



Root Causes Cover Sheet
Economic Growth Region #3: Northeast Indiana

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1. Introduction to Economic Growth Region 3 Strategic Skills Initiative Root Causes Report

“While we have hope, we are realists. It will take time for Northeast Indiana to emerge from its current state. But together, with a shared understanding and clear purpose forged through consensus, we can make our region thrive and grow once again.”

This concluding statement from the Northeast Indiana Strategic Skills Initiative’s (SSI) Skills Shortages Report takes on new life as the Root Causes phase of the project unfolds. Throughout the months of November and December, a thorough investigation of the core, systemic causes of the target-occupation shortages was undertaken, focusing on the positions outlined in the initial Skills Shortages Report.

In our first report, we uncovered four targeted occupations and skills that demanded attention in the Strategic Skills Initiative. They are:

- **Registered Nurses** (Standard Occupation Code: 29-1111)
- **CNC-MIMMs** (A multi-skilled hybrid of five occupations: Industrial Machinery Mechanics, SOC 49-9041; Maintenance and Repair Workers, General, SOC 49-9042; Maintenance Workers, Machinery, 49-9043; Computer controlled Machine Tool Operators & Tenders, Metal & Plastic, SOC 51-4011 and Machinists, SOC 51-4041)
- **Industrial Engineers** (SOC 17-2112)
- **Computer Systems Analysts** (SOC 15-1051)

First-person perspectives were gathered from target-industry employers and employees, students, service providers and educators at both the secondary and post-secondary levels. Their insights were substantiated by additional secondary research.

We uncovered three universal root causes challenges to be addressed if Northeast Indiana is to succeed in the global economy. These challenges permeate nearly all occupations. They are:

1. **The need to replace the silo effect with meaningful systems thinking across our region.** Systems thinking – bridging the individual needs of institutions to achieve collective goals – should improve basic skills development, set realistic expectations of the world of work in our youth and improve the understanding of the regional economy in all sectors of business, government and education.
2. **The need to promote loyalty within our workforce, and to demonstrate loyalty in return.** By investing in our strategic workforce, we can stem occupational leakage and develop a more productive workforce with expert skills.
3. **The need to better promote Northeast Indiana as a great place to live and work.** Recruiting workers to our region has been and will be a challenge, but we find that those who do move to Northeast Indiana have found our region to offer an excellent quality of life and are reluctant to leave.

Other root causes are specific to individual occupations. They include issues such as employee stress and burnout, instructor pay in our training programs and comparative pay disparities in relation to other Midwestern communities.

This report will explain the process and the findings. It will also present endorsements of our findings from our industry partners.

2. Methodology

The Staff and Lead Team of the Northeast Indiana SSI project employed the methodology laid out by Workforce Associates in the first Root Causes phase online workshop, conducted on November 21, 2005. Two subsequent workshops were held on November 28 and December 5. Whereas the first workshop defined the process, the final two workshops were used to discuss local implementation of the methodology and solicit expert feedback on ideas to counter key stumbling blocks.

Pursuant to the methodology in the SSI Research and Identification Guidebook 2.0 and the November 21 workshop, EGR-3's Root Causes phase investigation was largely driven by primary data gathering. Using the same methodology as the Shortages' phase, this approach used primary data to drive the secondary data gathering. The secondary data was then used to verify or dispel the primary's assertions.

Primary data collection was done using multiple methods: online surveys, focus groups, interviews and discussions. The findings were aggregated into a single source. Recognizing the geographic challenges of developing a bank of knowledge to represent our eleven-county region, data collection was coordinated through an online-survey-response-collection tool, SurveyMonkey.com. Links to the eight specific surveys were posted at the Northeast Indiana Workforce Investment Board's Internet home page, www.neiwib.org. Local Economic Development Organizations (LEDO) and Chambers of Commerce across the eleven-county region participated in the SSI Root Causes phase via the online surveys.

To gain adequate first person perspective, a series of 19 focus groups were scheduled. The focus group calendar was designed to ensure that opinions representing both the north and south of EGR-3 were represented for all industry and occupational groups. Geographic diversity in meeting sites was a prime consideration in planning. Supply and demand focus groups were scheduled separately to allow employers and employees to speak with a degree of anonymity.

Wage data was considered by comparing U.S. Census Bureau wage information for the targeted Standardized Occupation Codes for the Fort Wayne Metropolitan Statistical Area (the only MSA containing any EGR-3 counties) against those of other Michigan, Illinois, Indiana, Kentucky and Ohio MSAs. We then normalized to adjust for the Fort Wayne MSA's low cost of living using the Salary.com "Cost-Of-Living Wizard."

We tried to benchmark benefits in the same way that we benchmarked wages and salaries. We learned that no such universal, standardized benchmarking entity exists. Selected individual EGR-3 agencies such as LEDOs or Chambers of Commerce do conduct benefit surveys within their service area, but we found no standardization in survey instruments that made aggregation of data possible. Detailed wage data is available in our white paper report.

Lastly, we conducted an inventory of the many training options available in EGR-3 (and, in certain cases, beyond our border) in our targeted occupations. This inventory allowed us to compare training capacity against statistical demand.

3. Employer Recruitment and Retention

Using the demand survey responses, the following recruiting patterns emerged. Note that high school recruitment is not applicable for occupations requiring degrees.

	Computer Systems Analysts	Industrial Engineers	CNC-MIMM	Registered Nurses
How do you recruit your staff?				
Classified ads	17	14	17	21
College or technical schools	14	14	10	17
Staffing agencies	10	6	9	9
Personal referrals	18	18	16	24
High schools	0	0	11	0
Other (Internet - Monster, company websites)	8	8	4	4
Which form of recruiting works best for you?				
Classified ads	5	3	3	4
College or technical schools	3	3	1	1
Staffing agencies	3	1	2	0
Personal referrals	4	7	9	17
High schools	0	0	0	0
Other (Internet - Monster, company websites)	6	5	2	2
Which form of recruiting is least successful for you?				
Classified ads	7	7	6	8
College or technical schools	6	3	2	2
Staffing agencies	4	3	4	11
Personal referrals	2	3	2	1
High schools	0	0	2	0
Other (Internet - Monster, company websites)	0	0	0	1

Recruiting information obtained from SSI root causes survey responses

Focus group feedback revealed that personal referrals prove most effective for our respondents because they are considered “warm” leads. In technical occupations, Internet recruiting is also an effective tool because

applicants for these positions are computer savvy and are already primary users of technology.

Classified ads were least successful because the survey respondents reported that they resulted in too many responses from unqualified applicants.

Health-care delivery has a strong, industry-specific staffing formula, but supply focus group respondents indicated that agency nurses are not as loyal or reliable as staff nurses.

On balance, colleges, nursing schools and technical schools were desired recruitment locations, but overall, the challenges of bringing young professionals to EGR-3 are significant and many.

4. Career Awareness and Access

The Student Career Survey was completed by 377 students. The respondents either completed the survey in paper format at a focus group or online at SurveyMonkey.com.

On a weighted score level, the careers on the table on the next page appear to be most popular with the emerging workforce (Scale of 1-5, lower score=stronger value). The lack of any extreme scores indicates that the students are diverse in their collective occupational outlook. And health and information technology-related topics are high on the priority list, a positive sign for the region.

A point of concern is the aversion to manufacturing – a point that arose in the student, employer and employee focus groups. Employers recognized that manufacturing suffers

from a stereotype of being a dirty, manual labor industry. Employers recognize that our finest students are not looking to manufacturing as a potential career option. The root causes survey data indicates employers' frustration with the poor basic skills' level of the emerging workforce entering manufacturing.

What employers and employees may not entirely understand is the depth of broad disinterest – some may even say fear – of working in manufacturing in our student population. No student in a non-vocational/tech prep program focus group volunteered that he or she wanted to enter manufacturing. The reasons for this aversion include the stereotypes mentioned above, but they also are deeply rooted in their parents' experiences. Many students are children of parents whose jobs were outsourced or offshored. Our focus-group study reveals a near-direct correlation of parents in manufacturing with students who will not consider manufacturing.

Career interests of EGR-3 high school students	
Health	- 2.45
Education & Training	- 2.72
Human Services	- 2.75
Arts Audio-Video Technology & Communications	- 2.76
Architecture and Construction	- 2.82
Information Technology (Computers & Software)	- 2.87
Business & Administration	- 2.90
Law & Public Safety	- 2.94
Other	- 3.00
Scientific Research & Engineering	- 3.09
Hospitality & Tourism	- 3.16
Agriculture & Natural Sciences	- 3.26
Finance	- 3.31
Government & Public Administration	- 3.40
Retail/Wholesale Sales & Services	- 3.45
Manufacturing	- 3.48
Transportation, Distribution & Logistics Services	- 3.59

Consistent with national trends, students' post-graduation education plans largely revolve around four-year education. More than 70 percent plan to attend four-year colleges and universities, with 20 percent intending to attend a two-year technical education program. Just 10 percent plan to go to vocational or technical school, and approximately 7 percent intend to enlist in the military.

Interestingly, two of our targeted occupations (registered nursing and CNC-MIMM) do not require a four-year education. Still, a cultural bias toward the four-year college/university route as the key to career success is evident in our study.

5. Ranking of Root Causes

Root causes are ranked in order of priority by occupation. The scores are directly related to answers provided on our root causes survey forms, which were used both online and in focus groups. Survey results are offered with two elements of weighting:

- **Average scores:** The strength of an average score can be considered a reasonable indicator of the level of widespread appreciation for a given statement being a root cause of the shortage in question. On occupational surveys, the ratings were from 1 to 6, with 6 being the most important. Thus, a **higher** average score represents a more significant number. We set a threshold of average scores at or above 4.00 to conduct further evaluation as possible root causes.
- **Intensity:** Intensity of opinion is indicated by tallying the number of responses in the highest and second-highest category. On occupational surveys, the quantities of scores of 5 and 6 would be added together.

Additional primary data collected through focus groups impacted the relative ranking of the root causes.

CNC-MIMM

Root Cause	Supply - Employees		Demand - Employers	
	Average Score	Intensity	Average Score	Intensity
1. High school graduates have insufficient academic preparation for this occupation	5.43/6.00	7/9	4.58/6.00	11/19
2. Potential workers have unrealistic expectations of what it's like to work in this industry.	4.57/6.00	3/9	4.28/6.00	10/19
3. School guidance counselors have little understanding of the opportunities in this occupation.	3.86/6.00	2/9	4.94/6.00	14/19
4. Not enough practical experience for students with area employers.	4.00/6.00	2/9	4.67/6.00	11/19
5. Capacity of training institutions is inadequate to prepare workers in this occupation.	4.33/6.00	4/9	4.00/6.00	10/19
6. Workers at lower skill levels find it difficult to upgrade their skills to qualify for more senior roles.	4.00/6.00	4/9	4.00/6.00	6/19
7. Workers feel there is no opportunity to advance from their present position.	3.43/6.00	1/9	4.07/6.00	7/19

INDUSTRIAL ENGINEERS

Root Cause	Supply - Employees		Demand - Employers	
	Average Score	Intensity	Average Score	Intensity
1. Difficulty in attracting engineers &/or their spouses to this area.	4.40/6.00	7/10	3.94/6.00	8/17
2. High school graduates have insufficient academic preparation for this occupation	3.70/6.00	3/10	4.89/6.00	14/19
3. School guidance counselors have little understanding of the opportunities in this occupation.	4.20/6.00	3/10	4.47/6.00	12/19
4. Not enough practical experience for students with area employers.	3.50/6.00	2/10	4.28/6.00	10/19
5. Potential workers have unrealistic expectations of what it's like to work in this industry.	3.00/6.00	0/10	4.11/6.00	8/19

COMPUTER SYSTEMS ANALYSTS

Root Cause	Supply - Employees		Demand - Employers	
	Average Score	Intensity	Average Score	Intensity
1. IT professionals leave this occupation for better pay/benefits elsewhere.	5.00/6.00	9/14	3.26/6.00	5/19
2. Workers at lower skill levels find it difficult to upgrade their skills to qualify for more senior roles.	4.46/6.00	7/14	3.50/6.00	5/20
3. Workers feel there is no opportunity to advance from their present position.	4.83/6.00	8/14	3.33/6.00	7/19
4. Not enough practical experience for students with area employers.	4.46/6.00	9/14	4.25/6.00	12/20
5. High school graduates have insufficient academic preparation for this occupation	4.15/6.00	7/14	4.24/6.00	11/21
6. Potential workers have unrealistic expectations of what it's like to work in this industry.	3.92/6.00	6/14	4.05/6.00	6/21
7. Difficulty in attracting analysts &/or their spouses to this area.	4.08/6.00	6/14	3.00/6.00	3/19
8. Instructors are not sufficiently paid to retain them.	4.00/6.00	5/14	3.29/6.00	4/20

REGISTERED NURSES

Root Cause	Supply - Employees		Demand - Employers	
	Average Score	Intensity	Average Score	Intensity
1. Capacity of training institutions is inadequate to prepare workers for this occupation.	4.26/6.00	16/36	4.46/6.00	14/36
2. Instructors are not sufficiently paid to retain them.	4.42/6.00	17/36	4.00/6.00	12/36

3. Stress &/or burnout are driving registered nurses from this occupation in my area.	4.61/6.00	22/36	4.46/6.00	13/36
4. Not enough practical experience for students with area employers.	4.07/6.00	14/36	4.31/6.00	16/36
5. Potential workers have unrealistic expectations of what it's like to work in this industry.	4.41/6.00	17/36	4.23/6.00	14/36
6. Difficulty in attracting registered nurses &/or their spouses to this area.	4.17/6.00	13/36	4.04/6.00	10/36
7. School guidance counselors have little understanding of the opportunities in this occupation.	4.41/6.00	18/36	3.97/6.00	11/36
8. Registered nurses leave this occupation for better pay/benefits elsewhere.	4.29/6.00	15/36	3.71/6.00	3/36
9. The lack of teamwork among health care staff results in new workers having low morale.	4.13/6.00	13/36	3.86/6.00	10/36

6. Analysis of Root Causes

The root causes identified in this report fit into two groups: cross-cutting and occupation-specific. Relative importance of the root causes is outlined in the earlier section.

6.1. Cross-Cutting Root Causes

We believe that these cultural root causes are symptoms of important public policy issues. As such, we believe that these root causes represent the core qualitative solutions to the shortages in our core occupations and skills.

6.1.1. The Silo Effect

“The silo effect” describes a lack of communication and common goals between departments in an organization. The trend of root causes survey responses and focus group feedback lead us to conclude that these root causes are an outcome of the silo effect in our region. A systems-thinking approach will have to replace the silo effect if we hope to correct these important root causes of skills shortages in EGR-3.

- **“High school graduates have insufficient academic preparation for the occupations.”**

In 1990, Ian Rolland, then-President and Chief Executive Officer of Lincoln National Corporation, made the following statement when explaining why Lincoln chose not to build a \$60 million office tower in downtown Fort Wayne:

“The schools are just not preparing students with the skills we need. The 21st Century will place even greater demands on new workers, and we are not confident that schools in Fort Wayne and Allen County will produce these workers.”¹

The problem has not changed. The National Association of Manufacturers’ (NAM) “2005 Skills Gap Report – A Survey of the American Manufacturing Workforce” and the Indiana Chamber of Commerce Foundation’s “A Demand-Side Strategy to Meet Indiana’s Workforce Basic Skills Challenge” reports illustrate and explain the challenge of building a basic skills’ foundation that will allow our emerging workforce to move forward into high-skilled training and occupations.

Regionally, the root causes survey statement, “High school graduates have insufficient academic preparation for the occupations,” revealed that some of the strongest results in

¹ Thies, Bethany. “Educating Our Workforce.” *Fort Wayne News-Sentinel*, 10 Sept. 1990, p. 1B.

our root causes surveys were among three of the targeted occupations. Our industry partners want all workers to possess the following skills:

Scholastic skills	Technology skills
<ul style="list-style-type: none"> • Math • English, including writing skills 	<ul style="list-style-type: none"> • Computer and technology, including the ability to use basic software like Microsoft Office programs
Thinking skills	People skills
<ul style="list-style-type: none"> • Systems thinking • Critical thinking • Problem-solving • Trouble-shooting 	<ul style="list-style-type: none"> • Teamwork • Communications • Customer service • Listening skills

Relative to specific occupations, the following skills are needed:

CNC-MIMM	Industrial Engineer	Computer Systems Analyst	Registered Nurse
<ul style="list-style-type: none"> • Practical experience in a machining environment • Ability to read a CNC program • Machine programming • Machine setup • Machining skills • Blueprint reading 	<ul style="list-style-type: none"> • Creativity and imagination • Leadership skills • Spatial thinking • Computer Aided Design (CAD) software experience • Time management 	<ul style="list-style-type: none"> • Self-reliance and self-motivation • Personal computer hardware knowledge • Any possible computer hardware or software certifications • Detailed computer software application knowledge, especially with Microsoft Windows, Word, Excel and Access • Networking knowledge 	<ul style="list-style-type: none"> • Biological sciences • Basic clinical skills from practical training • Flexibility • Accountability • Professionalism • Compassion • Organizational skills • Time management

This is a critical root cause, as no skill development can take place without a foundation of basic skills.

• **“Potential workers have unrealistic expectations of the work world.”**

In the absence of appropriate expectation-setting from those around them, students look to other avenues to learn more about the world around them. One study indicates that high school students who use television as a primary means of determining work expectations develop conflicting values like:

- Wanting to have high-status jobs that would enable them to earn a lot of money.
- Wanting to have jobs that were relatively easy with long vacations and time-to-do-other-things-in-life attitudes.²

This study was echoed locally when CNC operators at a focus group in Fort Wayne, discussing the issue of worker expectations, agreed that new employees want to be paid a lot of money, but they don't want to do the work. A Huntington focus group participant said,

“Many [students] have unrealistic expectations for work and have a sense of entitlement. Many expect to make ‘GM money’ immediately following graduation. Our entry level employees earn \$8 an hour. Ivy Tech students with basic machine knowledge earn \$10 an hour with evaluations. Our wages are tied to skill level. Applicants do not understand the concept of working for advancement.”

² Signorielli, Nancy Ph.D. “Television and the Perpetuation of Gender-Role Stereotypes,” *AAP News*, Feb. 1998. Accessed at <http://www.aap.org/advocacy/sign298.htm> on 17 Dec. 2005.

While an important root cause, we believe that expectations will be adequately set in our new workforce if other root causes are addressed, especially those dealing with practical/applied learning.

- **“Guidance counselors have little understanding of the opportunities in the occupations.”**

Nearly every SSI focus group discussed guidance counselors’ lack of awareness of the opportunities, avenues and requirements of the businesses in their areas. Therefore, the survey statement regarding school guidance counselors was directly explored with the counselors in their focus group. When asked, “Do you as counselors know opportunities await your graduates?” one counselor answered, “No, we don’t know what’s available out there.” Another indicated that trying to stay current with the market is an incredible challenge when considering their real life work roles, including oversight and management of the schools’ many standardized tests, management of special needs student caseload and class scheduling.

The NAM report suggests that manufacturers should engage in career awareness to combat the shortfall in skilled workers with this statement – which could be applied across a number of industries where skills shortfalls exist:

“Employers must help the general public and public sector to understand what companies need. Companies need to become more engaged in public education, working with educators on curricula, holding field trips and career fairs for students, providing internships and apprenticeships and generally giving community schools opportunities to learn about manufacturing.”³

A 2002 Ferris State University study, “Decisions Without Direction,” on the alignment of school guidance and career choices by students reports:

- Students do not feel like they are receiving professional career guidance in school, leaning heavily on their parents’ advice.
- There is a bias in high school toward pursuing a four-year degree.
- Students choose their careers for reasons other than actual career opportunity.

Caution should be taken to keep from placing all responsibility on the shoulders of guidance counselors. The lack of public understanding of the work roles of the modern guidance counselor may deflect responsibility from other administrators and teachers, who also share the burden of building meaningful awareness of career options for our emerging workforce.

Addressing this root cause is an important vehicle for both developing meaningful linkages between education and the work world and combating the silo effect.

- **“Not enough practical/applied learning experience for students with area employers.”**

Across all focus groups, participants discussed the issue of applied learning at length. This concept took two paths: relevant course instruction and school-to-work concepts.

An advanced-manufacturing employer stated the first path plainly, “Students need applied learning with hands-on experience.” Relevant course instruction references real-world

³ Deloitte and The Manufacturing Institute, p. 22.

experience in standard academic offerings. It is believed that the more relevant the learning, the greater likelihood that the learning will be retained by the student.

Guidance counselors believe internships and experiential learning build greater academic discipline and relevancy between education and life. As observed in a focus group, when a student does not meet an employer's standards and is corrected in the workplace, that student realizes that the need to build skills is not just an academic exercise but a workplace necessity.

Academic studies of internships and other school-to-career (STC) learning models are supportive of practical learning concepts such as internships at both the secondary and post-secondary levels. A study of the effectiveness of STC programs in California found evidence of improved post-secondary education enrollment and post-education employment arising from STC programming like in-school business enterprise development and internships. Most notable of this study, the author commented was that, "...internship/apprenticeship programs may be particularly advantageous for the less-advantaged, as these programs boost college enrollment among those with the lowest test scores and boost employment among [those in an unfavorable socioeconomic status]."⁴

In "Education and Career Preparation for the New Millennium: A Vision for Systemic Change," CORD's Daniel Hull suggests teaching academics in context, offering relevant instruction, including:

- Relating — Learning in the context of life experiences.
- Experiencing — Learning in the context of exploration, discovery and invention.
- Applying — Learning in the context of how knowledge and information can be used.
- Cooperating — Learning in the context of sharing, responding and communicating with others.
- Transferring — Learning in the context of existing knowledge, using and building on what we know.

In a systems-thinking model where business and education partner to achieve common goals, the importance of this root cause is self-evident.

6.1.2. Employer-Employee Loyalty

The NAM report demonstrably turns manufacturing back on its former paradigm of viewing employees as commodities. In the report, the authors state:

"Employers must understand the importance of human capital as a business investment. Similar to the other aspects of their business, employers need to look at their human capital as an investment rather than as expenditure. If employees are engaged through a strategy of career ladders, incentives, competitive wages and benefits, and supportive working conditions, they will stay – research bears this out."⁵

⁴ Neumark, David, "The Effects of School-to-Career Programs on Postsecondary Enrollment and Employment," Public Policy Institute of California, 2004, p. x.

⁵ Deloitte and The Manufacturing Institute, p. 22.

An important component of our targeted occupation and skills shortages is **leakage** – people leaving their employer, leaving the area or leaving the industry. Addressing the following two sub-items would address worker frustrations that contribute to leakage, building loyalty within the workforce in the process.

- **“Workers at lower skill levels find it difficult to upgrade their skills to qualify for more senior roles.”**

The old manufacturing paradigm makes skill upgrading a challenge, as evidenced by the following comments from CNC-MIMM focus group participants:

- There is nowhere to send employees for advanced training.
- Training programs are generally offered during the evening hours; therefore, anyone working second shift would not be available to attend.

For computer systems analysts and industrial engineers, the challenges are more difficult in Northeast Indiana. As of 2002, there were only 920 systems analysts and 1,220 industrial engineers across EGR-3.⁶ Thus, to build a core competency where workers will have avenues in which they can advance their careers, the focus groups suggested two approaches: 1) Identification and promotion of an ongoing education continuum for professional participation; and 2) Development of an understanding by all employers that information technology skills must be upgraded as a matter of enlightened self-interest.

A subset of the skill-upgrade question relates to a demand-side concern from the Skills Shortages phase of the report regarding obtaining a sufficient number of post-degree, advanced certifications for registered nurses to staff regional care centers. As these centers (like the Parkview Heart Institute or the St. Joseph Hospital Burn Center, both in Fort Wayne) are generators of new regional wealth within a health-care delivery industry that largely recirculates existing wealth, this issue demanded special attention. A special focus group was scheduled to deal with this question. A focus group of nurses with such certifications indicated that, with the exception of satisfying the self-motivated nurse who chooses to learn for learning’s sake, there is no incentive to obtain advanced certifications – no visual recognition (such as extra certification letters on a name badge) or wage increase. The lack of meaningful employee incentives makes rectifying this shortage a challenge.

While not quantifying, industry leaders indicate that improved access to training will reduce EGR-3’s occupational and skill shortages. Especially with CNC-MIMMs and computer systems analysts, who identified this as a root cause, we should prioritize building efforts to provide flexible-training programming, be it from a time, distance or timeliness perspective.

- **“Employees in my field feel that there is no opportunity to advance from their current position.”**

The other component of employee loyalty is the opportunity for career progression. Many employees want to advance their careers through improved wages, title changes, new responsibilities, etc. – especially in the information technology field, which carries a public image of upward mobility. EGR-3 is challenged with hosting a small but important

⁶ Lookup of “Computer Systems Analysts” and “Industrial Engineers” in egr3projections.xls.

population of computer systems analysts whose short-term expectations are not necessarily accurate for our region.

The best insight came from IT workers themselves. One computer systems analyst said that IT-trained individuals come to his company right out of college. Within one to two years, he expects them to move on. Two other employers of engineers said that applicants don't want to come to Northeast Indiana because there are no further development options beyond the company they hire into.

As with any emerging occupation, it will be a challenge to keep the core of our region's computer-systems expertise intact while growing it into a larger foundation of our future growth. We are not certain if this root cause can be addressed in the SSI process and will look to potential solutions providers for creative insights.

6.1.3. The Marketing Challenge

- **“Difficulty attracting workers in target occupations &/or their spouses to our area.”**

This issue has a number of components, all related to the core issue.

- **Emerging Workforce: The Grass is Greener.**

Results demonstrate that only 29 percent of the 377 SSI Student Career Survey respondents definitely plan to live in Northeast Indiana when they graduate. Focus-group feedback indicates that our young people find Northeast Indiana to be boring and lack cultural amenities, or “excitement.”

The perceived flight from Indiana and the Midwest may not necessarily be the primary challenge; we may want to focus on recruiting. The Midwest keeps 25 percent of its graduates, according to economist Richard Mattoon, whereas the national average is only 23 percent. At the same time, the Midwest attracts 9 percent of outside graduates; the national average is around 23 percent.⁷

- **Recruiting/Retention – Do We Measure Up?**

A key component of this root cause is the ability to attract young professionals and families to our region. Using Richard Florida's Creative Class Index, a measurement designed to determine this capacity, the Fort Wayne region ranks 113 and the Muncie region ranks 180 out of 268 regions in America.

This capacity is weakened further by the leakage of high-wage employers (and their jobs) out of Northeast Indiana. Finding adequate employment for spouses is a challenge in this environment. Furthermore, workers are less likely to move to a community where there are no other similar jobs available in case the positions for which they relocate do not work out.

- **Transplanted Workers: I Like It Now That I'm Here.**

For this aspect, anecdotal evidence is most compelling. An industrial engineering participant, a father of two, added that when offered a job in Fort Wayne, he was not drawn to the city. He moved here with no intentions of “retiring” here. When considering the

⁷ Evens, Mary. “Governor's Conference on Economic Development: A novice's perspective,” *What's News*, Center for Community Partnerships, University of Wisconsin Oshkosh, Spring 2003. Accessed at <http://www.uwopartners.org/whatsnews/spring2003/weda.html> on 18 December 2005.

move to Fort Wayne, nothing sold him on the region. Once here, however, he has found the character of the community very attractive and now is reluctant to leave. He believes we should aggressively market Fort Wayne as a city and all that it has to offer.

- **Recruiters: Fort Wayne Is A Family Community.**

Recruiters and human resources managers, from our research, have settled on a paradigm of how to recruit people to come to Fort Wayne and Northeast Indiana: Make sure they have families. Two focus-group participants stated having “given up” on recruiting from outside Fort Wayne. The only thing that can bring candidates back to this area, in their opinion, is family.

As a root cause, this is systemic to our community’s outlook, both as others look at it and as it looks at itself. Recruitment of non-resident professionals will be vital until business-education linkages are institutionalized. This is one of the most important root causes.

6.2. Additional Occupation-Specific Root Causes

6.2.1. Registered Nurses

- **“Capacity of training institutions is inadequate to prepare workers for this occupation.”**

As indicated above, we conducted a broad inventory of training options in all of our targeted occupations to ensure that training-related concerns could be addressed, as well as to compare training capacity against anticipated demand.

Comparing the current EGR-3 nursing school capacity of approximately 400 against the projections, the region only falls short in capacity against the upper demand projection of 487 to 563 seats per year. When including the additional 50 seats of Huntington University’s anticipated new program, it appears that our nursing schools will have sufficient seats to meet all but the highest demand for registered nurses in Northeast Indiana. These supply and demand factors must be closely monitored in case demand reaches the upper projection.

We remain confident in our middle projection range of 386 to 421 required registered nursing seats per year. Huntington’s new program also offers a valuable hedge against an upper demand projection scenario. The faculty shortage referred to by IPFW and the University of Saint Francis are of great concern, however, as there is little margin for error when comparing EGR-3’s anticipated demand against the projected supply. Any reduction in faculty will result in an accompanying shortage of class seats, which can not be allowed to happen.

- **“Instructors are not paid sufficiently to retain them.”**

The American Association of Colleges of Nursing (AACN) explains this argument in stating:

“Almost two-thirds (64.8 percent) of the nursing schools responding to the 2003 survey pointed to faculty shortages as a reason for not accepting all qualified applicants into entry-level baccalaureate programs.”⁸

⁸ “Nursing Shortage Fact Sheet.” AACN – Media Relations, <http://www.aacn.nche.edu/Media/Backgrounders/shortagefacts.htm>, accessed 15 Dec. 2005.

The shortages are largely related to lack of teaching nurses. Current accreditation standards and state regulations allow for a defined number of student nurses per instructor.

In addition, the AACN's "Nursing Faculty Shortage Fact Sheet" paints a picture that extends the discussion into issues of relative pay for the precious few qualified nurses when they report that, "Higher compensation in clinical and private-sector settings is luring current and potential nurse educators away from teaching."⁹

Both IPFW and the University of Saint Francis, two of EGR-3's largest nursing schools, indicated in our survey that they are challenged in attracting and recruiting teaching-degreed nurses.

This is a critical shortcoming that must be addressed to fix the nursing school bottleneck.

- **"Stress &/or burnout are driving registered nurses from this occupation in my area."**

This is the largest issue for the registered-nursing supply. Much of the stress comes from long hours as a result of staffing shortages. Thus, a proper allocation of nurses logically should alleviate a great deal of nursing stress.

Other causes of occupational stress exist, and the shortage of nurses will not be fixed in the short-term. Thus, some form of short-term project to address stress in nursing is appropriate while systemic changes take effect.

- **"Registered nurses leave this occupation for better pay/benefits elsewhere."**

Our research demonstrates that pay satisfaction is a driver of personal employment decision-making. Both focus groups and surveys referred to pay disparities in their discussion of the registered nursing shortage.

After adjusting the cost of living in the different MSAs against the Fort Wayne MSA, data indicate that the Fort Wayne MSA pays its 4,730 registered nurses lower mean salaries than eighteen of the twenty-one sampled MSAs.

The Fort Wayne MSA mean annual wage for registered nurses is \$10,586 lower than the highest-paying adjusted mean salary, offered in the Elkhart-Goshen, Indiana, MSA (1,570 RNs, \$55,763 adjusted mean annual wage).

The Fort Wayne MSA offers a mean salary that is \$2,192 higher than the lowest-paying MSA, Evansville, Indiana (3,090 registered nurses, \$44,533 adjusted mean annual wage).

The median cost-of-living adjusted mean annual wages for the selected MSAs is \$49,620, approximately 6 percent higher than the average salary for Fort Wayne MSA RNs.

In both real dollar and cost-of-living adjusted mean annual wages, Fort Wayne is one of the lowest-paying Midwest MSAs for registered nurses. Nursing pay satisfaction could be a root cause, but studies in other fields show that pay dissatisfaction is often an outgrowth of workplace stress issues – leading us to believe that the root cause of stress and burnout is more critical to address.

⁹ "Nursing Faculty Shortage Fact Sheet." American Association of Colleges of Nursing, updated 18 Oct. 2005. Accessed at: <http://www.aacn.nche.edu/Media/pdf/FacultyShortageFactSheet.pdf>.

- **“The lack of teamwork among health care staff results in new workers having low morale.”**

In any organization, especially one with such well-defined work roles as the doctor-nurse relationship, issues of communication and teamwork are important to the well-being of the organization and individual job satisfaction.

This issue was only raised tangentially in the nursing focus groups, and survey results revealed no additional open-ended answers than the numerical statistics presented above. We determine this to be a possible root cause, but not likely.

6.2.2. CNC-MIMM

- **“Capacity of training institutions is inadequate to prepare workers for this occupation.”**

Upon reviewing available capacity in EGR-3’s training institutions (approximately 210 seats across the region’s secondary and post-secondary providers), we determined that a capacity shortfall does not exist against all but our upper demand projection (between 212 and 250 per year).

