervisors in aerospace and electronics usually need a bachelor's degree in a related field.

Work Experience – Managers

Managers usually must prove themselves as a first-line supervisor before they can enter this occupation. Many managers work for several years as supervisors before becoming managers.

Work Experience – Supervisors

Supervisors usually need experience as a worker in the business to learn the work processes, methods, and cycles. However, supervisors can enter some jobs with a bachelor's degree and very little experience.

On-the-Job Training – Managers

Some employers have management-training programs for new college graduates. They receive training in the company's products and policies. They also learn about the manufacturing process and their job duties. In order for experienced supervisors to advance to department head or production manager positions, they usually need a degree in business or engineering in addition to completing in-house training programs.

On-the-Job Training – Supervisors

Many employers train new supervisors in management theory and human resources. Supervisors may also learn new computer software.

Table III.15 Top O*Net Critical Skills

Importance	Skill
75	**Coordination** — Adjusting actions in relation to others' actions.
71	**Critical Thinking** — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.
71	**Reading Comprehension** — Understanding written sentences and paragraphs in work related documents.
71	**Speaking** — Talking to others to convey information effectively.
71	**Time Management** — Managing one's own time and the time of others.

Source: http://online.onetcenter.org

41-4012 – Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products

Sell goods for wholesalers or manufacturers to businesses or groups of individuals. Work requires substantial knowledge of items sold.

Skills and credentials required for entry: Many employers prefer to hire applicants who have a college degree. Employers that sell industrial products may prefer applicants with a degree in science or engineering. In contrast, firms that sell basic consumer products may place less emphasis on education. They may be more interested in sales experience and familiarity with their products. In general, employers look for applicants who have the personality and the desire to sell.

Most employers prefer sales representatives who are goal-oriented and persuasive. They should be able to work well both independently and as part of a team. A pleasant personality, neat appearance, and the ability to communicate well are also important. Completing a sale can take several months. Sales representatives should be patient, persistent, and good at problem solving.

To work as a sales representative, workers must:

- Work their way up through sales jobs over many years or have a bachelor's degree;
- Have excellent communication skills;
- Be persuasive and goal-oriented; and
- Be self-motivated.

Career Pathways to this Occupation

Formal Education

The amount and type of education needed for this occupation depends on the products or services being sold. A high school diploma and proven sale experience are acceptable for some jobs, such as selling consumer products to retail stores. However, sales representatives need a strong educational background for selling technical products. Selling industrial products, such as machinery or chemicals, may require a degree in engineering or chemistry.

Work Experience

Many sales jobs require previous sales experience. Some require technical experience with products. This experience could be installing, repairing, or using the product.

On-the-job Training

Many firms have formal training programs for beginning sales representatives. These programs may last up to two years. In some programs, they rotate among jobs in production plants and offices to learn all phases of the operation. In other programs, they take courses and get on-the-job training. As sales representatives become familiar with the firm and its products, they take on more responsibility. Eventually they are assigned their own territory.

Sales representatives must continually update their knowledge of new products and customer needs. They attend trade shows to learn about new products and sales techniques. They also attend conferences and conventions to meet with clients and other sales representatives to discuss industry changes and concerns.

Table III.16 Top O*Net Critical Skills

Importance	Skill
92	**Speaking** — Talking to others to convey information effectively.
83	**Persuasion** — Persuading others to change their minds or behavior.
83	**Service Orientation** — Actively looking for ways to help people.
83	**Social Perceptiveness** — Being aware of others' reactions and understanding why they react as they do.
75	**Active Listening** — Giving full attention to what other people are saying, taking time to

	understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
75	**Negotiation** — Bringing others together and trying to reconcile differences.

Source: http://online.onetcenter.org

17-2141 – MECHANICAL ENGINEERS

Perform engineering duties in planning and designing tools, engines, machines, and other mechanically functioning equipment. Oversee installation, operation, maintenance, and repair of such equipment as centralized heat, gas, water, and steam systems.

SKILLS AND CREDENTIALS REQUIRED FOR ENTRY: To work as a mechanical engineer, workers must:

- Have a bachelor's degree in mechanical engineering;
- Be curious and detail-oriented;
- Have strong analytical skills; and
- Be creative.

The professional engineer designation requires certification from the Indiana State Board of Professional Engineers, with at least four years of relevant work experience.

Career pathways to this occupation

Many mechanical engineers begin their careers as technicians, mechanics or other related occupations. However, a Bachelor's degree from an accredited engineering school is required for licensure as a professional engineer.

FORMAL EDUCATION

Most students prepare for this field by earning a bachelor's degree in mechanical engineering. Many four-year colleges and universities offer this program of study. Students may need between four and five years to complete this program. Some jobs require a master's or doctoral degree (Ph.D.). Many student engineers go to graduate school to specialize in one area of mechanical engineering.

In a typical four-year program, classes include math, basic science, introductory engineering, and social science. Courses may include mechanics and materials, thermal-fluids, and product engineering. Students may also study design and manufacturing and mechanical vibration.

Work Experience

Many mechanical engineering students participate in an engineering internship during college. An internship is usually part of a four-year degree program, and offers students an opportunity to apply what they have learned in the classroom to a work situation. It also allows them to build skills and make contacts with people in the field.

On-the-job Training

New graduates work under the guidance of experienced engineers. In large companies, they may also receive formal classroom training. As they gain knowledge and experience, they are usually given more difficult tasks and earn more independence in their work.

Table III.17 Top O*Net Critical Skills

Importance	Skill
89	**Mathematics** — Using mathematics to solve problems.
88	**Complex Problem Solving** — Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.
87	**Critical Thinking** — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.
85	**Reading Comprehension** — Understanding written sentences and paragraphs in work related documents.
85	**Science** — Using scientific rules and methods to solve problems.
82	**Active Listening** — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
80	**Judgment and Decision Making** — Considering the relative costs and benefits of potential actions to choose the most appropriate one.
80	**Time Management** — Managing one's own time and the time of others.
78	**Writing** — Communicating effectively in writing as appropriate for the needs of the audience.

Source: http://online.onetcenter.org

TDL–Critical Occupations

The critical occupations for TDL were chosen according to the projection in new openings and replacement workers. In addition, we selected occupations that are more likely to require computer skills, technology skills, certifications and postsecondary degrees.

The following table (Table III.18) describes the educational requirements for these critical occupations in TDL. **Table III.18**

SOC Code	Occupational Title	Education Requirements
53-7051	Industrial Truck and Tractor Operators	Short-term on-the-job training
53-1031	First-Line Supervisors/Managers of Transportation and Material-Moving Machine and Vehicle Operators	Work experience in related occupation
53-1021	First-Line Supervisors/Managers of Helpers, Laborers, and Material Movers, Hand	Work experience in related occupation
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	Postsecondary vocational training
43-5061	Production, Planning, and Expediting Clerks	Short-term on-the-job training
43-5032	Dispatchers, Except Police, Fire, and Ambulance	Moderate-term on-the-job training

Source: Indiana Workforce Development Agency

Table III.19 Employment, Wages and Earnings for Occupations in TDL

SOC	Occupational Title	Employ-ment	Mean Wage	Mean Annual	Entry Wage	Entry Annual
53-7051	Industrial Truck and Tractor Operators	1,930	14.37	29,898	11.01	22,898
53-1031	First-Line Supervisors/Managers of Transportation and Material-Moving Machine and Vehicle	590	23.67	49,229	15.07	31,347
53-1021	First-Line Supervisors/Managers of Helpers, Laborers, and Material Movers, Hand	490	21.15	43,984	14.45	30,060
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	1,000	15.97	33,222	10.49	21,816
43-5061	Production, Planning, and Expediting Clerks	1,570	20.87	43,419	14.32	29,781
43-5032	Dispatchers, Except Police, Fire, and Ambulance	330	18.91	39,337	11.59	24,116

Source: Indiana Workforce Development Agency, 2004, 2nd quarter

53-7051 – Industrial Truck and Tractor Operators

Operate industrial trucks or tractors equipped to move materials around a warehouse, storage yard, factory, construction site, or similar location.

Skills and credentials required for entry: Employers prefer forklift operators with a high school diploma or GED. They also look for operators with good balance, and eye-hand-foot coordination. It is also important for forklift operators to be able to judge the distance between objects. To work as a forklift operator, applicants must:

- Complete a high school diploma or GED;
- Have good eye-hand coordination;

- Complete on-the-job training.

Career pathways to this occupation

Work Experience

Any experience safely driving or operating equipment can help towards a trainee position.

On-the-job Training

Forklift operators learn their skills on the job from experienced operators. They begin as a helper and perform routine tasks. As they gain experience, they work on their own.

Table III.20 Top O*Net Critical Skills

Importance	Skill
76	**Mathematics** — Using mathematics to solve problems.
74	**Active Listening** — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
74	**Reading Comprehension** — Understanding written sentences and paragraphs in work related documents.
72	**Equipment Maintenance** — Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.
66	**Operation and Control** — Controlling operations of equipment or systems.
65	**Instructing** — Teaching others how to do something.
65	**Operation Monitoring** — Watching gauges, dials, or other indicators to make sure a machine is working properly.
64	**Critical Thinking** — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.

Source: http://online.onetcenter.org

53-1031 – First-Line Supervisors/Managers of Transportation and Material-Moving Machine and Vehicle Operators

Directly supervise and coordinate activities of transportation and material-moving machine and vehicle operators and helpers.

Skills and credentials required for entry: Most employers require managers to have at least a bachelor's degree. They prefer to hire applicants who have a degree in logistics, business, or marketing. They also hire applicants who have a degree in industrial relations, accounting, or economics.

Employers look for applicants who communicate well with staff and customers. They also look for people who can solve problems. Storage and transportation managers must be able to look at a lot of information and decide what is most important.

Career pathways to this occupation

To work as a storage or transportation manager, the person must:

- Have years of work experience in a related occupation or have a bachelor's degree and experience;
- Be self-confident and persuasive;
- Be able to direct and motivate people; and
- Have strong communication skills.

Formal Education

Most storage and transportation managers prepare for this field by earning a bachelor's degree. Some universities offer bachelor's or master's degrees in logistics, transportation, or supply chain management. However, most managers learn logistics through extensive on-the-job experience or training. Other programs of study to prepare for this field include business administration, accounting, or economics. Most schools offer these degree programs.

Work Experience

While education is important to prepare for this occupation, work experience is just as important. Most storage or transportation managers gained experience by working their up through the ranks. Some storage or transportation managers begin in entry-level positions, with only a high school degree or GED.

On-the-Job Training

Students should consider participating in an internship while in college. An internship is usually part of a four-year degree program. It offers students a chance to apply what they have learned in the classroom to a work situation. It also allows them to build skills and make contacts with people in the field.

Table III.21 Top O*Net Critical Skills

Importance	Skill
75	**Speaking** — Talking to others to convey information effectively.
71	**Active Listening** — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
71	**Coordination** — Adjusting actions in relation to others' actions.

Importance	Skill
71	**Mathematics** — Using mathematics to solve problems.
66	**Critical Thinking** — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.
66	**Instructing** — Teaching others how to do something.

Source: http://online.onetcenter.org

53-1021 – First-Line Supervisors/Managers of Helpers, Laborers, and Material Movers, Hand

Supervise and coordinate the activities of helpers, laborers, or material movers.

Skills and credentials required for entry*:* Employers look for applicants who have experience and job knowledge. They also look for organizational skills and leadership qualities. In addition, employers look for people who can motivate employees, maintain high morale, and command respect. They also look for people with strong communication and interpersonal skills. Educational requirements vary by industry. Supervisors are often promoted from among the workers they supervise.

To work as a Storage and Transportation Managers, workers must:

- Have at least a high school diploma or GED; (a postsecondary degree is recommended)
- Have work experience in the occupation being supervised;
- Have good communication skills; and
- Be able to direct and motivate people.

Career pathways to this occupation

Most employers require managers to have at least a bachelor's degree. They prefer to hire applicants who have a degree in logistics, business, or marketing. They also hire applicants who have a degree in industrial relations, accounting, or economics.

Employers look for applicants who communicate well with staff and customers. They also look for people who can solve problems. Storage and transportation managers must be able to look at a lot of information and decide what is most important.

Formal Education

Storage and Transportation Managers learn most of their skills on the job. A high school diploma or GED is the minimum requirement. However, in some industries they must

have more training. For example, supervisors in aerospace and electronics usually need a bachelor's degree in a related field.

Work Experience

Supervisors usually need experience as a worker in the business to learn the work processes, methods, and cycles. However, some can enter some jobs with a bachelor's degree and very little experience.

On-the-job Training

Many employers train new supervisors in management theory and human resources. Supervisors may also learn new computer software.

Table III.22 Top O*Net Critical Skills

Importance	Skill
71	**Instructing** — Teaching others how to do something.
71	**Management of Personnel Resources** — Motivating, developing, and directing people as they work, identifying the best people for the job.
66	**Coordination** — Adjusting actions in relation to others' actions.
66	**Critical Thinking** — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.
62	**Judgment and Decision Making** — Considering the relative costs and benefits of potential actions to choose the most appropriate one.
62	**Mathematics** — Using mathematics to solve problems.

Source: http://online.onetcenter.org

49-3031 – Bus and Truck Mechanics and Diesel Engine Specialists

Diagnose, adjust, repair, or overhaul trucks, buses, and all types of diesel engines. Includes mechanics working primarily with automobile diesel engines. Employers look for mechanics with experience, a good work record and appropriate certifications to work on diesel engines. Several employers indicated that this was a difficult position for them to fill.

Skills and Credentials Required for Entry: Employers prefer to hire bus and truck mechanics who graduate from formal training programs. Many employers work with training programs to provide instructors with the latest equipment, techniques, and tools. Employers help students learn what they need to know for the job. This relationship also helps employers hire skilled workers.

For unskilled entry-level jobs, employers look for workers who have mechanical aptitude and strong problem-solving skills. Bus and truck mechanics also must be at least 18

years old and in good physical condition. Most employers require completion of high school or a GED

Career Pathways to this Occupation

Unskilled beginners clean parts, fuel and lubricate vehicles, and drive vehicles into and out of the shop. Beginners are usually promoted to trainee mechanic positions, after they gain experience and if there are openings. In some shops, beginners who have experience in automobile service start as trainee mechanics.

After they gain a few months of experience, trainee mechanics may do planned service tasks and make minor repairs. They take on more difficult jobs after they prove their skills. They learn to work on related parts, such as brakes, transmissions, and electrical systems. A technician with at least three to four years of on-the-job experience will qualify as a journey-level diesel bus or truck mechanic. Those who graduate from community colleges or trade schools move more quickly to the journey level.

Table III.23 Top O*Net Critical Skills

Importance	Skill
87	**Equipment Maintenance** — Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.
84	**Troubleshooting** — Determining causes of operating errors and deciding what to do about it.
82	**Repairing** — Repairing machines or systems using the needed tools.
66	**Reading Comprehension** — Understanding written sentences and paragraphs in work related documents.
63	**Installation** — Installing equipment, machines, wiring, or programs to meet specifications.
62	**Coordination** — Adjusting actions in relation to others' actions.
62	**Equipment Selection** — Determining the kind of tools and equipment needed to do a job.

Source: http://online.onetcenter.org

43-5061 – Production, Planning, and Expediting Clerks

Coordinate and expedite the flow of work and materials within or between departments of an establishment according to production schedule. Duties include reviewing and distributing production, work, and shipment schedules; conferring with department supervisors to determine progress of work and completion dates; and compiling reports on progress of work, inventory levels, costs, and production problems. This occupation is

increasingly requiring keyboarding skills for data entry and the ability to use various software applications for tracking, reporting, and finding information.

SKILLS AND CREDENTIALS REQUIRED FOR ENTRY: Employers prefer applicants who have taken business courses or who have work experience. Employers look for applicants who have good oral and written communication skills. Typing, filing, record keeping, and other clerical skills are also important. To work as a production and planning clerk, applicants must:

- Have a high school diploma or GED; and
- Complete on-the-job training.

ON-THE-JOB TRAINING

Production and planning clerks usually learn their skills on the job. New clerks work with an experienced clerk and do routine tasks under close supervision. They also receive training in the use of computers and other electronic business equipment.

Career Pathways to this Occupation

Employers rarely require more than a high school degree or GED for entry-level jobs. However, employers increasingly prefer to hire those who have experience with computers. Chances for advancement vary with the place of employment. For many production and planning clerks, advancement takes the form of more responsibility and higher pay.

Table III.24 Top O*Net Critical Skills

Importance	Skill
83	**Coordination** — Adjusting actions in relation to others' actions.
83	**Monitoring** — Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.
83	**Reading Comprehension** — Understanding written sentences and paragraphs in work related documents.
79	**Management of Material Resources** — Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.
79	**Time Management** — Managing one's own time and the time of others.
79	**Writing** — Communicating effectively in writing as appropriate for the needs of the audience.
75	**Active Listening** — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
75	**Mathematics** — Using mathematics to solve problems.
75	**Speaking** — Talking to others to convey information effectively.
74	**Complex Problem Solving** — Identifying complex problems and reviewing related

information to develop and evaluate options and implement solutions.