Some programs could be better aligned to provide for cross training between machine operation and maintenance, but our main concern is that existing capacity is not utilized. Currently, only 152 students are enrolled in CNC-MIMM programs. Therefore, a root cause could be proper marketing of the manufacturing professions per section 4, and that must be addressed in the Solutions phase.

We also must monitor and plan accordingly in case capacity tightens and demand approaches our upper projections.

6.2.3. Computer Systems Analysts

- **“IT professionals leave this occupation in my area because of better pay & benefits elsewhere.”**

This issue did not surface beyond the raw scores in the supply surveys. A computer systems analyst, supply focus group in Columbia City revealed that IT staffers are expected to leave our region for jobs earning more money elsewhere. College-trained hires can be expected to move on within one to two years.

Once mean salaries are normalized to reflect the Fort Wayne MSAs cost of living, the median of the mean annual wages for computer systems analysts in the selected MSAs is \$63,369, or 0.6 percent less than the Fort Wayne MSA.

The highest adjusted average salaries are paid in the Elkhart-Goshen MSA, where their 190 computer systems analysts earn an adjusted mean annual wage of \$69,464.

The lowest mean annual wages for computer systems analysts are paid in the Madison, Wisconsin MSA, where their 3,360 analysts earn an average of \$54,191.

The Angola IT professionals’ supply focus group revealed that an estimated wage for starting IT professionals is \$25,000 to \$32,000. The anecdotal figure offered in our focus group is approximately half of the mean annual wage for computer systems analysts in the Fort Wayne MSA. If a new IT employee working for approximately \$30,000 annually accumulates sufficient skills and experience to be employed somewhere else at the

median wage, the comments from the aforementioned Columbia City supply focus group are given context.

Wages – and the tie between skills and wage development for members of this occupation – may be a contributing root cause to a systemic shortage in qualified IT workers.

- **“Instructors are not paid sufficiently to retain them.”**

Review of focus group notes and recordings indicate no discussion of instructor pay in any of the focus groups – supply or demand. This survey statement is included in the “training” section. Discussion of the important root cause considerations related to IT training focused mainly around the lack of access to training because of distance and small occupational population.

It could be argued that agreeing with the statement about instructor pay is an endorsement of the need for investing in expanded training options and the faculty to deliver that training. We look at this as an outlier in our survey model.

7. Industry endorsements

Every individual who participated in the Shortage and Root Causes phases of the Northeast Indiana SSI project was invited to review and comment upon a draft of this report. Endorsements were received from leadership in each of our targeted industries. In addition, some employees who participated in occupational supply focus groups offered their support to our conclusions.

8. Concluding Comments

The root causes identified are as varied as our targeted occupations and skills. We look forward to the Solutions phase, bringing this SSI process to fruition by developing the line of sight between the solutions offered, the root causes presented herein and the shortages that we intend to remedy.



Digging deep

The Northeast Indiana Strategic Skills Initiative

Root Cause Summary Report



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1. Introduction

“While we have hope, we are realists. It will take time for Northeast Indiana to emerge from its current state. But together, with a shared understanding and clear purpose forged through consensus, we can make our region thrive and grow once again.”

This concluding statement from the Northeast Indiana Strategic Skills Initiative’s (SSI) Skills Shortages Report takes on new life as the Root Causes phase of the project unfolds. Throughout the months of November and December, a thorough investigation of the core, systemic causes of the target-occupation shortages was undertaken, focusing on the positions outlined in the initial Skills Shortages Report.

In our first report, we uncovered four targeted occupations and skills that demanded attention in the Strategic Skills Initiative. They are:

- **Registered Nurses** (Standard Occupation Code: 29-1111)
- **CNC-MIMMs** (A multi-skilled hybrid of five occupations: Industrial Machinery Mechanics, SOC 49-9041; Maintenance and Repair Workers, General, SOC 49-9042; Maintenance Workers, Machinery, 49-9043; Computer controlled Machine Tool Operators & Tenders, Metal & Plastic, SOC 51-4011 and Machinists, SOC 51-4041)
- **Industrial Engineers** (SOC 17-2112)
- **Computer Systems Analysts** (SOC 15-1051)

First-person perspectives were gathered from target-industry employers and employees, students, service providers and educators at both the secondary and post-secondary levels. Their insights were substantiated by additional secondary research.

We uncovered three universal root causes challenges to be addressed if Northeast Indiana is to succeed in the global economy. These challenges permeate nearly all occupations. They are:

1. **The need to replace the silo effect with meaningful systems thinking across our region.** Systems thinking – bridging the individual needs of institutions to achieve collective goals – should improve basic skills development, set realistic expectations of the world of work in our youth and improve the understanding of the regional economy in all sectors of business, government and education.
2. **The need to promote loyalty within our workforce, and to demonstrate loyalty in return.** By investing in our strategic workforce, we can stem occupational leakage and develop a more productive workforce with expert skills.
3. **The need to better promote Northeast Indiana as a great place to live and work.** Recruiting workers to our region has been and will be a challenge, but we find that those who do move to Northeast Indiana have found our region to offer an excellent quality of life and are reluctant to leave.

Other root causes are specific to individual occupations. They include issues such as employee stress and burnout, instructor pay in our training programs and comparative pay disparities in relation to other Midwestern communities.

This report will explain the process and the findings. It will also present endorsements of our findings from our industry partners.

The Root Causes identified are as varied as our targeted occupations and skills. We look forward to the Solutions phase, bringing this SSI process to fruition and beginning the workforce transformation it is designed to achieve.

2. Methodology

The Staff and Lead Team of the Northeast Indiana Strategic Skills Initiative project employed the methodology laid out by Workforce Associates in the first Root Cause phase online workshop, which was conducted on November 21, 2005.

Two subsequent workshops were held on November 28 and December 5. Whereas the first workshop was led by the Workforce Associates staff, the final two workshops were used to discuss local implementation of the methodology and solicit expert feedback on ideas to counter key stumbling blocks.

Pursuant to the methodology in the SSI Research and Identification Guidebook 2.0 and the November 21 workshop, EGR-3's Root Cause phase investigation was largely driven by primary data gathering. Using the same methodology of the Shortage phase, this approach used primary data to drive the secondary data gathering; secondary data was used to verify or dispel the primary's assertions.

2.1. Surveys

2.1.1. Description of surveys

Primary data collection was done using two methods that were then aggregated into a single source. Recognizing the geographic challenges of developing a bank of knowledge representing our eleven county region, data collection was coordinated through an online survey response collection tool, SurveyMonkey.com. Links to every individual survey were posted at the Northeast Indiana Workforce Investment Board's Internet home page, www.neiwib.org. LEDO and Chamber partners across the eleven-county region were encouraged to participate in the SSI Root Cause phase via a 5-minute, online survey.

398 residents of EGR-3 completed the various surveys online. Surveys completed in the focus groups were inputted online to aggregate the raw data together and achieve a larger base of respondents. Combined, 537 residents of EGR-3 completed a survey.

Surveys were created to uncover root causes from the following perspective:

1. Emerging workforce – A high school student survey was adapted from www.getttech.org, a website created by the National Association of Manufacturers' Center for Workforce Success. As the attitudes and beliefs of the emerging workforce have a direct effect on the long-term supply of workers in all occupations, gaining firsthand knowledge of this demographic is critical.
2. Separate supply and demand surveys for all targeted occupations – In all instances, the same basic survey was used to allow for determination of cross-

cutting root causes. The survey instrument used was adapted from one created by Workforce Associates to investigate the root causes of shortages in nursing. Surveys were identical with the exception of facility population and occupational shortage statistics, which only was asked on the demand surveys.

2.1.2. Conveying survey results in this report

Survey results will be conveyed in this report on a two-pronged scale: the first numbers listed will represent the average score given by the respondents; the second numbers will indicate the intensity of the scoring – how many people felt that the particular statement presented was a significant root cause. By survey model, the scoring was as follows:

- **Average scores** - The strength of an average score can be considered a reasonable indicator of the level of widespread appreciation for a given statement being a root cause of the shortage in question.

On occupational surveys, the rating from 1 to 6 made 6 the most important. Thus, a **higher** average score represents a more significant number. We set a threshold of average scores at or above 4.00 to conduct further evaluation as possible root causes.

- **Intensity** - Intensity of opinion will be indicated by tallying the number of responses in the highest and second-highest category. On occupational surveys, the quantities of scores of 5 and 6 would be added together.

Some survey questions left room for open-ended “essay” answers that revealed unique insights. Those answers may be cited to offer supporting or explanatory evidence of a root cause.

2.2. Focus groups

As indicated in the SSI Shortage report, focus groups were the main avenue to gain detailed mass input during the Root Cause phase. The focus group model made the most sense from a calendar perspective; more people were able to meaningfully participate in the compressed SSI timeline through the focus group model. The group conversation model of the focus group also allowed for greater thought and dialogue on issues that participants felt were root causes of the shortages.

2.2.1. Organization of focus groups

To gain adequate first person perspective, a series of 19 focus groups were scheduled. The schedule of focus groups follows:

Date	Focus Area	S/D	N/S	City
23-Nov	Emerging workforce – Career/Technical Education			Fort Wayne
28-Nov	Emerging workforce – General Education			Huntington
30-Nov	Registered Nurses	Supply	North	Auburn
1-Dec	Information Technology	Demand	North	Fort Wayne
1-Dec	CNC Operators/Maintenance	Supply	North	Fort Wayne
2-Dec	Advanced Manufacturing	Demand	North	Fort Wayne
5-Dec	Advanced Manufacturing	Demand	South	Decatur
6-Dec	Registered Nurses	Supply	South	Bluffton
7-Dec	Information Technology	Supply	South	Columbia City
7-Dec	Information Technology	Supply	North	Angola
8-Dec	Industrial, Quality and Design Engineers	Supply	South	Wabash
9-Dec	Information Technology	Demand	South	Bluffton
9-Dec	Registered Nurses (<i>Cancelled – weather</i>)	Demand	South	Marion
12-Dec	RN's - Advanced Certifications	Supply		Fort Wayne
12-Dec	Industrial, Quality and Design Engineers	Supply	North	Fort Wayne
12-Dec	CNC Operators/Maintenance	Supply	South	Huntington
13-Dec	Registered Nurses	Demand	North	Kendallville
14-Dec	Emerging Workforce – Career Majors Academy			Leo
14-Dec	High School Guidance Counselors (East Allen County Schools – 5 high schools)			New Haven

The focus group schedule was designed to ensure that opinions representing both the north and south of EGR-3 were represented. Geographic diversity in meeting sites was given consideration in planning. Supply and demand focus groups were scheduled separately to allow employers and employees to speak with a degree of anonymity. The multiple layers of focus groups also allowed for a level of redundancy that allowed for lower turnout at given groups and, in the case of December 9, a cancellation due to poor weather conditions.

In the spirit of building community-wide capacity in the demand-driven workforce planning model of SSI, SSI staff recruited JobWorks, NIWIB’s largest single service provider, to assist in the population of the focus groups. With JobWorks’ help, 135 individual residents of EGR-3 attended focus groups and offered input that helped drive this report.

Focus groups were designed around paper versions of the online surveys. Attendees were invited to complete the survey, and conversation then flowed forth from their answers. Surveys were not issued in advance of the focus groups, leading to intuitive answers with little deliberation. Discussion then revolved around individuals’ survey selections, emphasizing discussion of rationales behind “key cause” and “very important” selections. SSI staff conducted the focus groups, again in an effort to build local capacity for future planning efforts.

2.2.2. Conveying focus group results in this report

Accurate documentation of the focus groups was a top priority, as the critical primary data developed over the course of the groups would be needed for documentation in this report. To ensure that appropriate records were kept, SSI staff used a combination of digital audio recording of the groups and a scribe, who noted the timing of key elements of the discussions for reference in looking up archived audio files. This redundancy proved critical, as the audio recording in one focus group failed; the notes of the meeting have proven sufficient to provide an accurate representation of the responses generated in the group.

As focus group survey results have been aggregated into the larger pool of online survey results, focus group information will be used to augment the survey results. Specific examples from focus groups will help illustrate points raised by the survey results. As with the EGR-3 SSI Shortage report's LEDO questionnaire, participants in the focus groups were offered anonymity in exchange for candor.

2.3. Wage surveys

Consistent with the recommended methodology, we compared wage and salary data for our target occupations in the Fort Wayne Metropolitan Statistical Area (MSA) with the same occupations in other MSAs. The MSAs consulted in our survey follow:

Indianapolis, IN	Rockford, IL	Lexington, KY
South Bend, IN	Des Moines, IA	Grand Rapids, MI
Lafayette, IN	Dayton, OH	Ann Arbor, MI
Evansville, IN	Columbus, OH	Kalamazoo, MI
Elkhart-Goshen, IN	Cincinnati, OH	Detroit, MI
Muncie, IN	Toledo, OH	Flint, MI
Kokomo, IN	Cleveland, OH	Madison, WI
Chicago, IL	Lima, OH	
Peoria, IL	Louisville, KY	

The U.S. Census Bureau defines the Fort Wayne MSA as the combined population of Allen County, Wells County and Whitley County. No other counties in EGR-3 are located in a MSA.¹

It is a commonly-held understanding that the cost of living in Northeast Indiana is an effective retardant against wage inflation pressures. Therefore, any wage or salary survey for EGR-3 cannot be meaningful without normalizing wage and salary levels against a common cost of living indicator. After investigating a number of alternative

¹ "METROPOLITAN STATISTICAL AREAS AND COMPONENTS, November 2004, WITH CODES." U.S. Census Bureau, <http://www.census.gov/population/estimates/metro-city/List4.txt>, accessed 16 Dec. 2005.

cost of living indicators, we chose to use Salary.com’s “Cost of Living Wizard” because of the broad number of cities included in their database. Had we used any other source, we would have had to shrink the comparative sampling as no other service we identified had the reach of Salary.com.

The issue of benefits repeatedly arose in our research. Both employer and employee focus groups, as well as our online surveys, listed benefits as a key reason for employment with a given employer. Benefits were mentioned by some as being more important than wages.

“Benefits” can be loosely defined as a combination employer-sponsored (but not necessarily fully funded) services like health insurance, dental insurance, vision insurance, life insurance, pensions, retirement savings programs (including but not limited to 401(k) retirement programs), stock options, employee assistance programs (short-term counseling services) and other creative initiatives.

We attempted to benchmark benefits in the same way that we benchmarked wages and salaries. We learned that no such universal, standardized benchmarking entity exists. Selected individual EGR-3 agencies such as Local Economic Development Organizations or Chambers of Commerce do conduct benefit surveys within their service area, but we found no standardization in survey instruments that made aggregation of data possible.

The quality of benefits frequently vary widely among employers with a region to such an extent that there is no way to determine the strength of a given community’s level of benefits. As examples, health insurance benefits can range from major medical insurance programs to health maintenance organizations to preferred provider organizations to health savings accounts – all within the same market area. Past that, levels of insurance coverage and employee participation vary within those subsets.

All wage and salary survey analysis in this report refers to data collected according to information collected from the U.S. Bureau of Labor Statistics’ November edition of “Metropolitan Area Occupational Employment and Wage Estimates” and the Salary.com “Cost-of-Living Wizard.” Raw data is compiled in tabular form in section 6.5.

2.4. Other secondary research

Consistent with the methodology, additional secondary research was conducted to further develop an understanding of root cause indicators from the primary research.

Our philosophical foundation from the Skills Shortage report remains intact and new secondary sources were unearthed to further develop our thinking, but one key piece of secondary research emerged that demands specific attention. The Manufacturing Institute, an affiliate of the National Association of Manufacturers (NAM) released their

“2005 Skills Gap Report - A Survey of the American Manufacturing Workforce” (the NAM report) on November 22, 2005.²

The NAM report is critical when considering Northeast Indiana’s economic environment. Twenty-six percent of EGR-3’s employment is directly engaged in manufacturing, and manufacturing is the top provider of both jobs and wages in each county in EGR-3.³

The NAM report’s statistical information is revealing and will be referenced throughout our report. In summary, the NAM report draws 3 key conclusions:

- 1) Manufacturing-based skill shortages are felt by over 80 percent of the more than 800 respondents to a survey conducted by the NAM and Deloitte Touche Tohmatsu.
- 2) The skill shortages are impacting manufacturers’ production, productivity and customer responsiveness.
- 3) 75 percent of survey respondents indicate that high-performance workforce requirements have increased as a result of the skills gap shortage and global competitive factors.⁴

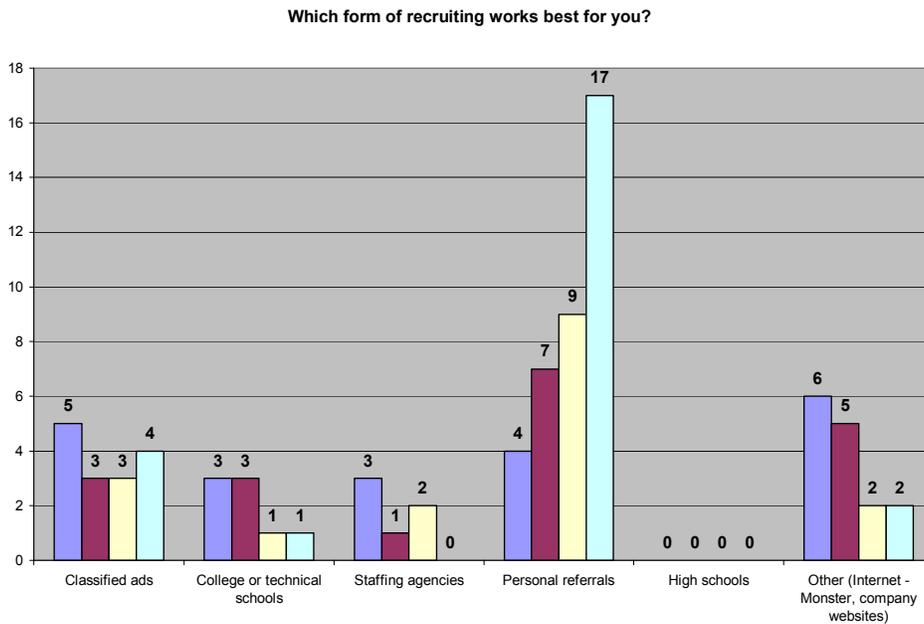
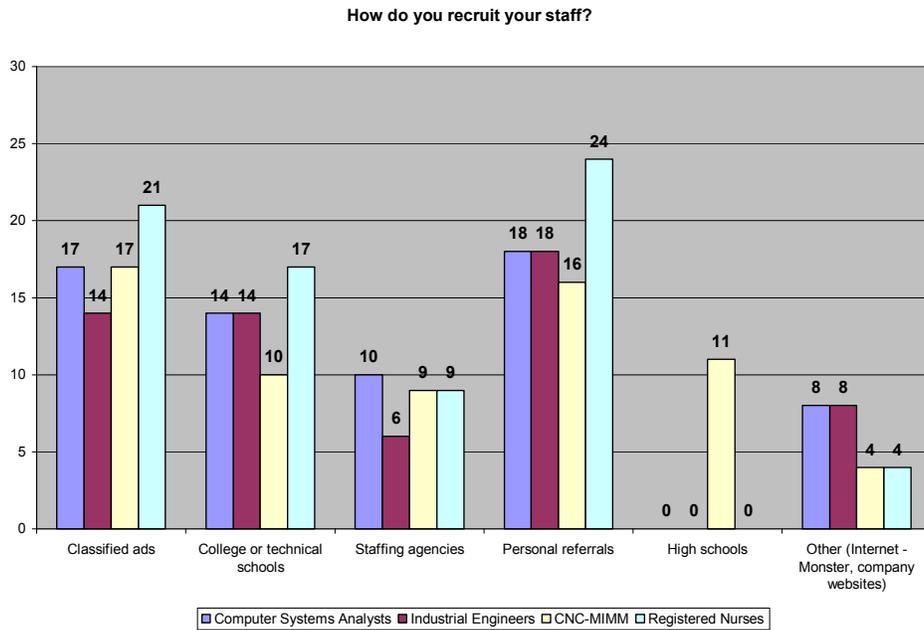
² As of December 16, 2005, this report can be accessed at http://www.nam.org/s_nam/bin.asp?CID=202426&DID=235731&DOC=FILE.PDF

³ Northeast Indiana Workforce Investment Board, “Rebuilding Our Technological Heritage: The Northeast Indiana Strategic Skills Initiative Skills Shortages Report,” 4 Nov. 2005, p. 12-13.

⁴ Deloitte and The Manufacturing Institute. “2005 Skills Gap Report – A Survey of the American Manufacturing Workforce,” 22 Nov. 2005, Introduction.

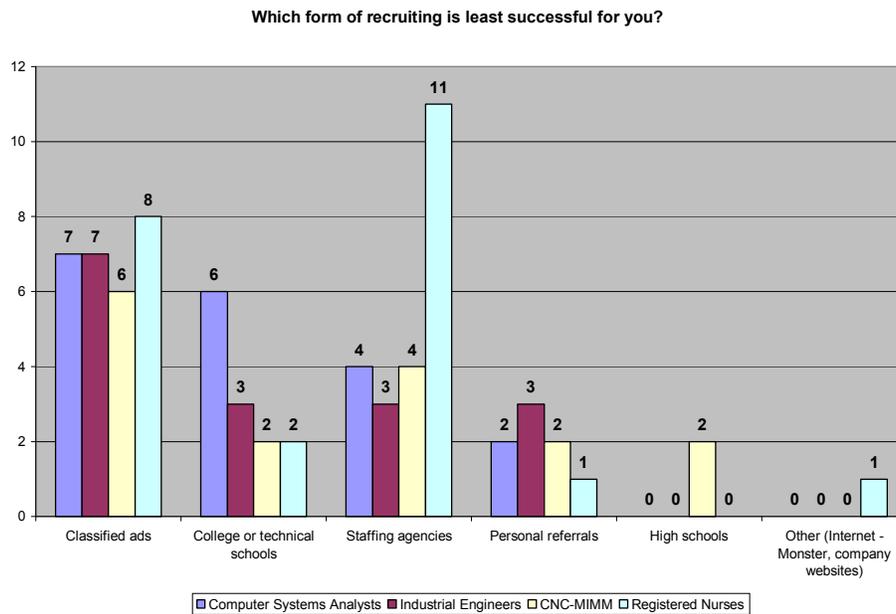
3. Recruiting our workforce

Using the demand survey responses, the following recruiting patterns emerge. Note that high school recruitment is not applicable for occupations requiring degrees.



Focus group feedback revealed that personal referrals worked best for our respondents because they were considered “warm” leads. In technical occupations, internet

recruiting was a strong tool because the computer as a recruiting tool revealed a level of savvy of the applicants.



Classified ads were least successful because the respondents felt that classified placement resulted in too many responses from too many unqualified applicants.

Health care delivery has a strong, industry-specific staffing formula, but respondents indicated that agency nurses are not as loyal or reliable as staff nurses.

On balance, colleges, nursing schools and technical schools were desired recruitment locations, but overall, the challenges of bringing young professionals to EGR-3 are significant and many.

4. Career awareness and access

377 students completed our Student Career Survey, raw results of which are in section 7.1.2. The respondents either completed the survey in paper format at a focus group or online at SurveyMonkey.com.

On a weighted score level, the following careers appear to be most popular with the emerging workforce (Scale of 1-5, lower score=stronger value):

Career interests of EGR-3 high school students	
Health	- 2.45
Education & Training	- 2.72
Human Services	- 2.75
Arts Audio-Video Technology & Communications	- 2.76
Architecture and Construction	- 2.82
Information Technology (Computers & Software)	- 2.87
Business & Administration	- 2.90
Law & Public Safety	- 2.94
Other	- 3.00
Scientific Research & Engineering	- 3.09
Hospitality & Tourism	- 3.16
Agriculture & Natural Sciences	- 3.26
Finance	- 3.31
Government & Public Administration	- 3.40
Retail/Wholesale Sales & Services	- 3.45
Manufacturing	- 3.48
Transportation, Distribution & Logistics Services	- 3.59

The lack of any extreme scores indicates that the students are diverse in their collective occupational outlook. And health and information technology-related topics are high on the priority list, which represents a positive sign for the region.

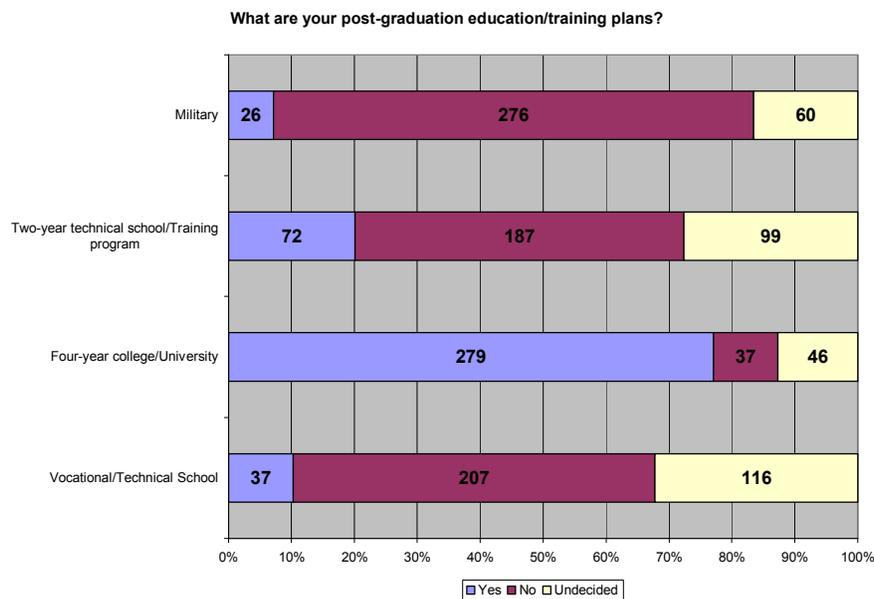
A point of concern is the aversion to manufacturing – a point that arose in the student, employer and employee focus groups. Employers recognized that manufacturing suffers from a stereotype of being a dirty, manual labor industry. Employers recognize that our finest students are not looking to manufacturing as a potential career option. The root causes survey data indicates employers' frustration with the poor basic skills' level of the emerging workforce entering manufacturing.

What employers and employees may not entirely understand is the depth of broad disinterest – some may even say fear – of working in manufacturing in our student population. No student in a non-vocational/tech prep program focus group volunteered that he or she wanted to enter manufacturing. The reasons for this aversion include the stereotypes mentioned above, but they also are deeply rooted in their parents' experiences. Many students are children of parents whose jobs were outsourced or

offshored. Our focus-group study reveals a near-direct correlation of parents in manufacturing with students who will not consider manufacturing. Wall Street Journal columnist David Wessel encapsulates this aversion:

“Mention factory jobs to an American high-school student and he or she thinks about layoffs, benefit cuts and bare-knuckle union bargaining. No wonder so few want to grow up to be machinists.”⁵

Consistent with national trends (see section 6.1.3.), students’ post-graduation education plans largely revolve around four-year education.



Consistent with national trends, students’ post-graduation education plans largely revolve around four-year education. More than 70 percent plan to attend four-year colleges and universities, with 20 percent intending to attend a two-year technical education program. Just 10 percent plan to go to vocational or technical school, and approximately 7 percent intend to enlist in the military.

Interestingly, two of our targeted occupations (registered nursing and CNC-MIMM) do not require a four-year education. Still, a cultural bias toward the four-year college/university route as the key to career success is evident in our study.

⁵ Wessel, David. “Behind the Labor Shortage-Layoff Paradox: Lack of Skilled Workers.” *Wall Street Journal*, 1 Dec. 2005, p. A2.

5. Ranking of Root Causes

Root causes are ranked in order of priority by occupation. The scores are directly related to answers provided on our root causes survey forms, which were used both online and in focus groups. Additional primary data collected through our focus groups impacted the survey-driven ranking of the root causes.

CNC-MIMM				
Root Cause	Supply - Employees		Demand - Employers	
	Average Score	Intensity	Average Score	Intensity
1. High school graduates have insufficient academic preparation for this occupation	5.43/6.00	7/9	4.58/6.00	11/19
2. Potential workers have unrealistic expectations of what it's like to work in this industry.	4.57/6.00	3/9	4.28/6.00	10/19
3. School guidance counselors have little understanding of the opportunities in this occupation.	3.86/6.00	2/9	4.94/6.00	14/19
4. Not enough practical experience for students with area employers.	4.00/6.00	2/9	4.67/6.00	11/19
5. Capacity of training institutions is inadequate to prepare workers in this occupation.	4.33/6.00	4/9	4.00/6.00	10/19
6. Workers at lower skill levels find it difficult to upgrade their skills to qualify for more senior roles.	4.00/6.00	4/9	4.00/6.00	6/19
7. Workers feel there is no opportunity to advance from their present position.	3.43/6.00	1/9	4.07/6.00	7/19

INDUSTRIAL ENGINEERS

Root Cause	Supply - Employees		Demand - Employers	
	Average Score	Intensity	Average Score	Intensity
1. Difficulty in attracting engineers &/or their spouses to this area.	4.40/6.00	7/10	3.94/6.00	8/17
2. High school graduates have insufficient academic preparation for this occupation	3.70/6.00	3/10	4.89/6.00	14/19
3. School guidance counselors have little understanding of the opportunities in this occupation.	4.20/6.00	3/10	4.47/6.00	12/19
4. Not enough practical experience for students with area employers.	3.50/6.00	2/10	4.28/6.00	10/19
5. Potential workers have unrealistic expectations of what it's like to work in this industry.	3.00/6.00	0/10	4.11/6.00	8/19

COMPUTER SYSTEMS ANALYSTS

Root Cause	Supply - Employees		Demand - Employers	
	Average Score	Intensity	Average Score	Intensity
1. IT professionals leave this occupation for better pay/benefits elsewhere.	5.00/6.00	9/14	3.26/6.00	5/19
2. Workers at lower skill levels find it difficult to upgrade their skills to qualify for more senior roles.	4.46/6.00	7/14	3.50/6.00	5/20
3. Workers feel there is no opportunity to advance from their present position.	4.83/6.00	8/14	3.33/6.00	7/19
4. Not enough practical experience for students with area employers.	4.46/6.00	9/14	4.25/6.00	12/20
5. High school graduates have insufficient academic preparation for this occupation	4.15/6.00	7/14	4.24/6.00	11/21
6. Potential workers have unrealistic expectations of what it's like to work in this industry.	3.92/6.00	6/14	4.05/6.00	6/21
7. Difficulty in attracting analysts &/or their spouses to this area.	4.08/6.00	6/14	3.00/6.00	3/19
8. Instructors are not sufficiently paid to retain them.	4.00/6.00	5/14	3.29/6.00	4/20

REGISTERED NURSES				
Root Cause	Supply – Employees		Demand - Employers	
	Average Score	Intensity	Average Score	Intensity
1. Capacity of training institutions is inadequate to prepare workers for this occupation.	4.26/6.00	16/36	4.46/6.00	14/36
2. Instructors are not sufficiently paid to retain them.	4.42/6.00	17/36	4.00/6.00	12/36
3. Stress &/or burnout are driving registered nurses from this occupation in my area.	4.61/6.00	22/36	4.46/6.00	13/36
4. Not enough practical experience for students with area employers.	4.07/6.00	14/36	4.31/6.00	16/36
5. Potential workers have unrealistic expectations of what it's like to work in this industry.	4.41/6.00	17/36	4.23/6.00	14/36
6. Difficulty in attracting registered nurses &/or their spouses to this area.	4.17/6.00	13/36	4.04/6.00	10/36
7. School guidance counselors have little understanding of the opportunities in this occupation.	4.41/6.00	18/36	3.97/6.00	11/36
8. Registered nurses leave this occupation for better pay/benefits elsewhere.	4.29/6.00	15/36	3.71/6.00	3/36
9. The lack of teamwork among health care staff results in new workers having low morale.	4.13/6.00	13/36	3.86/6.00	10/36

6. Root cause analysis: Cross-cutting root causes

6.1. The Silo Effect

Wikipedia defines the “Silo effect” as follows:

“The **silo effect** is a phrase that is currently popular in the business and organizational communities to describe a lack of communication and common goals between departments in an organization. It is the opposite of systems thinking in an organization. The silo effect gets its name from the farm storage silo, probably because there could be two silos right next to each other and if people were inside them they would not be able to communicate, since silos are tall, narrow buildings with no windows and are even supposed to be airtight.”⁶

The Silo metaphor is appropriate when viewing the cultural landscape of Northeast Indiana – and not just because of our agricultural heritage. Whether within large organizations, between entities in a community, or across Economic Growth Region 3, our cumulative research, driven by survey data and focus group response, indicates that the lack of meaningful communication and common goals between organizations has a detrimental effect on the development and growth of EGR-3’s target occupations in the Strategic Skills Initiative.

As a point of comparison, Wikipedia defines “Systems thinking” as follows:

“**Systems thinking** involves the use of various techniques to study systems of many kinds. It includes studying things in a holistic way, rather than purely reductionist techniques. It aims to gain insights into the whole by understanding the linkages, interactions and processes between the elements that comprise the whole “system”. Systems thinking can help avoid the silo effect, where a lack of organizational communication can cause a change in one area of a system to adversely affect another area of the system.”⁷

If we are to fix a host of root causes in our target occupation shortages, we must address our Silo problem and develop a widespread regional systems thinking approach.

The migration from the silo effect paradigm to a comprehensive systems thinking model is our major systemic challenge. The following subsections indicate areas where the silo effect is most profound. From a systems approach, the root causes survey focused respondent attention on the systems relationship between education (both secondary

⁶ “Silo effect,” http://en.wikipedia.org/wiki/Silo_effect, accessed 15 Dec. 2005.

⁷ “Systems thinking,” http://en.wikipedia.org/wiki/Systems_thinking, accessed 15 Dec. 2005.

and post-secondary) and the world of work. These four subsections, while independently important root causes, form a larger picture of the systems relationship in EGR-3 when considered together.

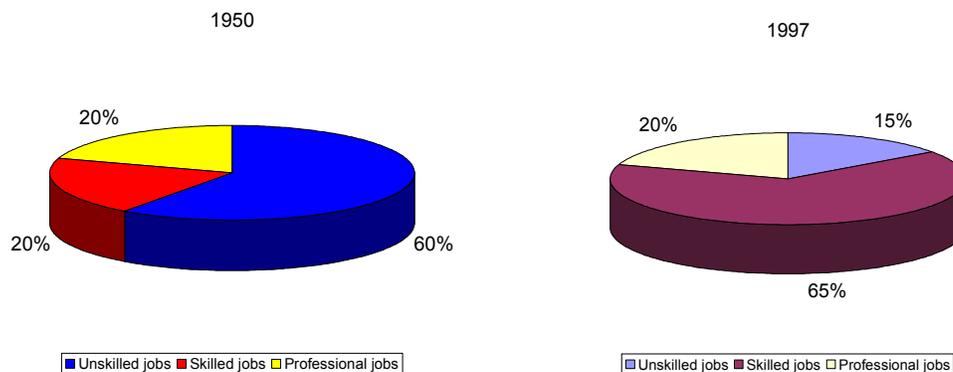
6.1.1. “High school graduates have insufficient academic preparation for the occupations”

CNC-MIMM			Industrial Engineers		
Respondents	Average Score	Intensity	Respondents	Average Score	Intensity
Supply	5.43/6.00	7/9	Supply	3.70/6.00	3/11
Demand	4.58/6.00	11/19	Demand	4.89/6.00	14/19

Computer Systems Analysts		
Respondents	Average Score	Intensity
Supply	4.15/6.00	7/14
Demand	4.24/6.00	11/21

The debate over whether students in Northeast Indiana have the skills to perform in the global economy is not new, but the effects of not meaningfully addressing this issue are having increasingly profound effects on our communities.

The skills landscape has changed significantly in the last 50 years. The National Summit on Twenty-first Century Skills for Twenty-first Century Jobs” demonstrated that the American workforce cannot rely upon low-skilled or unskilled work in today’s economic environment⁸:



This shift in the needs of our workforce is being felt locally. In 1990, Ian Rolland, then-President and Chief Executive Officer of Lincoln National Corporation, made the

⁸ Meeder, Hans K., Deputy Assistant Secretary, Office of Vocational and Adult Education, United States Department of Education. “U.S. Department of Education’s High School Initiative: Presentation to the National Association of Secondary School Principals,” 29 Feb. 2004, slide 8.

following statement when explaining why Lincoln chose not to build a \$60 million office tower in downtown Fort Wayne:

“The schools are just not preparing students with the skills we need. The 21st Century will place even greater demands on new workers, and we are not confident that schools in Fort Wayne and Allen County will produce these workers.”⁹

The NAM report adds weight to the argument as Northeast Indiana relies on manufacturing industries for much of its employment base. The report indicates that, nationally, 84 percent of respondents to its survey of manufacturers said, “No” to the question “Are K-12 Schools Doing a Good Job Preparing Students for the Workplace?” in 2005. That number is up from 78 percent in 2001 and 81 percent in 1997.¹⁰

When the NAM asked “What Are the Specific Deficiencies of the Public Education System in Preparing Students for the Workplace?” the respondents listed the following priorities:

- Basic Employability Skills (attendance, timeliness, work ethic, etc.), 55 percent
- Math and Science, 51%
- Reading and Comprehension, 38%¹¹

At the statewide level, the effects of not preparing our workers adequately are being felt through the incumbent workforce. The Indiana Chamber of Commerce Foundation commissioned “A Demand-Side Strategy to Meet Indiana’s Workforce Basic Skills Challenge,” and the authors note that between 960,000 to 1.23 million employed residents of Indiana do not possess the minimum literacy skills needed for successful employment in a knowledge-based economy.¹² Citing a definition created by The Conference Board, the report defines minimum workforce literacy as:

- A skill-based proficiency continuum (a relative rather than an absolute measure);
- Reading, using information, and math skills;
- Communicating effectively in English;
- Learning, understanding and applying information and analysis;
- Thinking critically and acting logically to solve problems;
- Using technology, tools and information systems; and
- Working in teams, developing a positive attitude toward change, and a willingness and ability to learn for life.¹³

⁹ Thies, Bethany. “Educating Our Workforce.” *Fort Wayne News-Sentinel*, 10 Sept. 1990, p. 1B.

¹⁰ Deloitte and The Manufacturing Institute. “2005 Skills Gap Report – A Survey of the American Manufacturing Workforce,” 22 Nov. 2005, p.16.

¹¹ Deloitte and The Manufacturing Institute, p. 17.

¹² FutureWorks for the Indiana Chamber of Commerce Foundation. “A Demand-Side Strategy to Meet Indiana’s Workforce Basic Skills Challenge,” Jan. 2005, p. 5.

¹³ *Ibid*, p. 10.

Regionally, the root causes survey statement “High school graduates have insufficient academic preparation for the occupations” revealed the some of the strongest results in our root causes surveys among three targeted occupations. When asked why they felt this issue to be a root cause of the shortage of the three targeted occupations (CNC-MIMMs, Industrial Engineers and Computer Systems Analysts), they answered:

- This is a world economy. Students need different work ethics to compete with the world or jobs will be outsourced abroad.¹⁴
- Students are not retaining what they learned in high school. ... Schools are not preparing students who will need to enter the workforce immediately following high school rather than entering college.¹⁵
- New employees don’t know how to behave in a world of professionals. Their writing skills, grammar skills and professionalism are inadequate.¹⁶
- High school students are graduating without knowledge of simple computer skills. This generation is very computer literate in gaming but nothing more.¹⁷
- It would be helpful if students were able to get certification in particular [computer and technical] programs.¹⁸
- High school students are not prepped in math and English. Retaining geometry knowledge is important.¹⁹
- High school students have taught themselves because the high schools are not teaching [basic information technology] skills.²⁰
- High schools are focused on college prep. We are not all college-bound.²¹
- We need real vocational schools.²²
- Too many new CNC workers don’t know math and can’t turn a wrench. What good are they?²³
- High school students are not prepared for a career in nursing. No medical courses such as terminology or anatomy/physiology offered in high school.²⁴
- The high schools “do not care what I need to run my business.”²⁵

When asked what skills that workers in our targeted fields should possess when leaving high school, they offered these core competencies.²⁶

¹⁴ Notes taken at Information Technology demand focus group, Bluffton, 9 Dec. 2005.

¹⁵ Notes taken at CNC-MIMM supply focus group, Huntington, 12 Dec. 2005.

¹⁶ Notes taken at Information Technology demand focus group, Fort Wayne, 1 Dec. 2005.

¹⁷ Notes taken from Information Technology supply focus group, Angola, 7 Dec. 2005.

¹⁸ Notes taken from Information Technology supply focus group, Angola, 7 Dec. 2005.

¹⁹ Notes taken from Advanced Manufacturing demand focus group, Decatur, 5 Dec. 2005.

²⁰ Notes taken at Information Technology demand focus group, Bluffton, 9 Dec. 2005.

²¹ Notes taken from Advanced Manufacturing demand focus group, Fort Wayne, 2 Dec. 2005.

²² Notes taken from Advanced Manufacturing demand focus group, Fort Wayne, 2 Dec. 2005.

²³ Notes taken from CNC-MIMM focus group, Fort Wayne, 1 Dec. 2005.

²⁴ Notes taken from Registered Nursing supply focus group, Auburn, 30 Nov. 2005.

²⁵ Notes taken at Information Technology demand focus group, Bluffton, 9 Dec. 2005.

Scholastic skills

- Math
- English, including writing skills

Thinking skills

- Systems thinking
- Critical thinking
- Problem-solving
- Trouble-shooting

Technology skills

- Computer and technology, including the ability to use basic software like Microsoft Office programs

People skills

- Teamwork
- Communications
- Customer service
- Listening skills

The specific occupational groups also suggested other skill areas to be developed in preparation for a successful career path. For aspiring **CNC-MIMMs**, our subject matter experts require the following:

- Practical experience in a machining environment
- Ability to read a CNC program
- Machine programming
- Machine setup
- Machining skills
- Blueprint reading

For **industrial engineers**, the survey respondents and focus group participants require:

- Creativity and imagination
- Leadership skills
- Spatial thinking
- Computer Aided Design (CAD) software experience
- Time management

Computer systems analysts and their employers/recruiters look for the following:

- Self-reliance and self-motivation
- Personal computer hardware knowledge
- Any possible computer hardware or software certifications
- Detailed computer software application knowledge, especially with Microsoft Windows, Word, Excel and Access
- Networking knowledge

While not listing this area as a root cause of the shortage of **registered nurses**, the nursing survey respondents and focus group participants suggested that these skills be develop:

²⁶ For a full inventory of survey and focus group responses to a request for basic skills, look in section 6.6.

- Biological sciences
- Basic clinical skills from practical training
- Flexibility
- Accountability
- Professionalism
- Compassion
- Organizational skills
- Time management

The education community appears willing to acknowledge this concern, as there was a general acknowledgement in a focus group of high school guidance counselors that basic skills could be improved. They expressed concern that school curriculums are becoming “watered” down to avoid test-driven performance failures, which would then reflect negatively on the teacher and the school. As one counselor said, “The standard we hold students to is declining.”²⁷

Higher education is attempting to keep their academic standards high, and is forced to teach the secondary curriculum to those who did not learn in high school. This diverts resources away from teaching the higher-level skills needed for a high-wage, high-skilled workforce. As an example, roughly 30% of IPFW’s incoming students place into remedial courses - slightly more in Math, slightly less in writing and reading.²⁸

Nationally, the remediation factor is even larger. In “Answers in the Tool Box” by Clifford Adelman, the author reports that American higher education is offering remediation courses at the following levels:

- Any remedial reading, 10.2 percent
- No remedial reading, but more than 2 other remedial courses, 18.7 percent
- No remedial reading, but 1 or 2 other remedial courses, 20.4 percent
- Total, some remedial education, 49.3 percent²⁹

The counselors expressed concern that part of the basic skills gap lies in the motivation of students. One counselor stated that some students are doing only what is required to get by, and nothing more, even if that means passing classes with D’s.³⁰ They do not believe that many students realize that they are competing globally – for jobs, for scholarships and for college placement.

Recognizing the value of the systems approach, the counselors we spoke to found that internships helped address this basic skills issue by moving the requirement for academic performance out of the classroom and into the real world. This issue is discussed in section 3.1.4.

²⁷ Notes from High School Guidance Counselor Focus Group, New Haven, 14 Dec. 2005.

²⁸ Email from Dr. Susan Hannah, IPFW. 9 Dec. 2005.

²⁹ Meeder, “U.S. Department of Education’s High School Initiative: Presentation to the National Association of Secondary School Principals,” slide 17.

³⁰ Notes from High School Guidance Counselor Focus Group, New Haven, 14 Dec. 2005.

This is a critical root cause, as no skill development can take place without a foundation of basic skills.

6.1.2. "Potential workers have unrealistic expectations of the work world"

CNC-MIMM			Industrial Engineers		
<u>Respondents</u>	<u>Average Score</u>	<u>Intensity</u>	<u>Respondents</u>	<u>Average Score</u>	<u>Intensity</u>
Supply	4.57/6.00	3/9	Supply	3.00/6.00	0/10
Demand	4.28/6.00	10/19	Demand	4.11/6.00	8/19

Computer Systems Analysts			Registered Nurses		
<u>Respondents</u>	<u>Average Score</u>	<u>Intensity</u>	<u>Respondents</u>	<u>Average Score</u>	<u>Intensity</u>
Supply	3.92/6.00	6/14	Supply	4.41/6.00	17/36
Demand	4.05/6.00	6/21	Demand	4.23/6.00	14/36

"Throughout high school and college I heard that the opportunities a liberal-studies degree can afford one are endless. I majored in anthropology with the intentions of pursuing graduate studies and becoming a college professor. Shortly before graduation, I began to question my major decision and life goals and decided to try out the 'endless opportunities.' I soon found these opportunities ended with paraprofessional positions. I am now very upset with my education and career decisions and feel trapped after only one and a half years of work experience." -- Anonymous³¹

That experience is not unique among graduates of both college and high school. Our research has shown that employers and, tellingly, workers on the shop floor and in the hospital wing, found that graduates are leaving our education institutions with little idea of what they should expect in their job – and what their employer expects of them.

In the absence of appropriate expectation-setting from those around them, students look to other avenues to learn more about the world around them. One study indicates that high school students who use television as a primary means of determining work expectations develop conflicting values like:

- Wanting to have high-status jobs that would enable them to earn a lot of money
- Wanting to have jobs that were relatively easy with long vacations and time-to-do-other-things-in-life attitudes³²

This study was echoed locally when CNC operators at a focus group in Fort Wayne, discussing the issue of worker expectations, agreed that new employees want to be

³¹ "Real World Advice: New Grad Career Journeys and First Jobs." Accessed at http://www.quintcareers.com/Real_World/career_journeys.html on 18 Dec. 2005.

³² Signorielli, Nancy Ph.D. "Television and the Perpetuation of Gender-Role Stereotypes," *AAP News*, Feb. 1998. Accessed at <http://www.aap.org/advocacy/sign298.htm> on 17 Dec. 2005.

paid a lot of money, but they don't want to do the work.³³ A Huntington focus group participant said,

“Many [students] have unrealistic expectations for work and have a sense of entitlement. Many expect to make ‘GM money’ immediately following graduation. Our entry level employees earn \$8 an hour. Ivy Tech students with basic machine knowledge earn \$10 an hour with evaluations. Our wages are tied to skill level. Applicants do not understand the concept of working for advancement.”³⁴

Guidance counselors with whom we spoke to brought up this point when asked what makes today's students different than those who came before. One counselor said, “They have a different mindset. They want to be models, superstars and pro football players. Too much reality TV has created unrealistic expectations in these kids.”³⁵

Unrealistic expectations also extend into issues like potential incomes. An unscientific October/November 2004 JA Interprise poll of 1,065 high school students across America conducted by Junior Achievement shows that 295, or 27.7 percent, expect to earn salaries of more than \$250,000 by the time they are 40. 110 students, or 10.6 percent of the respondents, believe that they will be earning more than \$1 million annually by age 40.³⁶ In reality, the U.S. Census Bureau reports that 1.11 million Americans, 0.3 percent of the population of the United States, earned \$250,000 or more in 2004.³⁷

While our wage studies in section 4 proves that Northeast Indiana's low cost of living is not a blanket answer to lower-than-market wages, information technology employers at a focus group in Fort Wayne added that college graduates are not prepared for what pay and benefits are reasonable for this area of the country. Many new workers' expectations are too high.³⁸

Tied in with expectations is the question of ambition. The CNC supply focus group in Fort Wayne discussed this point in depth. One shop floor manager volunteered that they see little desire in or lack of ambition in new employees. Upon further discussion, the entire focus group agreed that most new employees either have ambition, but lack of ability to do the job or lack of ambition, but they do have the ability to do the job.³⁹

³³ Notes from CNC-MIMM supply focus group, Fort Wayne, 1 Dec. 2005.

³⁴ Notes from CNC-MIMM supply focus group, Huntington, 12 Dec. 2005.

³⁵ Notes from High School Guidance Counselor Focus Group, New Haven, 14 Dec. 2005.

³⁶ JA Worldwide, “2005 Kids and Careers,” 24 Jan 2005, p. 13. Accessed at http://www.ja.org/files/polls/Kids_Careers_2005.pdf on 17 Dec. 2005.

³⁷ U.S. Census Bureau, “Table PINC-11. Income Distribution to \$250,000 or More: 2004.” Accessed at http://pubdb3.census.gov/macro/032005/perinc/new11_000.htm on 17 Dec. 2005.

³⁸ Notes from Information Technology demand focus group, Fort Wayne, 1 Dec. 2005.

³⁹ Notes from CNC-MIMM supply focus group, Fort Wayne, 1 Dec. 2005.

The supply focus groups were strongest in their criticisms of unrealistic new employees, especially in higher-stress occupations like nursing. As evidence, an emergency room nurse at an Auburn focus group said of new recruits, “Nurses coming directly out of school know nothing! Many times they don’t truly understand what their job will be like and what it will entail.”⁴⁰

The “unrealistic expectations” root cause is a telling sign of the silo effect between education and the world of work. In an integrated systems approach where students learned in the classroom and then applied their learning in the workplace, this would not be as strong a root cause indicator. The simplest form of applied learning is the internship, a “temporary position with an emphasis on education rather than merely employment, making it similar in some respects to an apprenticeship.”⁴¹

Recent college graduates reinforced this philosophy at a “Real World Panel” discussion conducted by Quintessential Careers, a Florida-based company that offers job postings and career advice for young adults on its web site. When these graduates were asked what they wish they had known when in school, the first piece of advice was a call for students to actively seek out internships with employers while in school. Internships, according to one panelist, “give you a taste of what work is like and to let you experiment with different fields before it counts.”⁴² Internships and applied learning are discussed in section 3.1.4.

While an important root cause, we believe that expectations will be adequately set in our new workforce if other root causes are addressed, especially those dealing with practical/applied learning.

6.1.3. “School guidance counselors have little understanding of the opportunities in the occupations”

CNC-MIMM			Industrial Engineers		
<u>Respondents</u>	<u>Average Score</u>	<u>Intensity</u>	<u>Respondents</u>	<u>Average Score</u>	<u>Intensity</u>
Supply	3.86/6.00	2/9	Supply	4.20/6.00	3/10
Demand	4.94/6.00	14/19	Demand	4.47/6.00	12/19

Registered Nurses		
<u>Respondents</u>	<u>Average Score</u>	<u>Intensity</u>
Supply	4.41/6.00	18/36
Demand	3.97/6.00	11/36

⁴⁰ Notes from Registered Nursing supply focus group, Auburn, 30 Nov. 2005.

⁴¹ “Intern,” <http://en.wikipedia.org/wiki/Internship>, accessed 18 Dec. 2005.

⁴² Hansen, Katharine. “The Real World: What Entry-level Workers Wish They’d Known When They Graduated.” Accessed at http://www.quintcareers.com/Real_World.html on 18 Dec. 2005.

Taken literally, this root cause statement only considers the guidance function at our education institutions. The discussion of “guidance” in most of the focus groups we conducted turned to the larger issue of deteriorated school-business relationships and whether students have the basic awareness of the occupational opportunities in the community.

This root cause is best summarized by an engineering employer who, in a focus group, reported that high school guidance counselors have told students there are no engineering positions in the United States due to globalization. That is untrue; 4,920 engineering jobs existed in EGR-3 alone in 2002.⁴³

Another example of this problem is a Fort Wayne manufacturer of entertainment/sport products who, for years, had hosted annual field trips for their local high school. This built awareness of the industry possibilities in the emerging work force and gave the company a chance to discuss the skill and performance expectations of their workforce, helping to instill educational relevance.

The company has not been contacted to conduct a plant tour for the school since 2001, the year that Public Law 221, a test-driven performance measurement system, was enacted in the State of Indiana. Since P.L. 221, the Federal Government enacted the No Child Left Behind legislation, a furthering of P.L. 221’s philosophy. Employer and workers across our focus groups made repeated references to schools only teaching what is required to pass these standardized tests – and little to nothing else. They felt that student career exposure was suffering as a result.

A systemic problem with school guidance and career exploration is that it starts too late. In schools that had “Careers” classes where basic career exploration was introduced to students, these classes started at the ninth grade level. 366 students responded to our EGR-3 student career survey question, “At what grade level do you feel you should begin thinking and learning about careers?” Over half felt that exploration should begin at the middle school level (44.8%) or in elementary school (5.8%).

Student focus group participants agreed with this idea, with most volunteering that middle school was an appropriate time to begin exploring careers. Many students who were exposed to “Careers” classes were grateful for the opportunity but would have liked to have a wider base of general exposure to different careers before taking the class, so they could make more informed choices within the class.⁴⁴

⁴³ “SOC 17-2000 - Engineers” lookup on egr3projections.xls, Accessed at http://www.stats.indiana.edu/ssi/reg_page.asp?reg=3 on 18 Dec. 2005.

⁴⁴ Notes from student focus group, Leo, 14 Dec. 2005.

The NAM report also suggests that manufacturers engage in career awareness to combat the shortfall in skilled workers with this statement – which could be applied across a number of industries where skill shortfalls exist:

“Employers must help the general public and public sector to understand what companies need. Companies need to become more engaged in public education, working with educators on curricula, holding field trips and career fairs for students, providing internships and apprenticeships and generally giving community schools opportunities to learn about manufacturing.”⁴⁵

Nearly every SSI focus group discussed guidance awareness of the opportunities, avenues and requirements of businesses in their areas. Therefore, the survey statement regarding school guidance counselors was directly explored with the counselors in their focus group. When asked, “Do you as counselors know opportunities await your graduates?” one counselor answered, “No, we don’t know what’s available out there.” Another indicated that trying to stay current with the market is an incredible challenge.⁴⁶

National research emphasizes this fact. A 2002 Ferris State University study on the alignment of school guidance and career choices by students reports:

“The nation’s career guidance system is falling short. Business interests call for more properly trained workers, at the same time questioning the value of a traditional four-year college education in providing that training. Research shows a stark disconnect between the courses of study students pursue and existing career openings and business needs. Educators have seen relatively low interest in technology programs despite continuing demand for technologically adept graduates and high income potential for those who choose high-tech careers.”⁴⁷

The Ferris State study lists three key conclusions when evaluating student career choices, two of which are supported by primary data collected in an EGR-3 student career survey developed for this phase of the SSI project.⁴⁸ Specifically:

- **Students do not feel like they are receiving professional career guidance in school, leaning heavily on their parents’ advice.**⁴⁹

⁴⁵ Deloitte and The Manufacturing Institute, p. 22.

⁴⁶ Notes from High School Guidance Counselor Focus Group, New Haven, 14 Dec. 2005.

⁴⁷ Hurley, Dan and Jim Thorp, editors. “Decisions without Direction: Career Guidance and Decision-Making Among American Youth.” Ferris State University Career Institute for Education and Workforce Development, May 2002, p. 1.

⁴⁸ Raw results of the survey can be reviewed in section 6.1.2.

⁴⁹ Hurley and Thorp, p. 2.

The Ferris State study indicates that 10 percent of high school junior and senior survey respondents (n=809) considered school personnel primarily responsible for helping plan for a career or job. 78 percent made the same statement about their parents.

Restricting the EGR-3 survey to junior and senior respondents to match Ferris State (n=209) shows that 12 percent have spoken with a school employee (counselor, teacher or principal) on five or more occasions regarding their career plans. 73 percent talked five or more times with their parents about career planning. Students interviewed in focus groups widely indicated that their parents were the primary sounding boards for career planning. Educators only were a significant influence in vocational/tech prep schools, with noticeable influence in the Career Major Academy education model.

- **There is a bias in high school toward pursuing a four year degree.⁵⁰**

A number of CNC-MIMM focus group attendees agreed that guidance counselors are largely unaware of any non-college bound career path. Specifically, one participant recalled that his guidance counselors assumed that he would be attending a college when he had no intention of doing so.⁵¹ Employers echoed the feeling that CNC-MIMM opportunities were not understood, and that students also are being pushed toward a four-year education rather than post-secondary technical or vocational education.

Ferris State’s survey (n=809) shows that 68 percent planned to pursue a four year college education, despite the fact that far fewer will succeed in this endeavor and that fields requiring only technical training are in need of employees. Matching Ferris State’s sampling criteria, the number rises to 71 percent in the EGR-3 survey.

The perceived institutional bias, at least in the guidance counselor focus group we conducted, did not prove true. When asked, “Do you feel pressure to get kids into college?” a counselor said, “Not necessarily. Students think we want to hear them say they are going to a four year college - or that, if you don’t, you won’t amount to anything. We need to change this mentality.” They also discussed that they attempt to show students and parents the different levels of education such as four year programs, two year programs and technical/trade training. Within their time constraints, they understand that not everyone is cut out for four year programs and need to identify programs that will help the students succeed.⁵²

- **Students choose their careers for reasons other than actual career opportunity.⁵³**

33% of the Ferris State respondents (n=673) indicated that the main reason they chose their career path was because it was “something I like.”

⁵⁰ Hurley and Thorp, p. 3.

⁵¹ Notes from CNC-MIMM supply focus group, Fort Wayne, 1 Dec. 2005.

⁵² Notes from High School Guidance Counselor Focus Group, New Haven, 14 Dec. 2005.

⁵³ Hurley and Thorp, p. 5.

The EGR-3 study did not ask a survey question directly related to this topic. Anecdotal evidence compiled from student focus groups (conducted with roughly 30 students across 3 high schools) indicates that the 33% figure is believable – especially in high schools that lack a defined career program like a Vocational/Tech Prep school or Career Majors Academy. Especially with those in Vocational/Tech Prep, but also with many in the Career Majors Academy, the demonstrated industry knowledge was much greater and impacted the students’ career choices accordingly.

Other reasons for the lack of business-guidance linkages exist. One factor is the large student populations served by individual counselors. Within our focus group, ratios ranged from 200 to 750 students per guidance counselor, with the main determinant of the lower ratio number being the number of at-risk students in the school population.⁵⁴ Another factor to consider is that guidance counselors are looked to perform a host of other tasks beyond dispensing career advice. They are the primary processors of student performance statistics on the many standardized tests administered in today’s education environment. They draft and review reports, conduct student tracking and perform data analysis for tests like ISTEP+ and NWEA (Northwest Evaluation Association). On the testing culture in education, a focus group participant said that upon completing all the work related to one test, it feels like another one is ready to start.⁵⁵

Counselors also are coordinators of class scheduling and processing mid-year schedule changes. When given the opportunity to speak directly with students about scheduling, most of those with whom we spoke indicated that they make the effort to discuss career and future goal alignment with the students.⁵⁶

The challenge of special education in the context of broad education service delivery is another consideration. Title 20, Chapter 33, Subchapter II of the U.S. Code defines the services that are to be provided to children with disabilities. Special education conferences, especially for new students who move into a school, are required to ensure proper delivery of the subject’s education needs. Schools are also required to design Individualized Education Plans and review those cases annually, time-consuming responsibilities largely given to guidance staff.

Increasing administrative duties have forced guidance staff to reduce non-mandatory responsibilities. One counselor who organized an annual career day at her high school had to discontinue the program due to other workload.⁵⁷

⁵⁴ Notes from High School Guidance Counselor Focus Group, New Haven, 14 Dec. 2005.

⁵⁵ Notes from High School Guidance Counselor Focus Group, New Haven, 14 Dec. 2005.

⁵⁶ The schools employing the counselors at the 14 December focus group all subscribe to the “Meaningful Future Plan” concept advanced by Bridges Transitions, Inc. (<http://www.bridges.com>). The Bridges program offers the counselors a common frame of reference to initiate career dialogue with students.

⁵⁷ Notes from High School Guidance Counselor Focus Group, New Haven, 14 Dec. 2005.

Lastly, our guidance focus group revealed a silo effect in education about the responsibility for building career guidance. Whereas guidance counselors looked at their role as general coordinators of career exploratory opportunity and dispensers of individual career advice when time permitted, they wanted to see teaching staff to build relevant career exploration into lesson plans. The counselors felt that they were expected by the faculty to provide all career education – that career exploration was not part of the curriculum beyond a specific “Careers” class.

The counselors with whom we spoke looked to internships as an important means to get students direct exposure in possible career avenues. They believe that internships are necessary to allow students to “touch and feel” a career.⁵⁸

Caution should be taken to keep from placing all responsibility on the shoulders of guidance counselors. The lack of public understanding of the work roles of the modern guidance counselor may deflect responsibility from other administrators and teachers, who also share the burden of building meaningful awareness of career options for our emerging workforce.

Addressing this root cause is an important vehicle for both developing meaningful linkages between education and the work world and combating the silo effect.

6.1.4. “Not enough practical/applied learning experience for students with area employers”

CNC-MIMM			Industrial Engineers		
<u>Respondents</u>	<u>Average Score</u>	<u>Intensity</u>	<u>Respondents</u>	<u>Average Score</u>	<u>Intensity</u>
Supply	4.00/6.00	2/9	Supply	3.50/6.00	2/10
Demand	4.67/6.00	11/19	Demand	4.28/6.00	10/19

Computer Systems Analysts			Registered Nurses		
<u>Respondents</u>	<u>Average Score</u>	<u>Intensity</u>	<u>Respondents</u>	<u>Average Score</u>	<u>Intensity</u>
Supply	4.46/6.00	9/14	Supply	4.07/6.00	14/36
Demand	4.25/6.00	12/20	Demand	4.31/6.00	16/36

Across all focus groups, participants discussed the issue of applied learning at length. This concept took two paths: relevant course instruction and school-to-work concepts.

An advanced manufacturing employer stated the first path plainly in stating, “Students need applied learning with hands on experience.”⁵⁹ Relevant course instruction references real-world experience in standard academic offerings. It is believed that the

⁵⁸ Notes from High School Guidance Counselor Focus Group, New Haven, 14 Dec. 2005.

⁵⁹ Notes from Advanced Manufacturing demand focus group, Fort Wayne, 2 Dec. 2005.

more relevant the learning, the greater likelihood that the learning will be retained by the student.

Examples of successful applied learning exist and could act as best practice models. The focus group participants offered examples of applied learning in advanced manufacturing. For example, the Honda Corporation works with the Marysville, Ohio school district by investing their employees' time in assisting in teaching the future workforce concepts like Statistical Process Control. In Alabama schools, industry has helped to develop a meaningful curriculum for tech schools. A major EGR-3 employer, dissatisfied with the quality of the local workforce, is considering engaging the schools to help them better understand and teach CNC skills.⁶⁰

Other logical linkages between education and business are taking shape – again, possible pilots for widespread adoption. Local manufacturers are making arrangements to donate legacy CNC machinery to their local high schools so students can learn on the much newer equipment than they would have otherwise.

Applied learning linkages like this need to be reciprocal, another silo effect challenge. An information technology worker related his frustration in stating, "I've tried to work with local high schools and was given no support or desire to partner."⁶¹

Internship programs are important, also. Potential teachers use internship programs to determine if they want to continue on with their teaching degree. IT students need internships, and the programs need to start early enough for students to begin to focus their educational choices.⁶²

Guidance counselors believe internships and experiential learning build greater academic discipline and relevancy between education and life. When a student does not meet an employer's standards and is corrected in the workplace, they offered in our focus group, that student realizes that the need to build skills is not just an academic exercise but a workplace necessity.⁶³

Academic studies of internships and other school-to-career (STC) learning models are supportive of the practical learning/internship concept at both the secondary and post-secondary levels. In a survey of college-level information technology students who engaged in internships, researchers from Illinois State University, the researchers arrived at the following conclusions:

⁶⁰ Notes from Advanced Manufacturing demand focus group, Fort Wayne, 2 Dec. 2005.

⁶¹ Notes from Information Technology supply focus group, Angola, 7 Dec. 2005.

⁶² Notes from Information Technology demand focus group, Bluffton, 9 Dec. 2005.

⁶³ Notes from Guidance Counselor focus group, New Haven, 14 Dec. 2005.

“Student responses were strongly favorable concerning their internship experiences. Most students described the internship as a great experience that had a major impact on their learning and on their understanding of real world issues and environments. Respondents overwhelmingly recommended that other students get involved in cooperative education opportunities, preferably early within their major program of study.”⁶⁴

Another study of the effectiveness of STC programs in California, found evidence of improved post-secondary education enrollment and post-education employment arising from STC programming like in-school business enterprise development and internships. Most notable of this study, the author commented was that “...internship/apprenticeship programs may be particularly advantageous for the less-advantaged, as these programs boost college enrollment among those with the lowest test scores and boost employment among [those in an unfavorable socioeconomic status].”⁶⁵

Internships are not the universal solution, however. A focus group participant said that information technology internships at his company were only available to college students, which restricted hands-on learning at the high school level.⁶⁶ Another challenge at some manufacturers is an 18-year-old age restriction to operate production equipment, largely due to legal and insurance concerns.⁶⁷ Surveying high school level internship programs indicates that these restrictions are not applicable in every instance.