Source: http://online.onetcenter.org

43-5032 – Dispatchers, Except Police, Fire, and Ambulance

Schedule and dispatch workers, work crews, equipment, or service vehicles for conveyance of materials, freight, or passengers, or for normal installation, service, or emergency repairs rendered outside the place of business. Duties may include using radio, telephone, or computer to transmit assignments and compiling statistics and reports on work progress.

Most dispatchers utilize computers and customer services skills to perform their jobs. Many often have supervisory responsibility or at least manage the work of drivers and other workers. In some small companies, the role of dispatcher is often embedded into other occupations like terminal manager or customer service, making it difficult to accurately determine the actual number of employees and job growth rates.

Skills and credentials required for entry: Employers require dispatchers to have a high school diploma or GED. They prefer to hire people who are familiar with radio equipment and other telecom equipment, and know how to use a computer to track orders and perform some data entry. Dispatchers need to know geography: knowledge of land, sea, and air masses; they also need to know how to describe their location, features, and relationships.

To work as a dispatcher, workers must:

- Complete a high school diploma or GED;
- Complete on-the-job training;
- Have good communications skills; and
- Work well under stress.

Career Pathways to this Occupation

Formal Education

Emergency vehicle dispatchers may take special courses. Training in dispatching can include study in interpersonal communications, public safety telecommunications, radio broadcasting, and computer operations. Dispatchers also learn proper procedures for emergency communications with police, fire, and rescue functions.

On-the-job Training

Most dispatchers learn their skills through on-the-job training. Training may last from

several days to several months, depending on the difficulty of the job. Dispatchers begin by working with experienced dispatchers. They monitor calls and learn how to operate telephones and data communications terminals.

Dispatchers also learn to use radio transmitters and receivers. Later, as they gain confidence, they begin to handle calls on their own.

Table III.25 Top O*Net Critical Skills

Importance	Skill
76	**Active Listening** — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
72	**Judgment and Decision Making** — Considering the relative costs and benefits of potential actions to choose the most appropriate one.
69	**Reading Comprehension** — Understanding written sentences and paragraphs in work related documents.
68	**Speaking** — Talking to others to convey information effectively.
67	**Time Management** — Managing one's own time and the time of others.
64	**Critical Thinking** — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.

Source: http://online.onetcenter.org

Competitive levels and Trends for Critical Occupations with Midwest and National Comparisons

HEALTHCARE

Below, in Table III.26, you will find median wages from 2003 as Northwest Indiana's median wages of our critical occupations as compared to the Midwest and Nation. LPN's median wage is slightly below both the Midwest and Nation. Pharmacy Technician's make slightly more in Northwest Indiana. Dental Hygienist's is in line with both the Midwest and Nation. Medical & Clinical Lab Technologist's median wage is not far off the Midwest and Nation. A Registered Nurse living in our Region make's a tremendous amount of less money compared to the Midwest and Nation. A Medical & Health Services Manager also makes considerably less than their counterparts in the Midwest and Nation. A Pharmacists makes somewhat less in Northwest Indiana than in the Midwest and Nation. A Medical and Health Services Manager makes considerably less money than fellow employees in the Midwest and Nation.

Table III.26

Healthcare			
	Location	Median Wage 2003	
		Hourly	Annual
Licensed Practical and Licensed Vocational Nurses	United States	15.92	33,100
	Midwest	16.47	34,300
	NW Indiana	15.32	31,859
Pharmacy Technicians	United States	11.26	23,400
	Midwest	10.83	22,500
	NW Indiana	12.13	25,225
Dental Hygienists	United States	27.25	56,700
	Midwest	25.43	52,900
	NW Indiana	26.55	55,221
Medical & Clinical Lab Technologists	United States	21.37	44,400
	Midwest	20.92	43,500
	NW Indiana	20.79	43,250
Registered Nurses	United States	24.53	51,000
	Midwest	23.31	48,500
	NW Indiana	20.78	43,218
Pharmacists	United States	39.67	82,500
	Midwest	39.67	82,500
	NW Indiana	38.35	79,759
Medical & Health Services Managers	United States	31.90	66,400
	Midwest	30.53	63,500
	NW Indiana	27.30	56,774

Midwest = median of the following states: IL, IN, MI, OH, WI

Source: Bureau of Labor Statistics, Occupational Employment Statistics Survey;
Indiana Department of Workforce Development, Labor Market Information

Table III.27 tells us that the employment growth rates for all Healthcare occupations, except for a Medical & Clinical Lab Technologist and Medical & Health Services Manager's are growing slower in our region than the Midwest and Nation.

Table III.27

Healthcare				
	Location	Employment		Percent Change
		2002	2012	
Licensed Practical and Licensed Vocational Nurses	United States	701,900	843,700	20%
	Midwest	103,130	117,640	14%
	NW Indiana	2,200	2,360	7%
Pharmacy Technicians	United States	210,800	271,500	29%
	Midwest	36,540	45,050	23%
	NW Indiana	950	1,120	18%
Dental Hygienists	United States	148,000	211,700	43%
	Midwest	24,800	32,810	32%
	NW Indiana	430	570	33%
Medical & Clinical Lab Technologists	United States	150,000	178,900	19%
	Midwest	24,600	28,300	15%
	NW Indiana	300	380	27%
Registered Nurses	United States	2,284,500	2,907,600	27%
	Midwest	379,010	463,210	22%
	NW Indiana	6,630	7,910	19%
Pharmacists	United States	230,200	299,400	30%
	Midwest	38,150	47,120	24%
	NW Indiana	890	1,030	16%
Medical & Health Services Managers	United States	243,600	314,900	29%
	Midwest	35,780	44,640	25%
	NW Indiana	460	600	30%

Midwest = sum of the following states: IL, IN, MI, OH, WI
Source: Bureau of Labor Statistics, Occupational Employment Statistics Survey; Indiana Department of Workforce Development, Labor Market Information

MANUFACTURING

In Table III.28, all occupations in this industry make a higher median salary as compared to the Midwest and Nation.

Table III.28

Manufacturing			
	Location	Median Wage 2003	
		Hourly	Annual
Inspectors, Testers, Sorters, Samplers, & Weighers	United States	13.56	28,200
	Midwest	14.34	29,800
	NW Indiana	15.37	31,978
Welders, Cutters, Solderers, and Brazers	United States	14.39	29,900
	Midwest	15.02	31,200
	NW Indiana	16.25	33,791
1st-line Supervisors/ Mgrs of Production & Operating Workers	United States	21.23	44,200
	Midwest	21.59	44,900
	NW Indiana	22.56	46,919
Sales Representatives Wholesale, Manufacturing, Except Technical/Scientific Products	United States	21.41	44,500
	Midwest	21.41	44,500
	NW Indiana	21.98	45,715
Mechanical Engineers	United States	31.35	65,200
	Midwest	29.23	60,800
	NW Indiana	31.36	65,233

Midwest = median of the following states: IL, IN, MI, OH, WI
Source: Bureau of Labor Statistics, Occupational Employment Statistics Survey; Indiana Department of Workforce Development, Labor Market Information

But in Table III.29, every single occupation in Manufacturing shows slower growth rates than the Midwest and Nation.

Table III.29

Manufacturing				
	Location	Employment		Percent Change
		2002	2012	
Inspectors, Testers, Sorters, Samplers, & Weighers	United States	515,400	539,500	5%
	Midwest	112,790	116,240	3%
	NW Indiana	1,690	1,560	-8%
Welders, Cutters, Solderers, and Brazers	United States	390,500	456,700	17%
	Midwest	77,940	86,780	11%
	NW Indiana	1,970	1,980	1%
1st-line Supervisors/ Mgrs of Production & Operating Workers	United States	733,400	803,300	10%
	Midwest	158,300	171,420	8%
	NW Indiana	2,660	2,580	-3%

Sales Representatives, Wholesale, Manufacturing, Except Technical/Scientific Products	United States	1,458,800	1,738,100	19%
	Midwest	255,200	295,130	16%
	NW Indiana	2,320	2,400	3%
Mechanical Engineers	United States	215,100	225,400	5%
	Midwest	54,220	55,940	3%
	NW Indiana	540	480	-11%

Midwest = sum of the following states: IL, IN, MI, OH, WI
Source: Bureau of Labor Statistics, Occupational Employment Statistics Survey; Indiana Department of Workforce Development, Labor Market Information

TDL

Each occupation except for a Bus/Truck Mechanic & Diesel Engine Specialist makes more than the Midwest and Nation mean averages.

Table III.30

TDL			
	Location	Median Wage 2003	
		Hourly	Annual
Industrial Truck & Tractor Operators	United States	12.72	26,500
	Midwest	13.45	28,000
	NW Indiana	14.08	29,279
1st-line Supervisors/Mgr Transp. & Material-Moving Mach & Vehicle Operators	United States	21.32	44,300
	Midwest	21.66	45,100
	NW Indiana	22.01	45,790
1st-line Supervisors/Mgr Helpers, Laborers, Material Movers, Hand	United States	18.37	38,200
	Midwest	18.70	38,900
	NW Indiana	20.05	41,697
Bus/Truck Mechanics & Diesel Engine Specialists	United States	16.9	35,200
	Midwest	17.05	35,500
	NW Indiana	16.09	33,468
Production, Planning, & Expediting Clerks	United States	16.95	35,300
	Midwest	17.12	35,600
	NW Indiana	20.65	42,954
Dispatchers, Except Police, Fire & Ambulance	United States	14.72	30,600
	Midwest	14.88	31,000
	NW Indiana	17.79	37,009

Midwest = median of the following states: IL, IN, MI, OH, WI
Source: Bureau of Labor Statistics, Occupational Employment Statistics Survey; Indiana Department of Workforce Development, Labor Market Information

Very similar to the Manufacturing Industry, each occupation has a lower employment growth rate when you compare them to the Midwest and Nation.

Table III.30

TDL				
	Location	Employment		Percent Change
		2002	2012	
Industrial Truck & Tractor Operators	United States	593,700	659,500	11%
	Midwest	122,000	129,990	7%
	NW Indiana	1,930	1,760	-9%
1st-line Supervisors/Mgr Transp. & Material-Moving Mach & Vehicle Operators	United States	207,200	232,100	12%
	Midwest	33,150	35,710	8%
	NW Indiana	590	600	2%
1st-line Supervisors/Mgr Helpers, Laborers, Material Movers, Hand	United States	147,400	168,100	14%
	Midwest	25,860	28,310	9%
	NW Indiana	490	480	-2%
Bus/Truck Mechanics & Diesel Engine Specialists	United States	267,200	305,000	14%
	Midwest	43,660	47,780	9%
	NW Indiana	1,000	1,030	3%
Production, Planning, & Expediting Clerk	United States	287,600	328,000	14%
	Midwest	58,480	65,430	12%
	NW Indiana	1,570	1,400	-11%
Dispatchers, Except Police, Fire & Ambulance	United States	170,000	194,400	14%
	Midwest	24340	26360	8%
	NW Indiana	330	330	0%

Midwest = sum of the following states: IL, IN, MI, OH, WI
Source: Bureau of Labor Statistics, Occupational Employment Statistics Survey; Indiana Department of Workforce Development, Labor Market Information

Section IV: Size and Location of Short- and Long-Term Occupational Shortages

Occupational Shortages

An occupation is deemed to be in shortage when an employer in a certain area is unable to recruit and/or retain as many workers in that particular occupation as they would normally like to employ under current labor market and workplace conditions.

At the current moment, there is no clear-cut method in quantifying "occupational shortages" across multiply industries. And a data source that would provide us with precise information enabling us to calculate occupational shortages does not exist.

However, our team was able to utilize the resources of the ERISS Corporation, a market leader in collecting in-depth business information, specializing in gathering business intelligence collection and technologies. ERISS was able to disseminate a Job Vacancy Survey to 991 employers throughout the seven-county region of Northwest Indiana. To be more specific, Healthcare, Manufacturing, and TDL was represented by 83, 283, and 199 companies respectively. In all, the ERISS job vacancy survey revealed to us that there are over 4,000 current job vacancies that exist in all industries across Northwest Indiana. This includes 820 in healthcare, 1,313 in manufacturing, and 623 in TDL. These three industries alone are responsible for at least 69% of all job vacancies specifically reported by the ERISS Job Vacancy Survey.

A couple of sample questions that ERISS asked the employers were;

1. How many (workers in a specific occupation) do you have?
2. How many current vacancies for this specific occupation?

We believe these two questions to be the most relevant in assisting us in estimating our short-term and long-term occupational shortages. The answer to the first question will tell us precisely how many people are employed within a certain occupation inside that company. And the answer to the second question will tell us specifically how many job vacancies exist for that specific occupation at the current moment. By knowing both of these figures, we can now calculate the "vacancy rate" for any occupation reported in the job vacancy survey. Just take the total number of "current vacancies" and divide it by the total number of "occupations".

We were able to take the "vacancy rate" as determined by the ERISS Job Vacancy Survey for each occupation and immediately apply it to our estimated 2005 employment

figures in order to compute our current occupational vacancies. Table IV.1 outlines the present number of job vacancies among our eighteen occupations.

Table IV.1

Healthcare					
Code	Occupational Title	2005[1] Employment	ERISS Vacancy Rate	2005 Job Vacancies	2005 Actual Jobs
29-2061	Licensed Practical and Licensed Vocational Nurses	2,248	4%	90	2,338
29-2052	Pharmacy Technicians	1,001	6%	60	1,061
29-2021	Dental Hygienists	472	0%	0	472
29-2011	Medical and Clinical Laboratory Technologists	324	3%	10	334
29-1111	Registered Nurses	7,014	3%	210	7,224
29-1051	Pharmacists	932	10%	93	1,025
11-9111	Medical and Health Services Managers	502	3%	15	517
	Totals	**12,493**	**4%**	**478**	**12,971**
Manufacturing					
Code	Occupational Title	2005[1] Employment	ERISS Vacancy Rate	2005 Job Vacancies	2005 Actual Jobs
51-9061	Inspectors, Testers, Sorters, Samplers & Weighers	1,651	3%	50	1,701
51-4121	Welders, Cutters, Solderers, and Brazers	1,973	7%	138	2,111
51-1011	First-Line Supervisors/Managers of Production and Operating Workers	2,636	1%	26	2,662
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	2,344	8%	188	2,532
17-2141	Mechanical Engineers	522	3%	16	538
	Totals	**9,126**	**5%**	**417**	**9,543**
TDL					
Code	Occupational Title	2005[1] Employment	ERISS Vacancy Rate	2005 Job Vacancies	2005 Actual Jobs
53-7051	Industrial Truck and Tractor Operators	1,879	3%	56	1,935
53-1031	First-Line Supervisors/Managers of Transportation and Material-Moving Machine and Vehicle Operators	593	0%	0	593
53-1021	First-Line Supervisors/Managers of Helpers, Laborers, and Material Movers, Hand	487	2%	10	497
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	1,009	2%	20	1,029
43-5061	Production, Planning, and Expediting Clerks	1,519	3%	46	1,565
43-5032	Dispatchers, Except Police, Fire, and Ambulance	330	3%	10	340
	Totals	**5,817**	**2%**	**142**	**5,959**
	Total for All 3 Industries	**27,436**	**4%**	**1,037**	**28,473**

[1] *Based on straight-line method*

Source: The Center of Workforce Innovations & ERISS Job Vacancy Survey

Overall, 2005 shows us that there is a 4% average vacancy rate for the chosen occupations. This amounts to 1,037 total job openings just within our eighteen occupations or almost 58 jobs per occupation. This is at least one quarter of all the jobs that the Job Vacancy Survey reported being vacant across all industries throughout Northwest Indiana. According to ERISS, Pharmacists has the highest vacancy rate at 10%, which amounts to 93 openings that exist within the borders of Northwest Indiana. But the survey was unable to show any current openings for Dental Hygienists or First-Line Supervisors/Managers of Transportation & Materials. We considered looking at

other methods to measure vacancies within these two occupations but decided it would be most appropriate to use the same methodology across all occupations in order to maintain consistency.

According to the Indiana Health & Hospital Association, at the end of the second quarter of 2003, Indiana's vacancy rates for Registered Nurses varied from 2.3%-8.78% based on geographic location. But also reports that the statewide vacancy rate decreased from 6.5% to 5% compared to the first quarter. Based on the ERISS survey, we estimate Northwest Indiana's vacancy rates for Registered Nurses to be at only 3%. This percentage is only an estimate based on the facilities that actually completed the Job Vacancy Survey. And not all companies from Northwest Indiana that employ Registered Nurses completed the survey. "The Indiana Health and Hospital Association say nursing vacancies are at their highest since the organization first started collecting data four years ago. Nearly 8 percent of those vacancies are in Lake County".[33]

Size of Shortages

In order to estimate our short-term (2 year) and long-term (7 years) "occupational shortages" we immediately needed to know how many job vacancies existed in 2005 (Table IV.1). Secondly, how many job openings (demand) are being projected each year in each occupation? To get this figure we took our 2012 projected Total Openings per occupation (Table III.1) and calculated annual job openings for each year due to growth and net replacements (Total Openings) by dividing the 2012 number by 10 (years), hence, a straight-line methodology. This gives us a constant number to use for each occupation through out all consecutive years.

Other factors that we had to consider were both the projected IN-Migration and projected out-Migration of workers for Northwest Indiana. In 2003, thirteen percent of Northwest Indiana's total labor force migrated to work outside of the seven-county Region. And only four percent of workers who resided outside of the Region migrated in to work within Northwest Indiana.[34] We estimated that for all new workers (supply) that Northwest Indiana produces, we are going to lose nine percent of them to Counties and/or States outside of our Region.