Focus group-participating high school junior and senior students suggested that the introductory career classes expand to include some applied learning and not just exploration. They felt that the “Careers class” was a good start, but they felt that schools need to also offer more internships. The relevance of internships was emphasized by one of the participants, who said that internships help students narrow their career choices.⁶⁸

In “Education and Career Preparation for the New Millennium: A Vision for Systemic Change,” the author outlines a career preparatory education model.⁶⁹ This concept includes the following elements:

- **Arranging curriculum by Career Cluster**, ensuring that students with specific career goals are able to follow a logical progression toward relevant skills proficiency

⁶⁴ Schambach, Thomas and Jim Dirks, “Student Perceptions of Internships,” 7 Nov. 2002.

⁶⁵ Neumark, David, “The Effects of School-to-Career Programs on Postsecondary Enrollment and Employment,” Public Policy Institute of California, 2004, p. x.

⁶⁶ Notes from Information Technology demand focus group, Fort Wayne, 1 Dec. 2005.

⁶⁷ Notes from CNC-MIMM supply focus group, Huntington, 12 Dec. 2005.

⁶⁸ Notes from Student focus group, Leo, 14 Dec. 2005.

⁶⁹ Hull, Daniel, “Education and Career Preparation for the New Millennium: A Vision for Systemic Change,” CORD, October 2000.

- **Teaching academics in context**, offering relevant instruction. Specifically, this context-driven teaching needs to include the following concepts:
 - **Relating** — Learning in the context of life experiences
 - **Experiencing** — Learning in the context of exploration, discovery, and invention
 - **Applying** — Learning in the context of how knowledge and information can be used
 - **Cooperating** — Learning in the context of sharing, responding, and communicating with others
 - **Transferring** — Learning in the context of existing knowledge—using and building on what we know
- **New, unified, standards-based curricula**, emphasizing that outcomes are as valuable as process in education
- **Work-based learning**, be they internships or co-op education
- **Career guidance and exploration**, addressing the earlier root cause
- **Interdisciplinary problem solving**, giving students an early understanding of systems thinking – that problems can overlap between disciplines
- **High school delivery system based on Career Academies**, in the model of Indiana’s Career Majors Academy model⁷⁰
- **Community and technical college delivery focused on full-time youth**, building alignment for lifelong learning

Should the community choose to address the silo effect between education and business, this model could prove useful in constructively engaging all partners.

Regardless of the practices utilized, however, the importance of this root cause is self-evident in a systems-thinking paradigm where business and education partner to achieve common goals.

6.2. Employer-employee loyalty

In today’s knowledge-driven economy, skilled employees are no longer commodities. They are not interchangeable parts. They are strategic assets.

The NAM report demonstrably turns manufacturing back on its former paradigm of viewing employees as commodities. In the report, the authors state:

“Employers must understand the importance of human capital as a business investment. Similar to the other aspects of their business, employers need to look at their human capital as an investment rather than as expenditure.

⁷⁰ Information on Indiana Career Majors can be found at http://www.in.gov/dwd/partners/tech_ed_career_majors.html

If employees are engaged through a strategy of career ladders, incentives, competitive wages and benefits, and supportive working conditions, they will stay – research bears this out.”⁷¹

An important component of occupation and skill shortages is **leakage** – people leaving their employer, leaving the area or leaving the industry. Addressing the following two sub-items would address worker frustrations that contribute to leakage, building loyalty within the workforce in the process.

The Northeast Indiana SSI project will promote occupations that require high skills, so the issue of employer-employee loyalty is critical as we make decisions and promote solutions. If Northeast Indiana is to thrive once again, we must build bridges not just between those in societal silos but also between employers and their employees.

6.2.1. “Workers at lower skill levels find it difficult to upgrade their skills to qualify for more senior roles”

CNC-MIMM			Computer Systems Analysts		
<u>Respondents</u>	<u>Average Score</u>	<u>Intensity</u>	<u>Respondents</u>	<u>Average Score</u>	<u>Intensity</u>
Supply	4.00/6.00	4/9	Supply	4.46/6.00	7/14
Demand	4.00/6.00	6/19	Demand	3.50/6.00	5/20

This root cause statement arose in the CNC-MIMM and computer systems analyst occupations, which reflects on Northeast Indiana’s manufacturing heritage.⁷² The issues related to these fields, as well as to industrial engineers and registered nurses, have slightly different applications that warrant separate treatment.

6.2.1.1. CNC-MIMM

The old manufacturing paradigm makes skill upgrading a challenge, as evidenced by the following comments from focus group participants:

- There is nowhere to send employees for advanced training.⁷³
- Training programs are generally offered during the evening hours, therefore, anyone working second shift would not be available to attend.⁷⁴

The challenge in upgrading skills also relates to the quality of training programs available. At one manufacturer focus group, a self-directed discussion developed

⁷¹ Deloitte and The Manufacturing Institute, p. 22.

⁷² Many of the Computer Systems Analysts participating in our focus groups – the supply group who rated this as a key cause – were drawn from manufacturing employers or manufacturing-servicing consulting companies. This population was not by design but does shed light on the relative rankings of root causes.

⁷³ Notes from Advanced Manufacturing demand focus group, Fort Wayne, 2 Dec. 2005.

⁷⁴ Notes from Advanced Manufacturing supply focus group, Fort Wayne, 1 Dec. 2005.

regarding internal machining/CNC training that does not utilize formal education resources. A large regional manufacturer is starting its own internal training program, leading some present to question the value of vocational school training programs. All participants reported doing some internal training. One human resources official said, “We have no other choice. Vocational school students do not know how to run machines.”⁷⁵

An important investment in employees comes in their skill development. The NAM report states that “...we recommend that employers invest at least 3 percent of payroll whenever possible in training supports for their current employees. The key is to be proactive in understanding the types of workers needed now, the types needed going forward, what they value as incentives, and how to motivate them to reach their workplace potential.”⁷⁶

Investment in training by employers cannot be taken for granted; in some corners of EGR-3, it is not part of the culture. One CNC manager recognized this at a focus group. He also demonstrated an awareness of the need to continually hone his skills to stay employable. As the dialogue continued, he asked, “If there is no funding available for training, then how else am I going to learn?”⁷⁷

6.2.1.2. Computer Systems Analysts (and Industrial Engineers)

The challenges facing the IT and engineering occupations are more difficult in Northeast Indiana. As of 2002, there were only 920 systems analysts and 1,220 industrial engineers across EGR-3.⁷⁸ Thus, to build a core competency where workers will have avenues where they can advance their careers, the focus groups suggested two approaches: 1) Identification and promotion of an continual education continuum that professionals can take part in, and 2) Developing an understanding of all employers that information technology skills must be upgraded as a matter of enlightened self-interest.

- **Identification and promotion of an education continuum**

A focus group participant in Columbia City described a training and aligned career ladder with a systems thinking method:

“Even small businesses have a “go to” person – the “help desk” problem solver and office computer guru (level 1). This “go to” person needs additional training because this small business cannot afford a full-time IT person.

“[The IT] industry needs a 3 level system:

- Level 1 is the office “go to” person,

⁷⁵ Notes from Advanced Manufacturing demand focus group, Fort Wayne, 2 Dec. 2005.

⁷⁶ Deloitte and The Manufacturing Institute, p. 22.

⁷⁷ Notes from Advanced Manufacturing supply focus group, Fort Wayne, 1 Dec. 2005.

⁷⁸ Lookup of “Computer Systems Analysts” in egr3projections.xls.

- Level 2 has a bit more training and can handle strategic systems issues,
- Level 3 would be the highest IT training possible.

“Level 3 people would be the consultants. These are the people who work in IT – every day, all day. We eventually need to increase the number of Level 3 individuals. To get there, we need a program similar to plumbers and electricians where you start as an apprentice and, with additional training, become journeymen.”⁷⁹

Another suggestion that arose on a number of occasions in both IT and engineering is that training should be local to make it easier to learn. With small-population occupations, multiple-site learning is a challenge due to limited demand. Both computer systems analysts and industrial engineers suggested that a networked distance learning model could increase accessibility while maintaining some economies of scale.⁸⁰

Lastly, the focus group suggested that any training program should offer a means for updating skills.⁸¹ Too many institutional programs develop benchmarked skills but avoid leading edge training. This model does not work as well in IT. New product and technology development knowledge needs to be implemented as soon as it is available in order for companies to remain globally competitive with other early adopters.

This last point is critical for industrial engineers, who said that a major challenge in preventing occupational leakage is the lack of accessible, ongoing, continuing education. (The experience of this small but mature occupation can be applied to the emerging computer systems analyst field, and proactive measures may stop that occupation from experiencing leakage.) They said that degree programs are not necessarily needed in our region, but meaningful continuing education would help make Northeast Indiana an advanced manufacturing knowledge center. As envisioned in a Fort Wayne focus group, this could respond to demand for detailed training in programs like lean manufacturing and Six Sigma – but also flexible training that can integrate the latest business practices into formal curriculum.⁸²

• **Developing an appreciation for the need for ongoing IT training**

A focus group participant said, “We need to educate the top people in companies as to what the IT people truly do and what they have to offer.”⁸³ When aligned with a company’s strategic objectives, information technology staff can be a vital piece of their ongoing competitiveness strategies.

⁷⁹ Notes from Information Technology supply focus group, Columbia City, 7 Dec. 2005.

⁸⁰ Notes from Information Technology supply focus group, Columbia City, 7 Dec. 2005.

⁸¹ Notes from Information Technology supply focus group, Columbia City, 7 Dec. 2005.

⁸² It was noted in conducting this research that Fort Wayne’s TQM Network (<http://www.tqmnet.com/index.php>) offers some of this educational programming, as does the Fort Wayne-based chapter of APICS (<http://www.apics-fortwayne.org/>).

⁸³ Notes from Information Technology supply focus group, Columbia City, 7 Dec. 2005.

The challenge locally is a perception expressed by survey respondents and focus group participants that information technology is not appreciated. This was a cause of frustration, which led to hints of occupational leakage.

Without an appreciation of the need to continually train staff and upgrade IT skills, there will be insufficient demand for training services. A program like SSI would ideally act as the venture investment to help demonstrate the need for training and build the infrastructure that an IT occupational cluster could utilize.

6.2.1.3. Registered nurses

A subset of the skill-upgrade question relates to a demand-side concern from the Skills Shortages phase of the report regarding obtaining a sufficient number of post-degree, advanced certifications for registered nurses to staff regional care centers. As these centers (like the Parkview Heart Institute or the St. Joseph Hospital Burn Center, both in Fort Wayne) are generators of new regional wealth within a health-care delivery industry that largely recirculates existing wealth, this issue demanded special attention. A special focus group was scheduled to deal with this question.

A focus group of nurses with such certifications indicated that, with the exception of satisfying the self-motivated nurse who chooses to learn for learning's sake, there is no incentive to obtain advanced certifications – no visual recognition (such as extra certification letters on a name badge) or wage increase.⁸⁴ The lack of meaningful employee incentives makes rectifying this shortage a challenge.

In addition, we learned that nurses choose not to get an additional certification because they want to switch jobs or work units often, sometimes to take advantage of advertised, shortage-driven sign on bonuses.⁸⁵

6.2.2. "Employees in my field feel that there is no opportunity to advance from their current position"

CNC-MIMM			Computer Systems Analysts		
<u>Respondents</u>	<u>Average Score</u>	<u>Intensity</u>	<u>Respondents</u>	<u>Average Score</u>	<u>Intensity</u>
<i>Supply</i>	3.43/6.00	1/9	<i>Supply</i>	4.83/6.00	8/14
<i>Demand</i>	4.07/6.00	7/19	<i>Demand</i>	3.33/6.00	7/19

The other component of employee loyalty is the opportunity for career progression. Many employees want to advance their career – through improved wages, title changes, new responsibilities, etc. - especially with the information technology field, which carries a public image of upward mobility. EGR-3 is challenged with hosting a small but

⁸⁴ Notes from Registered Nursing supply focus group, Fort Wayne, 12 Dec. 2005.

⁸⁵ Ibid.

important population of computer systems analysts whose short-term expectations are not necessarily accurate for our region.

The best insight came from IT workers themselves. One computer systems analyst said that IT trained individuals come to his company right out of college; within one to two years, he expects them to move on.⁸⁶ Two other employers of engineers said that applicants don't want to come to Northeast Indiana because there are no further development options beyond the company they hire into.^{87,88}

At the same time, some of our IT knowledge is generated by augmenting current employees' skills with information technology. Companies who take this approach are not used to the pay scale of computer systems analysts and balk at paying the market rate. One such computer systems analyst commented on this scenario at a focus group when saying, "I am seeking further certification and if my employer can't or won't increase my wage I'll be moving on."⁸⁹

As with any emerging occupation, it will be a challenge to keep the core of our region's computer-systems expertise intact while growing it into a larger foundation of our future growth. We are not certain if this root cause can be addressed in the SSI process and will look to potential solutions providers for creative insights.

6.3. The marketing challenge

Northeast Indiana has a number of assets that allow it to offer a quality life to its residents. The challenge on this front is informing the world – and our own residents – about those assets to build both a recruiting and retention edge.

Marketing is not necessarily a training function, but the Innovating Indiana Strategic Skills Initiative is about fixing the shortage of high-skilled, high wage professionals in our targeted occupations. Part of that fix is mitigating against leakage of existing workers, part is retention of our young talent and part is attraction of new talent. Proper marketing of our community can positively impact all three areas.

⁸⁶ Notes from Information Technology supply focus group, Columbia City, 7 Dec. 2005.

⁸⁷ Notes from Advanced Manufacturing demand focus group, Fort Wayne, 2 Dec. 2005.

⁸⁸ Notes from Advanced Manufacturing focus group, Decatur, 5 Dec. 2005.

⁸⁹ Notes from Information Technology supply focus group, Columbia City, 7 Dec. 2005.

6.3.1. “Difficulty attracting target occupations &/or their spouses to our area”

Industrial Engineers			Computer Systems Analysts		
Respondents	Average Score	Intensity	Respondents	Average Score	Intensity
Supply	4.40/6.00	7/10	Supply	4/08/6.00	6/14
Demand	3.94/6.00	8/17	Demand	3.00/6.00	3/19

Registered Nurses		
Respondents	Average Score	Intensity
Supply	4.17/6.00	13/36
Demand	4.04/6.00	10/36

The average scores over 4.0 came from every non-blue collar profession supply survey, with industrial engineers demonstrating the largest intensity. This root cause, it can be inferred, is a white collar challenge.

Much of the recent thinking about how cities look at themselves and their attractiveness to the professional class is driven by Carnegie Mellon professor Richard Florida’s The Rise of the Creative Class and his follow-up book, The Flight of the Creative Class. Florida’s basic premise is that the guiding indicators of a community’s ability to attract young, college educated professional are summed up in the components of his Creative Index:

“The Creativity Index is a mix of four equally weighted factors:

- The creative class share of the workforce (fast-growing, highly educated, and well-paid segment of the workforce on whose efforts corporate profits and economic growth increasingly depend);
- High-tech industry, using the Milken Institute's widely accepted Tech Pole Index, which I refer to as the High-Tech Index;
- Innovation, measured as patents per capita; and
- Diversity, measured by the Gay Index, a reasonable proxy for an area's openness to different kinds of people and ideas.

This composite indicator is a better measure of a region's underlying creative capabilities than the simple measure of the creative class, because it reflects the joint effects of its concentration and of innovative economic outcomes.”⁹⁰

Fort Wayne is the only region based in EGR-3 to be listed in The Rise of the Creative Class, but Muncie (which presumably encompasses EGR-3’s Grant County and Marion) is also listed. Within its comparison group of regions with 500,000-1 million inhabitants, Fort Wayne ranks twenty-fifth out of 32 like-sized regions in the country.⁹¹ Muncie, in the category of regions with less than 250,000 people, ranks 52nd out of 124.⁹² Against

⁹⁰ Florida, Richard, “The Rise of the Creative Class,” Washington Monthly, May 2002. Accessed at

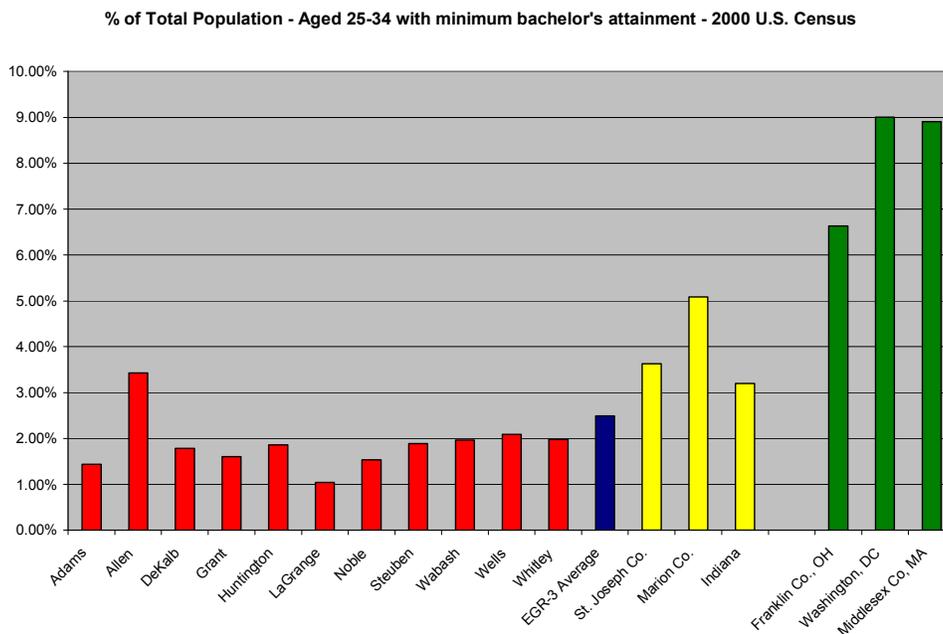
⁹¹ Ibid.

⁹² Florida, Richard. The Rise of the Creative Class, Basic Books, 2002, p. 349.

all 268 regions for which Florida tabulated a creative class ranking, Fort Wayne and Muncie rank as follows:

Creative Class Rankings (out of 268)					
	Overall Rank	Creative Class	High Tech	Innovation	Diversity
Fort Wayne	113	171	92	67	109
Muncie	180	52	252	262	127

Keeping with Florida’s theory of placing value in attracting young, creative professionals, a census survey of cities with significant numbers of young, college-educated professionals reveals between 6-9 percent of the total populations of their cities being college educated (having attained at least a bachelor’s degree) people aged 25-34. As of the 2000 census, EGR-3 boasts 2.49 percent college attainment among the 25-34 year-old population. Two comparison Indiana counties, St. Joseph and Marion, stand at 3.6 and 5.1 percent, respectively. The State of Indiana, by comparison, is at 3.2 percent.⁹³



As the graph indicates, the challenges facing Fort Wayne toward attraction and retention of professional workers is different than those in EGR-3 but not in Allen County. While Fort Wayne is competing for creative workers with other major metropolitan areas around the country, the non-Allen County surrounding counties are

⁹³ Analysis of U.S. Census Bureau data by author, comparing St. Joseph Co., Ind., Marion Co., Ind., State of Indiana, Middlesex Co., Mass., Washington, DC and Franklin Co., Ohio with EGR-3, detailed in section 6.7.

competing with Fort Wayne (and the southern part of EGR-3 with Muncie and Indianapolis) to keep their younger, professional populations in their communities.

The perceived flight from Indiana and the Midwest may not necessarily be the primary challenge; we may want to focus on recruiting. The Midwest keeps 25% of its graduates, according to Economist Richard Mattoon, whereas the national average is only 23%. At the same time, the Midwest attracts 9% of outside graduates; the national average is around 23%.⁹⁴

The challenge of recruiting people to fill the growing number of strategic jobs in the Midwest is not unique to Indiana. The Council of State Governments describes one of the most creative attempts to repopulate a state:

“Iowa Gov. Tom Vilsack has also been busy trying to increase the supply of labor by courting the state’s expatriates. Armed with the knowledge that nearly 40 percent of all students who graduate from Iowa colleges and universities will leave the state to find work, the governor and other state officials have been hosting a series of “recruitment parties” for Iowa alumni in major cities around the country. Sponsored in part by the Iowa Human Resource Recruitment Consortium — a public-private partnership whose mission is to promote career opportunities to transplanted Iowans — these events are an attempt to lure more professionals and skilled workers back home to fill the ever-growing hole in the state’s labor market. The parties give Vilsack the opportunity to tout the virtues of living in Iowa — focusing on its quality of life and family-friendly atmosphere. In addition to the parties being hosted in places like Chicago and Los Angeles, a Web site has also been set up to market the social and economic benefits of living and working in the state.”⁹⁵

Regionally, focus group participation was encouraged from all counties of EGR-3 throughout the Root Cause phase process, but “Fort Wayne” – the metropolitan area – was the lens through which regional attractiveness discussion was held.

- **Emerging Workforce: The Grass is Greener...**

Within the emerging workforce focus groups of high school juniors and seniors, feelings about Northeast Indiana were tepid at best. In the Huntington focus group, all of the participants felt they could find a job in their chosen career in Northeast Indiana. The majority, however, felt they would not be happy living “here” and would prefer to spend the first several years of their career, if not their entire career, in a larger city.⁹⁶

⁹⁴ Evens, Mary. “Governor’s Conference on Economic Development: A novice’s perspective,” *What’s news*, Center for Community Partnerships, University of Wisconsin Oshkosh, Spring 2003. Accessed at <http://www.uwopartners.org/whatsnews/spring2003/weda.html> on 18 December 2005.

⁹⁵ Layzell McCann, Anne. “Midwestern states and businesses struggle to find workers in a tight labor market,” *Firstline*, July/August 2000, p.2.

⁹⁶ Notes from High school student focus group, Huntington, 28 Nov. 2005.

When asked about the alignment of their career and living plans, the majority of the Leo emerging workforce focus group expressed a desire to leave this area and start their adult life/career somewhere other than Leo or Fort Wayne – they want a bigger city. When asked if they could find work in their career in Northeast Indiana, the majority again indicated that they could, but they felt that “it would be too boring here.”⁹⁷

- **Recruiting/retention – Do we measure up?**

The constriction of the high-wage employer base in EGR-3 referred to in the EGR-3 SSI Skills Shortage Report has had an effect on the migration plans of the emerging workforce. A manufacturer referred to this phenomenon as a brain drain. His own daughters chose to not stay in the area following college. As he said, “No employer pool equals no employee pool.”⁹⁸

Two younger engineering focus group participants volunteered that that younger people may not look to Fort Wayne for industrial engineering jobs because of the perception one must work at a headquarters in a larger city to move up the business ladder and achieve career goals more quickly.⁹⁹

An information technology employer conveyed that recruiting employees to Fort Wayne is difficult because the community does not have to offer what the “big cities” have – especially cultural amenities.¹⁰⁰ Another focus group participant said that engineers do not “hang out” in Fort Wayne.¹⁰¹

Lastly, we have a challenge in retaining the young and unwed. “Fort Wayne is a family town. Singles are more attracted to Indianapolis,” according to one human resources representative.¹⁰²

A very specific issue arose in the Wabash engineering focus group - inadequate housing in the mid-price range in Wabash County. This has proven to be a large obstacle for recruiting young, white collar professionals to their community.¹⁰³

Another challenge in marketing smaller communities is the difficulty attracting individuals due to spouses not being able to find adequate paying jobs.¹⁰⁴ This issue arose both in our focus groups and surveys.

⁹⁷ Notes from high school student focus group, Leo, 14 Dec. 2005.

⁹⁸ Notes from Advanced Manufacturing demand focus group, Decatur, 5 Dec. 2005.

⁹⁹ Notes from Industrial Engineering supply focus group, Fort Wayne, 12 Dec. 2005.

¹⁰⁰ Notes from Information Technology demand focus group, Fort Wayne, 1 Dec. 2005.

¹⁰¹ Notes from Advanced Manufacturing demand focus group, Fort Wayne, 2 Dec. 2005.

¹⁰² Notes from Advanced Manufacturing demand focus group, 2 Dec. 2005.

¹⁰³ Notes from Industrial Engineering supply focus group, Wabash, 8 Dec. 2005.

¹⁰⁴ Notes from Information Technology demand focus group, Columbia City, 7 Dec. 2005.

The lack of an occupational cluster affects recruiting as much as training. A participant in Angola said that his community does not offer many jobs for IT professionals, making it difficult to recruit. His company addresses the challenge by being flexible with employees (flex hours, working remotely, etc.) in order to get them to come.¹⁰⁵

- **Transplanted workers: I like it now that I'm here**

Manufacturing focus group attendees felt that the physical attractiveness of Fort Wayne is an asset - if we can entice prospective workers to visit the community. They acknowledged that we lack the infrastructure of Chicago and Indianapolis, which can be an asset when considering quality of life.¹⁰⁶

One computer systems analyst group participant stated she felt Fort Wayne was selling itself short. The region has plenty to offer but needs to promote itself better. She has lived in 21 states and has settled here! She feels once we "get them" they don't want to leave but it is difficult to get them here initially, a point that many agreed with.¹⁰⁷

Another industrial engineering participant, a father of two, added that when offered a job in Fort Wayne, he was not drawn to the city. He moved here with no intentions of "retiring" here. When considering the move to Fort Wayne, nothing sold him on the region. Once here, however, he has found the character of the community very attractive and now is reluctant to leave. He believes we should aggressively market Fort Wayne as a city and all that it has to offer.¹⁰⁸

- **Recruiters: Fort Wayne is a family community**

Recruiters and human resources managers, from our research, have settled on a paradigm of how to recruit people to come to Fort Wayne and Northeast Indiana: Make sure they have families. In one example, a focus group participant reported an entire extended family moving to Fort Wayne from Detroit to take advantage of the quality of life.¹⁰⁹

Two other participants stated having "given up" on recruiting from outside Fort Wayne. The only thing that can bring candidates back to this area, in their opinion, is family.¹¹⁰

A manufacturing human resources representative suggested that if an individual is not originally from this area then they probably won't choose to seek or accept employment here. Some return to raise a family after having left to pursue the big city. This is a

¹⁰⁵ Notes from Information Technology supply focus group, Angola, 7 Dec. 2005.

¹⁰⁶ Notes from Advanced Manufacturing demand focus group, 2 Dec. 2005.

¹⁰⁷ Notes from Information Technology demand focus group, Fort Wayne, 1 Dec. 2005.

¹⁰⁸ Notes from Industrial Engineering supply focus group, Fort Wayne, 12 Dec. 2005.

¹⁰⁹ Notes from Advanced Manufacturing demand focus group, Fort Wayne, 2 Dec. 2005.

¹¹⁰ Notes from Information Technology demand focus group, Fort Wayne, 1 Dec. 2005.

great place to raise your family, but young people typically are looking for what big cities have to offer.¹¹¹

As a root cause, this is systemic to our community's outlook, both as others look at it and as it looks at itself. Recruitment of non-resident professionals will be vital until business-education linkages are institutionalized. This is one of the most important root causes.

¹¹¹ Notes from Industrial Engineering supply focus group, Wabash, 8 Dec. 2005.

7. Root cause analysis: Additional occupation-specific root causes

Within each occupation, unique root causes were uncovered that demand specific attention. They follow:

7.1. Registered Nurses

The challenge in addressing the shortage of registered nursing is laid down by an EGR-3 staff supervisor, when they stated,

“This is not a new problem, there has been a shortage during most of my 16 year career. You are attempting the same failed strategies that have been shown to be insufficient time and time again. If every Registered Nurse in Indiana worked as a Nurse and did not choose to leave the field, then the "shortage" may not exist. It is time you started asking why they choose to leave.”¹¹²

Fortunately, our research finds that EGR-3’s medical professionals and their employers are well-versed in the problems surrounding the shortage of registered nurses. Their focus groups and survey results indicated three unique root causes, insufficient capacity in nursing schools, the shortage of nursing school instructors and the widespread stress and burnout in the registered nursing profession.

7.1.1. Survey responses and focus group insights

7.1.1.1. “Capacity of training institutions is inadequate to prepare workers for this occupation”

<u>Respondents</u>	<u>Average Score</u>	<u>Intensity</u>
Supply	4.26/6.00	16/36
Demand	4.46/6.00	14/36

The question of area nursing school capacity is one that must be looked at from two perspectives: short term and mid-to-long term.

In the short term, there appears to be a slight capacity shortage in EGR-3’s nursing schools. Current annual nursing school seat production in EGR-3, as listed in section 6.4.1., is 417 seats.¹¹³ Longer term, new programs from Ivy Tech State College

¹¹² Submission #23, EGR-3 Registered Nursing Demand Survey, 8 Dec. 2005.

¹¹³ This number differs slightly from EGR-3 SSI Solutions report page 165, where initial “production” of registered nurses on Supply Side Worksheet #1 (“Production”) listed initial combined training program

Northeast (graduating its first class in 2006), Huntington University (projected to open in 2007) will add to our region’s capacity by roughly 50 more seats, bringing the total to 467.

EGR-3’s anticipated annual registered nursing demand, detailed in the EGR-3 SSI Shortage report, is listed below:

- Low projection: 163-166/year
- Middle projection: 386-421/year
- High projection: 487-563/year

Comparing the current capacity against the projections, EGR-3 only falls short in capacity against the high projection. When including the additional capacity of the new programs, it appears that our nursing schools will have sufficient seats to meet all but the highest demand for registered nurses in Northeast Indiana. Thus, it is reasonable to say that insufficient nursing school capacity may be a significant short-term root cause, but forces are already in place to ensure that EGR-3 will have sufficient capacity to meet demand. These supply and demand factors must be closely monitored in case demand reaches the upper projection.

In the meantime, the current shortage in nursing school seats has been felt in EGR-3 high schools. In the course of the December 14 focus group with high school guidance counselors, the counselors expressed frustration that their schools produced graduates, whom they claimed were academically qualified for admission, which did not gain acceptance into nursing schools. They claimed the reason for the denials to be a shortage of seats.

Research into this issue with local subject matter experts unearthed an important point: Simply increasing nursing school capacity is not enough. Master’s degreed teaching nurses are required to educate the willing population. Without the educators, planned seats will go empty – a point explored in more detail in section 3.1.2.

7.1.1.2. “Instructors are not paid sufficiently to retain them”

<u>Respondents</u>	<u>Average Score</u>	<u>Intensity</u>
Supply	4.42/6.00	17/36
Demand	4.00/6.00	12/36

This statement, placed within the context of training options for registered nurses, was the only statement on the registered nursing surveys to mention instructors. It immediately followed the statement mentioned in section 3.1.1., possibly leading some

output of 349 new degreed RN’s. The variation can be attributed to using full capacity figures in this report instead of anticipated production in the first.

respondents to make a linkage between nursing school shortages and teacher pay. At the same time, the issue raised in the statement is valid.

The causal relation between the shortage of nursing school instructors and the shortage of registered nurses is simple: The more master's-degreed teaching nurses in a nursing education and certification program, the more students are permitted to enter that program. At every level – employers, employees and educational institutions – this relationship is understood.

The American Association of Colleges of Nursing (AACN) adds facts to this argument when they state:

“According to AACN's report on *2003-2004 Enrollment and Graduations in Baccalaureate and Graduate Programs in Nursing*, U.S. nursing schools turned away 15,944 qualified applicants to entry-level baccalaureate nursing programs in 2003 due to insufficient number of faculty, clinical sites, classroom space, clinical preceptors, and budget constraints. In 2002, a total of 5,283 students were turned away from all types of professional nursing programs as well. ***Almost two-thirds (64.8%) of the nursing schools responding to the 2003 survey pointed to faculty shortages as a reason for not accepting all qualified applicants into entry-level baccalaureate programs.*** [Emphasis added] www.aacn.nche.edu”¹¹⁴

In addition, the AACN's “Nursing Faculty Shortage Fact Sheet” paints a picture that extends the discussion into issues of relative pay for the precious few qualified nurses:

“Higher compensation in clinical and private-sector settings is luring current and potential nurse educators away from teaching.

“According to the 2003 National Salary Survey of Nurse Practitioners completed by *ADVANCE for Nurse Practitioners* magazine, the average salary of a master's prepared nurse practitioner working in an emergency department was \$80,697. In contrast, AACN reports that master's prepared nurse professors earned an annual average salary of \$60,357 in 2003.”¹¹⁵

This disparity in pay is magnified by the overall graying of the master's degreed teaching nurse population and the nationwide shortage of doctoral teaching nurses, who are needed to train master's degreed nurses. Much like the shortage of master's degreed teaching nurses creates a bottleneck in the generation of registered nurses,

¹¹⁴ “Nursing Shortage Fact Sheet.” AACN – Media Relations, <http://www.aacn.nche.edu/Media/Backgrounders/shortagefacts.htm>, accessed 15 Dec. 2005.

¹¹⁵ “Nursing Faculty Shortage Fact Sheet.” American Association of Colleges of Nursing, updated 18 Oct. 2005. Accessed at: <http://www.aacn.nche.edu/Media/pdf/FacultyShortageFactSheet.pdf>.

this nationwide doctoral nurse shortage gives us yet another bottleneck which increases the both the general demand for master’s degreed nurses and increases their salary bargaining power, a situation with which the AACN report indicates nursing schools are finding it difficult to keep pace.¹¹⁶

EGR-3 survey respondents agreed. Following are quotes taken directly from registered nurse “supply” survey respondents, both responses listed as “key causes” in their respective surveys:

“Lack of qualified instructors. Very little push for advanced practice nursing- These degrees are not recognized by salary differences in hospitals. Educators with more education make significantly less money than associate degree nurses working in the hospitals.”¹¹⁷

“The pay for a Master's or Doctorate prepared nurse who decides to teach does not reflect the amount of money and years spent to earn these upper level degrees. ... I really believe the one of the most important causes of a nursing shortage in Northeast Indiana is due to the lack of advanced degree nurses available to teach and train the nurses. The pay for advanced degree nurses who decide to teach does not offer an adequate incentive given the amount of money and time it takes to earn a Master's or Doctorate degree. There are many people who WANT to get into the nursing programs but there are just not enough spots within the program to accommodate the number that are applying. Some individuals spend years taking ‘pre-nursing’ courses just waiting to get into the nursing program.”¹¹⁸

From the employer, or “demand” side, the need for fixing the instructor bottleneck is apparent:

“Limited # of professors d/t too high qualifications needed to teach at the university level. Nursing students not able to get into the program d/t not enough professors.”¹¹⁹

Both IPFW and the University of Saint Francis, two of EGR-3’s largest nursing schools, indicated in our survey that they are challenged in attracting and recruiting teaching-degreed nurses.

This is a critical shortcoming that must be addressed to fix the nursing school bottleneck.

¹¹⁶ Ibid.

¹¹⁷ Submission #19, EGR-3 Registered Nursing Supply Survey, 8 Dec. 2005.

¹¹⁸ Submission #32, EGR-3 Registered Nursing Supply Survey, 5 Dec. 2005.

¹¹⁹ Submission #25, EGR-3 Registered Nursing Demand Survey, 6 Dec. 2005.

7.1.1.3. “Stress &/or burnout are driving registered nurses from this occupation in my area”

Respondents	Average Score	Intensity
Supply	4.61/6.00	22/36
Demand	4.46/6.00	13/36

Of particular interest in this section is that the issue of stress and burnout in registered nurses registered highest in both average score and intensity of all suggested root cause statements on the RN supply survey. The average score on the demand side ties with the issue of insufficient nursing school capacity, and intensity is nearly identical.

The shortage in registered nurses has a significant impact on the hospital population, where nurses are needed to work shifts every hour of the day, every day of the week. In order to get nurses to work unfavorable shifts, hospitals offer increased wages as incentives.

The AACN again offers a rich vein of research on this topic, giving us the following:

“Job burnout and dissatisfaction are driving nurses to leave the profession.

“According to a study released in the *Journal of the American Medical Association* in October 2002, nurses reported greater job dissatisfaction and emotional exhaustion when they were responsible for more patients than they can safely care for. Lead researcher Dr. Linda Aiken concluded that “failure to retain nurses contributes to avoidable patient deaths.”

“According to a study published by Dr. Linda Aiken and colleagues in the May/June 2001 issue of *Health Affairs*, more than 40% of nurses working in hospitals reported being dissatisfied with their jobs. The study indicates that 1 out of every 3 hospital nurses under the age of 30 are planning to leave their current job in the next year.

“According to a study commissioned by the Federation of Nurses and Health Professionals in April 2001, *The Nurse Shortage: Perspectives from Current Direct Care Nurses and Former Direct Care Nurses*, currently 1 out of every 5 nurses currently working is considering leaving the patient care field for reasons other than retirement within the next five years.”¹²⁰

¹²⁰ “Nursing Shortage Fact Sheet.” AACN – Media Relations, <http://www.aacn.nche.edu/Media/Backgrounders/shortagefacts.htm>, accessed 15 Dec. 2005.

Anecdotal supply survey responses add to the dialogue on burnout and stress in registered nursing:

“Why become a nurse when you can get a factory job with a comparable salary and less stress and schooling?”¹²¹

“No one wants to discuss wages, working conditions and the expectation that you work extra whenever the employer wants because the patients need you. Let's not hire enough people to do the job lets just use up the ones we have. Nurses in the profession must be able to support it. Most nurses I know discourage young people from going into it.”¹²²

“More responsibility, higher acuity patients and higher nurse to patient ratios not only cause nurses to become burnt out but causes the nurse to work as few hours as needed. It is difficult to work full-time, 12-hours shifts and not get burnt out and want to reduce the number of hours worked. This also creates a shortage.”¹²³

“Nursing is demanding work in many positions, both physically and mentally. Many times, decisions are life and death and must be made on the spot. Staffing shortages demand more of current nurses, both physically and mentally to cover for the understaffed areas. This is ok for the short-run, but for the long haul, becomes exhausting and job satisfaction drops significantly.”¹²⁴

Most telling from the mix of different supply focus group participants was that those working in a single physician or small group practice acknowledge that stress and burnout are root causes to the shortage for hospitals. They also know that, by taking generally lower pay and fewer (if any) benefits by working in a doctor's office, they are able to gain emotionally from working in a generally lower-stress environment. At the same time, the high-wage, high-stress hospital nursing option is available if income becomes the primary consideration. This is echoed by an online respondent, self-identified as a diploma nurse, who says,

“Workplace conditions at current job are the best I have ever had. The last job required putting job first-family last. You were required to do extra hours as staffing was inadequate to safely provide care. Pay at current job is low but the hours are better M-F with all weekends and holidays off.”¹²⁵

¹²¹ Registered Nursing Supply Focus Group notes, 12 Dec. 2005.

¹²² Submission #24, EGR-3 Registered Nursing Supply Survey, 6 Dec. 2005.

¹²³ Submission #32, EGR-3 Registered Nursing Supply Survey, 5 Dec. 2005.

¹²⁴ Submission #33, EGR-3 Registered Nursing Supply Survey, 5 Dec. 2005.

¹²⁵ Submission #6, EGR-3 Registered Nursing Demand Survey, 13 Dec. 2005.

It remains to be seen whether the projected increase in nursing school capacity will alleviate the nursing shortages and theoretically reduce registered nurses' stress levels. Survey respondents remind us that the causes of stress are not entirely rooted in long hours, however, and other methods to alleviate stress in this occupation should be considered in the Northeast Indiana SSI Solutions phase.

7.1.1.4. "Registered nurses leave this occupation for better pay/benefits elsewhere"

Respondents	Average Score	Intensity
Supply	4.29/6.00	15/36
Demand	3.71/6.00	3/36

The New York Regents Blue Ribbon Task Force on the Future of Nursing commissioned a survey of nurses in September 2002. Their findings? Pay satisfaction was a root cause issue to address. Their summary follows:

"Nurses' average level of satisfaction with pay was the lowest of all the job climate satisfaction scale means. About 45 percent disagreed or strongly disagreed with the statement, 'My present salary is satisfactory'. In contrast, about 20 percent agreed or strongly agreed with this view (the remaining 35.9 percent expressed relatively neutral feelings). The same pattern characterized RNs' views regarding the adequacy of their pay increases. These relatively low compensation satisfaction ratings were generally consistent across settings and titles."¹²⁶

A focus group of nurses made reference to EGR-3 nursing pay levels being lower than other areas. Our wage survey analysis indicates that, in relation to other Midwest locations, this is a correct statement. They also indicated that 'traveling nurses' – nurses who work for a given employer for a temporary period of time – also make significantly more income than fully-employed nurses.¹²⁷

One survey respondent backs up these assertions with data of their own:

"Offer starting pay to be more in this area. Please upgrade the pay of the presently working RN's. It's sad that a truck driver makes more annually than an RN, and a fourth-year electrician makes as much or more than a seasoned RN. (Money is the biggest issue.)"¹²⁸

¹²⁶ Duncan-Poitier, Johanna. "Horizon Issue: Results of the September 2002 Survey of Registered Professional Nurses," 27 Oct. 2003. Accessed at <http://www.op.nysed.gov/nursing-survey-final-regents-report-nov.htm> on 22 Dec. 2005.

¹²⁷ Notes taken at Registered Nursing focus group, 12 Dec. 2005.

¹²⁸ Submission #36, Registered Nursing Supply Survey, 2 Dec. 2005.

Statistics provided by Indiana Workforce Development indicate that a heavy duty truck driver in EGR-3 makes a mean annual wage of \$35,840. EGR-3 Electricians making a “Experienced Annual Wage” earn \$56,510. By comparison, the same wage information indicates that a registered nurse earns a mean annual wage of \$44,690 and an “Experienced Annual Wage” of \$49,632.¹²⁹ Not all of the specific examples given are correct, but the sentiment still is important to consider because beliefs and not facts drive a great deal of individual decision-making. That this respondent feels that they are making less than other occupations that they deem worthy of comparison is important.

With a differential between the median of the Midwest MSA’s mean annual wages and the Fort Wayne MSA over five percent, this is a reasonable root cause to consider. In both real dollar and cost-of-living adjusted mean annual wages, Fort Wayne is one of the lowest-paying Midwest MSAs for registered nurses.

At the same time, it is not a primary root cause because of the root cause regarding stress and burnout concerns. Research about basic human motivations in other fields shows that while salary is not necessarily related to job satisfaction, stress (possibly influenced by low pay, but inclusive of other issues) is a major determinant.¹³⁰ Thus we look at the stress and burnout root cause as more critical to address.

7.1.1.5. “The lack of teamwork among health care staff results in new workers having low morale”

Respondents	Average Score	Intensity
Supply	4.13/6.00	13/36
Demand	3.86/6.00	10/36

In any organization, especially one with such well-defined work roles as the doctor-nurse relationship, issues of communication and teamwork are important to the well-being of the organization and individual job satisfaction. This issue is supported by a morale survey of staff at 74 Chicago-area community health centers conducted by the Health and Medicine Policy Research Group in 2001 which revealed the following:

“Lack of respect and understanding of their jobs from administration and medical leadership is a significant concern for front-line staff. As a result, line staff feel a lack of teamwork among their colleagues and a loss of connectedness to the organization and their co-workers.”¹³¹

¹²⁹ Egr3estimates.xls

¹³⁰ Wright, Michael and Rodney Custer, “Why They Enjoy Teaching: The Motivation of Outstanding Technology Teachers.” *Journal of Technology Education*, Vol. 9 No. 2, Spring 1998, pp. 3-4.

¹³¹ Health Policy Research Group, “Community Health Center Morale Executive Summary.” Health and Medicine Policy Group, Oct. 2001, p. 4.

This issue was only raised tangentially in the nursing focus groups, and survey results revealed no additional open-ended answers than the numerical statistics presented above. We determine this to be a possible root cause, but not likely.

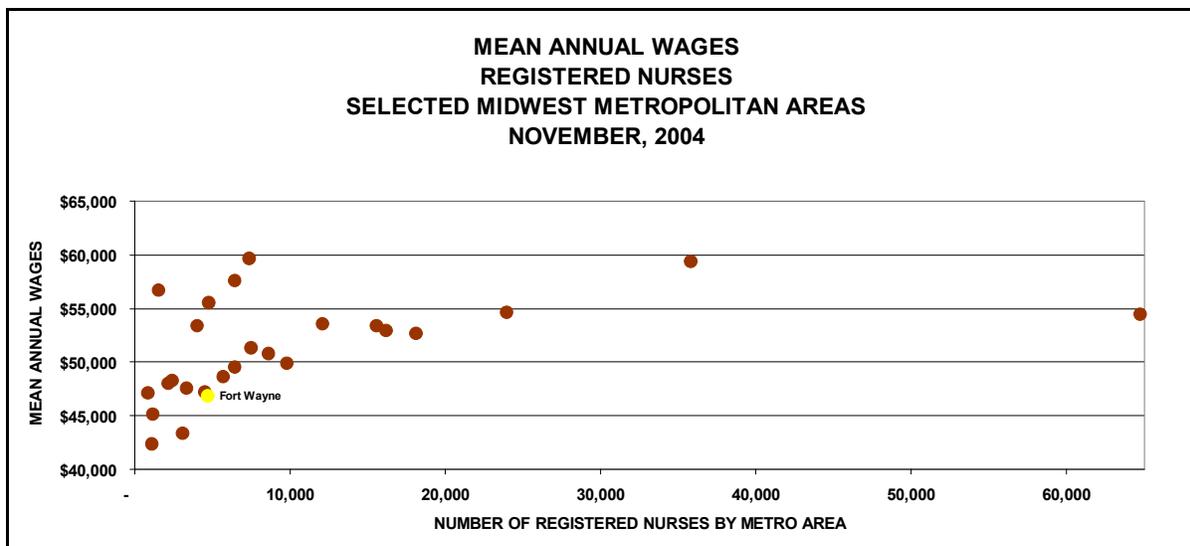
7.1.2. Wage survey analysis

The Fort Wayne MSA employs 4,730 registered nurses and pays them a mean annual wage of \$46,830. On a real dollar basis, three of the 26 MSAs (Muncie, Evansville and Lafayette) sampled offer registered nurses lower mean annual wages.

Fort Wayne MSAs registered nurses earn \$12,750 less on average in real dollars than those in the Ann Arbor, Michigan, MSA – the highest paying sampled MSA (7,380 nurses).

Fort Wayne MSAs RN's earn \$4,510 more on average than those in the MSA with the lowest mean salary, Muncie, Indiana (1,140 registered nurses – mean salary \$42,320).

The median of the mean annual wages of the sampled MSAs is \$51,010, almost nine percent higher than the mean salaries of Fort Wayne MSA RN's.



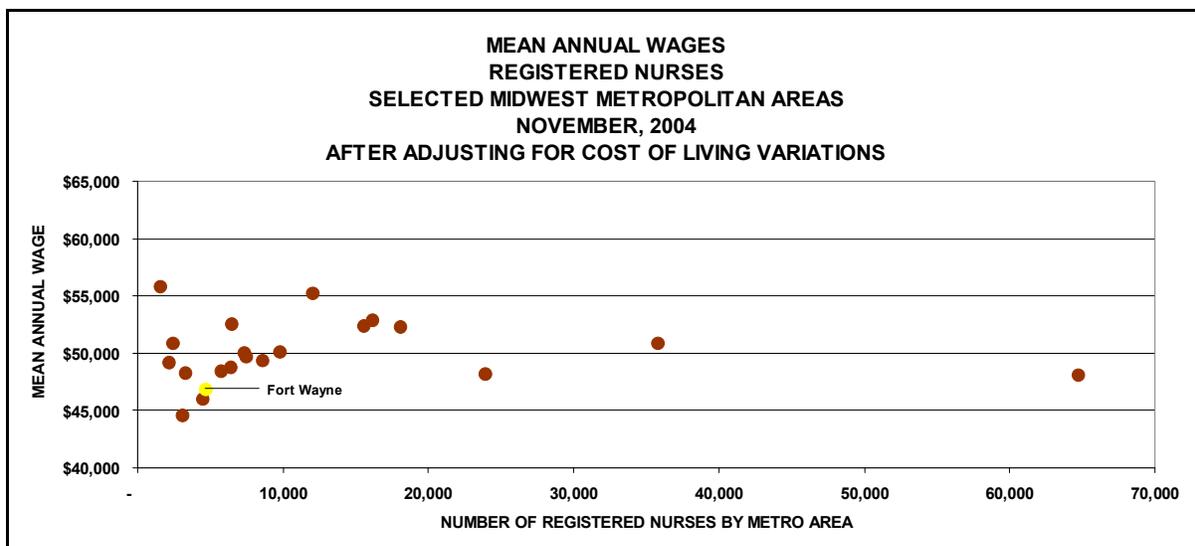
After weighing relative cost of living in the different MSAs against the Fort Wayne MSA, the Fort Wayne MSA pays its registered nurses lower mean salaries than 18 of the 21 sampled MSAs.¹³²

¹³² Salary.com did not provide comparative cost of living information for five MSAs – Muncie, Indiana; Lafayette, Indiana; Kokomo, Indiana; Flint, Michigan and Kalamazoo, Michigan.

Normalizing sampled mean salaries to reflect the Fort Wayne MSA cost of living, the Fort Wayne MSA mean annual wage for registered nurses is \$10,586 lower than the highest-paying mean salary, offered in the Elkhart-Goshen, Indiana, MSA (1,570 registered nurses, \$55,763 adjusted mean annual wage).

The Fort Wayne MSA offers a mean salary that is \$2,192 higher than the lowest-paying MSA, Evansville, Indiana (3,090 registered nurses, \$44,533 adjusted mean annual wage), the lowest-paying MSA when adjusting for the Fort Wayne MSAs cost of living.

The median cost of living-adjusted mean annual wages for the selected MSAs is \$49,620, roughly six percent higher than the average salary for Fort Wayne MSA RN's.



In both real dollar and cost of living adjusted mean annual wages, Fort Wayne is one of the lowest paying MSAs for registered nurses.

7.2. CNC-MIMMs

7.2.1. Survey responses and focus group insights

7.2.1.1. "Capacity of training institutions is inadequate to prepare workers for this occupation"

Respondents	Average Score	Intensity
Supply	4.33/6.00	4/9
Demand	4.00/6.00	10/19

While no survey comments augmented the higher-than-average score, concern about training capacity among CNC managers at our focus groups dealt with the alignment of

existing training resources toward more advanced CNC programming, operation and maintenance skills, which all agreed were necessary to succeed in this industry. As examples from our Ivy Tech focus group on December 1 indicate:

- One participant stated and several others agreed that training at Ivy Tech and other schools is not focused on the field itself. “English classes are good to know, but not pertinent to the CNC field.”
- One participant suggested that a class combining computer skills and CNC hands on training would be beneficial to anyone entering the CNC field.
- One participant who attends Ivy Tech stated that he finds it hard to be prepared to go into the workforce without having advanced training on machines.¹³³

Among both workers and employers, there was an appreciation for the CNC workers generated by the Vantage Career Center in Van Wert, Ohio. The program at Vantage is recognized in Northeast Indiana as creating strong machinists with a broad set of applicable skills and knowledge. When compared against similar vocational centers in EGR-3, Vantage was determined to be the leader in this field.

Using the “Worksheet for Calculating Shortages or Surpluses of One Occupation” on page 169 of the EGR-3 SSI Skills Shortage report, net demand for CNC-MIMMs is projected to range as follows:

- Lower projection: 43-93/year
- Middle projection: 105-155/year
- Higher projection: 143-155/year

Upon reviewing available capacity in EGR-3’s training institutions (approximately 210 seats across the region’s secondary and post-secondary providers), we determined that a capacity shortfall does not exist against all but our upper demand projection (between 212 and 250 per year).

Some programs could be better aligned to provide for cross training between machine operation and maintenance, but our main concern is that existing capacity is not utilized. Currently, only 152 students are enrolled in CNC-MIMM programs. Therefore, a root cause could be proper marketing of the manufacturing professions per section 4, and that must be addressed in the Solutions phase.

We also must monitor and plan accordingly in case capacity tightens and demand approaches our upper projections.

¹³³ CNC-MIMM Supply Focus Group notes, 1 Dec. 2005.

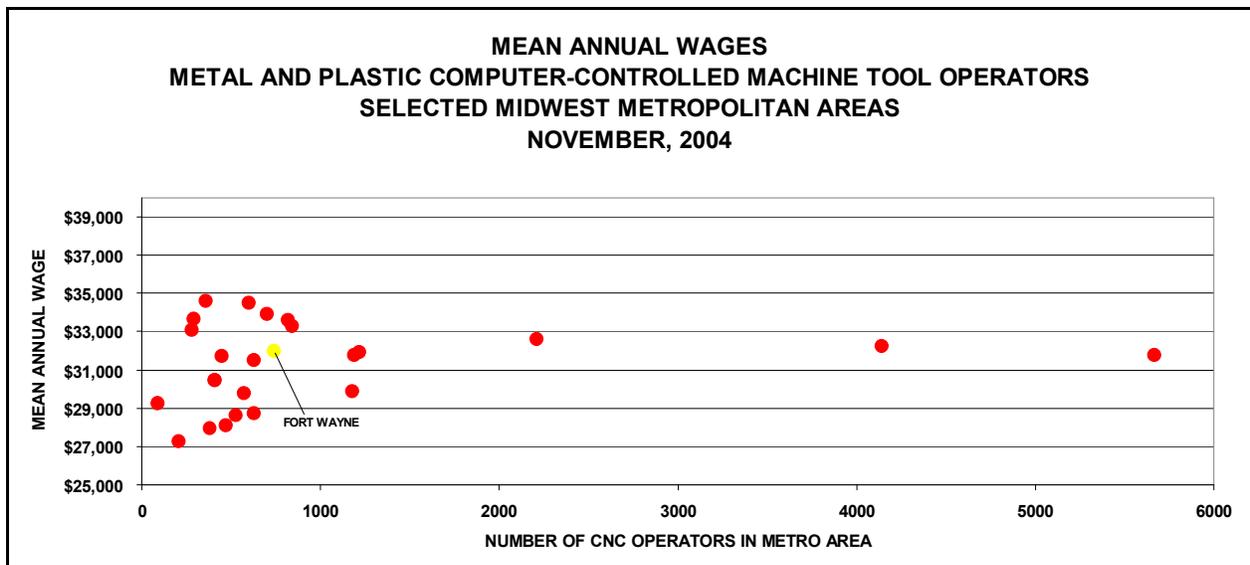
7.2.2. Wage survey analysis

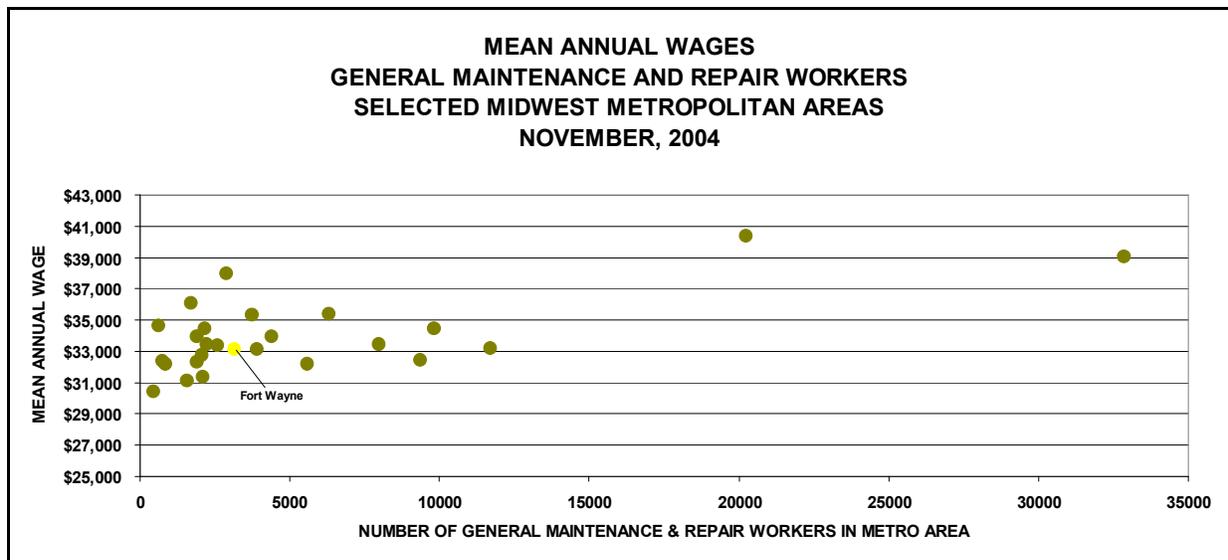
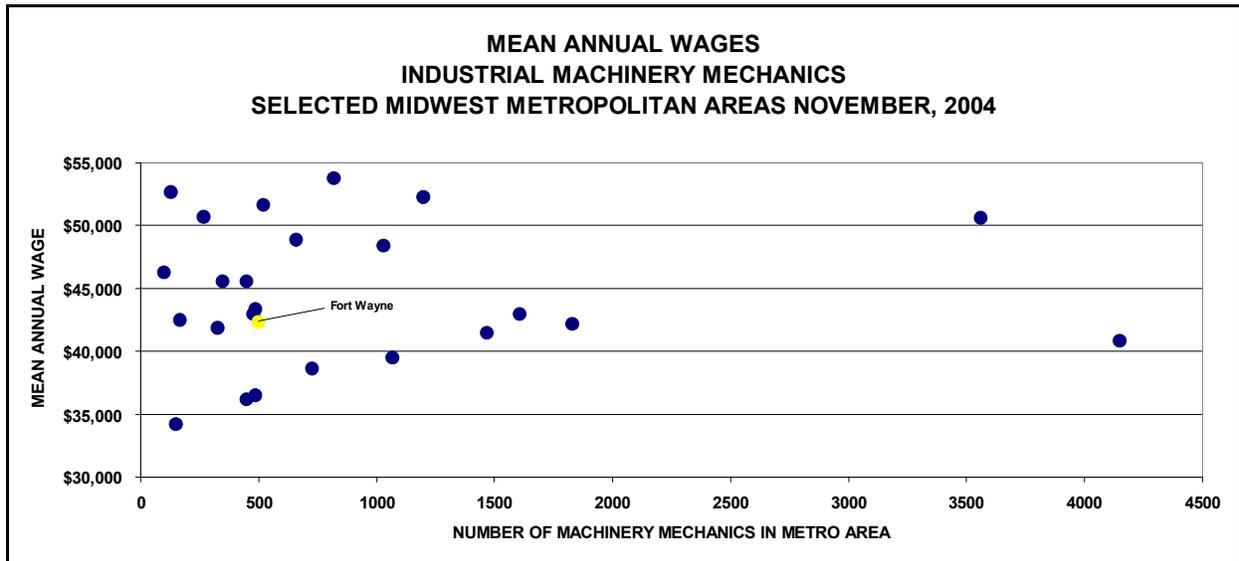
In order to compare mean annual wages, all five component occupations of the CNC-MIMM occupation cluster must be analyzed together. The following table offers that analysis.

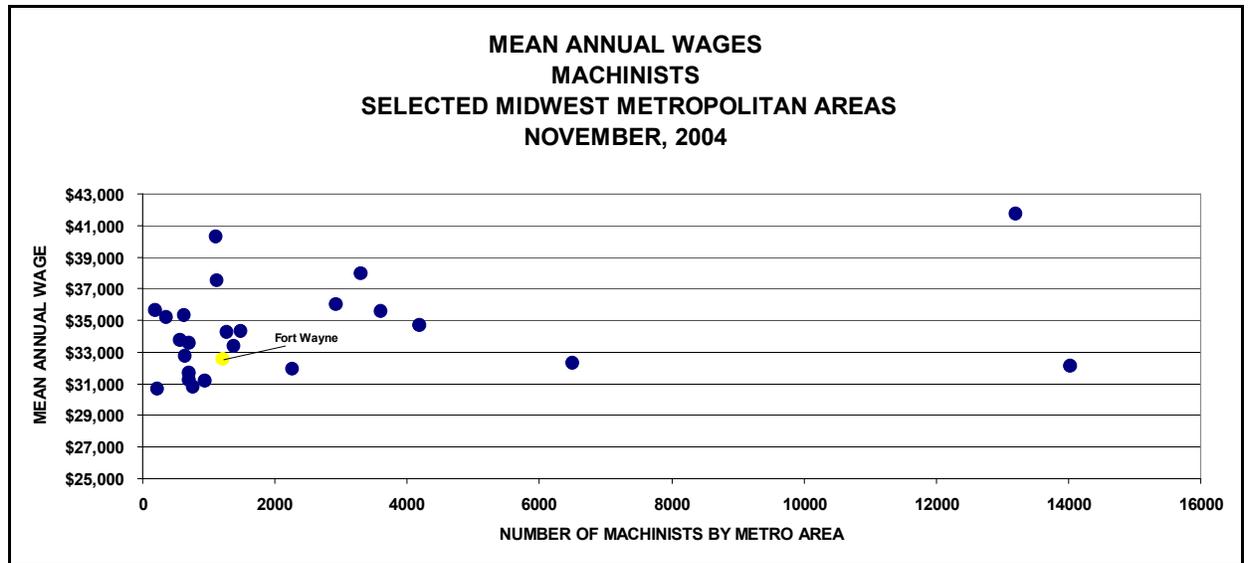
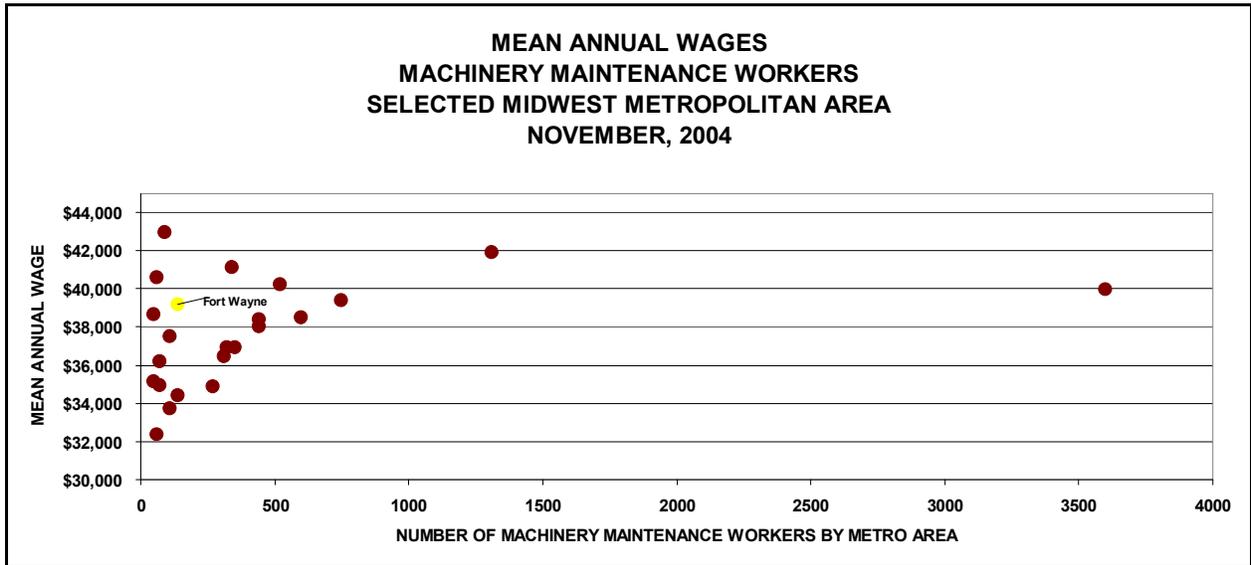
REAL DOLLAR COMPARISON

Occupation	Fort Wayne MSA info			Median of Mean Annual Wages (by MSA)	Other sampled MSAs – No. of workers – Mean annual wage	
	No. of workers	Mean annual wage	No. of sampled MSA's paying more/less		Highest paying	Lowest paying
Metal & Plastic Computer Controlled Machine Tool Operators	740	\$31,950	7/14	\$30,501	Rockford, IL 700 - \$34,405	Madison, WI 210 - \$27,920
Industrial Machinery Mechanics	500	\$42,270	14/8	\$42,877	Dayton, OH 820 - \$53,999	Benton Harbor, MI 150 - \$31,163
Maintenance & Repair Workers, General	3,160	\$33,130	10/12	\$32,932	Rockford, IL 1,720 - \$36,565	Cleveland, OH 11,710 - \$29,223
Maintenance Workers, Machinery	140	\$39,180	3/18	\$35,937	Lima, OH 90 - \$43,960	Madison, WI 70 - \$31,838
Machinists	1,220	\$32,540	13/8	\$34,551	Peoria, IL 1,110 - \$39,302	Chicago, IL 14,030 - \$28,380

As the table indicates, the Fort Wayne MSA is close to or higher than the median of the mean annual wages of the sampled MSAs on a real dollar basis.