Table IV.2 summarizes both short and long-term occupational shortages/surpluses that potentially could come to exist if we continue to produce the same amount of workers into the workforce based on current and projected employment numbers.

[33] Post-Tribune, *Nurses Needed-Statistics Show,* 10/25/05, p A1.
[34] Labor Market Information Unit, Indiana Dept. of Workforce Development and STATS Indiana, Indiana University Graduate School of Business.

Table IV.2

Healthcare					
Code	Occupational Title	2007[1] Employment	2007 Shortages+ Surpluses-	2012 Employment	2012 Shortages+ Surpluses-
29-2061	Licensed Practical and Licensed Vocational Nurses	2280	60	2,360	-16
29-2052	Pharmacy Technicians	1,035	63	1,120	71
29-2021	Dental Hygienists	500	-42	570	-148
29-2011	Medical and Clinical Laboratory Technologists	340	12	380	17
29-1111	Registered Nurses	7,270	250	7,910	348
29-1051	Pharmacists	960	98	1,030	109
11-9111	Medical and Health Services Managers	530	16	600	19
	Totals	**12,915**	**457**	**13,970**	**400**
Manufacturing					
Code	Occupational Title	2007[1] Employment	2007 Shortages+ Surpluses-	2012 Employment	2012 Shortages+ Surpluses-
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	1,625	51	1,560	55
51-4121	Welders, Cutters, Solderers, and Brazers	1,975	207	1,980	378
51-1011	First-Line Supervisors/Managers of Production and Operating Workers	2,620	28	2,580	32
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	2,360	200	2,400	231
17-2141	Mechanical Engineers	510	-1	480	-43
	Totals	**9,090**	**485**	**9,000**	**653**
TDL					
Code	Occupational Title	2007[1] Employment	2007 Shortages+ Surpluses-	2012 Employment	2012 Shortages+ Surpluses-
53-7051	Industrial Truck and Tractor Operators	1,845	58	1,760	62
53-1031	First-Line Supervisors/Managers of Transportation and Material-Moving Machine and Vehicle Operators	595	-1	600	-3
53-1021	First-Line Supervisors/Managers of Helpers, Laborers, and Material Movers, Hand	485	12	480	18
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	1,015	21	1,030	24
43-5061	Production, Planning, and Expediting Clerks	1,485	48	1,400	54
43-5032	Dispatchers, Except Police, Fire, and Ambulance	330	10	330	9
	Totals	**5,755**	**148**	**5,600**	**164**
	Totals for 3 Industries	**27,760**	**1,090**	**28,570**	**1,217**

[1] *Based on straight-line method*
Employment Source: Indiana Workforce Development Agency

According to Don Keller, CEO of Tri-State Industries in Hammond, IN, welders are a critical occupation that has always been difficult to fill, requiring more of an emphasis on hiring people who can be trained and certified for the position. However, hiring people without welding skills or experience is also difficult. "The first year is critical. We can train them; however we lose 60% of them during the first year. If they can work with us for a year, they usually stay".

Table IV.2 also tells us that the Registered Nurses occupation is only growing at a 9% positive growth rate from 2007 to 2012, but its shortages increase 39%, going from 250 in 2007 to a projected 348 in 2012. Each year the gap between the current supply of

nurses being produced versus demand for nurses is getting larger over the next seven years.

“Everyone knows that our nursing shortage is well documented requiring our schools of nursing to increase capacity, but the shortage has also impacted the number of graduate faculty trained to teach the new workforce. State and community colleges can only bear so much of the financial burden. Additional funds from other sources are needed to solve this State and National dilemma”, says Anthony Ferracane, Vice President of Human Resources-Community Foundation of Northwest Indiana.

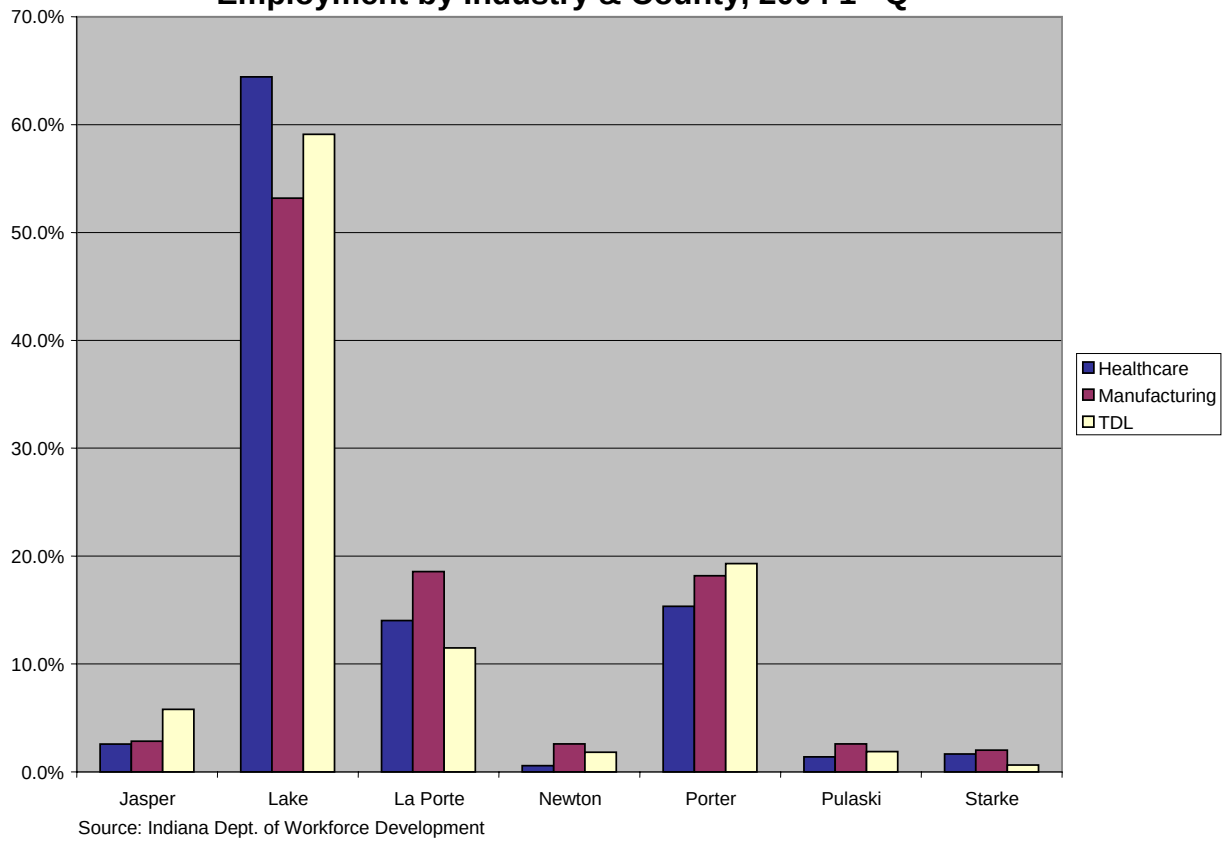
Location

When estimating the occupational shortages according to distribution by geographic location we determined that the most practical way to do is was by calculating and determining where the employment was located. We took a closer look at all three industries (Healthcare, Manufacturing, and TDL) across our seven-county Region by figuring out which specific counties held the jobs.

Chart IV.3 will show employment by industry according to each individual County’s percent of total employment occupation share.

Chart IV.3

Employment by Industry & County, 2004 1st Q

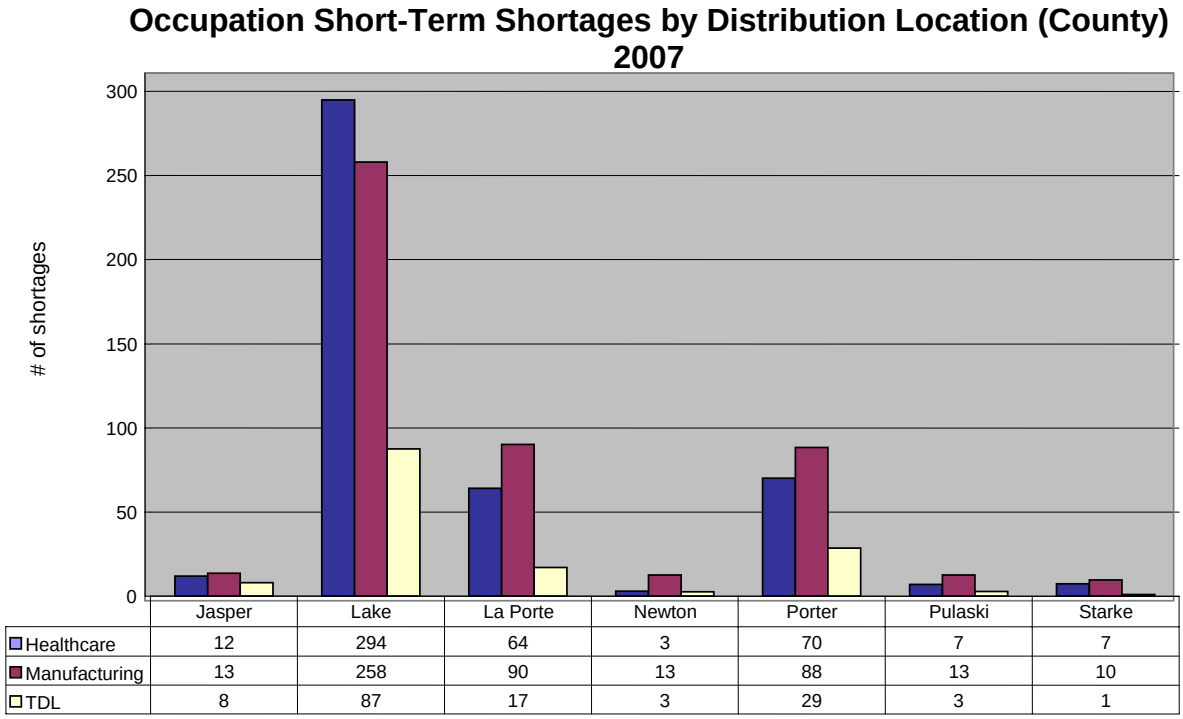


Source: Indiana Dept. of Workforce Development

Lake County employers provide the highest percentage of occupations across the Region averaging 59% across all three industries along with Porter County averaging 18%. La Porte furnishes an average of 15% of jobs within these three industries, while Jasper is at 4%. Newton and Pulaski both average 2% of employment and directly behind them is Starke at an average of 1%.

Chart IV.4 shows us the short-term (2 years) and Chart IV.5 will show us our long-term (7 years) location of all occupational shortages by industry and County.

Chart IV.4

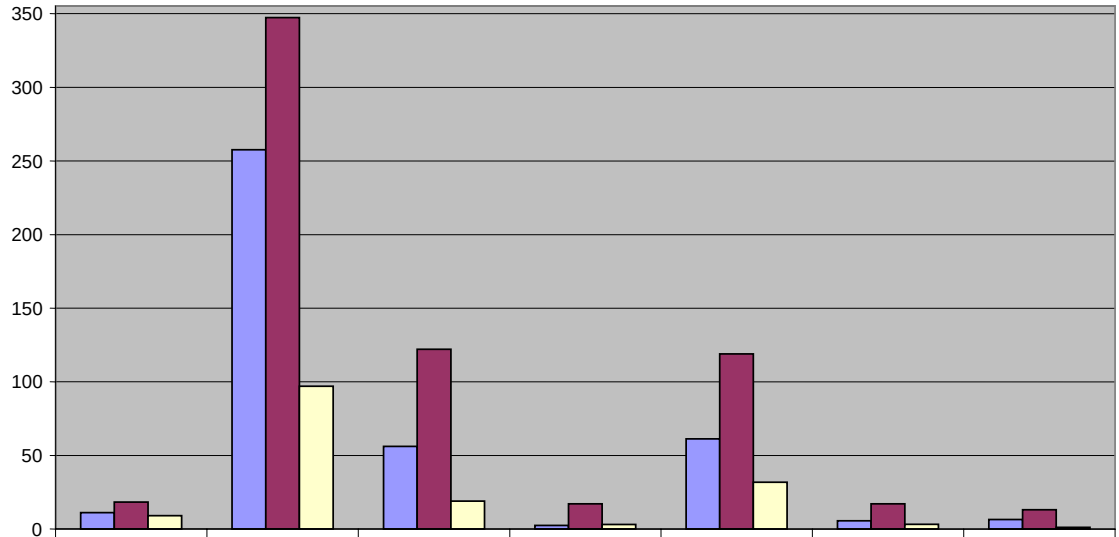


	Jasper	Lake	La Porte	Newton	Porter	Pulaski	Starke
Healthcare	12	294	64	3	70	7	7
Manufacturing	13	258	90	13	88	13	10
TDL	8	87	17	3	29	3	1

Although the total number of occupational shortages changes across all Counties, each County maintains the same percentage of shortages between 2007 and 2012. Jasper is responsible for 3%, Lake 58-59%, La Porte 16%, Newton 2%, Porter 17%, Pulaski 2%, and Starke 2%.

Chart IV.5

Occupational Long-Term Shortages by Distribution (County)
2012

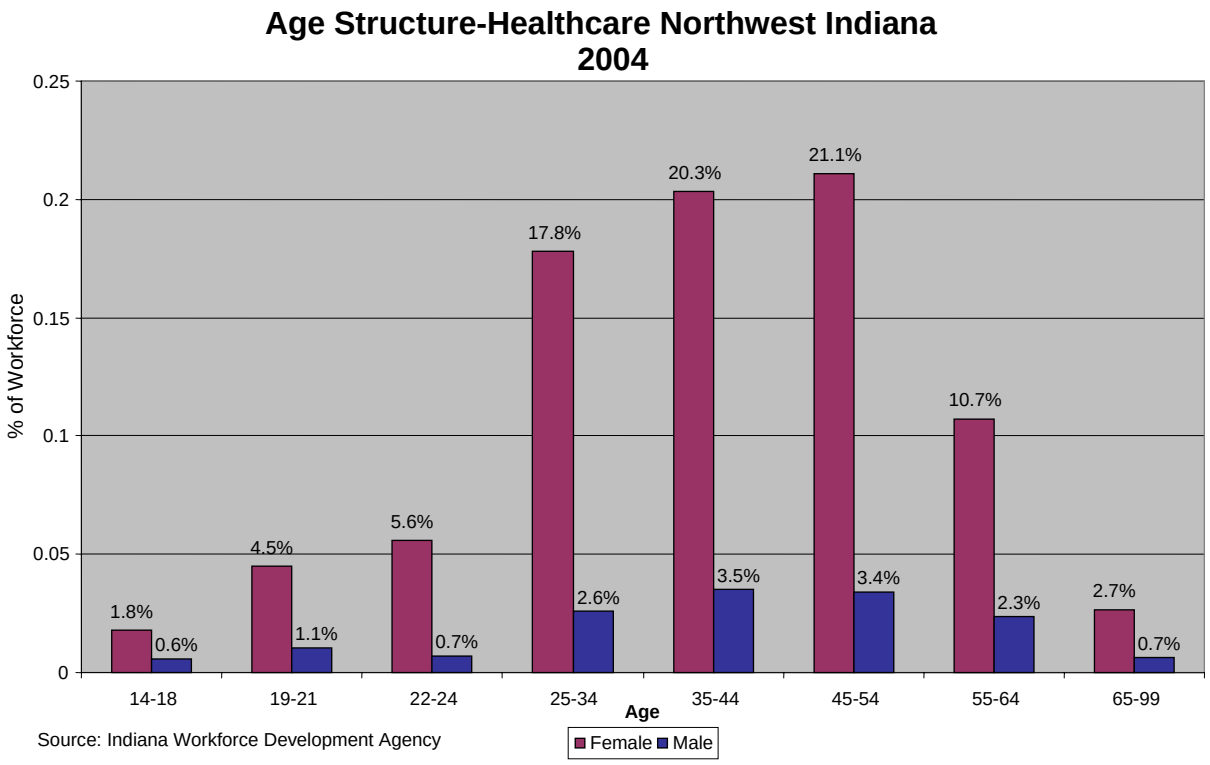


	Jasper	Lake	La Porte	Newton	Porter	Pulaski	Starke
Healthcare	11	258	56	2	61	6	6
Manufacturing	18	347	122	17	119	17	13
TDL	9	97	19	3	32	3	1

Age Structure

As we take a closer look at the age composition of all workers within our three industries in Northwest Indiana, it's evident that the majority of the people are between the ages of 35-54. This age demographic accounts for over 40% of the total workforce within the three industries. Chart IV.6 shows us the age structure in Healthcare, where 41.4% of these workers between the ages of 35-54 are female while only 6.9% are male.