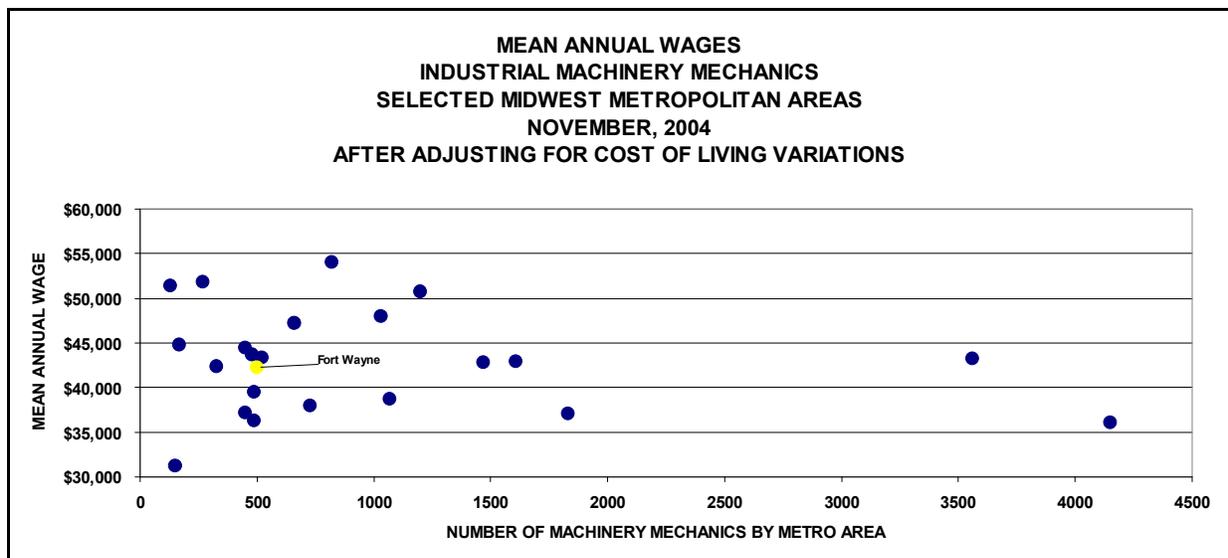
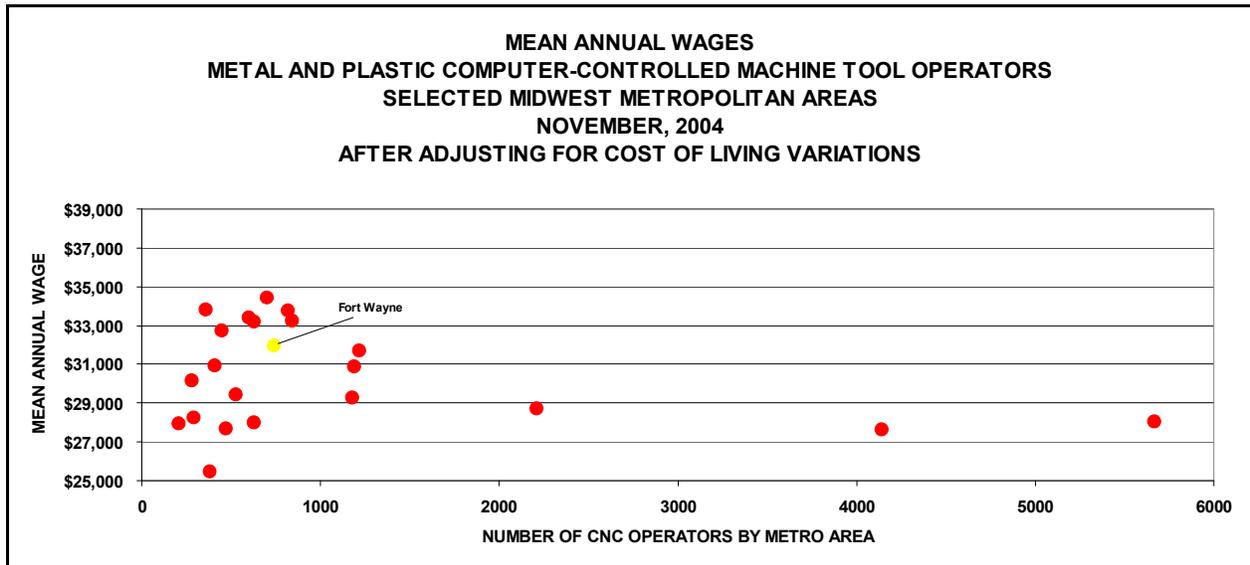


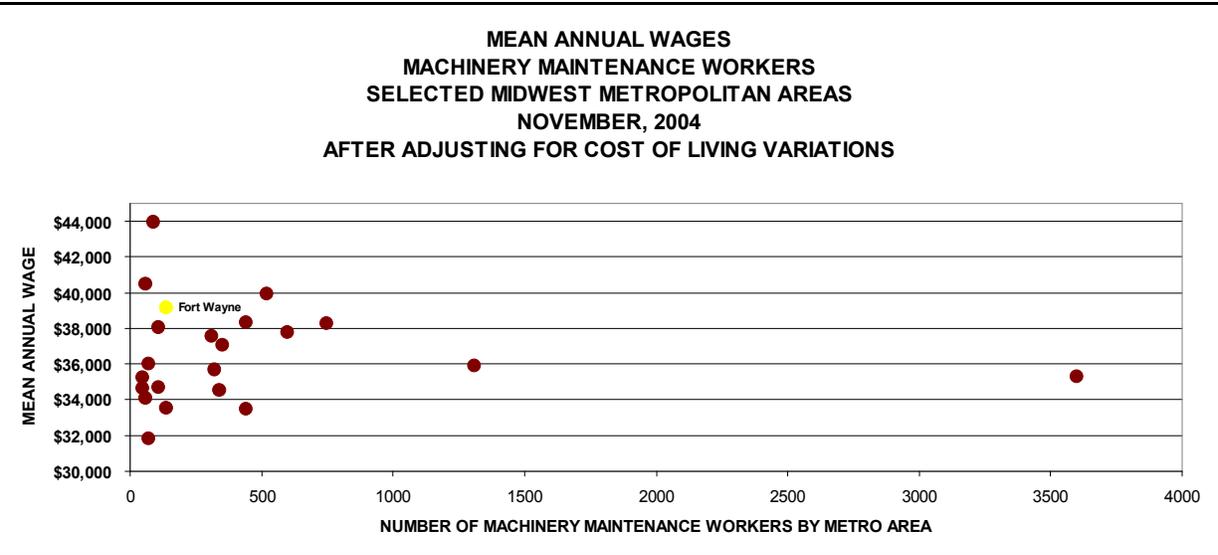
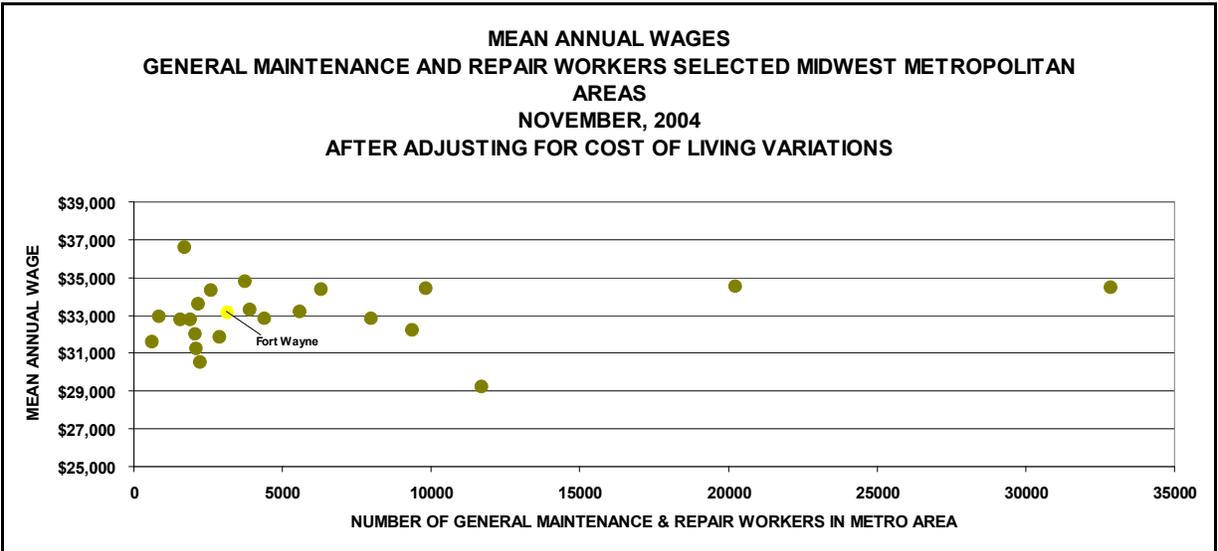
COST OF LIVING ADJUSTED TO FORT WAYNE MSA¹³⁴

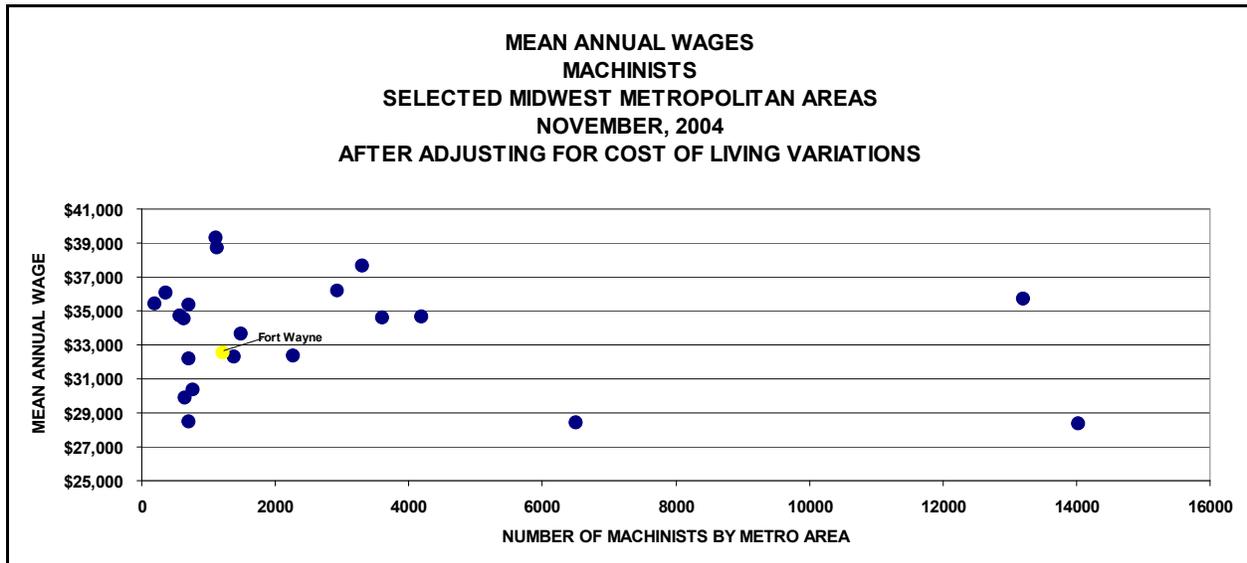
Occupation/ SOC	No. of workers in Fort Wayne MSA	Mean annual wage in Fort Wayne MSA	No. of sampled MSAs paying more than Fort Wayne MSA	No. of sampled MSAs paying less than Fort Wayne MSA	Median of Mean Annual Wages (by MSA)	Highest paying sampled MSA	No. of workers in highest paying MSA	Mean annual wage in highest paying MSA	Lowest paying sampled MSA	No. of workers in lowest paying MSA	Mean annual wage in lowest paying MSA
Metal & Plastic Computer Controlled Machine Tool Operators 51-4011	740	\$31,950	7	14	\$30,501	Rockford, IL	700	\$34,405	Madison, WI	210	\$27,920
Industrial Machinery Mechanics 49-9041	500	\$42,270	14	8	\$42,877	Dayton, OH	820	\$53,999	Benton Harbor, MI	150	\$31,163
Maintenance & Repair Workers, General 49-9042	3,160	\$33,130	10	12	\$32,932	Rockford, IL	1,720	\$36,565	Cleveland, OH	11,710	\$29,223
Maintenance Workers, Machinery 49-9043	140	\$39,180	3	18	\$35,937	Lima, OH	90	\$43,960	Madison, WI	70	\$31,838
Machinists 51-4041	1,220	\$32,540	13	8	\$34,551	Peoria, IL	1,110	\$39,302	Chicago, IL	14,030	\$28,380

In every instance, the Fort Wayne MSA is within six percent of the median of the mean average wages for the sampled MSA. In three of the five component occupations, the Fort Wayne MSA offers a mean average salary higher than the aforementioned medians.

¹³⁴ Salary.com does not offer data on Muncie, Indiana; Jackson, Michigan and Kalamazoo, Michigan. The other U.S. Bureau of Labor Statistics omissions from the prior table also apply to this table.







In addition, neither the supply nor demand surveys for CNC-MIMMs indicated that pay was a root cause of the shortage in this occupation. The statistical information in this wage survey, combined with no contradicting indicators from the surveys and focus groups, leads to conclude that wages are not a root cause of the CNC-MIMM shortage.

7.3. Industrial Engineers

7.3.1. Survey responses and focus group insights

All identified root causes for this occupation drawn from surveys and focus groups can be considered cross-cutting root causes and will be addressed in section 4.

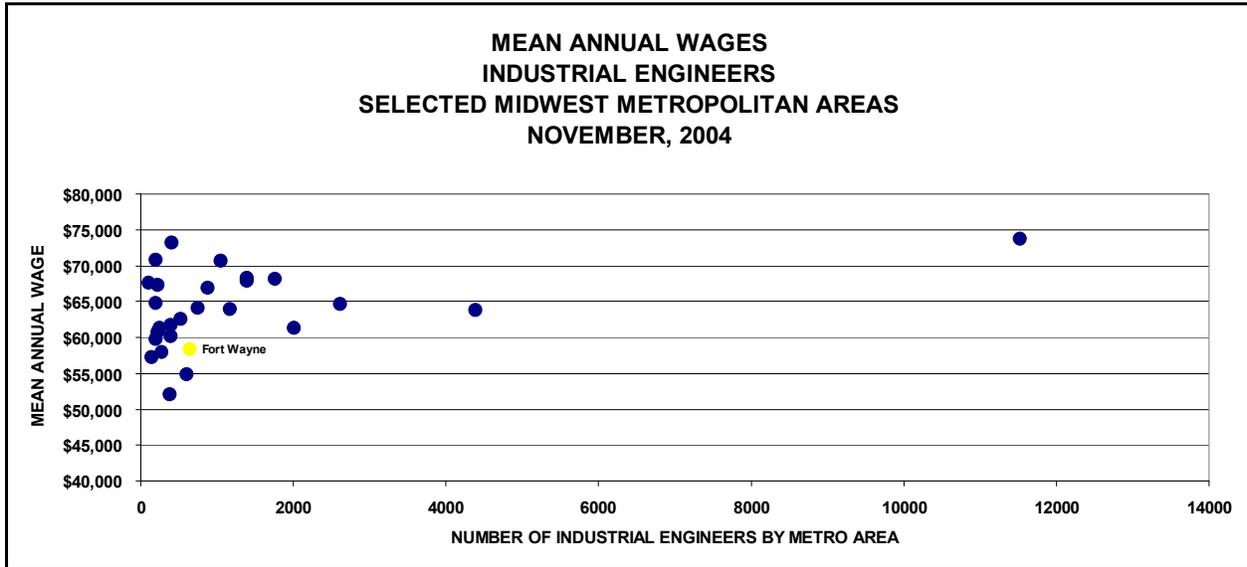
7.3.2. Wage survey analysis

650 industrial engineers are employed in the Fort Wayne MSA. The mean annual wage for this occupation in the Fort Wayne MSA is \$58,310. This wage is lower than 22 of the 26 MSAs surveyed.

The highest-paying MSA for industrial engineers is the Detroit, Michigan MSA, who pays their 11,530 industrial engineers a mean salary of \$73,770.

The lowest-paying MSA for industrial engineers is the Elkhart-Goshen, Indiana MSA. The mean salary for this occupation in Elkhart-Goshen is \$52,060.

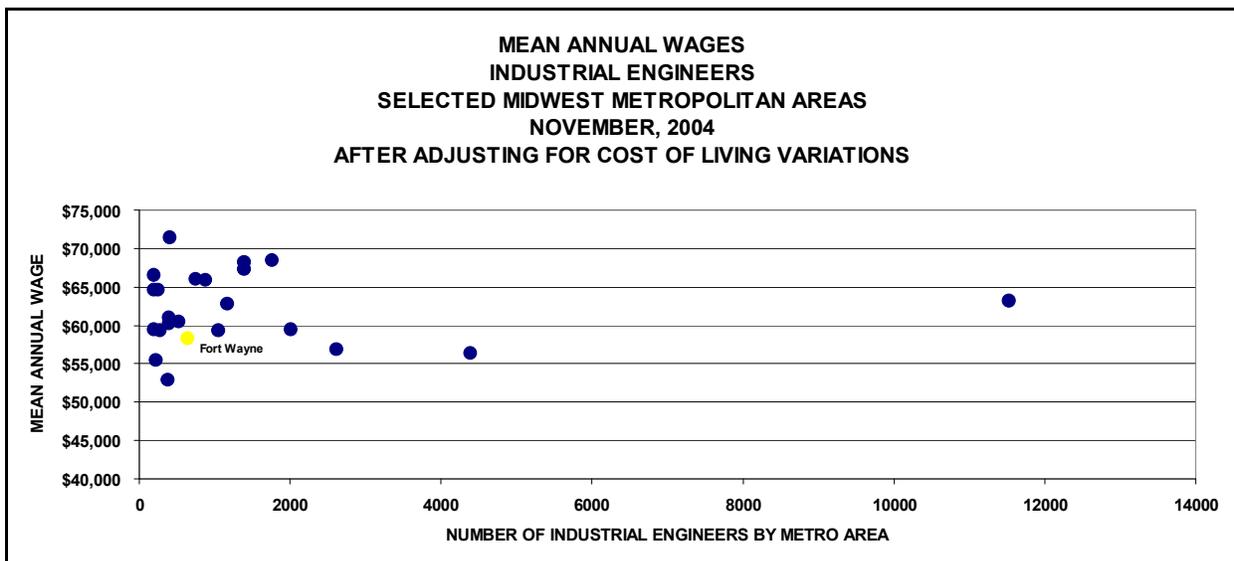
The median of the mean annual wages for industrial engineers among the sampled MSAs is \$63,930, 9.6 percent more than the mean salary in the Fort Wayne MSA.



When normalizing the mean annual wages for industrial engineers to reflect the Fort Wayne MSAs cost of living, the Lansing, Michigan MSA (410 industrial engineers) becomes the highest-paying mean annual wage provider at \$71,448.

On average, industrial engineers make the lowest cost of living-adjusted mean salaries in the Elkhart-Goshen, MSA, where their 380 industrial engineers earn an average of \$52,893.

The median of the mean annual wages for industrial engineers in the selected MSAs is \$61,023 – 4.7 percent higher than the average salaries in the Fort Wayne MSA.



With a 5-10 percent gap between the Fort Wayne MSA’s average salary levels and those of the other sampled MSAs (depending on cost of living adjustments), this could be a participating cause in the shortage. Neither supply nor demand surveys, however, listed wage pressure as a root cause of the shortage of industrial engineers. Therefore, other root causes must be more compelling than wage pressure.

7.4. Computer Systems Analysts

7.4.1. Survey responses and focus group insights

7.4.1.1. “IT professionals leave this occupation in my area because of better pay & benefits elsewhere”

<u>Respondents</u>	<u>Average Score</u>	<u>Intensity</u>
Supply	5.00/6.00	9/14
<i>Demand</i>	3.26/6.00	5/19

This issue did not surface beyond the raw scores in the supply surveys. A computer systems analyst supply focus group in Columbia City revealed these thoughts regarding pay:

- IT people eventually leave here for a job with more money.
- IT trained individuals come here right out of college and within one to two years I can expect them to move on.
- I am seeking further certification and if my employer can’t/won’t increase my wage I’ll be moving on.¹³⁵

Additional statistical analysis of this issue is detailed in section 3.4.2. Anecdotally, this note from the Angola IT professionals supply focus group sheds light on the wage issue:

- Estimated wage for starting IT professionals is \$25,000 to \$32,000.¹³⁶

The anecdotal figure offered in our focus group is roughly half of the mean annual wage for computer systems analysts in the Fort Wayne MSA. Without further detail on the distribution of wages by county, industry, employer or employer size in EGR-3, we are left to conjecture on this discrepancy.

If, however, a new IT employee working for roughly \$30,000 annually accumulates sufficient skills and experience to be employed somewhere else at the median wage, the comments from the aforementioned Columbia City supply focus group are given context.

¹³⁵ Notes from Information Technology supply focus group, Columbia City, 1 Dec. 2005.

¹³⁶ Notes from Information Technology supply focus group, Angola, 1 Dec. 2005.

Wages – and the tie between skills and wage development for members of this occupation – may be a contributing root cause to a systemic shortage in qualified IT workers.

7.4.1.2. “Instructors are not paid sufficiently to retain them.”

Respondents	Average Score	Intensity
Supply	4.00/6.00	5/14
Demand	3.29/6.00	4/20

As a root cause, this is somewhat confusing. While it passed our root cause threshold of a 4.00 average score on the supply surveys, the average score on demand surveys did not meet the minimum criteria. Intensity of opinion on this statement as a root cause was lacking, with less than 50% of respondents in both supply and demand considering this “very important” or “a key cause” of the shortage of information technology professionals.

Further review of focus group notes and recordings indicate no discussion of instructor pay in any of the focus groups – supply or demand. This survey statement is included in the “training” section, and discussion of the important root cause considerations related to IT training focused around the lack of access to training because of distance and small occupational population.

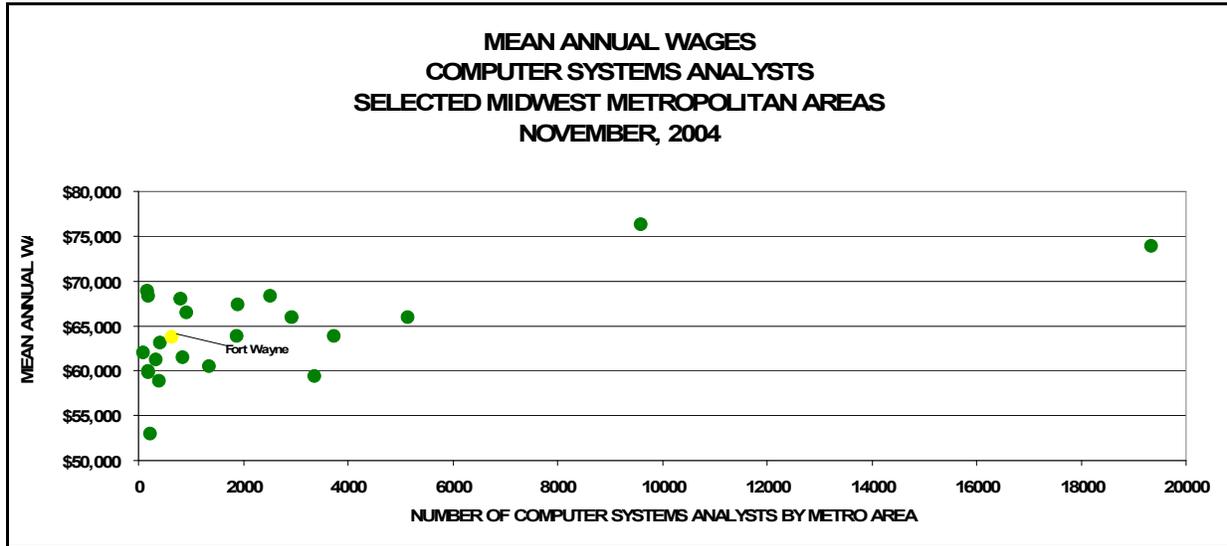
It could be argued that agreeing with the statement about instructor pay is an endorsement of the need for investing in expanded training options and the faculty to deliver that training. We look at this as an outlier in our survey model.

7.4.2. Wage survey analysis

The 640 computer systems analysts in the Fort Wayne MSA earn a mean annual wage of \$63,780. That amount is less than 12 MSAs but higher than 10 others. The Fort Wayne MSA’s mean annual wage is 0.6 percent lower than the median of the mean annual wages for computer systems analysts in the sampled MSAs, \$63,880.

The highest-paying MSA for computer systems analysts’ mean annual wages is Detroit, Michigan, whose 9,600 computer systems analysts earn an average salary of \$76,310.

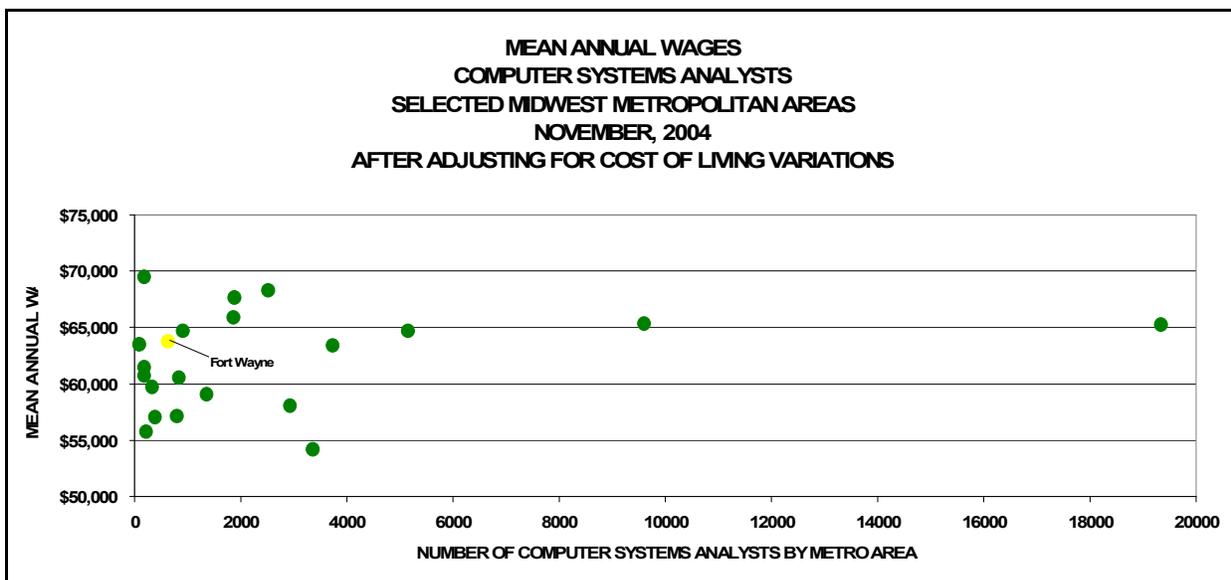
South Bend, Indiana is the lowest-paying MSA for computer systems analysts’ mean annual wages, where 230 computer systems analysts earn a mean annual wage of \$52,940.



Once mean salaries are normalized to reflect the Fort Wayne MSA’s cost of living, the median of the mean annual wages for computer systems analysts in the selected MSAs is \$63,369, or 0.6 percent less than the Fort Wayne MSA.

The highest adjusted average salaries are paid in the Elkhart-Goshen MSA, where their 190 computer systems analysts earn an adjusted mean annual wage of \$69,464.

The lowest mean annual wages for computer systems analysts are paid in the Madison, Wisconsin MSA, where their 3,360 computer systems analysts earn an average of \$54,191.



8. Concluding Comments and Industry Endorsement

The root causes identified are as varied as our targeted occupations and skills. We look forward to the Solutions phase, bringing this SSI process to fruition by developing the line of sight between the solutions offered, the root causes presented herein and the shortages that we intend to remedy.

Every individual who participated in the Shortage and Root Causes phases of the Northeast Indiana SSI project was invited to review and comment upon a draft of this report. Endorsements were received from leadership in each of our targeted industries. In addition, some employees who participated in occupational supply focus groups offered their support to our conclusions. Their feedback follows:

You have done a great job on this. I would like to be part of the Solution in the IT area.

Ralph Compagnone
Continental Computer Services
ExecuTrain of Northern Indiana

This is great. Makes me realize how much we have to do, to recruit people to come to Ft. Wayne. As for nursing I think they need to pay a little better and adopt a clinical ladder in all hospitals.

Marie Hamrick, RN, MSN, CCRN
Clinical Educator/ Nursing Informatics, Parkview Health

The data is interesting. I'd like to be part of the solution. Please contact me as you move forward.

Sue Johnson, RN, CNA, BC
Accreditation Specialist
Regulatory/Accreditation Department, Parkview Health

As an IT Professional, I agree with your findings so far and look forward to your recommendations on how to implement change based upon these findings.

Gary M. Morris
Manager, IT
Steel Dynamics - Structural and Rail Division

I think you did a good job of summarizing the information. It does reflect the discussions in which I participated. It is right on the mark, from my (the health care) perspective.

Bruce W. Hamilton
Vice President, Human Resources
Lutheran Hospital of Indiana
Lutheran Health Network

I support your findings.

Tammie Marlowe
Human Resources Manager
Comcast

I think you are on track with the discussion related to Nursing. Key issues are stress level on nurses and low instructor pay at the college level.

Johnathan Liechty, RN, BSN
Manager Student & Learning Services
Workforce Development
Parkview Health

I read through the report and think it does an excellent job of analyzing the region. I approve!

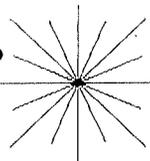
Robert M. Pearson
Chief Executive Officer
Wabash County REMC

I have read the Root Cause Report and have no substantial changes to recommend. Consequently I endorse the report and empower you to convey my endorsement to the appropriate persons. As a member of the Lead Team, I look forward to moving ahead with the upcoming third stage of this very important initiative.

Dr. John F. Wellington, Dean
School of Business and Management Sciences
Indiana University - Purdue University Fort Wayne



Ottenweller Co., Inc.



3011 Congressional Parkway • Fort Wayne, IN 46808
Phone: (260) 484-3166 • Fax: (260) 484-9798

December 20, 2005

Tom Fellrath, IOM
Project Manager
Northeast Indiana Workforce Investment Board
300 East Main Street
Fort Wayne, Indiana 46802

Dear Tom;

We have read the Economic Growth Region 3 Strategic Skills Shortage's Root Cause report and endorse the findings.

Please let us know what we can do to work with Patty Weddle and her staff to develop meaningful solutions to the Root Causes addressed in the report.

Sincerely,

Joyce Spahr
Human Resources



STAR
Wealth Management

Professional Services:

Trusts & Estates

Wealth Planning

Investment Management

Foundations & Endowments

Retirement Plans

Private Banking

December 20, 2005

VIA FACSIMILE: 260-436-5973

Thomas D. Fellrath, IOM
Project Manager
Northeast Indiana Workforce Investment Board
300 East Main Street
Fort Wayne, IN 46802

Re: Economic Growth Region 3 Strategic Skills Shortage's
Root Cause Report

Dear Mr. Fellrath:

I have read the Economic Growth Region 3 Strategic Skills Shortage's Root Cause report and endorse its findings. I intend to work with Patty Weddle and her staff in developing meaningful solutions to the Root Causes addressed in the report.

To discuss this initiative further, I can be reached directly at (260) 428-7033.

Sincerely,

Keith Davis
President
STAR Wealth Management

KD/mir

127 West Berry Street, 2nd Floor
PO Box 10600
Fort Wayne, Indiana 46853-0600

Tel: (260) 428-7052

Fax: (260) 428-7053

Additional offices in
Indianapolis and Marion

JOBWORKS

providing workforce solutions for people, business, and communities

December 21, 2005

Dear Tom,

I have reviewed NIWIB'S Economic Growth Region 3 Strategic Skills Shortage's Root Cause and endorse its findings without reservation. It mirrors much of what I see and hear everyday in my work with Region 3 Human Resource Professionals who seek that skilled workforce for their place of business. They tell me they often have to go outside our community to find that experienced and educated workforce.

The report also accurately captured the thoughts (and attitudes) of many of our community youth concerning four year degrees. Many of them do not believe that our big wage manufacturing jobs are gone. In my community work with teens I often hear that they will find high paying manufacturing jobs in North East Indiana like their parents or other extended family members.

I will continue to work with Patty Weddle and the NIWIB staff in their endeavors in seeking solutions to these root causes that were addressed in this important (and often eye opening) report.

Thank you,



Rita Bennett-Sheirbon,
Business Services Manager
JobWorks Inc.
201 East Rudisill Fort Wayne
Fort Wayne, IN 46806
260-458-7136

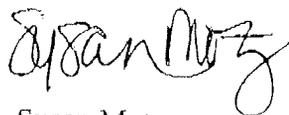


5335 Bass Road
Ft. Wayne, IN 46808
(260) 432-8176
Fax (260) 432-1758
susan_motz@sweetwater.com
<http://www.sweetwater.com>

December 22, 2005

I have read the Economic Growth Region 3 Strategic Skills Shortage's Root Cause report and endorse its findings. I intend to work with Patty Weddle and her staff in developing meaningful solutions to the Root Causes addressed the report.

Sincerely,



Susan Motz
Director of Human Resources



cornerstonesolutions^{INC}

December 20, 2005

To Whom It May Concern:

I have read the Economic Growth Region 3 Strategic Skills Shortage's Root Cause report and endorse its findings. I intend to work with Patty Weddle and her staff in developing meaningful solutions to the Root Causes addressed the report.

Sincerely,

Chris Werling

President

Cornerstone Solutions, Inc.

9. Supplemental Information

9.1. Student Career Survey

9.1.1. Survey Instrument

Student Career Survey

School: _____

Date: _____

Grade Level: _____

Age: _____

Male ___ Female ___

The Northeast Indiana Workforce Investment Board is seeking information about how school students think about their future career plans, and how their school experiences prepare them.

The purpose of this **survey** is to collect information from you about the following:

- I. What careers are you interested in exploring?***
- II. How have you learned about career options?***
- III. How will your course choices and your education plans beyond high school help you be prepared for the career of your choice?***
- IV. Access and usage of computers and the internet.***
- V. Your living plans.***

I. What careers are you interested in exploring?

1. The following is a list to show the many **career** clusters in America. Please look at the entire list. Think about five careers you might pursue. Write the job titles on the blank line under the appropriate category. Then rank the top 5 in order with "1" being the highest that might be of interest to you.

- _____ Agriculture and Natural Sciences _____
- _____ Architecture and Construction _____
- _____ Arts, Audio-Video Technology & Communications _____
- _____ Business and Administration _____
- _____ Education and Training _____
- _____ Finance _____
- _____ Government and Public Administration _____
- _____ Health _____
- _____ Hospitality and Tourism _____
- _____ Human Services _____

- _____ Information Technology (Computers & Software) _____
- _____ Law and Public Safety _____
- _____ Manufacturing _____
- _____ Retail/Wholesale Sales and Services _____
- _____ Scientific Research and Engineering _____
- _____ Transportation, Distribution and Logistics Services _____
- _____ Other _____

II. How have you learned about career options?

2. Have you ever discussed these career interests with any of the following people?

	Never	At least 1 Time	1-5 Times	More than 5 times
a. Mother	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Father	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Sibling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Counselor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Religious Leader	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Peers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Adult Friend	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Community Organization Leader	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Math Teacher	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Science Teacher	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. English/Language Teacher	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. History Teacher	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m. Physical Education Teacher	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n. Principal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o. Art Teacher	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p. Music Teacher	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
q. Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. What grade were you in when you had your first career discussion? _____

4. When you think about a possible career, what is important to you:

	Very Important	Somewhat Important	Not Important
a. Salary you could earn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Education you need	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Where to learn about the job	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Range of jobs in your field	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Where you need to live	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. What you wear to work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Hours you will work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. If you sit at a desk all day	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. If you work alone or with other people on a team	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. If you work inside or outside	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

k. If you use a computer and other technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Have you looked for information about careers in any of the following?

	Yes	No
a. Library	<input type="checkbox"/>	<input type="checkbox"/>
b. Television	<input type="checkbox"/>	<input type="checkbox"/>
c. Newspaper	<input type="checkbox"/>	<input type="checkbox"/>
d. Internet sites, computer programs	<input type="checkbox"/>	<input type="checkbox"/>
e. Other	<input type="checkbox"/>	<input type="checkbox"/>

6. If you answered yes to (d), please list up to four websites/computer programs you have used to learn more about a possible career:

III. How will your course choices and your education plans beyond high school help you be prepared for the career of your choice?

7. In what kind of high school courses are you most interested? Please rank in order of 1–7 with "1" being the highest.

- | | |
|-----------------------------------|--------------------------|
| _____ Math and science | _____ Physical education |
| _____ English and language skills | _____ Arts and music |
| _____ History and social sciences | _____ Other _____ |
| _____ Technology | |

8. Based upon your first career choice in Question 1, what courses do you believe are the most important for you to take in high school? Please rank in order of 1-8 with "1" being most important. Use the "Don't Know" column if you are not sure.

	Rank	Don't Know
a. Math		<input type="checkbox"/>
b. Science		<input type="checkbox"/>
c. English and language skills		<input type="checkbox"/>
d. History and social sciences		<input type="checkbox"/>
e. Technology		<input type="checkbox"/>
f. Physical education		<input type="checkbox"/>
g. Arts and music		<input type="checkbox"/>
h. Vocational-Technical Programs		<input type="checkbox"/>
i. Other _____		<input type="checkbox"/>

9. Do you believe that your attitude towards your teachers, classmates and school are important to your career and your life?

Yes	No	Don't Know
-----	----	------------

10. Do you believe that your attitude about attendance, punctuality and turning work in on time are important to your career and your life?

Yes	No	Don't Know
-----	----	------------

11. At what grade level do you feel you should begin thinking and learning about careers?

Elementary School	Middle School	High School	Don't Know
-------------------	---------------	-------------	------------

12. Do you plan to attend a Vocational-Technical School while in high school?

Yes	No	Undecided
-----	----	-----------

13. Do you plan to attend a four-year college/university after graduating?

Yes	No	Undecided
-----	----	-----------

14. Do you plan to attend a two-year technical school or training program after graduating?

Yes	No	Undecided
-----	----	-----------

15. Do you plan on entering the military after graduating?

Yes	No	Undecided
-----	----	-----------

IV. Access and usage of computers and the internet.

16. Do you use a computer?

	Yes	No
a. At Home	<input type="checkbox"/>	<input type="checkbox"/>
b. At School	<input type="checkbox"/>	<input type="checkbox"/>
c. In Library	<input type="checkbox"/>	<input type="checkbox"/>
d. Friend/Relative	<input type="checkbox"/>	<input type="checkbox"/>

17. If you answered "Yes" to "b. At School", how often do you use the computer?

1 hour a day	1 hour a week	1 hour a month	Other: _____ hours
--------------	---------------	----------------	--------------------

18. Do you have access to the Internet?

	Yes	No
a. At Home	<input type="checkbox"/>	<input type="checkbox"/>
b. At School	<input type="checkbox"/>	<input type="checkbox"/>
c. In Library	<input type="checkbox"/>	<input type="checkbox"/>
d. Friend/Relative	<input type="checkbox"/>	<input type="checkbox"/>

19. If you answered "Yes" to "b. At School", how often do you use the Internet?

1 hour a day	1 hour a week	1 hour a month	Other: _____ hours
--------------	---------------	----------------	--------------------

20. What *math* class(es) are you taking this school year (i.e. Algebra, Geometry, etc.)?

21. What *science* class(es) are you taking this school year (i.e. Life Science, Physical Science, etc)?

IV. Your living plans.

22. Do you plan to live in Northeast Indiana when you graduate from school?

Yes	No	Undecided
-----	----	-----------

23. If no, where do you plan to move and why?

24. Do you think you can find work in your most promising career (#1 on the front page) in Northeast Indiana?

Yes	No	Don't know
-----	----	------------

9.1.2. Student survey responses

Your grade level

	Response Total
Grade 9	143
Grade 10	22
Grade 11	42
Grade 12	164
Total Respondents	371
(skipped this question)	6

Your gender

	Response Total
Male	175
Female	197
Total Respondents	372
(skipped this question)	5

The following is a list to show the many career clusters in America. Please look at the entire list. Think about five careers you might pursue. Rank the top 5 in order with "1" being the highest that might be of interest to you.

	1	2	3	4	5	Response Average
Agriculture and Natural Sciences	13	8	16	19	17	3.26
Architecture and Construction	23	19	20	20	14	2.82
Arts Audio-Video Technology & Communications	37	46	36	23	28	2.76
Business and Administration	37	32	28	26	32	2.9
Education and Training	39	44	36	26	24	2.72
Finance	5	13	17	20	12	3.31
Government and Public Administration	6	6	15	19	11	3.4
Health	56	28	31	17	20	2.45
Hospitality and Tourism	8	17	14	23	11	3.16
Human Services	24	34	21	23	15	2.75
Information Technology (Computers & Software)	17	18	15	16	13	2.87
Law and Public Safety	19	33	41	30	16	2.94
Manufacturing	2	9	12	14	11	3.48
Retail/Wholesale Sales and Services	7	11	20	18	21	3.45
Scientific Research and Engineering	13	20	18	14	20	3.09
Transportation Distribution and Logistics Services	2	8	8	10	13	3.59
Other	58	18	13	18	58	3
Total Respondents	369					
(skipped this question)	8					

Have you ever discussed these career interests with any of the following people?

	Never	At least one time	1-5 times	More than 5 times	Response Average
Mother	21	35	70	237	3.44
Father	36	45	85	194	3.21
Sibling	53	70	100	133	2.88
Counselor	133	82	94	45	2.14
Religious Leader	211	64	44	24	1.65
Peers	25	53	92	188	3.24
Adult Friend	39	84	122	107	2.84
Community Organization Leader	279	41	7	11	1.26
Math Teacher	244	64	23	10	1.41
Science Teacher	242	67	24	11	1.43
English/Language Teacher	209	80	41	13	1.59
History Teacher	242	66	22	14	1.44
Physical Education Teacher	267	45	16	16	1.36
Principal	296	22	16	6	1.21
Art Teacher	279	42	14	9	1.28

Music Teacher	286	27	18	10	1.27
Total Respondents	366				
(skipped this question)	11				

What grade were you in when you had your first career discussion?

Total Respondents	352
(skipped this question)	25

When you think about a possible career what is important to you:

	Very important	Somewhat important	Not important	Response Average
Salary you could earn	239	110	14	1.38
Education you need	293	64	2	1.19
Where to learn about the job	190	149	20	1.53
Range of jobs in your field	173	156	29	1.6
Where you need to live	202	128	30	1.52
What you wear to work	79	150	128	2.14
Hours you will work	201	134	24	1.51
If you sit at a desk all day	116	133	108	1.98
If you work alone or with other people on a team	163	167	29	1.63
If you work inside or outside	117	166	76	1.89
If you use a computer and other technology	98	188	73	1.93
Total Respondents	363			
(skipped this question)	14			

Have you looked for information about careers in any of the following?

	Yes	No	Response Total
Library	127	234	361
Television	149	211	360
Newspaper	105	253	358
Internet sites computer programs	180	181	361
Total Respondents	363		
(skipped this question)	14		

In what kind of high school courses are you most interested? Please rank in order of 1–7 with "1" being the highest.

	1	2	3	4	5	6	7	Response Average
Math and science	88	53	40	41	28	50	55	3.67

English and language skills	39	59	61	57	43	54	40		3.93
History and social sciences	35	51	75	63	66	35	28		3.82
Technology	46	58	50	54	61	38	46		3.92
Physical education	44	46	50	59	64	60	29		3.99
Arts and music	62	52	39	45	47	58	54		3.99
Other	43	39	39	36	44	52	84		4.46
Total Respondents	364								
(skipped this question)	13								

Based upon your first career choice in Question 1 what courses do you believe are the most important for you to take in high school? Please rank in order of 1-8 with "1" being most important. Use the "Don't Know" column if you are not sure.

	1	2	3	4	5	6	7	8	Don't know	Response Average
Math	87	80	47	28	25	13	17	20	29	3.1
Science	44	55	53	56	32	19	21	24	30	3.78
English and language skills	65	55	72	33	31	33	18	13	23	3.46
History and social sciences	18	26	33	69	66	39	34	11	36	4.51
Technology	33	38	63	57	53	44	15	16	29	4.04
Physical education	22	21	17	17	26	61	56	63	44	5.57
Arts and music	33	17	16	21	33	39	80	59	48	5.47
Vocational-Technical Programs	20	30	20	29	35	39	37	60	78	5.2
Other	16	15	11	11	17	21	29	28	148	5.14
Total Respondents	363									
(skipped this question)	14									

Do you believe that your attitude towards your teachers classmates and school are important to your career and your life?

	Response Total
Yes	323
No	23
Don't know	16
Total Respondents	362
(skipped this question)	15

Do you believe that your attitude about attendance punctuality and turning work in on time are important to your career and your life?

	Response Total
Yes	348
No	9

Don't know	5
Total Respondents	362
(skipped this question)	15

At what grade level do you feel you should begin thinking and learning about careers?

	Response Total
Elementary School	21
Middle School	162
High School	163
Don't know	16
Total Respondents	362
(skipped this question)	15

Do you plan to attend a Vocational-Technical School while in high school?

	Response Total
Yes	37
No	207
Undecided	116
Total Respondents	360
(skipped this question)	17

Do you plan to attend a four-year college/university after graduating?

	Response Total
Yes	279
No	37
Undecided	46
Total Respondents	362
(skipped this question)	15

Do you plan to attend a two-year technical school or training program after graduating?

	Response Total
Yes	72
No	187
Undecided	99
Total Respondents	358
(skipped this question)	19

Do you plan on entering the military after graduating?

	Response Total
Yes	26
No	276
Undecided	60
Total Respondents	362
(skipped this question)	15

Do you use a computer?

	Yes	No	Response Total
At Home	346	16	362
At School	357	5	362
In Library	301	58	359
Friend/Relative	299	58	357
Total Respondents	363		
(skipped this question)	14		

If you answered "Yes" to "b. At School" how often do you use the computer?

	Response Total
1 hour a day	185
1 hour a week	120
1 hour a month	47
Total Respondents	352
(skipped this question)	25

Do you have access to the Internet?

	Yes	No	Response Total
At Home	337	22	359
At School	362	0	362
In Library	350	8	358
Friend/Relative	331	21	352
Total Respondents	363		
(skipped this question)	14		

If you answered "Yes" to "At School" how often do you use the Internet?

	Response Total
More than 1 hour a day	57
1 hour a day	105
1 hour a week	119
1 hour a month	38
Total Respondents	319
(skipped this question)	38

Total Respondents	357
(skipped this question)	20

What math class(es) are you taking this school year (i.e. Algebra Geometry etc.)?

Total Respondents	357
(skipped this question)	20

What science class(es) are you taking this school year (i.e. Life Science Physical Science etc)?

Total Respondents	352
(skipped this question)	25

Do you plan to live in Northeast Indiana when you graduate from school?

	Response Total
Yes	106
No	118
Don't know	144
Total Respondents	368
(skipped this question)	9

Do you think you can find work in your favorite career choice in Northeast Indiana?

	Response Total
Yes	207
No	65
Don't know	95
Total Respondents	367
(skipped this question)	10

9.2. Sample occupational root causes survey instrument – Supply

Northeast Indiana Strategic Skills Initiative Root Causes Survey for CNC Equipment Managers

This brief survey will allow us to gather a better understanding of the root causes of our shortage of qualified CNC equipment managers in Northeast Indiana. Your input will help us guide our workforce planning for years to come!

1. What is your general job description? (Check one)

<input type="checkbox"/> CNC Operator	<input type="checkbox"/> CNC programmer
<input type="checkbox"/> CNC setup technician	<input type="checkbox"/> CNC maintenance technician

_____ Other (pls. specify: _____)

2. In which county do you work?

3. How are you and your fellow CNC managers recruited? (Check Yes or No for each)

	Yes	No
Classified ads	<input type="checkbox"/>	<input type="checkbox"/>
Via high schools	<input type="checkbox"/>	<input type="checkbox"/>
Via staffing agency placement	<input type="checkbox"/>	<input type="checkbox"/>
Via technical schools	<input type="checkbox"/>	<input type="checkbox"/>
Via personal referrals	<input type="checkbox"/>	<input type="checkbox"/>
Other: _____	<input type="checkbox"/>	<input type="checkbox"/>

4. Why do you work for your employer instead of another?

Questions 5-7: For each line, please check the box that most accurately describes your opinion on the importance of the statements listed toward the shortage of CNC managers.

5. Early parts of the CNC supply "pipeline":

	No importance	Slight importance	Some importance	Moderate importance	Very important	A key cause
High school graduates have insufficient academic preparation for this occupation.	<input type="checkbox"/>					
Potential workers have unrealistic expectations of what it's like to work in manufacturing.	<input type="checkbox"/>					
School guidance counselors have little understanding of the opportunities in this occupation.	<input type="checkbox"/>					
Employers don't try hard enough to recruit a diverse population.	<input type="checkbox"/>					
Other reasons	<input type="checkbox"/>					

If you checked that other reasons were a factor, please describe:

6. CNC training:

	No importance	Slight importance	Some importance	Moderate importance	Very important	A key cause

Capacity of training institutions is inadequate to prepare workers for this occupation.	<input type="checkbox"/>					
Instructors are not paid sufficiently to retain them.	<input type="checkbox"/>					
Training programs for this occupation are not continuously running throughout the year.	<input type="checkbox"/>					
Not enough applied learning experience for students with area employers.	<input type="checkbox"/>					
Workers at lower skill levels find it difficult to upgrade their skills to qualify for more senior roles.	<input type="checkbox"/>					
Other reasons	<input type="checkbox"/>					

If you checked that other reasons were a factor, please describe:

7. Workplace conditions:

	No importance	Slight importance	Some importance	Moderate importance	Very important	A key cause
Inflexible hours at the workplace.	<input type="checkbox"/>					
There is insufficient attention at workplaces to workers' family care needs, particularly with regard to day care arrangements.	<input type="checkbox"/>					
The lack of teamwork among CNC managers results in new workers having low morale.	<input type="checkbox"/>					
Stress &/or burnout are driving CNC managers from this occupation in my area.	<input type="checkbox"/>					
CNC managers leave this occupation in my area because of better pay & benefits elsewhere.	<input type="checkbox"/>					
CNC managers feel that there is no opportunity to advance from their present position.	<input type="checkbox"/>					
HR management shortcomings (e.g., inadequate supervisory skills; intergenerational differences).	<input type="checkbox"/>					
Difficulty in attracting CNC managers &/or their spouses to our area.	<input type="checkbox"/>					
Other reasons	<input type="checkbox"/>					

If you checked that other reasons were a factor, please describe:

expectations of what it's like to work with sick people.						
School guidance counselors have little understanding of the opportunities in this occupation.	<input type="checkbox"/>					
Health Care institutions don't try hard enough to recruit men/women, minorities, and Hispanics.	<input type="checkbox"/>					
Other reasons	<input type="checkbox"/>					

If you checked that other reasons were a factor, please describe:

12. Registered nurse training:

	No importance	Slight importance	Some importance	Moderate importance	Very important	A key cause
Capacity of training institutions is inadequate to prepare workers for this occupation.	<input type="checkbox"/>					
Instructors are not paid sufficiently to retain them.	<input type="checkbox"/>					
Training programs for this occupation are not continuously running throughout the year.	<input type="checkbox"/>					
Not enough clinical hours of experience for students in area hospitals.	<input type="checkbox"/>					
Professionals who have left the field in the area find it difficult to become re-certified.	<input type="checkbox"/>					
Workers at lower skill levels find it difficult to upgrade their skills to qualify for more senior roles.	<input type="checkbox"/>					
Other reasons	<input type="checkbox"/>					

If you checked that other reasons were a factor, please describe:

13. Workplace conditions:

	No importance	Slight importance	Some importance	Moderate importance	Very important	A key cause
Inflexible hours at the workplace.	<input type="checkbox"/>					
There is insufficient attention at workplaces to workers' family care needs, particularly with regard to day care arrangements.	<input type="checkbox"/>					

The lack of teamwork among Health Care staff results in new workers having low morale.	<input type="checkbox"/>					
Stress &/or burnout are driving registered nurses from this occupation in my area.	<input type="checkbox"/>					
Registered nurses leave this occupation in my area because of better pay & benefits elsewhere.	<input type="checkbox"/>					
Registered nurses feel that there is no opportunity to advance from their present position.	<input type="checkbox"/>					
HR management shortcomings (e.g., inadequate supervisory skills; intergenerational differences).	<input type="checkbox"/>					
High and/or rising cost of malpractice insurance.	<input type="checkbox"/>					
Licensing or certification bottlenecks.	<input type="checkbox"/>					
Difficulty in attracting registered nurses &/or their spouses to our area.	<input type="checkbox"/>					
Other reasons	<input type="checkbox"/>					

If you checked that other reasons were a factor, please describe:

14. What are the top 3 skills that we need to build in our CNC manager employment pool?

1.

2.

3.

15. If you would like to be updated on the conclusions of the Northeast Indiana Strategic Skills Initiative, please enter your email here:

9.4. Education and training inventory

9.4.1. Registered nursing

PROGRAM	ACADEMIC & OTHER REQUIREMENTS TO ENTER	OTHER REQ - NCLEX RN Cert Pass Rate (Avg 4 tests):	ACADEMIC & OTHER REQUIREMENTS TO REMAIN	PROGRAM DURATION (Years)	COST (T&F only) (IN resident)	PRESENT/PLANNED CAPACITY OF INTAKE (Almost all programs at capacity)	DROPOUT, NON-PERSISTENCE (Note-also have to pass RN exam)	OTHER ISSUES 1. Space	OTHER ISSUES 2. Faculty	OTHER ISSUES 3. Other
IPFW AS IPFW BS <i>For IPFW certificate program, see below</i>	Univ. admission, 18 cr hr to apply to program, top 81 GPA per semester (ie GPA competitive) A.S. requires "Nat League for Nursing pre-exam" criminal history check, immunizations	92.25	No lower than a 75% on a test; C minimum; 1repeat per class	2 4	12,386 24,772	81/semester/162 year total AS & BS degrees	Not an issue - approx 2 per year due to GPA screening	Clinical Space	Faculty (not enough) PhDs-pay is a main issue	IPFW's affiliated hospital is applying for a certification that will require more RNs with BS degrees
Univ. of St. Francis AS Univ. of St. Francis BS	Direct admit into nursing program with HS Chem, Bio, algebra; top 50% HS, 1000 SAT or 21 ACT	83.81 87.30	Passing classes w/ only 1 repeat per class allowed	2 4	34,936 69,872	50 per semester/100 yr	Due to academic rigor, will lose about 20% of each group	Clinical Space - Once in clinical, can guarantee graduation, but there may be a bottleneck for the 1st clinical.	Faculty (not enough) PhDs-pay is a main issue	
Ivy Tech - Northeast IN AS	Ivy Tech admission, and entrance determined by number of points gained by entrance exam and general ed classes	New program-1st graduates this May	"C" or better	2	5,036	20/semester traditional plus 10 in LPN program	New program-no evaluation yet	New program-no formal evaluation yet but obtaining clinical space has been a problem		
Ivy Tech - Marion/Muncie AS	Ivy Tech admission; completion of 9 general ed course and exam. Top points for these enter program	94.51	"C" or better	2	5,036	Transitional program-40/year (20 of these in Marion program) traditional-50/yr (assume half in Marion)	1-2 may drop out per year; they can reenter with next class	Clinical Space	Capacity limited by accrediting body	
Indiana Wesleyan BS	Univ admission, 29 semester hours with min 2.75 GPA and 4 science classes, min grade=C	93.55	On probation when GPA is below 2.75 or nursing is below C-. Dismissed after 3 rd probation	4	64,736	Approx 80/yr; they state they could probably handle more	15-20% drop out early - mostly due to academic (science); before they are really admitted into program	Not an issue		
Huntington University BS	Not yet determined - Program will probably not have students until Fall 2007	New program		4	72,240	50 per year	New program - no evaluation yet	New program - no evaluation yet		

IPFW Certificates in Health Care: Critical Care Nurse Certification (on or off- campus)	RN or enrolled in 2nd year of nursing program 16-17 credit hour (6 courses)	Must pass cert. exam	Same as IPFW program	1 or add to BS curr. (approx 1 extra sem.)	\$3,002 or can be part of BS curriculum with the addition of 3 courses	No real limit or capacity	Dropping is not a factor-the problem is getting RNs into this cert.	Not much interest in obtaining this cert. since there are no rewards and it can add to the length of the BS program		
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MASTER'S PROGRAMS:

IPFW offers a Masters in Administration, but as a non-clinical degree, very few of these graduates can teach. IPFW applied for Masters in Nursing Education in 1996, but application was rejected by Indiana Commission on Higher Ed. IPFW is currently preparing application to offer this degree again-Phase I, the concept letter, has been prepared. After this, approval from Purdue Provost, Graduate Committee, Board of Trustees is needed before sending to ICE again. IPFW also notes that there is only 1 facility in Indiana that accepts students for PhD program in Nursing Education, and they can only accept 8 students per year. Additionally, IPFW notes that the pay is so low in Universities that positions are going unfilled. For example, the current graduate coordinator position at IPFW was vacant for 3 years during that time the grad program suffered and the reaplication process for the Masters in Nursing Ed could not done.

UNIVERSITY OF ST. FRANCIS does not offer a Nursing Education Master degree.

INDIANA WESLEYAN has recently started a MS in Nursing Education; there is no limit or capacity on the number enrolled, and for the Nursing Masters they have offered in the past, there was a 98% completion rate.

9.4.2. CNC-MIMM

PROGRAM	ACADEMIC & OTHER REQUIREMENTS TO ENTER	OTHER REQ.	ACADEMIC & OTHER REQUIREMENTS TO REMAIN	PROGRAM DURATION (Years)	COST (T&F only) (For 2 or 4 year)	PRESENT/ PLANNED CAPACITY OF INTAKE	DROPOUT, NON-PERSISTENCE	OTHER ISSUES
Heartland Career Center, Wabash (Grant, Huntington, Miami, Wabash Counties) Vocational Education (9-12)	Algebra and good math skills helpful, not required Electronics/ Computer/ Robotics Program— offering such courses as Precision Machine Tech and Computer Integrated Mfg.		Attendance Each high school determines some factors including pass ISTEP, grades	2 (or 1)	0 (Students pay \$0)	32-36 students per yr (16-18 am, 16-18 pm)	Most stay in program, although a few leave for academic or ISTEP reasons. Heartland offers dual credit w/ Ivy Tech; internships possible second year	
Tucker Career & Tech Center, Marion (Grant, Howard, Miami, Blackford Counties)	Algebra helpful, not required. (Program serves high school students who come for .5 day) most are Jr and Sr, some Soph. qualify) Tucker has an adult program "apprenticeship"		Each high school determines Some factors include pass ISTEP, grades, attendance	1-2	0 (Students pay \$0)	Capacity is 40 students/yr (20 am and 20 pm) Current enrollment 23 in Precision Machining	Students quit school altogether Return to school for grade issues (need to complete gen ed requirements to graduate) Some switch due to lack of interest Approx 20-40% do not complete program	
Four County Area Vocational Cooperative, Kendallville (Noble, Steuben, DeKalb, Lagrange Counties) Machine Trades & Ind. Maintenance Tech	None (High school students start program their junior year; can do co-op work their last semester)		This co-op serves 11 schools Each school determines requirements, such as ISTEP or progression in other courses	2	0 (Students pay \$0)	Machine Trades: 32/yr. (Always close to capacity) Industrial Maintenance Tech: Capacity =36/yr. (14 registered at present)	Machine Trades: Approx. 90% complete program, and of those, 90% go into machine trades as a career Ind Maint: Once in the program, they generally complete it.	Ind Maint is not a topic students are interested in; program size has been cut in half.

Area 18 Vocational District, Decatur (Adams, Wells, Jay, Huntington Counties)									
Ivy Tech –FW Machine Tool Tech (AS, AAS) Machine Tool Tech (certificate) Manf & Industrial Tech (A.S., AAS) 6 weeks Job Works Program	admittance to IVY TECH, high school graduation			2 1 2	5,037 2,519 5,037	Assume cap at 36, not at capacity Prec Metal had about 15 in in 2001-03, incl certificate program Heavy Industrial repair was also higher in 01-03 (10-22, incl cert) compared to 0 enrolled in 03/04 Eng Tech and Electromechanical was 6 in 03/04; 11-25 prior years	Many leave after acquiring "journeyman" status	Many employers send employees to be trained on an "as needed" basis, therefore the pipeline never fills.	
IVY TECH - Muncie (Grant Co campus) Manf & Industrial Tech (AAS) Machine Tool Tech (AS) Machine Tool Tech (certificate)	admittance to IVY TECH, high school graduation			2 2 1	5,037 5,037 2,519	Not at capacity-- only 5 A.S. degrees in 2003/04 in these areas.			
Anthis Career Center, Fort Wayne (Serving Area 14 - Allen, DeKalb Whitley - 22 high schools)	Machining Program for HS Jr and Sr (a.m. and p.m. sessions)		Attendance Each high school determines some factors include pass ISTEP, grades	2 (or 1)	\$25 annual fee	Capacity 40 students/yr (20 am and 20 pm) Current enrollment 25 in Machining	Perhaps 90% complete 2 yr Course Some are expelled, some return to H.S. to complete gen ed requirements	People interested in Military career are generally in Machining. Co-op, internships possible	

9.4.3. Industrial Engineers

PROGRAM	ACADEMIC & OTHER REQUIREMENTS TO ENTER	OTHER REQ.	ACADEMIC & OTHER REQUIREMENTS TO REMAIN	PROGRAM DURATION (Years)	COST (T&F only) (For 2 or 4 year)	PRESENT/ PLANNED CAPACITY OF INTAKE	DROPOUT, NON- PERSISTENCE	OTHER ISSUES 1.Math	OTHER ISSUES 2. Faculty	OTHER ISSUES 3. Other
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<p>IPFW</p> <p>Mech Eng Technology BS</p> <p>Mech Eng Tech A.S.</p> <p>Industrial Eng Tech BS</p> <p>Industrial Eng Tech AS</p>	<p>Admission to IPFW for all programs (then directly into freshman engineering courses)</p>	<p>Math entrance exam to determine placement</p>	<p>Progression in Math courses causes delay</p> <p>University policies on cumulative and grade GPA minimum to remain in school</p>	<p>4/5-see other</p> <p>2/3-see other</p> <p>4/5-see other</p> <p>2/3-see other</p>	<p>24,772 (4 years)</p> <p>12,386 (2 years)</p>	<p>Currently enrolled 62</p> <p>112</p> <p>6</p> <p>24</p> <p>Total capacity Approx 300</p>	<p>Less than 10% drop out</p> <p>Reasons include interest; money; lack of H.S. prep; lack of mech. aptitude; family responsibilities</p>	<p>Yes-see academic comments</p>	<p>Current faculty able to handle 300</p> <p>This could be adjusted upward with Univ. approval to hire more</p>	<p>Current space for labs and classrooms accom. 300, but could be adjusted with Univ. approval if demand dictated.</p> <p>Time to graduate doubles for working students-65% students work full-time</p> <p>Lack of knowledge about careers in Eng Tech</p>
<p>IPFW</p> <p>Computer Controlled Systems Certificate</p>	<p>Admission to IPFW with strong math and English or A.S. or B.S. in Eng or Eng Tech.</p>	<p>Entrance exam to note: Course can be tailored to employers' specifications</p>		<p>2</p>	<p>24,772</p>	<p>Approx 20, but only 3-4 students register each yr</p>	<p>Basically all obtain their certificate</p>	<p>Good math background is strongly encouraged</p>		<p>Note earlier comment that program can be tailored to meet employer's needs</p>
<p>Purdue Univ. West Lafayette</p> <p>Industrial Eng.</p>	<p>Admission to Purdue, 1st yr Eng, then admittance based on GPA</p>		<p>Probation based on GPA which is adjusted based on semester</p>	<p>4</p>	<p>28,384</p>	<p>Haven't reached capacity in over 20 yrs, currently 120-180 enter each yr</p> <p>170 graduates last yr--139 sought employment</p>	<p>More transfer into program than transfer out, but some leave to enroll in related areas: Prod mgmt, M.E.</p> <p>Some leave school due to academic rigor</p>			<p>Almost 20% do not seek employment</p> <p>Some to Military, many return to homeland (eg Malaysia)</p>
<p>Purdue Univ-School of Technology (West Lafayette)</p> <p>AS (all programs below are BS offered as AS and BS)</p> <p>Industrial Technology other programs available, but not included here in capacity discussion: Mech Eng Technology Computer Integrated Tech</p>	<p>Same requirements for all programs-can enter College of Tech as a freshman--need 6 sem math, 8 sem Eng.</p> <p>Admitted to Purdue based on point system-grades, SAT, etc.</p>		<p>Probation based on GPA which is adjusted based on semester</p>	<p>2</p> <p>4</p>	<p>14,192</p> <p>28,384</p>	<p>Haven't reached capacity generally have 25-30 Ind Tech students, of which 4 are A.S.</p>				<p>Women and minorities need to be encouraged</p>

Rose Hulman, Terre Haute Mech. Eng. BS	Admission to University 21-24 ACT min; SAT-1050 min; top 25% hs class; 4 yrs math, Chemistry, Physics		2.0 GPA; can fall below this only twice	4	108,552	Capacity based on total school enrollment no more than 1800 undergrads. Mech. Eng. currently has 551 enrolled (1-5th year students)	Some change majors, but generally students enjoy their classes and succeed (Note - highly competitive to enter school so preparedness exists)		R-H believe its student success is related to its great faculty; and academic requirements to enter R-H	
Indiana Tech, Fort Wayne Industrial & Manufacturing Engineering	Engineering Day Program-admission to Univ w/ high school requirements of top half of class; math test scores: ACT 21 or SAT 500	Ind & Manf Eng requires less Math, Chem, Physics than Eng		4 (AS possible)		They are not near any possible capacity limit. Currently have 50 day (traditional) students and 25 evening students in the accelerated engineering program (will graduate 15 this year)		This program has a lower level math requirement (algebra), but 2/3 of all students need either math or English remediation		Gender issues: Less than 20% all students are female, although they do see 40% in the biomed eng program--suggesting that there is bias. Money: Some students leave school due to lack of finances.
Tri-State University Mechanical Eng B.S.	Admission to University		Probation based on academic standing	4	80,800	Currently graduating 30-40 M.E. per year, but could easily hold twice as many students-or more-they are trying to grow the program About 75% who enter the program do receive the Mech Eng degree.	Attrition is during freshman year-some for academic reasons, some not ready for college; some switch majors.			An observation: students with high GPA who drop out tend to enter seminaries Have a formal co-op program after freshman year

9.4.4. Computer Systems Analysts

School	Approximate Number of Graduates in 2003/04	Graduation Rate (cohort group) within 6 yrs:
Huntington University	7	63.4%
Indiana Institute of Technology	9	24.0%
IPFW	18	22.2%
IPFW also has a certificate program for Computer and Information Sciences - 4 certificates awarded. Program takes 2-3 years		
Manchester College	4	54.0%
	<ul style="list-style-type: none"> 139 in Computer Information and Support Services 182 degrees in Computer and Information Sciences, General 	

(Purdue also has an Operations Management BS degree program with 244 graduates)

Indiana University, Bloomington
 University of Notre Dame
 Ball State University

58
 41 Computer Science plus
 45 Management Information Systems
 22

plus Master's Program
 plus Master's Program

9.5. Wage survey data

9.5.1. Registered Nurses

REGISTERED NURSES SOC 29-1111 NOVEMBER, 2004						
MSA	EMPLOYMENT	MEAN ANNUAL WAGE	DOLLAR DIFFERENCE WITH FORT WAYNE	DOLLAR DIFFERENCE WITH FORT WAYNE ADJUSTED FOR COST OF LIVING		MEAN ANNUAL WAGE ADJUSTED FOR COST OF LIVING IN FORT WAYNE
INDIANAPOLIS	18,130	\$ 52,630	\$ 5,800	\$	5,445	\$ 52,209
SOUTH BEND	2,430	\$ 48,250	\$ 1,420	\$	3,903	\$ 50,807
LAFAYETTE	1,210	\$ 45,120	\$ (1,710)	NA		NA
EVANSVILLE	3,090	\$ 43,320	\$ (3,510)	\$	(2,192)	\$ 44,533
ELKHART-GOSHEN	1,570	\$ 56,670	\$ 9,840	\$	10,586	\$ 55,763
MUNCIE	1,140	\$ 42,320	\$ (4,510)	NA		NA
KOKOMO	880	\$ 47,090	\$ 260	NA		NA
CHICAGO	64,730	\$ 54,460	\$ 7,630	\$	2,153	\$ 48,088
PEORIA	4,520	\$ 47,160	\$ 330	\$	(819)	\$ 45,981
ROCKFORD	3,350	\$ 47,520	\$ 690	\$	1,349	\$ 48,185
DES MOINES	5,740	\$ 48,640	\$ 1,810	\$	1,596	\$ 48,397
DAYTON	9,810	\$ 49,850	\$ 3,020	\$	3,276	\$ 50,099
COLUMBUS	15,560	\$ 53,370	\$ 6,540	\$	5,658	\$ 52,356
CINCINNATI	16,210	\$ 52,930	\$ 6,100	\$	6,033	\$ 52,877
TOLEDO	7,490	\$ 51,260	\$ 4,430	\$	2,945	\$ 49,620
CLEVELAND	23,980	\$ 54,630	\$ 7,800	\$	2,247	\$ 48,129
LIMA	2,160	\$ 48,010	\$ 1,180	\$	2,297	\$ 49,162
LOUISVILLE	12,080	\$ 53,530	\$ 6,700	\$	8,133	\$ 55,189
LEXINGTON	6,460	\$ 49,500	\$ 2,670	\$	1,953	\$ 48,758
GRAND RAPIDS	8,610	\$ 50,760	\$ 3,930	\$	2,638	\$ 49,339
ANN ARBOR	7,380	\$ 59,580	\$ 12,750	\$	5,218	\$ 49,988
KALAMAZOO	4,780	\$ 55,540	\$ 8,710	NA		NA
DETROIT	35,800	\$ 59,380	\$ 12,550	\$	5,802	\$ 50,829
FLINT	4,010	\$ 53,380	\$ 6,550	NA		NA
MADISON	6,480	\$ 57,560	\$ 10,730	\$	6,620	\$ 52,495
FORT WAYNE	4,730	\$ 46,830	\$ -	\$	-	\$ 46,830

9.5.2. CNC-MIMMs

Because the CNC-MIMM is a hybrid occupation, data for each of the occupations from which the CNC-MIMM is drawn is presented.