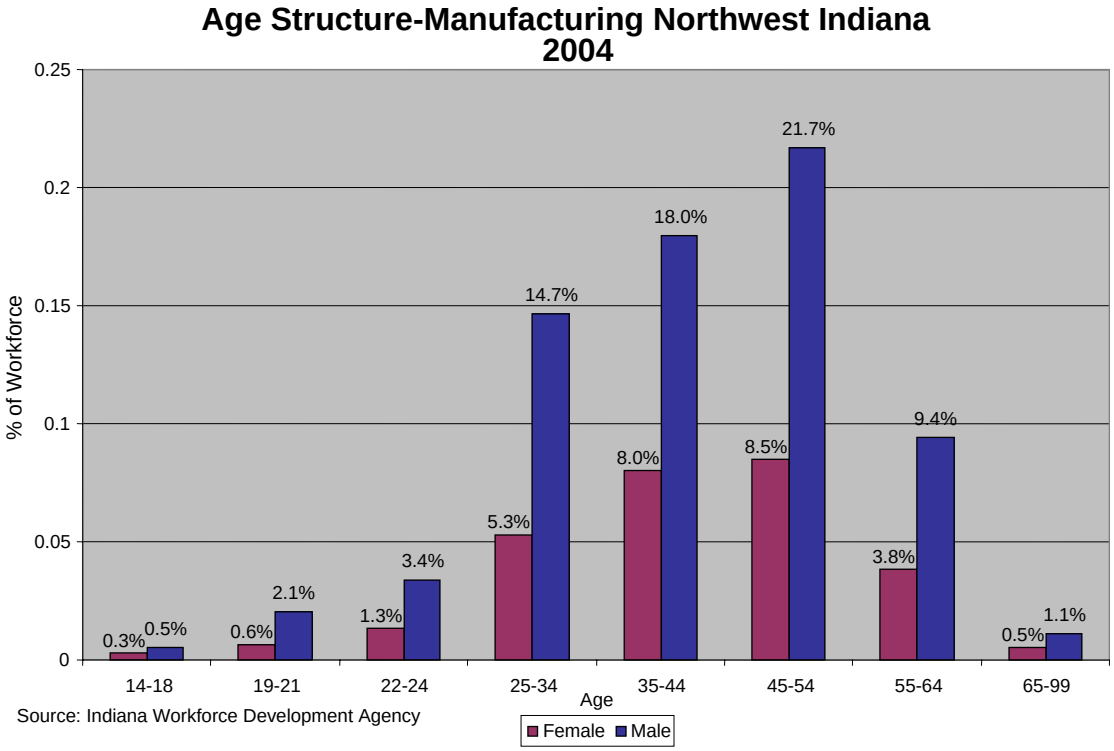
Chart IV.6



Source: Indiana Workforce Development Agency

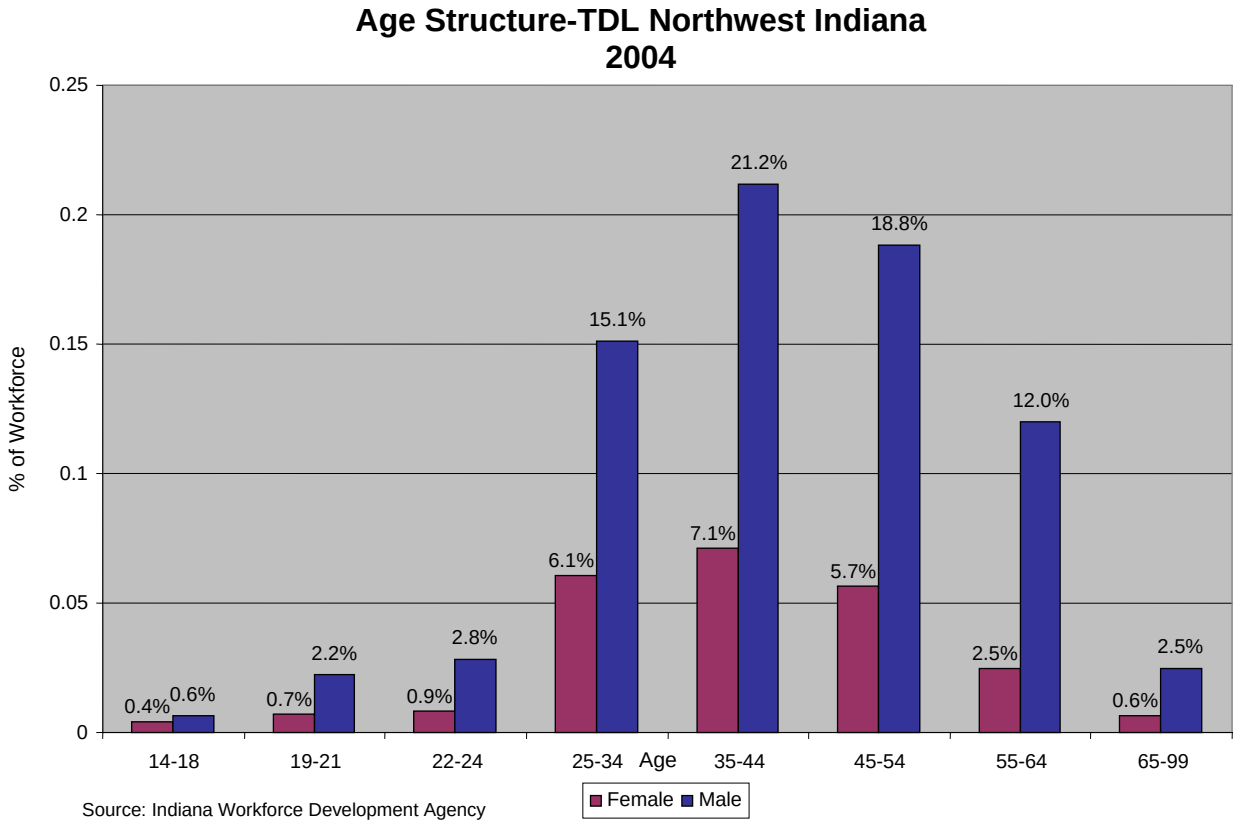
The age structure of the Manufacturing workforce (chart IV.7) shows us that the 35-54 age bracket consists of 39.7% males compared to 16.5% females. Even though the percentage of male workers outweigh the females, it's still a closer ratio than the female workers in the Healthcare industry compared to males.

Chart IV.7



The TDL industry shows similarities to the Manufacturing industry in regards to the percentage of males to females. Chart IV.8 shows us that the TDL workforce comprised of 40% men as compared to 12.8% of woman being employed within the TDL industry between the ages of 35-54.

Chart IV.8



Output of Entrants

Nine of the eighteen critical occupations require at least some form of education beyond a High School Diploma or G.E.D. The types of specific training and education required for entry into these occupations range from vocational training to a professional degree.

The remaining nine occupations minimum criteria for entry consists of either short-term on the job training, moderate-term on-the-job training, or work experience in a related occupation.

We based our number of entrants in 2005 on historical average graduation data from the previous 5 years. We expect this trend to continue through 2012. In order to calculate the number of entrants through the year 2012 we took our current number of graduates and multiplied it by 7 years (number of graduating classes). Each year we project that the number of graduates/completers will remain relatively consistent each year. Therefore, you have a total number of graduates from 2006-2012.

Table IV.9

Healthcare		
Occupation	**Entrants in NWIN 2005**	**Entrants in NWIN 2006-2012**
Licensed Practical Nurse	87	609
Dental Hygienists	21	147
Medical & Clinical Laboratory Technologists	n/a	n/a
Registered Nurses	196	1372
Pharmacists	n/a	n/a
Medical & Health Services Managers	4	28
Manufacturing		
Occupation	**Entrants in NWIN 2005**	**Entrants in NWIN 2006-2012**
Welders, Cutters, Solderers, and Brazers	25	175
Mechanical Engineers	20	140
TDL		
Occupation	**Entrants in NWIN 2005**	**Entrants in NWIN 2006-2012**
Bus & Truck Mechanics and Diesel Engine Specialists	n/a	n/a

n/a-program not available
Source: http://www.che.state.in.us/

Of the nine occupations that need some type of post-secondary education, institutions in our Region offer the required education for 6 of the occupations. If you want to become a Medical & Clinical Laboratory Technologist, a Pharmacist, or a Bus & Truck Mechanic and Diesel Engine Specialist you will have to travel outside of our Region because we don't have an educational facility that can provide you with the proper education and/or credentials to enter that occupation.

Graduates and Completers

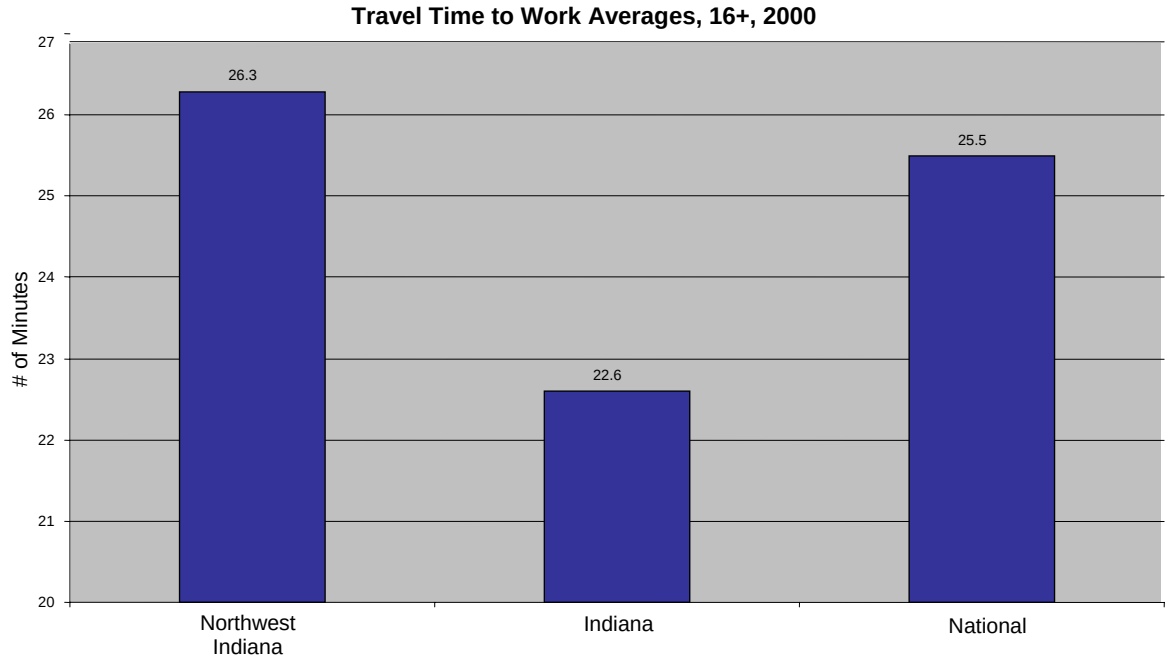
We asked representatives from six of our seven largest post-secondary colleges, universities and technical schools within our Region a simple question. What happens to your students once they graduate from your school? Most of them didn't have a definitive answer. A second question that we asked is-How do you track your students once they graduate? The most common response was that we don't track them, but we should. In 2004, two colleges reported that they survey each student within a year of them graduating. Of those two, one of them reported a 90% response rate and show that 36% of its graduates are employed outside the State of Indiana. The other school that conducted a survey determined that only 40% of its graduates were employed in Indiana. The answers we got from the remaining four schools that didn't conduct a survey were somewhat different. One College reported to us, "based on assumptions,

80-85% of our grads work within the Northwest Indiana/Chicagoland area, but we can't distinguish between the two". Yet another University notified us that "we feel that 80% of our graduates remain working in Northwest Indiana" and another claimed that "90% of our graduates work in Indiana". And the last school that we contacted replied with "95% of our graduates work in Indiana". Of these four schools, none of them currently have a formal way of maintaining contact with the graduates in order to compile research data. They do have alumni associates but it's not within the scope of their operation to track data such as this.

Geographical Mobility

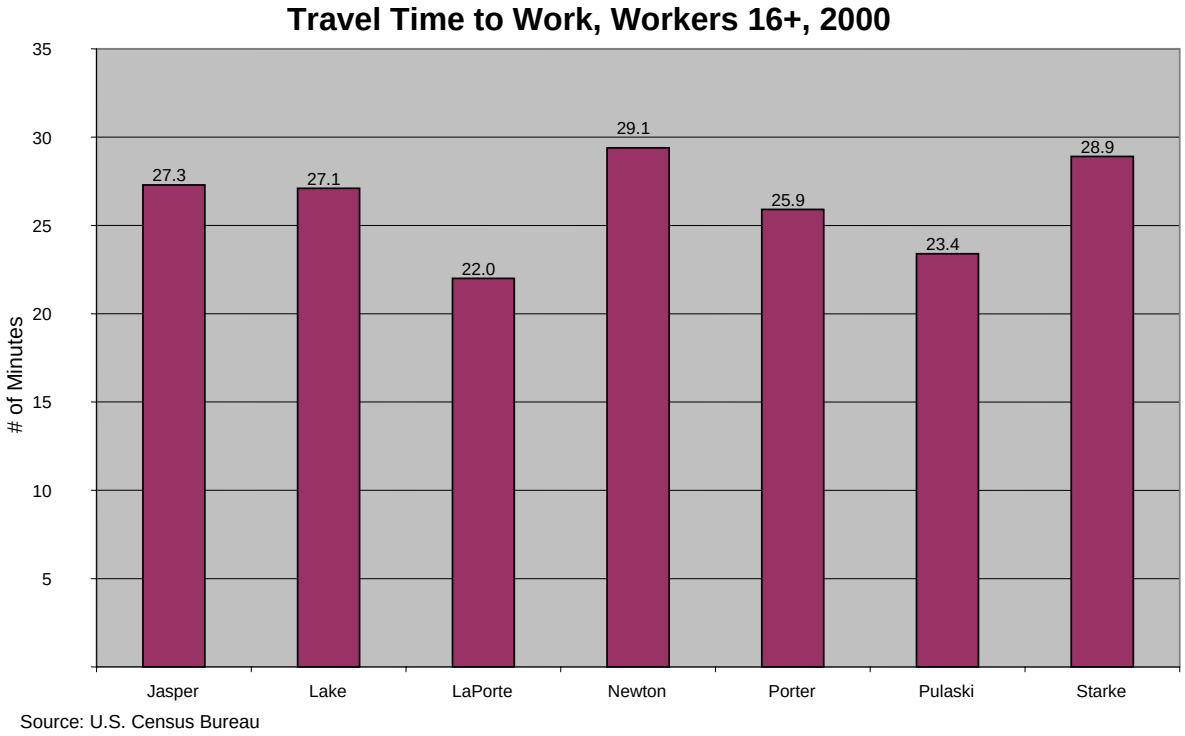
Workers from Northwest Indiana commute to work an average of almost a minute longer than their counterparts across the country. This may not seem like a lot of time, but if you multiply it by hundreds of thousands of commuters on a daily basis it will add up to a lot of time that our residents spend just commuting back and forth to work.

Chart IV.10



Source: U.S. Census Bureau

Chart IV.11



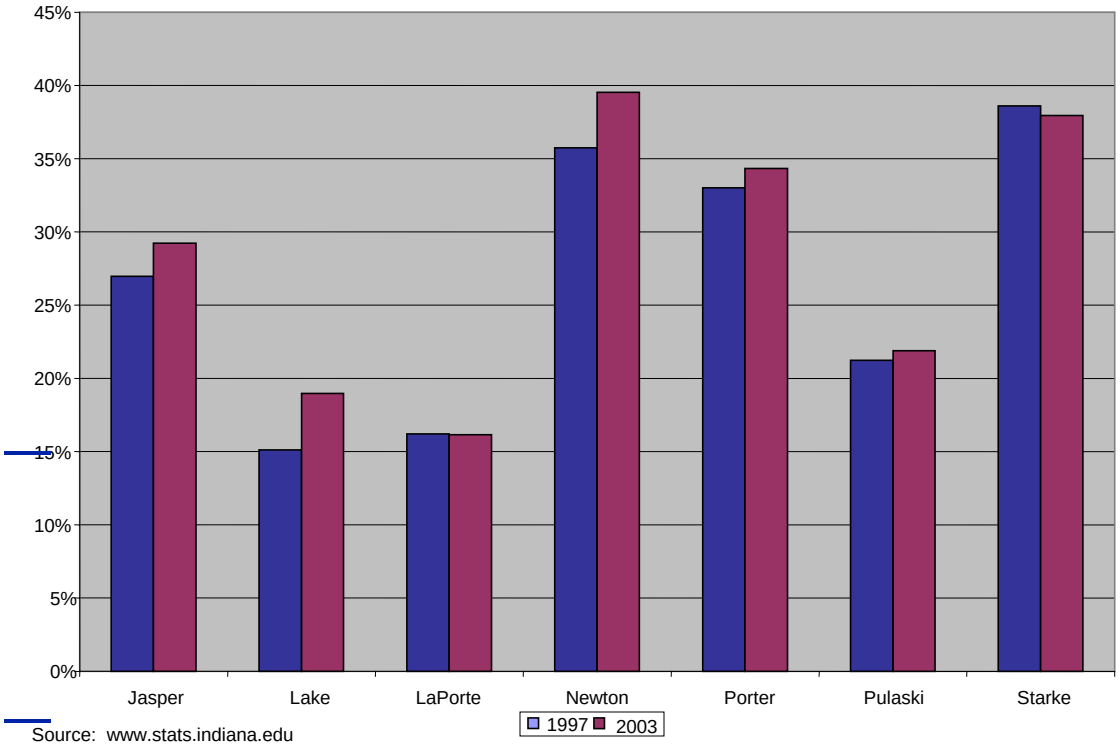
Source: U.S. Census Bureau

In our Region, commuters average just over 3 ½ minutes (one way) more in commuting time than the rest of the State resulting in an additional 30 hours a year in time dedicated to work. Northwest Indiana commuters range from averaging only twenty-two minutes of commute time in La Porte County to almost thirty minutes in Newton County.