9.5.2.1. Metal and Plastic Computer-Controlled Machine Tool Operators

METAL AND PLASTIC COMPUTER-CONTROLLED MACHINE TOOL OPERATORS SOC 51-4011 NOVEMBER, 2004						
MSA	EMPLOYMENT	MEAN ANNUAL WAGE	DOLLAR DIFFERENCE WITH FORT WAYNE	DOLLAR DIFFERENCE WITH FORT WAYNE ADJUSTED FOR COST OF LIVING		MEAN ANNUAL WAGE ADJUSTED FOR COST OF LIVING IN FORT WAYNE
INDIANAPOLIS	1220	\$ 31,940	\$ (10)	\$	(266)	\$ 31,684
SOUTH BEND	630	\$ 31,510	\$ (440)	\$	1,230	\$ 33,180
EVANSVILLE	530	\$ 28,610	\$ (3,340)	\$	(2,539)	\$ 29,411
ELKHART-GOSHEN	410	\$ 30,440	\$ (1,510)	\$	(1,023)	\$ 30,927
MUNCIE	90	\$ 29,240	\$ (2,710)	NA		NA
CHICAGO	5670	\$ 31,780	\$ (170)	\$	(3,888)	\$ 28,062
PEORIA	630	\$ 28,720	\$ (3,230)	\$	(3,948)	\$ 28,002
ROCKFORD	700	\$ 33,930	\$ 1,980	\$	2,455	\$ 34,405
DAYTON	820	\$ 33,600	\$ 1,650	\$	1,818	\$ 33,768

COLUMBUS	1180	\$ 29,860	\$ (2,090)	\$ (2,657)	\$ 29,293
CINCINNATI	840	\$ 33,280	\$ 1,330	\$ 1,297	\$ 33,247
TOLEDO	600	\$ 34,510	\$ 2,560	\$ 1,421	\$ 33,371
CLEVELAND	2210	\$ 32,590	\$ 640	\$ (3,238)	\$ 28,712
LIMA	210	\$ 27,260	\$ (4,690)	\$ (4,036)	\$ 27,914
LOUISVILLE	450	\$ 31,730	\$ (220)	\$ 764	\$ 32,714
LEXINGTON	470	\$ 28,080	\$ (3,870)	\$ (4,291)	\$ 27,659
DETROIT	4140	\$ 32,250	\$ 300	\$ (4,344)	\$ 27,606
LANSING	360	\$ 34,610	\$ 2,660	\$ 1,864	\$ 33,814
GRAND RAPIDS	1190	\$ 31,740	\$ (210)	\$ (1,099)	\$ 30,851
ANN ARBOR	290	\$ 33,660	\$ 1,710	\$ (3,709)	\$ 28,241
KALAMAZOO	570	\$ 29,750	\$ (2,200)	NA	NA
JACKSON	410	\$ 30,440	\$ (1,510)	NA	NA
BENTON HARBOR	280	\$ 33,060	\$ 1,110	\$ (1,799)	\$ 30,151
MADISON	380	\$ 27,920	\$ (4,030)	\$ (6,487)	\$ 25,463
FORT WAYNE	740	\$ 31,950	\$ -	\$ -	\$ 31,950

9.5.2.2. Industrial Machinery Mechanics

INDUSTRIAL MACHINERY MECHANICS SOC 49-9041 NOVEMBER, 2004					
MSA	EMPLOYMENT	MEAN ANNUAL WAGE	DOLLAR DIFFERENCE WITH FORT WAYNE	DOLLAR DIFFERENCE WITH FORT WAYNE ADJUSTED FOR COST OF LIVING	MEAN ANNUAL WAGE ADJUSTED FOR COST OF LIVING IN FORT WAYNE
INDIANAPOLIS	1030	\$ 48,340	\$ 6,070	\$ 5,683	\$ 47,953
SOUTH BEND	170	\$ 42,480	\$ 210	\$ 2,461	\$ 44,731
EVANSVILLE	450	\$ 36,130	\$ (6,140)	\$ (5,128)	\$ 37,142
ELKHART-GOSHEN	480	\$ 42,970	\$ 700	\$ 1,388	\$ 43,658
MUNCIE	NA	NA	NA	NA	NA
CHICAGO	4150	\$ 40,820	\$ (1,450)	\$ (6,226)	\$ 36,044
PEORIA	450	\$ 45,570	\$ 3,300	\$ 2,161	\$ 44,431
ROCKFORD	330	\$ 41,800	\$ (470)	\$ 115	\$ 42,385
DES MOINES	490	\$ 36,470	\$ (5,800)	\$ (5,982)	\$ 36,288
DAYTON	820	\$ 53,730	\$ 11,460	\$ 11,729	\$ 53,999
COLUMBUS	1070	\$ 39,460	\$ (2,810)	\$ (3,560)	\$ 38,710
CINCINNATI	1610	\$ 42,920	\$ 650	\$ 607	\$ 42,877
TOLEDO	660	\$ 48,810	\$ 6,540	\$ 4,929	\$ 47,199
CLEVELAND	1830	\$ 42,120	\$ (150)	\$ (5,162)	\$ 37,108
LIMA	270	\$ 50,650	\$ 8,380	\$ 9,596	\$ 51,866
LOUISVILLE	1470	\$ 41,460	\$ (810)	\$ 475	\$ 42,745
LEXINGTON	730	\$ 38,560	\$ (3,710)	\$ (4,288)	\$ 37,982
DETROIT	3560	\$ 50,550	\$ 8,280	\$ 1,001	\$ 43,271
LANSING	130	\$ 52,610	\$ 10,340	\$ 9,130	\$ 51,400
GRAND RAPIDS	1200	\$ 52,240	\$ 9,970	\$ 8,507	\$ 50,777
ANN ARBOR	520	\$ 51,630	\$ 9,360	\$ 1,048	\$ 43,318
KALAMAZOO	350	\$ 45,540	\$ 3,270	NA	NA
JACKSON	100	\$ 46,270	\$ 4,000	NA	NA
BENTON HARBOR	150	\$ 34,170	\$ (8,100)	\$ (11,107)	\$ 31,163
MADISON	490	\$ 43,350	\$ 1,080	\$ (2,735)	\$ 39,535
FORT WAYNE	500	\$ 42,270	\$ -	\$ -	\$ 42,270

9.5.2.3. Maintenance and Repair Workers, General

MAINTENANCE AND REPAIR WORKERS, GENERAL SOC 49-9042 NOVEMBER, 2004					
MSA	EMPLOYMENT	MEAN ANNUAL WAGE	DOLLAR DIFFERENCE WITH FORT WAYNE	DOLLAR DIFFERENCE WITH FORT WAYNE ADJUSTED FOR COST OF LIVING	MEAN ANNUAL WAGE ADJUSTED FOR COST OF LIVING IN FORT WAYNE
INDIANAPOLIS	9360	\$ 32,440	\$ (690)	\$ (950)	\$ 32,180
SOUTH BEND	1580	\$ 31,130	\$ (2,000)	\$ (350)	\$ 32,780
EVANSVILLE	2600	\$ 33,400	\$ 270	\$ 1,205	\$ 34,335
ELKHART-GOSHEN	1890	\$ 32,270	\$ (860)	\$ (344)	\$ 32,786
MUNCIE	450	\$ 30,410	\$ (2,720)	NA	NA
CHICAGO	32850	\$ 39,020	\$ 5,890	\$ 1,325	\$ 34,455
PEORIA	2170	\$ 34,450	\$ 1,320	\$ 459	\$ 33,589
ROCKFORD	1720	\$ 36,060	\$ 2,930	\$ 3,435	\$ 36,565
DES MOINES	2110	\$ 31,380	\$ (1,750)	\$ (1,907)	\$ 31,223

DAYTON	3910	\$ 33,120	\$ (10)	\$ 156	\$ 33,286
COLUMBUS	7970	\$ 33,440	\$ 310	\$ (325)	\$ 32,805
CINCINNATI	9820	\$ 34,470	\$ 1,340	\$ 1,306	\$ 34,436
TOLEDO	4400	\$ 33,940	\$ 810	\$ (310)	\$ 32,820
CLEVELAND	11710	\$ 33,170	\$ 40	\$ (3,907)	\$ 29,223
LIMA	860	\$ 32,160	\$ (970)	\$ (198)	\$ 32,932
LOUISVILLE	5600	\$ 32,180	\$ (950)	\$ 48	\$ 33,178
LEXINGTON	3760	\$ 35,300	\$ 2,170	\$ 1,641	\$ 34,771
DETROIT	20250	\$ 40,340	\$ 7,210	\$ 1,401	\$ 34,531
LANSING	2080	\$ 32,770	\$ (360)	\$ (1,114)	\$ 32,016
GRAND RAPIDS	6320	\$ 35,380	\$ 2,250	\$ 1,259	\$ 34,389
ANN ARBOR	2880	\$ 37,940	\$ 4,810	\$ (1,298)	\$ 31,832
KALAMAZOO	1900	\$ 33,960	\$ 830	NA	NA
JACKSON	740	\$ 32,370	\$ (760)	NA	NA
BENTON HARBOR	620	\$ 34,660	\$ 1,530	\$ (1,520)	\$ 31,610
MADISON	2230	\$ 33,430	\$ 300	\$ (2,642)	\$ 30,488
FORT WAYNE	3160	\$ 33,130	\$ -	\$ -	\$ 33,130

9.5.2.4. Maintenance Workers, Machinery

MAINTENANCE WORKERS, MACHINERY SOC 49-9043 NOVEMBER, 2004					
MSA	EMPLOYMENT	MEAN ANNUAL WAGE	DOLLAR DIFFERENCE WITH FORT WAYNE	DOLLAR DIFFERENCE WITH FORT WAYNE ADJUSTED FOR COST OF LIVING	MEAN ANNUAL WAGE ADJUSTED FOR COST OF LIVING IN FORT WAYNE
INDIANAPOLIS	520	\$ 40,240	\$ 1,060	\$ 738	\$ 39,918
SOUTH BEND	60	\$ 32,360	\$ (6,820)	\$ (5,105)	\$ 34,075
EVANSVILLE	110	\$ 33,720	\$ (5,460)	\$ (4,516)	\$ 34,664
ELKHART-GOSHEN	NA	NA	NA	NA	NA
MUNCIE	NA	NA	NA	NA	NA
CHICAGO	3600	\$ 39,980	\$ 800	\$ (3,878)	\$ 35,302
PEORIA	140	\$ 34,390	\$ (4,790)	\$ (5,650)	\$ 33,530
ROCKFORD	110	\$ 37,500	\$ (1,680)	\$ (1,155)	\$ 38,025
DES MOINES	70	\$ 36,180	\$ (3,000)	\$ (3,181)	\$ 35,999
DAYTON	350	\$ 36,900	\$ (2,280)	\$ (2,096)	\$ 37,085
COLUMBUS	600	\$ 38,500	\$ (680)	\$ (1,412)	\$ 37,769
CINCINNATI	440	\$ 38,380	\$ (800)	\$ (838)	\$ 38,342
TOLEDO	320	\$ 36,900	\$ (2,280)	\$ (3,498)	\$ 35,682
CLEVELAND	440	\$ 38,000	\$ (1,180)	\$ (5,702)	\$ 33,478
LIMA	90	\$ 42,930	\$ 3,750	\$ 4,780	\$ 43,960
LOUISVILLE	310	\$ 36,430	\$ (2,750)	\$ (1,621)	\$ 37,559
LEXINGTON	50	\$ 35,160	\$ (4,020)	\$ (4,547)	\$ 34,633
DETROIT	1310	\$ 41,910	\$ 2,730	\$ (3,305)	\$ 35,875
LANSING	60	\$ 40,600	\$ 1,420	\$ 1,298	\$ 40,478
GRAND RAPIDS	750	\$ 39,400	\$ 220	\$ (883)	\$ 38,297
ANN ARBOR	340	\$ 41,140	\$ 1,960	\$ (4,664)	\$ 34,516
KALAMAZOO	270	\$ 34,880	\$ (4,300)	NA	NA
JACKSON	NA	NA	NA	NA	NA
BENTON HARBOR	50	\$ 38,650	\$ (530)	\$ (3,931)	\$ 35,249
MADISON	70	\$ 34,910	\$ (4,270)	\$ (7,342)	\$ 31,838
FORT WAYNE	140	\$ 39,180	\$ -	\$ -	\$ 39,180

9.5.2.5. Machinists

MACHINISTS SOC 51-4041 NOVEMBER, 2004					
MSA	EMPLOYMENT	MEAN ANNUAL WAGE	DOLLAR DIFFERENCE WITH FORT WAYNE	DOLLAR DIFFERENCE WITH FORT WAYNE ADJUSTED FOR COST OF LIVING	MEAN ANNUAL WAGE ADJUSTED FOR COST OF LIVING IN FORT WAYNE
INDIANAPOLIS	3300	\$ 37,980	\$ 5,440	\$ 5,136	\$ 37,676
SOUTH BEND	710	\$ 33,580	\$ 1,040	\$ 2,820	\$ 35,360
EVANSVILLE	570	\$ 33,750	\$ 1,210	\$ 2,155	\$ 34,695
ELKHART-GOSHEN	700	\$ 31,660	\$ (880)	\$ (373)	\$ 32,167
MUNCIE	230	\$ 30,680	\$ (1,860)	NA	NA

CHICAGO	14030	\$ 32,140	\$ (400)	\$ (4,160)	\$ 28,380
PEORIA	1110	\$ 40,310	\$ 7,770	\$ 6,762	\$ 39,302
ROCKFORD	2270	\$ 31,900	\$ (640)	\$ (193)	\$ 32,347
DES MOINES	190	\$ 35,610	\$ 3,070	\$ 2,892	\$ 35,432
DAYTON	2930	\$ 36,000	\$ 3,460	\$ 3,640	\$ 36,180
COLUMBUS	1480	\$ 34,300	\$ 1,760	\$ 1,108	\$ 33,648
CINCINNATI	4190	\$ 34,690	\$ 2,150	\$ 2,115	\$ 34,655
TOLEDO	1380	\$ 33,400	\$ 860	\$ (242)	\$ 32,298
CLEVELAND	6510	\$ 32,270	\$ (270)	\$ (4,110)	\$ 28,430
LIMA	360	\$ 35,220	\$ 2,680	\$ 3,525	\$ 36,065
LOUISVILLE	1130	\$ 37,540	\$ 5,000	\$ 6,164	\$ 38,704
LEXINGTON	760	\$ 30,810	\$ (1,730)	\$ (2,192)	\$ 30,348
DETROIT	13200	\$ 41,720	\$ 9,180	\$ 3,172	\$ 35,712
LANSING	630	\$ 35,330	\$ 2,790	\$ 1,977	\$ 34,517
GRAND RAPIDS	3600	\$ 35,580	\$ 3,040	\$ 2,044	\$ 34,584
ANN ARBOR	NA	NA	NA	NA	NA
KALAMAZOO	1270	\$ 34,230	\$ 1,690	NA	NA
JACKSON	950	\$ 31,190	\$ (1,350)	NA	NA
BENTON HARBOR	700	\$ 31,200	\$ (1,340)	\$ (4,086)	\$ 28,454
MADISON	640	\$ 32,770	\$ 230	\$ (2,654)	\$ 29,886
FORT WAYNE	1220	\$ 32,540	\$ 32,540	\$ -	\$ 32,540

9.5.3. Industrial Engineers

INDUSTRIAL ENGINEERS SOC 17-2112 NOVEMBER, 2004						
MSA	EMPLOYMENT	MEAN ANNUAL WAGE	DOLLAR DIFFERENCE WITH FORT WAYNE	DOLLAR DIFFERENCE WITH FORT WAYNE ADJUSTED FOR COST OF LIVING	MEAN ANNUAL WAGE ADJUSTED FOR COST OF LIVING IN FORT WAYNE	
INDIANAPOLIS	1390	\$ 67,830	\$ 9,520	\$ 8,977	\$ 67,287	
SOUTH BEND	250	\$ 61,270	\$ 2,960	\$ 6,207	\$ 64,517	
LAFAYETTE	150	\$ 57,180	\$ (1,130)	NA	NA	
EVANSVILLE	200	\$ 64,750	\$ 6,440	\$ 8,253	\$ 66,563	
ELKHART-GOSHEN	380	\$ 52,060	\$ (6,250)	\$ (5,417)	\$ 52,893	
MUNCIE	110	\$ 67,510	\$ 9,200	NA	NA	
CHICAGO	4390	\$ 63,750	\$ 5,440	\$ (2,019)	\$ 56,291	
PEORIA	400	\$ 61,720	\$ 3,410	\$ 1,867	\$ 60,177	
ROCKFORD	400	\$ 60,180	\$ 1,870	\$ 2,713	\$ 61,023	
DES MOINES	200	\$ 59,700	\$ 1,390	\$ 1,092	\$ 59,402	
DAYTON	1760	\$ 68,080	\$ 9,770	\$ 10,110	\$ 68,420	
COLUMBUS	1170	\$ 63,930	\$ 5,620	\$ 4,405	\$ 62,715	
CINCINNATI	1390	\$ 68,200	\$ 9,890	\$ 9,822	\$ 68,132	
TOLEDO	530	\$ 62,540	\$ 4,230	\$ 2,166	\$ 60,476	
CLEVELAND	2610	\$ 64,570	\$ 6,260	\$ (1,424)	\$ 56,886	
LIMA	280	\$ 57,940	\$ (370)	\$ 1,021	\$ 59,331	
LOUISVILLE	750	\$ 64,070	\$ 5,760	\$ 7,746	\$ 66,056	
LEXINGTON	880	\$ 66,890	\$ 8,580	\$ 7,577	\$ 65,887	
DETROIT	11530	\$ 73,770	\$ 15,460	\$ 4,837	\$ 63,147	
LANSING	410	\$ 73,130	\$ 14,820	\$ 13,138	\$ 71,448	
GRAND RAPIDS	2010	\$ 61,190	\$ 2,880	\$ 1,167	\$ 59,477	
ANN ARBOR	1050	\$ 70,650	\$ 12,340	\$ 965	\$ 59,275	
KALAMAZOO	610	\$ 54,790	\$ (3,520)	NA	NA	
JACKSON	230	\$ 67,210	\$ 8,900	NA	NA	
BENTON HARBOR	200	\$ 70,790	\$ 12,480	\$ 6,250	\$ 64,560	
MADISON	230	\$ 60,740	\$ 2,430	\$ (2,915)	\$ 55,395	
FORT WAYNE	650	\$ 58,310	\$ -	\$ -	\$ 58,310	

9.5.4. Computer Systems Analysts

COMPUTER SYSTEMS ANALYSTS SOC 15-1051 NOVEMBER, 2004						
MSA	EMPLOYMENT	MEAN ANNUAL WAGE	DOLLAR DIFFERENCE WITH FORT WAYNE	DOLLAR DIFFERENCE WITH FORT WAYNE ADJUSTED FOR COST OF LIVING	MEAN ANNUAL WAGE ADJUSTED FOR COST OF LIVING IN FORT WAYNE	
INDIANAPOLIS	3730	\$ 63,880	\$ 100	\$ (411)	\$ 63,369	
SOUTH BEND	230	\$ 52,940	\$ (10,840)	\$ (8,034)	\$ 55,746	
EVANSVILLE	190	\$ 59,770	\$ (4,010)	\$ (2,336)	\$ 61,444	
ELKHART-GOSHEN	190	\$ 68,370	\$ 4,590	\$ 5,684	\$ 69,464	
CHICAGO	19350	\$ 73,890	\$ 10,110	\$ 1,465	\$ 65,245	
PEORIA	330	\$ 61,250	\$ (2,530)	\$ (4,061)	\$ 59,719	

ROCKFORD	180	\$	59,900	\$	(3,880)	\$	(3,041)	\$	60,739
DAYTON	1890	\$	67,320	\$	3,540	\$	3,877	\$	67,657
COLUMBUS	5150	\$	65,960	\$	2,180	\$	927	\$	64,707
CINCINNATI	2520	\$	68,320	\$	4,540	\$	4,472	\$	68,252
TOLEDO	400	\$	58,860	\$	(4,920)	\$	(6,804)	\$	56,976
CLEVELAND	2930	\$	65,890	\$	2,110	\$	(5,731)	\$	58,049
LIMA	90	\$	61,960	\$	(1,820)	\$	(333)	\$	63,447
LOUISVILLE	1870	\$	63,900	\$	120	\$	2,101	\$	65,881
LEXINGTON	840	\$	61,420	\$	(2,360)	\$	(3,281)	\$	60,499
DETROIT	9600	\$	76,310	\$	12,530	\$	1,541	\$	65,321
LANSING	1360	\$	60,420	\$	(3,360)	\$	(4,750)	\$	59,030
GRAND RAPIDS	920	\$	66,490	\$	2,710	\$	848	\$	64,628
ANN ARBOR	800	\$	68,050	\$	4,270	\$	(6,686)	\$	57,094
KALAMAZOO	420	\$	63,040	\$	(740)		NA		NA
JACKSON	170	\$	68,880	\$	5,100		NA		NA
MADISON	3360	\$	59,420	\$	(4,360)	\$	(9,589)	\$	54,191
FORT WAYNE	640	\$	63,780	\$	-	\$	-	\$	63,780

9.6. Basic Skills Inventory responses from surveys and focus groups

The following represents unedited responses from SSI root causes survey and focus group participants when asked which skills are most important for people entering their occupation to possess.

9.6.1. Registered Nurses

Education

- Continuing Education
- Education
- Get higher education
- Have mandatory CEU's
- Invest in quality care
- Knowledge
- Lifelong learning
- Ongoing Continuing Education

Applied Learning

- Clinical expertise, not just knowledge
- Accurate picture of clinical nursing
- Better clinical exposure/preparation
- Clinical expertise
- Clinical proficiency
- Clinical skills (more hands on practice)
- Direct nursing care
- Expansion of "student" employment programs (When they graduate, they are better prepared due to more "hands-on" learning in the occupation)
- Lack of clinical experience for new grads

- Practical training

Technical Skills

- Computer
- Computer applications - informatics
- Computer skills
- Critical Care
- Math & science
- Pharmacology
- Physical Assessment
- Technical
- Technical
- Technical skills (almost exclusively computerized charting in hospitals and increased technological knowledge needed which is not taught in nursing schools)

Attitude

- Autonomy
- Empowerment to make a difference as individual clinicians
- Flexibility
- Flexibility in staffing
- Flexibility/cross training
- Flexibility

- Incentives for current RN's to get higher-level degrees
- Professional accountability
- professionalism
- Realistic expectations
- Work ethic

Systems Thinking

- Nursing process

Communications

- People skills and communication
- Teamwork
- Communication
- Communication
- Communication
- Communications skills
- Communication skills
- Communication skills
- Interpersonal skills
- Leadership
- Leadership
- Leadership
- Leadership/mentorship
- Teamwork
- Teamwork
- Teamwork
- Teamwork/teambuilding

Personal Traits

- Detail oriented
- Assertiveness

9.6.2. CNC-MIMMs

Programming Skills

- Able to read programs
- Programming structure
- Programming
- Programming
- CNC programming
- More specific software training

Process Skills

- Setup

- Character
- Compassion
- Compassion
- Compassion
- Compassion
- Human caring
- Integrity
- Motivation and devotion
- Organizational skills
- Organizational skills
- Patience
- Patience and courtesy
- Time management
- Time management
- Time organization

Problem solving

- Creative thinking
- Critical thinking
- How to prioritize
- Logical thinking
- Prioritization
- Priority assessment

- Setup
- Setup

Basic Skills

- Math, English, mechanical experience
- Blueprint reading skills
- Strong math and mechanical skills
- Mathematical skills
- Manual machining skills

- Computer skills beyond basic programming of machines
- Basic machining skills
- Practical/hands-on skills
- Mechanical ability
- Math skills
- Mechanical skills
- Math skills
- Simple math such as converting decimals

Analytical Skills

- Trouble shooting
- Tool trouble shooting
- Trouble-shooting experience
- Problem solving ability
- Troubleshoot and fix the problem
- Problem-solving
- Troubleshooting

Communication

- Coaching skills
- Teamwork
- Team building skills
- Teamwork
- Communications

- Listening skills
- Teamwork
- Communication/paperwork
- Teamwork
- Communication skills

Attitude

- Aptitude
- Right person for the job
- Creativity
- Competency
- Dependability/Loyalty
- Work Ethic
- Goal oriented motivation
- Flexibility
- Work ethics
- Common sense
- Working under deadlines

Other

- Experience on the job
- On the job training
- Combining computer skills and CNC hands on training

9.6.3. Industrial Engineers

Personal Skills

- Creativity
- Manage time wisely
- Creativity
- Common sense
- Leadership
- Desire to continue personal and career development
- Curiosity
- Leadership skills
- Work on their own
- Creative skills

Systems Thinking

- Ability to reason & see big picture

- Systems engineering: interrelation of the product, not just their piece
- Lean/Six Sigma quality improvement skills
- Quantitative decision-making skills
- Lean manufacturing concepts
- Multi-facet engineering

Communications

- Teamwork
- How to function in a team environment
- Teamwork
- People/communication skills
- Communication skills - oral and written

- Communications
- Change management - This teaches you how to communicate and work with people.
- People skills
- Work in an environment as a team player
- Ability to work towards a common goal
- English, writing, and strong communication and people skills
- People skills
- Communication skills
- Communication skills

Basic Skills

- Better preparation in lower grades
- More hands-on experience
- Get kids exposed to industrial environment earlier

9.6.4. Computer Systems Analysts

Personal growth

- Independence
- Self reliance
- Analytical/problem solving
- Ability to find answers
- Decision making
- Work ethic
- Maturity
- Think outside the box
- Work ethic

Technology Knowledge/Awareness

- Understanding pc hardware is key
- PC skills in all areas
- Knowledge of software
- Good understanding of windows
- Word/Excel/Access
- Networking
- Understanding networking is key
- Knowledge of networking
- Students do not understand the infrastructure of the internet and how

- Math and engineering skills
- Basic math skills - The ability to add and subtract without a calculator
- Accounting background
- Math and English
- Basic math skills are an issue including fractions, rulers, percentages
- Retaining geometry

Technical Skills

- Pro/E software
- Advanced blueprint skills (CD&T)
- Spatial Thinking
- Manufacturing process knowledge

Other

- Diverse work environments
- On-the-job-training

their computer relates to the entire network.

- Server management including exchange
- Mobile technologies (handhelds, wireless, sales force)
- New technology development
- Object-oriented methodologies and processes

Technology Application

- Troubleshooting hardware, software, and networking problems
- Hardware and software troubleshooting skills
- Trouble shooting experience
- Less management type - more hands on skills
- Hands on skills
- Technicians
- Tech education
- MSCE - Microsoft certification

- Master information security
- Microsoft certified
- Generalist/diverse skills
- Certification in particular programs

Systems Thinking

- Understand business
- Understand how their specific job tasks relate to the bigger picture of the success of the company
- Foundations of business
- Job quoting process and business school skills
- Applicants need to understand how their job relates to the entire system
- Need to understand the business model. Need to not only be able to run the reports but understand the reports
- We need employees with managerial skills and who have IT experience, not just IT experts
- Operations and technology

- Need to be able to see the big picture

K-12 - Basic Skills

- Not strong enough IT in high schools
- Better foundation in the public schools concerning computers
- Knowledge of simple computer skills
- Hands-on experience

Communications

- Communication skills
- Customer service skills
- People skills
- Understand people
- Managerial skills
- Customer skills
- Soft skills and customer service

9.7. Comparison of regions with population aged 25-34 and minimum bachelor's degree attainment

Source: US Census Bureau, 2000 Census

EGR-3 County	% w/ bachelor's attainment	Aged 25-34	Target Population	Total Population	% of whole
Adams	11.7%	4,131	483	33,625	1.44%
Allen	24.2%	47,011	11,377	331,849	3.43%
DeKalb	13.0%	5,524	718	40,285	1.78%
Grant	13.9%	8,458	1,176	73,403	1.60%
Huntington	15.1%	4,686	708	38,075	1.86%
LaGrange	8.1%	4,487	363	34,909	1.04%
Noble	10.7%	6,626	709	46,275	1.53%
Steuben	14.4%	4,356	627	33,214	1.89%
Wabash	16.8%	4,087	687	34,960	1.96%
Wells	18.1%	3,187	577	27,600	2.09%
Whitley	15.9%	3,821	608	30,707	1.98%
EGR-3 Average			18,032	724,902	2.49%
St. Joseph Co.	27.5%	35,069	9,644	265,559	3.63%
Marion Co.	30.9%	141,612	43,758	860,454	5.09%
Indiana	23.4%	831,125	194,483	6,080,485	3.20%

Franklin Co., OH	38.7%	183,255	70,920	1,068,978	6.63%
Washington, DC	50.6%	101,762	51,492	572,059	9.00%
Middlesex Co, MA	55.3%	235,910	130,458	1,465,396	8.90%