On average, the data provided in IV.12 indicates that in 2003 residents are more apt to work in a county where they don't reside. In 2003, Newton County has the highest percentage of commuters (nearly 40%) that live there but commute into other counties for employment. Only Starke County had a decrease in it's percentage of persons commuting to counties where they don't reside, it only went down 1%. All the other counties except for La Porte actually rose in percentage of workers that commute to counties in which they don't live.

Chart IV.12

% of Persons Who Work in a County Where They Don't Reside



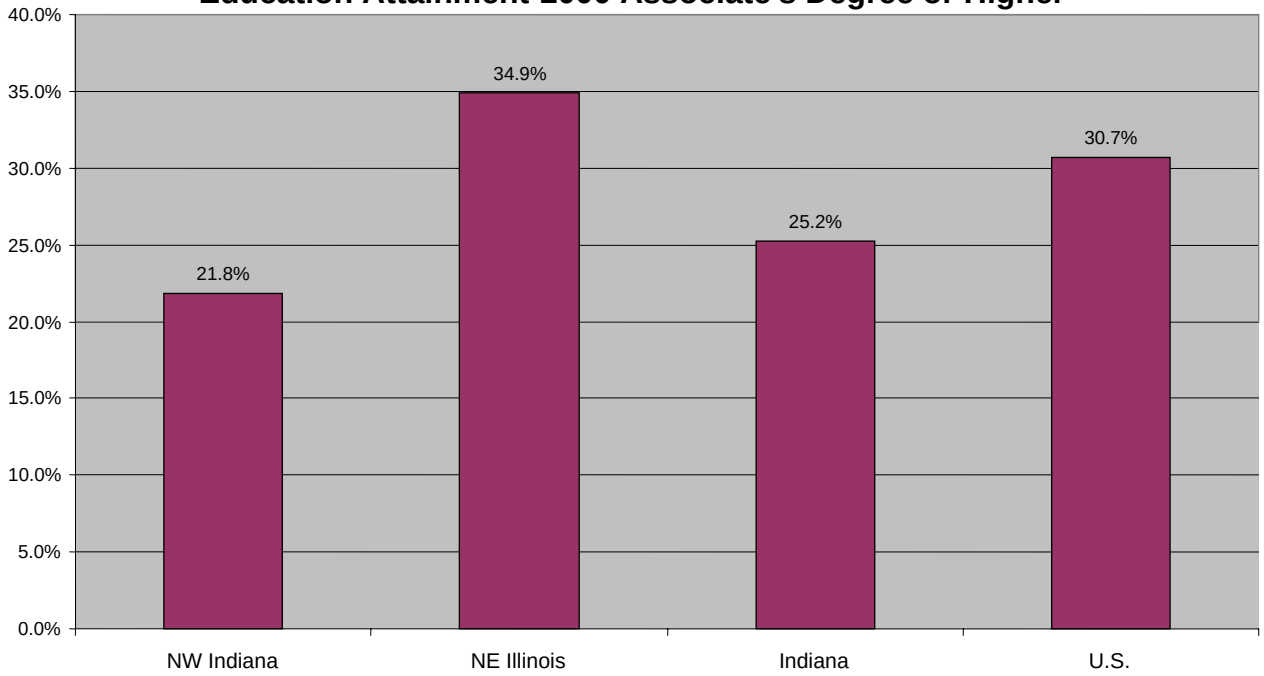
Source: www.stats.indiana.edu

Education Attainment

Compared to Northeast Illinois, the state, and nation, Northwest Indiana lags behind in obtaining either an associate's or bachelor's degree. The residents of Northeast Illinois, just miles away from the Region, are able to obtain a much higher percentage of degree's than Northwest Indiana residents. We fall somewhat below the state and far below the nation.

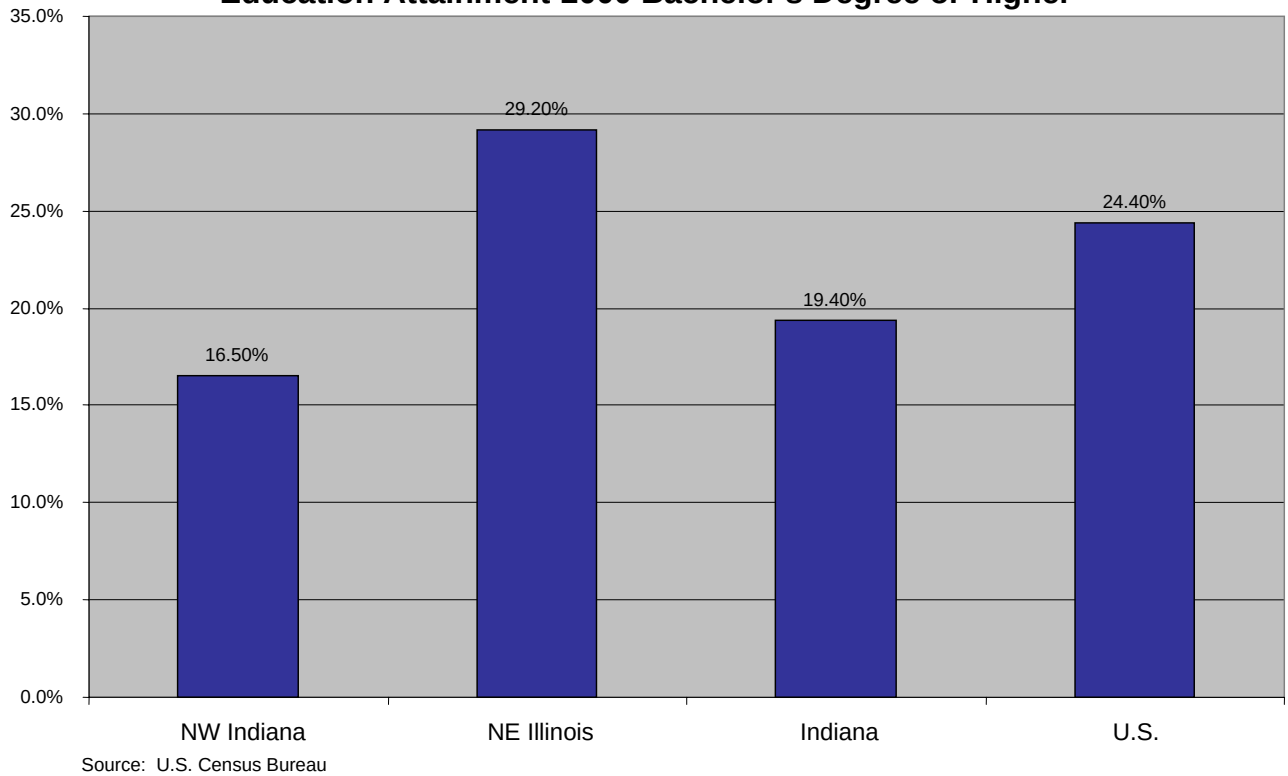
Chart IV.13 Chart IV.14

Education Attainment-2000 Associate's Degree or Higher



Source: U.S. Census Bureau

Education Attainment-2000 Bachelor's Degree or Higher



Source: U.S. Census Bureau

Financially Self-Sufficiency in Northwest Indiana

What the Self-Sufficiency Standard is…

Self-sufficiency means maintaining a decent standard of living and not having to choose between basic necessities-whether to meet one's need for child care but not for nutrition, or for housing but not health care. Self-sufficiency Wages are family-sustaining wages.

What the Self-Sufficiency Standard isn't…

Using the Self-Sufficiency Standard, a given family's income is deemed inadequate if it falls below the appropriate threshold based on their family type and location. The Self-Sufficiency Wage is not an absolute measure, but a relative measure of "wage adequacy". Therefore, if a family's income falls a dollar above or below the monthly Self-Sufficiency Wage, it should not be interpreted in absolute terms as being, or not being, adequate income.[35]

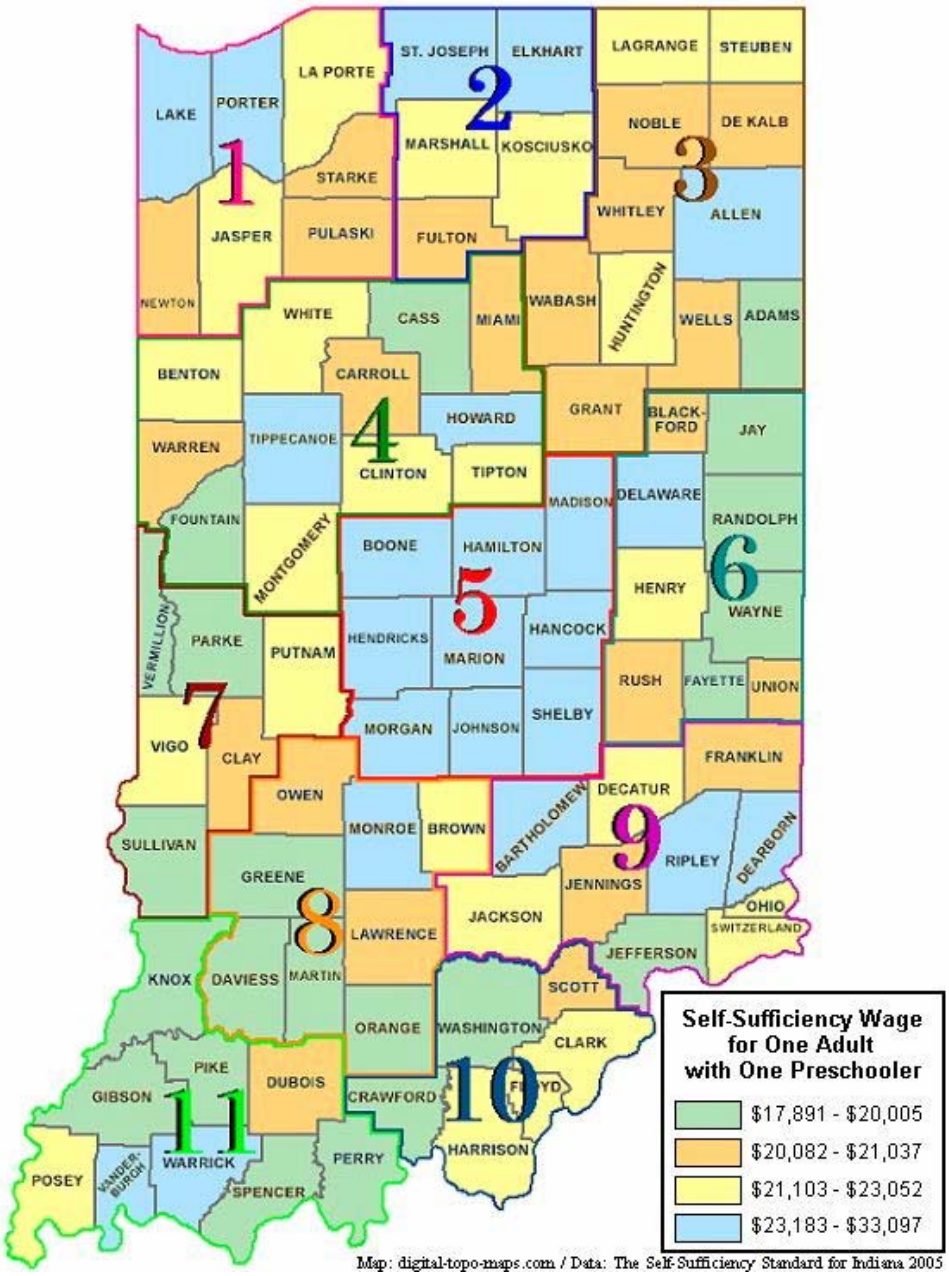
Table IV.15 show eight different family models that are measured by The Indiana Coalition on Housing and Homeless Issues. The monthly figure given is the minimum monthly average income for Northwest Indiana residents to be deemed Self-Sufficient. An adult with no children needs to make at least $1,325 per month in order to be considered self-sufficient. If this same adult adopted an infant, a preschooler and a schoolage child than the adult would have to make at least $3,368 per month, which is about 2 ½ times the amount required to make with no children.

Table IV.15
The Self-Sufficiency Standard for Northwest Indiana
Average Monthly Income Required per Family
Counties (Jasper, Lake La Porte, Newton, Porter, Pulaski, Starke)

Adult	Adult & Infant	Adult & Preschooler	Adult & Infant Preschooler	Adult & School Age Teenager	Adult & Infant Preschooler School Age	2 Adults & Infant Preschooler	2 Adults & Preschooler School Age
$1,325	**$1,940**	**$1,948**	**$2,449**	**$1,857**	**$3,368**	**$3,124**	**$3,044**

[35] Indiana Coalition on Housing and Homeless Issues, (*The Self-Sufficiency Standard for Indiana: Where Economic Independence Begins), www. http://www.ichi.org/.pdf.092805, p. 11.*

By looking at all Counties throughout Indiana you can get an idea of what Northwest Indiana's minimum annual salary requirements must be in order to remain self-sufficient. Although a family with one adult and one preschooler's minimum annual salary in 5 of our 7 counties do not require being at least $23,183, our average is still near $23,376 (12 months x $1,948 chart IV.15). This may indicate that minimum salaries required to remain above self-sufficiency standards for Northwest Indiana residents is higher than most other Regions, except for maybe Region 5, as every county there has a minimum of at least $23,183 annually.



Section V: Location and Significance of Critical Skills Gaps

Critical Skill Sets

How do we determine the prevalence and growth of critical skills gaps in these specific industries and occupations? One method is to use data gathered from Northwest Indiana employers using WorkKeys assessment tools for their incumbent workforce and their applicant pool.

To date, over 25 employers in our Region have conducted a WorkKeys profile of critical occupations. OF these, half of the employers also utilize WorkKeys assessments to screen applicants for these critical occupations. According to the Region 1 office of the Department of Workforce Development, over 25% of applicants who pass initial screening steps are unable to meet the critical skill level requirements for the job when tested through a WorkKeys assessment. The local WorkOne offices also utilize WorkKeys assessments as a screening tool for employers who request that level of prequalification for applicants.

The three core WorkKeys assessments that are most used by employers include Reading for Information, Applied Mathematics, and Local Information. Most of the skills associated with these areas support the critical occupations chosen for the Strategic Skills Initiative, and indicate that improvements in these skill gaps will increase the employability of many potential workers across the region.

In our interviews with employers, many described the difficulty they have in finding qualified workers. The typical job opening could require screening 50 to 100 applicants in order to fill that position. Employers said that the number one reason for not hiring someone is a lack of appropriate skills.

In fact, CWI interviewed over 100 employers from 2002 to 2004, including employers in Manufacturing, Health Care, and TDL, who ranked the following problems among applicants in our published Industry Cluster Reports:

Table V.1

	Applicant Problems
15 Manufacturing Employers*	
	Poor technical skills Poor math skills Poor work ethic Poor reading skills
25 Health Care Employers**	
	Poor work ethic Poor interpersonal skills Insufficient work experience Poor technical/clinical skills Poor math skills Poor reading skills
15 TDL Employers***	
	Poor technical skills Poor work ethic Poor interpersonal skills Poor math skills Insufficient work history

*http://www.innovativeworkforce.com/files/resourcesmodule/@random41e02f6eb3ad3/1118434243_Adv_mfg.pdf, p. 67
**http://www.innovativeworkforce.com/files/resourcesmodule/@random41e02f6eb3ad3/1118434020_Healthcare.pdf, p. 34
***http://www.innovativeworkforce.com/files/resourcesmodule/@random41e02f6eb3ad3/1118434998_Logistics.pdf, p. 40

Even though all employers provide on-the-job training of some sort, they increasingly rely on new workers to have ready-to-go skills in order to maintain their productivity needs.

Present and Future Impacts of Critical Skill Gaps

When surveyed “what do you need most to thrive and grow here?” top employers in our industries ranked “better qualified workforce” as one of the top three reasons. Critical skills gaps continue to negatively impact the regional economy and competitive advantage of local firms.

First, physical capital investment opportunities are diminished due to relocating facilities and/or outsourcing non-core functions outside of EGR 1 or postponing expansion within EGR 1. Within the next five years, eight firms across the three industries indicated that they foresee a need to either relocate or expand outside of Northwest Indiana. 43 firms conversely indicated that they will either expand at their current location or elsewhere within the region.

Secondly, human capital investments are allocated to turnover, in-house training and sign-on bonuses. For instance, average turnover rates for healthcare, manufacturing and TDL range between 7-15%, 3-10% and 3-10% respectively. For workers, the skills

deficiencies create barriers to educational attainment and full employment, the drivers of income growth.

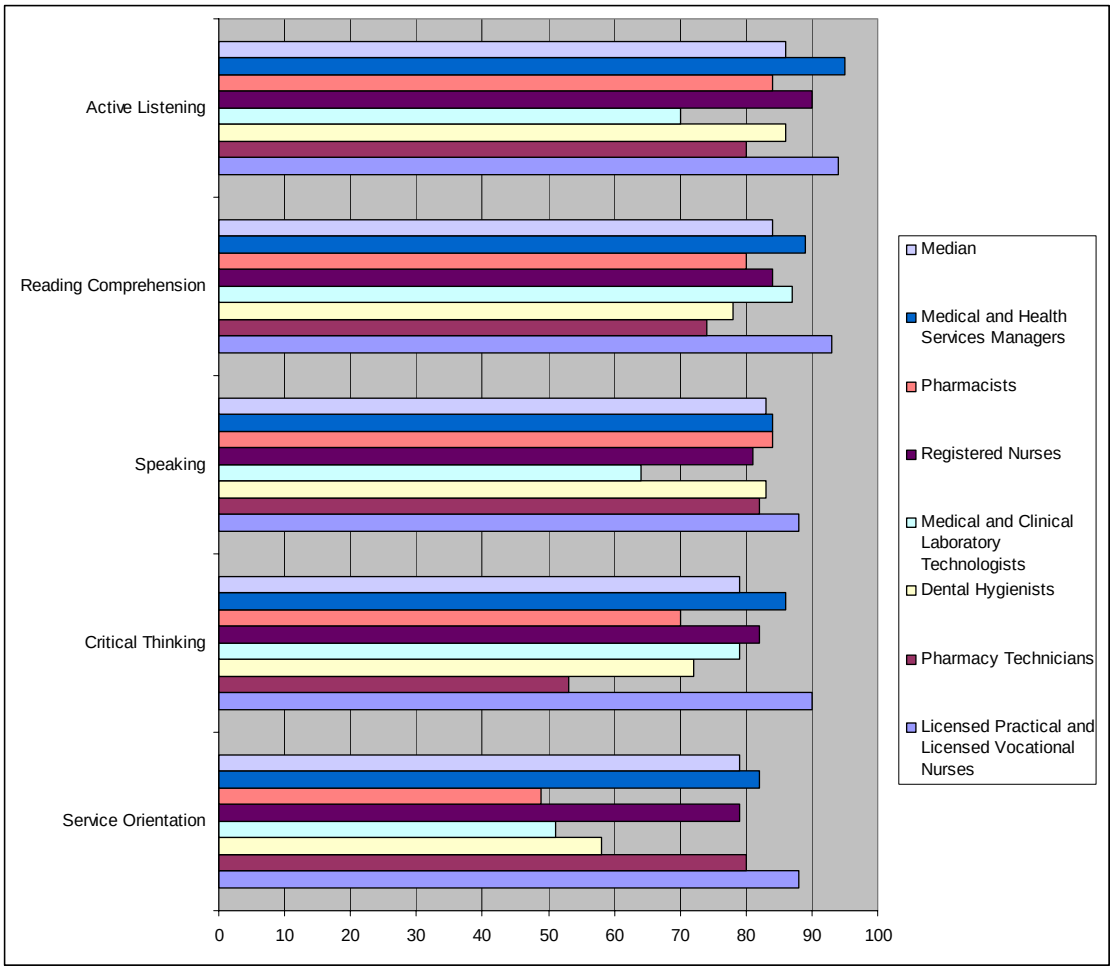
Without sustainable interventions to shore-up critical skills gaps, local firms and workers will not be appropriately aligned to achieve or exceed globally competitive standards.

O*Net Critical Skills by Occupation

There are a number of skill sets that are shared by various occupations within a particular industry. By ranking the median score of all skill sets for each occupation within each critical industry, we are able to determine which skills are considered to be most crucial for success and likely to be shared among those clusters of occupations.

The critical skill rankings for each occupation were taken from the O*Net database at www.online.onetcenter.org.

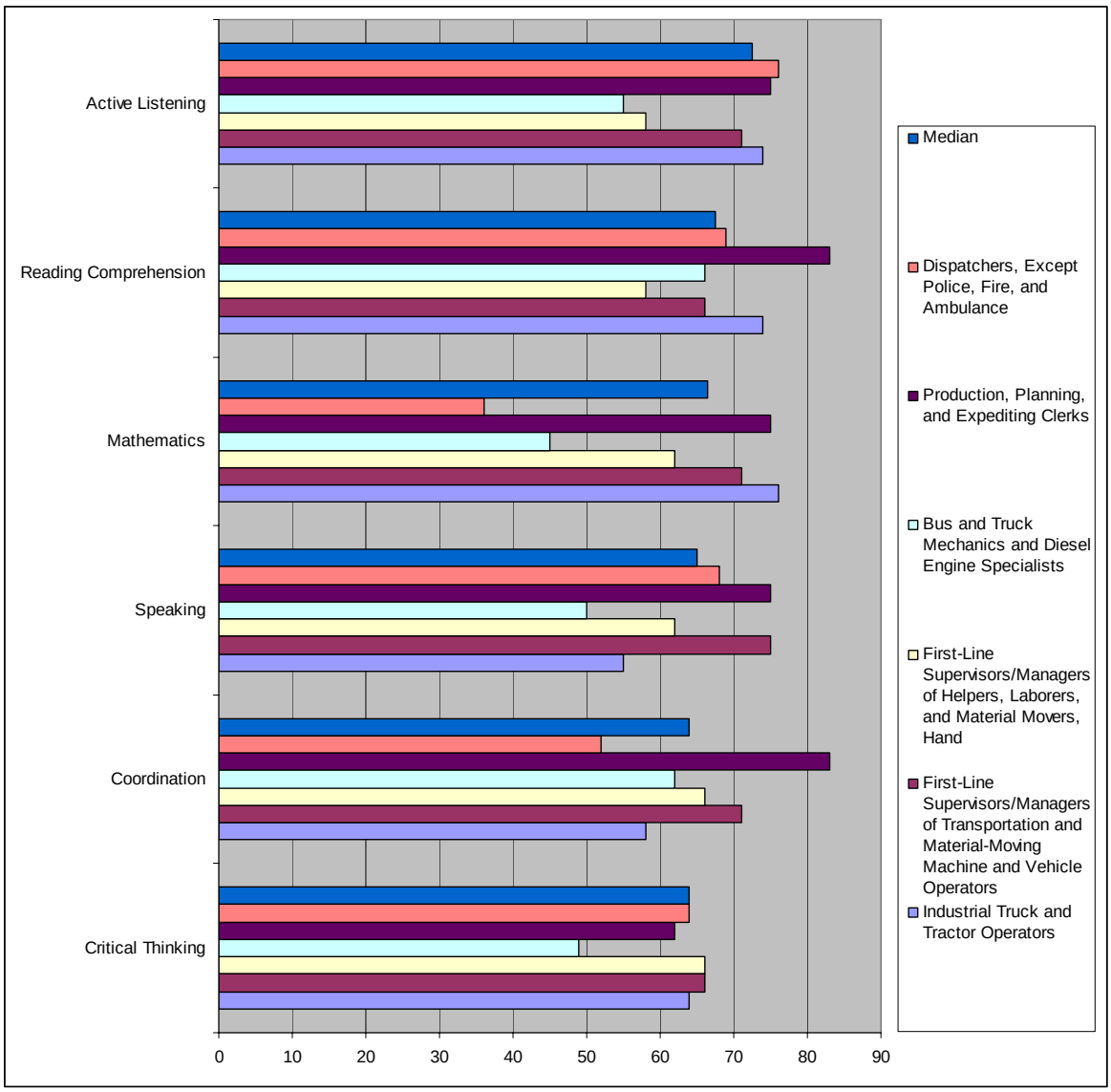
Chart V.2 Healthcare – Top Five Critical Skills



Critical Skill Descriptions

1. Active Listening - Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
2. Reading Comprehension - Understanding written sentences and paragraphs in work related documents.
3. Speaking - Talking to others to convey information effectively.
4. Critical Thinking- Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.
5. Service Orientation - Actively looking for ways to help people.

Chart V.3 TDL – Top Five* Critical Skills



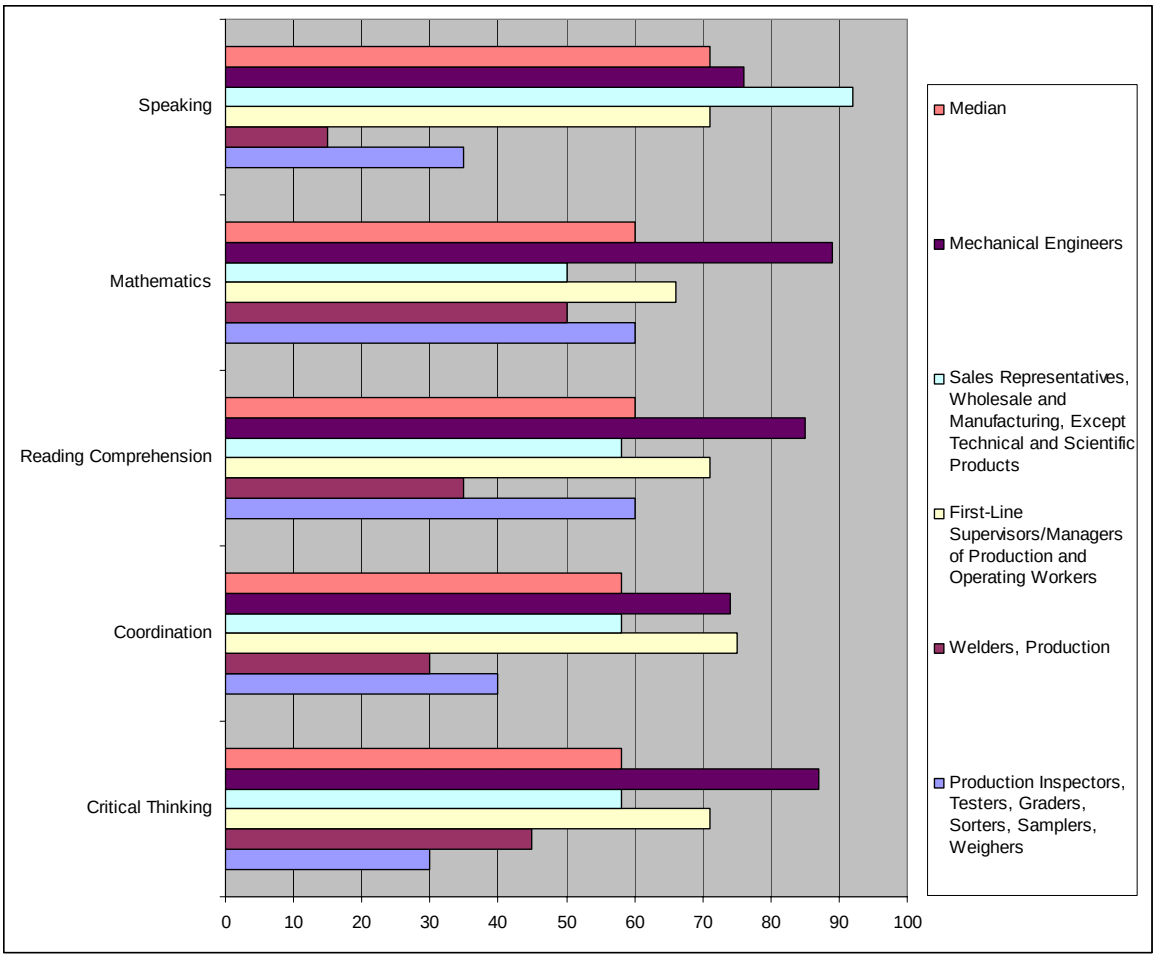
*

Median scores for Coordination and Critical Thinking tied for fifth place.

Critical Skill Descriptions

1. Active Listening - Communicating effectively in writing as appropriate for the needs of the audience.
2. Reading Comprehension - Understanding written sentences and paragraphs in work related documents.
3. Mathematics - Using mathematics to solve problems.
4. Speaking - Teaching others how to do something.
5. Coordination - Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.
6. Critical Thinking - Actively looking for ways to help people.

Chart V.4 Manufacturing – Top Five Critical Skills



Critical Skills Descriptions

1. Speaking - Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.
2. Mathematics - Communicating effectively in writing as appropriate for the needs of the audience.
3. Reading Comprehension - Understanding written sentences and paragraphs in work related documents.
4. Coordination - Actively looking for ways to help people.
5. Critical Thinking - Watching gauges, dials, or other indicators to make sure a machine is working properly.

Section VI: Regional Consortium and Industry Partner Engagement

We feel comfortable with the level of industry and partner engagement we were able to realize in support of Phase I of SSI, given the very tight timelines imposed by the project. But we know from our work with the *WorkOne* providers and our *Industry Cluster* project employers that high-quality partnerships take time to build.

Industry Consortium & Executive Team Engagement

As detailed in Section I of this report, we first convened a planning group comprising key industry, economic development, labor and community leaders to help us shape our initial SSI application and to help us identify individuals who would be effective participants on our broader Industry Consortium. The planning group met twice in July. It became the *Executive Team* for the SSI project as we began to recruit consortium members. The Team met again in August to plan the first meeting of the full *Industry Consortium*—a three-hour work-session that took place September 20, 2005—and to begin reviewing data that would be presented at this event.

We had significant contact with our Consortium members before we convened them as a group in September—two members participated in formal interviews in advance of attending their first meeting; others completed surveys and/or sent them to colleagues.

During the first Industry Consortium work-session on September 20, 2005, we provided members with data collected to date, and facilitated a discussion, asking them to share their perspectives and relevant experiences.

Members' comments largely validated our early data and findings. Some expressed concern that the SSI focused too narrowly on college graduates and degrees; others expressed the opposite concern that it focused too narrowly on skills that would become obsolete quickly, and not enough on college completion. Two more were very interested in ways to emphasize entrepreneurial skills across all industries.

We asked Consortium members to review the information we provided and to be prepared to validate or challenge it within 48 hours. We then contacted all of within the 48 time-frame to solicit input on our processes and findings to date.

During the next week (September 26-30, 2005), we contacted a broader group of stakeholders in the region, asking them for input and for assistance with interviews, focus groups and surveys, and data validation.

By September 30, the Executive Team was provided with the data collected, and asked for their help in selecting our key industries. In a series of conference calls convened between September 30 and October 4, they validated the findings and narrowed our industry target list to three: **Healthcare**, **Manufacturing** and **Transportation, Distribution and Logistics**.[36]

It is important to note that there are representatives of the selected industries on the consortium. We also took into account the input received from industry leaders at summits held in 2005 on the three selected industries in 2004 and 2005 prior to the implementation of the SSI.

Even with all of this input, selecting occupations was a logistical challenge. It required looking across many data sets and considering all of the guidance our Consortium Members, Executive Team and key stakeholders had provided.

We developed a list of 25 occupations that show current and projected growth, offer family wages, and require increasing skill levels, and began sharing it with members of the Executive Team in mid-October. Based on their input, we narrowed the list to 18, and then shared those with members by email. During the last week, we held three meetings and two conference calls to accommodate members' schedules. By October 28, 2005, they had all agreed to the selection of both industries and occupations for the SSI project.

Service Provider Partners and Other Employer Stakeholders

In addition to Executive Team and Consortium members, we also contacted another 100 employers, educators, and economic development professionals, many of whom had participated in our Industry Cluster project. We asked them for additional input that would help inform the SSI project. We asked individual who had worked with us in the Industry Cluster project whether the occupation and skill shortages and the workforce challenges they identified during that process had changed. In nearly all cases, employers confirmed the shortages and challenges they had already identified, and in a few cases—health care and manufacturing—they reported more severe challenges today than during the past 18 months.

[36] As noted in Section II, not all of our consortium members agreed with the majority view; one requested that Hospitality and Entertainment be included as an industry of focus and another argued for Construction. Both were considered by the Executive Team, which ultimately selected Health Care, Manufacturing and TDL.

We also did our best to communicate SSI project information about, and solicit SSI input from, our service delivery partners including: *WorkOne* partners, our K-12 schools, Ivy Tech, and local universities and branch campuses.

We placed SSI on the agenda of our regular meeting, WIB meetings, and invited select partner staff to events and meetings with the Executive Team, even though they were not members.

As explained in the Section I of this report (methodology), our current Industry cluster project work did negatively affect our ability to engage firms and partners in the first Phase of this project—many felt we had just completed similar research and requested that we incorporate findings from that project into our SSI research. We have followed their guidance to the best of our ability, adding a section on Background and Context and working select findings into the SSI Report I sections where relevant.

While not all of our stakeholders submitted specific comments on the report in advance of submission, they were asked for input during the process and the report was shared with them as early as possible, beginning the week of October 25, 2005.

Finally, apart from the ERISS survey, we surveyed over 140 employers and over 150 employees in our Region. While most of this data will inform the Root Cause Report due later this year, we did look at the initial responses to make sure they were consistent with data collected from other sources. A number of the employers who received the surveys from their colleagues—who were not already engaged in the SSI project—will be placed on the information and invitation lists for future SSI project events.

Our employer partners and community stakeholders understand that this work is about improving the overall health of the economy. We are trying to raise both the demand for high skills and the supply of them, simultaneously. We believe a more highly skills workforce will result in:

- **More productive, profitable and competitive firms**—especially firms in industries seeking to maximize their use of technology. While we know technology will replace the some jobs currently done by workers, we also know that the jobs technology helps to create pay better and enable workers to apply a broader array of their skills and talents. And we are confident that highly skilled workers will help their firms be more innovative by finding what firms across Northwest Indiana continue to demand—better solutions to customer needs.
- **Better equipped workers.** We live in an age of fast-paced change and economic volatility. We cannot—and should not—try to stave off change in an effort to retain jobs. Lay-offs and relocations will continue to happen. But, as we invest in the skills and talents of our current and future

workforce, we enable them to more easily move through the labor market –whether within their initial career or in altogether new fields. As importantly—and as was strongly emphasize by our Industry Consortium—we help make business ownership a more attainable goal by encouraging entrepreneurship as an employment option.

- **More job and career opportunities in more industries for our young people** (and for career changers). Firms and stakeholders in our region repeatedly warned of "smarter people going to Chicago to work." This is a legitimate fear—it is what will likely occur if we do not create competitive jobs fast enough to keep up with the demand of Northwest Indiana's most talented students. This flips the law of supply and demand on its head—it is the Richard Florida, Daniel Pink, and Thomas Friedman model of economic development where talents attracts firms rather than the other way around. But if we grow our knowledge economy, our proximity to Chicago becomes a strength. We can offer top-notch career opportunities and a high-quality of life, while providing easy access to the amenities only a major metropolitan area can offer.
- **A more competitive economy overall, driven by a unique set of economic assets.** A more educated workforce will help Northwest Indiana to both attract firms and to build our own unique 21st Century economy. This is the virtuous spiral we seek to realize in our region. We don't want to draw firms solely on the basis of our proximity to Chicago, but because we offer talent not available in Chicago. Similarly, we don't want out research and development expertise to result in patents that are commercialized into products elsewhere. We seek to build clusters around our most advanced manufacturing processes, life sciences technologies and TDL expertise. Firms that rely on unique talents and R&D are less inclined to relocate and are more likely to generate additional business opportunities—whether through competition or the regular introduction of new products and services.

None of the changes we would like to see in our region will happen overnight, but we are confident that our industry engagement around the SSI project will help catalyze needed investment in skills and elsewhere in our economy.

Appendix A. Sample Employee Survey

The Center of Workforce Innovations

Lake County Integrated Services Delivery Board

Employee Skills & Talent Survey

You have been asked to take this survey because you are a valued employee in a job your industry has trouble filling. Your answers will be used to inform state and local efforts to keep your industry competitive--and keep jobs in Indiana!

The information you provide is confidential. At no time will your individual contact details or responses. In addition, your responses will NOT be shared with your employer.

Please answer the following questions to the best of your ability. The whole survey should take no more that 15 minutes.

If you have questions about the survey, contact Matt Hunter at the Center for Workforce Innovations 219-462-2940.

Many thanks!

1 What is your title, position, or occupation?

2 What industry are you in?

- Life Sciences
- Healthcare
- Manufacturing
- Professional Services
- Restaurant/Retail/Food Service
- Technology
- Transportation/Distribution/Logisitcs/Wholsesale Trade (TDL)
- Other, Please Specify

3 Who is your employer?

4 About how many employees does your company have?

- Under 10
- Between 10-19
- Between 20-49
- Between 50-99
- Between 100-249
- 250 or more

5 How long have you been in your current job?

- Less than 6 months
- 6-12 months
- 1-2 years
- 2-5 years
- 5-10 years
- More than 10 years

6 "My last job was..."

- ...with my current employer.
- ...a similar job with a different employer.
- ...a completely different kind of work with a different employer.
- This is my first job.
- Other, please specify

7 How did you find your current job?

- Newspaper
- Job Fair
- Help-wanted sign
- Word-of-mouth
- College placement office, internship, etc.
- Community employment program
- Private recruiting firm (headhunter)
- Indiana WorkOne Office
- Temp firm or staffing agency
- Electronic job bank or internet
- Referred by a friend or relative that knows the company
- Other, Please Specify

8 Where do you think is an ideal place for your company to find new

workers like you?

9 When there are openings at your company, do you refer friends, relatives, or acquaintances who are looking for work?

- Yes
- No
- Other, Please Specify

10 Which of the following best describes your current job status?

- I have a good job that I intend to keep.
- I have a good job, but I'm worried about lay-offs.
- My job is okay, but if something better came along, I'd take it.
- I am actively looking for a new job locally.
- I am actively looking for a new job outside of Indiana.
- I am planning to return to school.
- Other, Please Specify

11 Where do you think your next job will be?

- With my current employer.
- With a different employer in the same industry.
- With a different employer in a different industry.
- I have no idea.

12 Which of the following are required for your job (check more than one if applicable)?

- High school diploma or GED
- Associate's degree
- 4-year degree
- Experience
- A professional certificate or license
- Advanced degree (MA, PhD, etc.)
- Other, please specify

13 What is the highest level of education you personally have achieved?

- No high school
- Some high school
- High school diploma or GED
- Some college or vocational school training
- 2-year degree or professional certificate
- 4 year-college degree
- Some graduate education or training
- Advanced degree (MA, PhD, etc.)
- Other, Please Specify

14 How important are the following basic skills sets in your job?

	1 Not important	2 Somewhat important	3 Important	4 Very important	5 I don't know
Reading skills (high school or equivalent)	1	2	3	4	5
Writing skills	1	2	3	4	5
Math skills	1	2	3	4	5
Good safety habits	1	2	3	4	5
Team skills	1	2	3	4	5
English as a second language (ESL)	1	2	3	4	5
Computer or technical skills	1	2	3	4	5
Problem solving skills	1	2	3	4	5
Management skills	1	2	3	4	5
Technical skills	1	2	3	4	5

15 What is the most important skill you learned on your current job that you

wish you had learned before you were hired?

16 When new people are hired for your position, what is the skill set they most often need help with? lack?

17 Did you need training to do your current job?

- Yes, I completed training on my own before getting hired.
- Yes, my employer paid for the training I needed.
- Yes, my employer provided training at work.
- Not really, I learned on the job.
- No, I knew how to do the job before I was hired.
- Other, Please Specify

18 In your opinion, what is the most common reason your co-workers leave their jobs?

- Not enough pay
- Inadequate benefits
- Working conditions are unpleasant.
- They cannot meet the company's expectations.
- They get promoted within the company.
- They find better jobs outside the company.

19 Have you taken courses or training to improve your skills since you got your current job?

- Yes, and my employer provided it.
- Yes, and my employer helped with the cost.
- Yes, but I paid the full cost.
- No
- Other, Please Specify

20 If you had the chance to improve your skills right now, at little or no cost to you, what would you do?

- Enroll in training directly related to my current job.
- Enroll in training for a new job I'd like.

- Enroll in training/course for personal fulfillment.
- Enroll in training/education in pursuit of a diploma/degree.
- Enroll in training related to a hobby.
- I would not enroll in anything.
- Other, Please Specify

21 Is there a specific class or training you feel you need now?

YES NO

If yes, what is it?

22 Why have you not taken this class/training?

- I don't have time.
- It costs too much.
- I have a schedule conflict.
- The school is too far away.
- I'm not sure where to go.
- I'd need a computer/internet and I don't have one.
- Other, Please Specify

23 What is your age?

- Between 16 and 24
- Between 25 and 34
- Between 35 and 44
- Between 45 and 54
- Over 54
- I prefer not to answer this question.

24 With which racial or ethnic group do you most closely identify?

- African-American or Black
- American Indian
- Asian
- Caucasion or White
- Hispanic or Latino
- More than one

- I prefer not to answer this question
- Other, Please Specify

25 Are you female or male?

- Female
- Male
- I prefer not to answer this question

26 In which county do you work?

- Jasper
- Lake
- Laporte
- Newton
- Porter
- Pulaski
- Starke
- I don't know
- Other, Please Specify

27 In which county do you live?

- Jasper
- Lake
- Laporte
- Newton
- Porter
- Pulaski
- Starke
- I live in Illinois
- I don't know
- Other, Please Specify

Thank You!!!
We expect survey results to be reported by November 22, 2005. you can find them at:
www.innovativeworkforce.com

Appendix B. Bibliography

"2004 Leadership Report." Indiana Humanities Council, 2004. 11 Oct. 2005 <http://www.indianahumanities.org/summit/2004/challenged_change.htm>.

Aspinall, Simon and Anja Jacquin Langer, eds. Connected Workforce: Thought Leaders. London: Premium Publishing, 2005. 12 Oct. 2005 <http://www.cisco.com/application/pdf/en/us/guest/about/about/c644/ccmigration_09186a008048e087.pdf>

Barkey, Patrick M. "The Challenge for Indiana's Workforce." Ball State Bureau of Business Research, Sept. 9, 2005.

"Challenges and Opportunities: Indiana's Future." Metro Economies Report. U.S. Conference of Mayors, July 2003. 12 Oct. 2005 <http://www.usmayors.org/metroeconomies/0703/metroeconINFuture_0703.pdf>

Cohn, Jeffery M., Rakesh Khurana, and Laura Reeves. "Growing talent as if your business depended on it." Harvard Business Review, Oct. 2005.

Collier, Joe. "DCX plant brings big work changes." Detroit Free Press, 4 Oct. 2005.

"Connected Workforce Book Indicates Employee Mobility Will Effect The Biggest Change in Working Practices Since Industrial Revolution." London Business Wire, July 6, 2005.

Corporation for a Skilled Workforce. Northwest Indiana Steel Industry Workforce Report. Northwest Indiana Region 1 Workforce Investment Boards, Jan 2003.

DeVol, Ross, Rob Koepp, and Junghoon Ki. State Technology and Science Index: Enduring Lessons for the Intangible Economy. Milken Institute, Mar. 2004.

"Forbes/Milken 2002 Best Places To Do Business Metropolitan Ranking." MilkenInstitute.org, 9 May 2002. 12 Oct. 2005 <http://www.milkeninstitute.org/pdf/2002_metro_rankings.pdf>

Heikens, Norm. "Indiana seeped jobs in August." Indianapolis Star, 9 Sept. 2005.

Indiana Jobs and Employment Climate, Executive Summary Report. Indiana Workforce Development, 2005.

Indiana's Strategic Plan for Economic Development. Indiana Economic Development Council, Inc., 2005.

"The Innovation Economy – The Promise of Innovation." BusinessWeek online, 11 Oct. 2004. 12 Oct. 2005 <http://www.businessweek.com/magazine/content/04_41/b3903402.htm>

IT Talent Search for Northwest Indiana. Center of Workforce Innovations, 2005.

"Ivy Tech Creates New WorkForce and Economic Development Department." Inside Indiana Business, 3 Oct. 2005. 11 Oct. 2005 <http://www.insideindianabusiness.com/newsitem.asp?ID=15334>.

"Kauffman Foundation Innovation Conference Seeks To Spur University Innovation, Entrepreneurship." Press release. Ewing Marion Kauffman Foundation, 27 Sept. 2005. 11 Oct. 2005 <http://www.kauffman.org/items.cfm?itemID=641>

Kostelac, Amber. "Health Insurance Costs and Coverage." InContext 6, no. 6 (Sept. 2005). 11 Oct. 2005 <http://www.incontext.indiana.edu/2005/september/4.html>

Matoon, Richard H, The Federal Reserve Bank of Chicago. "The state of higher education funding in the Midwest." Chicago Fed Letter 218 (Sept. 2005).

"Meaningful Work for Older Adults." White Paper. Center for Aging and Community, University of Indianapolis, Aug. 2004. 12 Oct. 2005 <http://cac.uindy.edu/awards/files/meaningful_work.pdf>

"Midwest Business Activity Plunges in August: Economic Measure Contracts for First Time in More Than Two Years." Crain's Chicago Business, 31 Aug. 2005.

Mitra, Amian (Purdue University Calumet). "Measuring the Impact of the TDL Industry in Northwest Indiana." Presentation of Interim data to TDL Project Advisory Committee Meeting. 20 July 2005.

Pearce, Diana. The Self-Sufficiency Standard for Indiana: Where Economic Independence Begins. Indiana Coalition on Housing and Homeless Issues, Sept. 2005. 24 Oct. 2005 <http://www.ichhi.org/downloads/reportspublications/the_2005_selfsufficiency_standard_for_indiana_final_92805.pdf>

Quality of Life Indicators Report. Northwest Indiana Quality of Life Council, Sept 2004.

Region 1 Strategic Plan for Economic Development. Indiana Department of Commerce, 2005. 11 Oct. 2005 <http://www.iedc.org/pdfs/Region%201%20Strategy%20Final%20013105.pdf>.

Raise the Region, The Discovery Alliance and the Center of Workforce Innovations, 2004.

Ritter, Jim. "Area Nursing Shortage Keeps Getting Worse." Chicago Sun Times, 19 Sept. 2005.

Rupert, Sandra S. Closing the College Participation Gap. Education Commission of the States, Oct. 2003.

SHRM. "Learning to Compete in a Knowledge Economy." Workplace Visions 3 (2005).

Still Recovering From Recession: Indiana's Days of Reckoning. Indiana Fiscal Policy Institute, Nov. 2004.

Targeted Industries Report: Healthcare for Northwest Indiana. Center of Workforce Innovations, 2004.

Targeted Industries Report: Life Sciences for Northwest Indiana: Building a Cluster for Clinical Research. Center of Workforce Innovations, 2005.

Targeted Industries Report: Precision Equipment Manufacturing, An Overview of Advanced Manufacturing in Northwest Indiana. Center of Workforce Innovations, 2004.

Targeted Industries Report: Professional Services. Center of Workforce Innovations, 2004.

Targeted Industries Report: Wholesale Trade- Durable Goods, Driving 21st Century Logistics for Northwest Indiana. Center of Workforce Innovations, 2004.

Thomas P. Miller and Associates. Report on Learners. Center of Workforce Innovations, January 8, 2004.

Thomas P. Miller and Associates. What Indiana Makes, Makes Indiana: Analysis of the Indiana Manufacturing Sector. Central Indiana Corporate Partnership, 2005.

"U.S. Job Satisfaction Keeps Falling, The Conference Board Reports Today." The Conference Board, 28 Feb. 2005. 11 Oct. 2005 <http://www.conference-board.org/utilities/pressDetail.cfm?press_ID=2582>

Appendix C. Job Projections > 50 by Occupational Title

Occupational Title	Base Year Employment 2002	Projected Year Employment 2012	Openings Due to Growth	Openings Due to Replacement	Total Openings from Growth and Replacements	Annual Total Openings from Growth and Employment
Total, All Occupations	**330,980**	**342,110**	**22,130**	**81,700**	**103,830**	**10,380**
Management Occupations	13,630	14,460	1,020	2,560	3,580	360
Top Executives	5,240	5,510	280	970	1,250	130
General and Operations Managers	4,120	4,360	240	780	1,020	100
Operations Specialties Managers	2,180	2,320	160	380	550	60
Other Management Occupations	5,470	5,820	510	1,070	1,580	160
Business & Financial Operations Occupations	7,510	8,040	620	1,360	1,980	200
Business Operation Specialists	4,260	4,530	340	770	1,110	110
Financial Specialists	3,240	3,520	280	590	870	90
Accountants & Auditors	1,700	1,830	130	320	450	50
Computer & Mathematical Occupations	2,790	3,030	280	370	650	70
Computer Specialists	2,770	3,010	280	370	650	70
Architecture & Engineering Occupations	4,670	4,610	180	1,070	1,260	130
Engineers	2,460	2,400	100	540	630	60
Drafters, Engineering, & Mapping Technicians	2,030	2,010	70	500	560	60
Life, Physical, & Social Science Occupations	1,390	1,580	216	330	550	60
Community & Social Services Occupations	3,930	5,070	1,160	740	1,900	190
Counselors, Social Workers, & Other Community & Social Service Specialists	3,400	4,470	1,070	640	1,710	170
Social & Human Service Assistants	960	1,550	590	170	760	80

Occupational Title	Base Year Employment 2002	Projected Year Employment 2012	Openings Due to Growth	Openings Due to Replacement	Total Openings from Growth and Replacements	Annual Total Openings from Growth and Employment
Education, Training, & Library Occupations	18,340	20,780	2,440	3,940	6,380	640
Postsecondary Teachers	2,150	2,760	610	480	1,090	110
Primary, Secondary, & Special Education School Teachers	10,440	11,320	880	2,430	3,320	330
Preschool Teachers, Except Special Education	450	530	90	50	140	10
Kindergarten Teachers, Except Special Education	340	400	60	40	100	10
Elementary School Teachers, Except Special Education	3,580	3,820	240	790	1,030	100
Middle School Teachers, Except Special & Vocational Education	1,990	2,010	20	440	460	50
Vocational Education Teachers, Middle School	40	40	0	10	10	0
Secondary School Teachers, Except Special & Vocational Education	2,980	3,270	290	840	1,130	110
Vocational Education Teachers, Secondary School	220	220	0	60	60	10
Special Education Teachers, Preschool, Kindergarten, & Elementary School	330	400	70	80	150	20
Special Education Teachers, Middle School	240	290	50	60	110	10
Special Education Teachers, Secondary School	290	340	60	70	130	10
Other Teachers & Instructors	1,870	2,330	470	230	690	70
Adult Literacy, Remedial Education, & GED Teachers & Instructors	30	40	10	0	10	0
Self-Enrichment Education Teachers	550	710	160	70	230	20
Teachers, Primary, Secondary, & Adult, All Other (OES Only)	1,290	1,590	300	160	460	50
Librarians, Curators, & Archivists	510	540	20	150	170	20
Archivists, Curators, & Museum Technicians	50	50	0	10	10	0
Librarians	290	290	0	70	70	10
Library Technicians	180	190	20	70	80	10

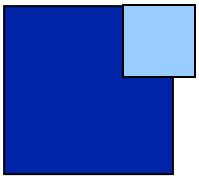
Occupational Title	Base Year Employment 2002	Projected Year Employment 2012	Openings Due to Growth	Openings Due to Replacement	Total Openings from Growth and Replacements	Annual Total Openings from Growth and Employment
Other Education, Training, & Library Occupations	3,370	3,830	460	640	1,110	110
Instructional Coordinators	160	190	30	20	60	10
Teacher/Assistants	3,170	3,590	420	610	1,040	100
Library, Museum, Training, & Other Education Workers, All Other (OES Only)	30	30	10	0	10	0
Arts, Design, Entertainment, Sports, & Media Occupations	3,070	3,210	240	550	780	80
Health Care Practitioners & Technical Occupations	18,480	21,710	3,240	3,500	6,740	670
Health Diagnosing & Treating Practitioners	11,200	13,210	2,020	2,210	4,220	420
Registered Nurses	6,630	7,910	1,290	1,390	2,670	270
Health Technologists & Technicians	6,910	8,070	1,150	1,230	2,380	240
Licensed Practical & Licensed Vocational Nurses	2,200	2,360	170	480	640	60
Health Care Support Occupations	7,200	9,040	1,840	1,140	2,990	300
Nursing, Psychiatric, & Home Health Aides	4,220	5,180	960	550	1,510	150
Nursing Aides, Orderlies, & Attendants	3,310	3,970	670	430	1,100	110
Other Health Care Support Occupations	2,540	3,270	730	520	1,250	130
Medical Assistants	840	1,220	380	160	540	50
Protective Service Occupations	9,130	10,170	1,050	2,440	3,500	350
Fire Fighting & Prevention Workers	1,430	1,680	250	420	660	70
Fire Fighters	1,290	1,530	240	370	620	60
Law Enforcement Workers	3,420	4,040	620	820	1,450	150
Police & Sheriff's Patrol Officers	1,890	2,280	400	490	880	90
Other Protective Service Workers	3,510	3,610	110	960	1,070	110
Security Guards	2,690	2,680	0	590	590	60
Food Preparation & Serving Related Occupations	29,610	30,270	910	11,890	12,800	1,280
Supervisors, Food Preparation & Serving Workers	2,400	2,400	20	590	610	60

Occupational Title	Base Year Employment 2002	Projected Year Employment 2012	Openings Due to Growth	Openings Due to Replacement	Total Openings from Growth and Replacements	Annual Total Openings from Growth and Employment
First-Line Supervisors/Managers of Food Preparation & Serving Workers	2,080	2,060	0	500	500	50
Cooks & Food Preparation Workers	7,200	7,190	220	2,350	2,570	260
Cooks, Restaurant	1,370	1,450	80	420	510	50
Cooks, Short Order	600	560	0	180	180	20
Food Preparation Workers	2,790	2,920	140	990	1,120	110
Food & Beverage Serving Workers	16,840	17,380	540	7,900	8,440	840
Bartenders	1,680	1,670	0	660	660	70
Combined Food Preparation & Serving Workers, Including Fast Food	8,130	8,280	150	3,530	3,670	370
Counter Attendants, Cafeteria, Food Concession, & Coffee Shop	990	1,010	20	640	670	70
Waiters & Waitresses	5,790	6,020	230	2,980	3,210	320
Food Servers, Nonrestaurant	270	400	140	90	230	20
Other Food Preparation & Serving Related Workers	3,170	3,300	130	1,050	1,180	120
Dining Room & Cafeteria Attendants & Bartender Helpers	1,170	1,260	100	390	490	50
Building & Grounds Cleaning & Maintenance Occupations	12,690	13,520	840	2,540	3,380	340
Building Cleaning & Pest Control Workers	8,670	9,300	640	1,700	2,330	230
Janitors & Cleaners, Except Maids & Housekeeping Cleaners	5,800	6,130	330	1,100	1,430	140
Maids & Housekeeping Cleaners	2,790	3,100	310	590	890	90
Grounds Maintenance Workers	3,180	3,300	130	690	820	80
Landscaping & Grounds keeping Workers	2,070	2,190	120	450	570	60
Personal Care & Service Occupations	11,830	14,130	2,340	2,990	5,330	530
Supervisors, Personal Care & Service Workers	1,350	1,590	240	310	550	60

Occupational Title	Base Year Employment 2002	Projected Year Employment 2012	Openings Due to Growth	Openings Due to Replacement	Total Openings from Growth and Replacements	Annual Total Openings from Growth and Employment
Entertainment Attendants & Related Workers	2,700	3,400	700	930	1,630	160
Personal Appearance Workers	2,170	2,540	380	420	790	80
Hairdressers, Hairstylists, & Cosmetologists	1,990	2,320	340	380	720	70
Other Personal Care & Service Workers	5,210	6,160	980	1,240	2,220	220
Child Care Workers	2,800	3,070	270	760	1,040	100
Personal & Home Care Aides	980	1,390	410	160	570	60
Sales & Related Occupations	35,370	35,440	680	11,850	12,530	1,250
Supervisors, Sales Workers	5,180	5,000	0	940	940	90
First-Line Supervisors/Managers of Retail Sales Workers	4,260	4,130	0	770	770	80
Retail Sales Workers	21,970	22,320	440	9,190	9,640	960
Cashiers	9,710	9,770	50	4,730	4,780	480
Counter & Rental Clerks	1,270	1,390	120	490	600	60
Retail Salespersons	10,040	10,200	170	3,650	3,810	380
Sales Representatives, Wholesale & Manufacturing	2,780	2,880	110	730	840	80
Sales Representatives, Wholesale & Manufacturing, Except Technical & Scientific Products	2,320	2,400	90	610	700	70
Other Sales & Related Workers	3,960	3,730	50	730	780	80
Office & Administrative Support Occupations	49,140	47,550	1,500	11,720	13,220	1,320
Supervisors, Office & Administrative Support Workers	2,730	2,580	0	590	590	60
First-Line Supervisors/Managers of Office & Administrative Support Workers	2,730	3,580	0	590	590	60
Financial Clerks	9,230	9,300	370	2,340	2,710	270
Bookkeeping, Accounting, & Auditing Clerks	4,040	3,780	0	760	760	80
Tellers	1,430	1,430	0	710	710	70
Information & Record Clerks	8,550	9,140	880	1,980	2,860	290

Occupational Title	Base Year Employment 2002	Projected Year Employment 2012	Openings Due to Growth	Openings Due to Replacement	Total Openings from Growth and Replacements	Annual Total Openings from Growth and Employment
Receptionists & Information Clerks	2,340	2,860	510	580	1,090	110
Material Recording, Scheduling, Dispatching, & Distributing Workers	10,480	9,400	70	3,040	3,110	310
Stock Clerks & Order Fillers	3,850	3,260	0	1,420	1,420	140
Secretaries & Administrative Assistants	8,880	8,480	170	1,700	1,870	190
Executive Secretaries & Administrative Assistants	2,720	2,700	0	520	520	50
Secretaries, Except Legal, Medical, & Executive	4,200	3,650	0	800	800	80
Other Office & Administrative Support Workers	8,710	8,140	10	1,920	1,930	190
Office Clerks, General	6,760	6,570	0	1,500	1,500	150
Farming, Fishing, & Forestry Occupations	1,270	1,510	240	350	590	60
Agricultural Workers	1,080	1,290	200	310	510	50
Construction & Extraction Occupations	21,960	22,620	830	4,170	5,000	500
Construction Trades Workers	18,050	18,510	600	3,300	3,910	390
Carpenters	4,080	4,170	90	660	750	80
Construction Laborers	2,720	2,860	140	360	500	50
Electricians	2,680	2,660	0	530	530	50
Installation, Maintenance, & Repair Occupations	17,920	17,670	480	4,160	4,640	460
Vehicle & Mobile Equipment Mechanics, Installers	5,480	5,590	240	1,510	1,750	180
Automotive Service Technicians & Mechanics	1,930	2,040	110	510	620	60
Other Installation, Maintenance, & Repair Occupations	9,670	9,390	200	2,000	2,200	220
Maintenance & Repair Workers, General	4,730	4,620	0	910	910	90
Production Occupations	31,350	28,360	570	7,620	8,180	820
Supervisors, Production Workers	2,660	2,580	0	560	560	60
First-Line Supervisors/Managers of Production & Operating Workers	2,660	2,580	0	560	560	60
Assemblers & Fabricators	3,700	3,310	150	920	1,090	110

Occupational Title	Base Year Employment 2002	Projected Year Employment 2012	Openings Due to Growth	Openings Due to Replacement	Total Openings from Growth and Replacements	Annual Total Openings from Growth and Employment
Team Assemblers	2,290	1,940	0	590	590	60
Metal Workers & Plastic Workers	11,360	9,740	60	2,750	2,810	280
Welders, Cutters, Solderers, & Brazers	1,970	1,980	10	560	560	60
Textile, Apparel, & Furnishings Workers	2,010	1,980	70	470	540	50
Other Production Occupations	8,060	7,330	200	1,960	2,160	220
Transportation & Material Moving Occupations	28,150	27,580	1,260	6,250	7,510	750
Motor Vehicle Operators	11,760	12,860	1,100	1,850	2,950	300
Truck Drivers, Heavy & Tractor-Trailer	6,980	7,630	650	1,140	1,790	180
Material Moving Workers	14,180	12,550	70	3,800	3,870	390
Laborers & Freight, Stock, & Material Movers, Hand	5,210	4,350	0	1,700	1,700	170

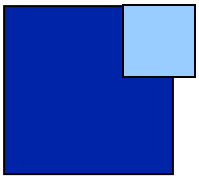


Appendix D. Percentage of Workers Over 55 in Indiana and Northwest Indiana

	Indiana		NW IN	
Industry Sub-sector	% of Total Emp	% of Workers in Industry 55+	% of Total Employment	% of Workers in Industry 55+
212 Mining (except Oil and Gas)	0.3%	15.1%	0.2%	0 or na
221 Utilities	0.6%	17.4%	1.1%	19.8%
236 Construction of Buildings	1.6%	11.6%	2.0%	9.6%
237 Heavy and Civil Engineering Construction	0.7%	13.3%	0.7%	13.7%
238 Specialty Trade Contractors	3.5%	10.5%	4.4%	11.9%
311 Food Manufacturing	1.3%	13.0%	0.6%	0 or na
321 Wood Product Manufacturing	0.8%	12.0%	0.1%	0 or na
322 Paper Manufacturing	0.5%	15.0%	0.1%	0 or na
323 Printing & Related Support Activities	0.8%	15.6%	0.2%	0 or na
324 Petroleum & Coal Products Manu.	0.1%	12.5%	1.0%	12.6%
325 Chemical Manufacturing	1.5%	11.9%	0.8%	13.6%
326 Plastics and Rubber Products Manu.	1.8%	13.3%	0.5%	11.5%
327 Nonmetallic Mineral Product Manu.	0.7%	13.9%	0.6%	10.6%
331 Primary Metal Manufacturing	2.2%	18.5%	10.9%	21.3%
332 Fabricated Metal Product Manu.	2.4%	14.9%	1.1%	13.7%
333 Machinery Manufacturing	1.8%	17.4%	0.4%	16.3%
335 Electrical Equipment, Appliance, & Component Manu.	0.6%	21.8%	0.1%	0 or na
336 Transportation Equipment Manu.	5.7%	14.8%	1.0%	13.7%
337 Furniture & Related Product Manu.	1.1%	13.5%	0.5%	0 or na
339 Miscellaneous Manufacturing	1.2%	15.1%	0.5%	10.8%
423 Merchant Wholesalers, Durable Goods	3.1%	15.0%	2.8%	17.5%
424 Merchant Wholesalers, Nondurable Goods	1.5%	15.0%	1.1%	13.7%
425 Wholesale Electronic Markets & Agents and Brokers	0.3%	25.3%	0.3%	0 or na
441 Motor Vehicle & Parts Dealers	1.7%	17.6%	1.9%	16.5%
442 Furniture & Home Furnishings Stores	0.4%	18.5%	0.5%	13.6%
443 Electronics and Appliance Stores	0.4%	8.6%	0.5%	0 or na
444 Building Material & Garden Equipment & Supplies Dealers	1.3%	16.0%	1.5%	8.0%

Industry Sub-sector	Indiana		NW IN	
	% of Total Emp	% of Workers in Industry 55+	% of Total Employment	% of Workers in Industry 55+
445 Food & Beverage Stores	2.2%	15.1%	3.1%	16.7%
446 Health & Personal Care Stores	0.8%	15.6%	1.3%	14.7%
447 Gasoline Stations	1.0%	11.6%	1.3%	7.2%
448 Clothing & Clothing Access. Stores	0.9%	10.2%	1.0%	8.1%
451 Sporting Goods, Hobby, Book, & Music Stores	0.6%	12.6%	0.4%	0 or na
452 General Merchandise Stores	3.0%	19.3%	2.8%	15.5%
453 Miscellaneous Store Retailers	0.9%	19.1%	0.9%	18.6%
454 Nonstore Retailers	0.4%	16.1%	0.3%	0 or na
484 Truck Transportation	2.0%	18.2%	2.3%	14.4%
485 Transit & Ground Passenger Transportation	0.1%	29.2%	0.4%	20.1%
488 Support Activities for Transportation	0.3%	13.1%	0.2%	0 or na
492 Couriers & Messengers	0.6%	7.3%	0.4%	0 or na
493 Warehousing & Storage	0.8%	12.6%	0.2%	0 or na
511 Publishing Industries (except Internet)	0.6%	15.8%	0.6%	11.8%
512 Motion Picture & Sound Recording Industries	0.2%	4.0%	0.1%	0 or na
515 Broadcasting (except Internet)	0.2%	9.6%	0.1%	0 or na
517 Telecommunications	0.6%	11.1%	0.3%	0 or na
522 Credit Intermediation & Related Activities	2.2%	13.9%	2.0%	12.9%
523 Securities, Commodity Contracts, & Other Financial Investments & Related Activities	0.3%	16.2%	0.1%	0 or na
524 Insurance Carriers & Related Activities	1.8%	15.2%	0.9%	14.6%
531 Real Estate	0.9%	21.0%	0.8%	24.5%
532 Rental & Leasing Services	0.5%	11.4%	0.6%	0 or na
541 Professional, Scientific, & Technical Services	3.6%	14.1%	3.6%	16.8%
551 Management of Companies & Enterprises	1.1%	14.5%	0.8%	14.2%
561 Administrative & Support Services	5.3%	13.0%	5.3%	14.2%
562 Waste Management & Remediation Services	0.3%	9.2%	0.5%	0 or na
611 Educational Services	1.6%	19.7%	1.1%	24.2%
621 Ambulatory Health Care Services	4.2%	14.0%	5.6%	15.8%
622 Hospitals	4.2%	13.6%	6.5%	15.4%
623 Nursing & Residential Care Facilities	2.7%	15.2%	2.7%	16.0%

Industry Sub-sector	Indiana		NW IN	
	% of Total Emp	% of Workers in Industry 55+	% of Total Employment	% of Workers in Industry 55+
624 Social Assistance	1.6%	17.5%	1.4%	19.1%
711 Performing Arts, Spectator Sports, & Related Industries	0.3%	16.2%	0.2%	0 or na
713 Amusement, Gambling, & Recreation Industries	1.4%	14.4%	2.9%	12.0%
721 Accommodation	0.8%	14.6%	0.7%	8.8%
722 Food Services & Drinking Places	8.2%	6.4%	8.3%	6.2%
811 Repair & Maintenance	1.1%	12.6%	1.5%	12.4%
812 Personal & Laundry Services	1.1%	17.7%	1.7%	18.1%
813 Religious, Grantmaking, Civic, Professional, & Similar Organizations	1.2%	20.4%	1.4%	25.7%
All NAICS subsectors		14.2%		15.3%



Appendix E. Location Quotients

Location Quotients

- An indicator of the *relative concentration* of employees in an industry sector in a local region vs. that same concentration in another region (e.g. the state or nation).
- If a LQ for an industry in your Region is:
- Equal to 1: That industry employs the same percentage of workers in your Region as it does in the Nation.
- Greater than 1: The industry enjoys a greater share of the local area employment than in the nation.
- Less than 1: The industry's share of local employment is smaller than its share of national employment.
- Note: A location quotient between .80 and .120 is close enough to 1 that it is not considered particularly significant.

Appendix F. Shift-Share Analysis

Shift-Share Analysis

- A method of determining the competitive strength of an industry within your Region by breaking employment growth down into individual components.

- National Growth Component: The portion of employment change in an industry in you region that can be attributed to the overall growth or contraction of employment in the entire nation.
-
- Industry Mix Component: The change in each local industry that can be explained by the growth or decline of that industry nationally.
-
- Regional Shift Component (or comparative advantage): The change in local industry employment that can be attributed to local factors, such as a competitive advantage in the industry.