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Southeast Iowa Great River Region Skillshed Analysis



*A study of occupational clusters, skills, & gap analysis
in the Southeast Iowa Great River Region*

Released June 2009

Conclusion

A Skillshed primarily does two things: it examines the interaction between the current supply of workers and the current demand for their skills by employers; also, it measures the difference between the current set of skills and education held by the regional workforce and that set of skills and education required for emerging occupations.

A region must develop a plan to meet the current needs of the labor market by ensuring that its workforce is prepared with the necessary skills. At the same time, the region must also help its labor market transition into a workforce with the skills and education required by emerging occupations.

Measuring the current regional labor force and employer demands shows sub-groups of employment and unemployment. A portion of the labor force is unemployed due to turnover and the natural flow of the job market. Employee turnover can be addressed as a solution to unemployment but is best left to the management of the individual businesses. There is some wage disparity within a sample of occupations, best seen in the jobs with a large number of unemployed workers in the labor force and employers with a large number of vacancies (i.e. truck drivers). This problem is related to the information disconnect between the workforce and employers. There are workers looking for a job and employers with vacancies but a lack of information or counseling keeps the two from meeting. This situation is most appropriately addressed by public administration. Counseling services, consolidated region-wide job banks, and other services promoting the dissemination of information are most likely to remedy this type of unemployment.

One of the primary focuses of regional economic development is clearing unemployment caused by the mismatch between the skills of the workforce and the needs of employers, both current and projected. This study showed a current demand for workers in the transportation & warehousing, manufacturing, and wholesale & retail trade industries.

There is a real opportunity for the region when considering the transition of the workforce into emerging occupations. The current workforce is well-suited to fulfill the occupational needs of emerging occupations in terms of the activities they will perform. However, there is a need for further training and education in occupation-specific areas such as mathematics, chemistry, and computers & electronics. Examining the Skillshed reveals which areas of education or skills are critical to an occupational cluster, which can be used to develop a plan to nurture those areas within the regional workforce.

It is imperative that public administration work closely with employers and educational providers to develop a cohesive plan to deliver the required education and training to the groups within the workforce whom will benefit most and will most easily be able to transition into emerging occupations.

Introduction

The Skillshed integrated and analyzed information from three different sources; the Great River Region Laborshed Study, the Regional Workforce Needs Assessment (Job Vacancy) Survey, and information from the Occupational Information Network (O*NET). These three sources were used to present the supply and demand for labor within the region and the skills required to perform current occupations and the occupational categories that will drive the 21st century economy.

The Laborshed survey was conducted and analyzed using 600 telephone survey responses from a random sample of 18-64 year olds within the region. Respondents were asked a wide range of demographic and employment-related questions. Areas of interest from the Laborshed survey:

- Work experience within the region
- Population by occupational category
- Unemployment and commuting patterns

Iowa Workforce Development conducted the second annual Workforce Needs Assessment from September 2008 through January 2009. In addition to vacancy and retirement data, this year's survey included questions pertaining to average hourly starting wage. Analysis of the survey illustrates the demand for workers and skills required in the workforce. The Needs Assessment focused on three areas:

- Vacancies across occupations
- Vacancies across industries
- Work activities, skills, and knowledge areas most needed by employers

The Occupational Information Network (O*NET) is a joint effort between the US Department of Labor and the North Carolina Employment Security Commission. It provides a database of standardized and occupation-specific descriptions that help determine which factors are critical in the performance of an occupation.

A Skillshed is the geographic area from which a region pulls its workforce and the skills, education, and experience that the workforce possesses. Traditionally, labor markets have been studied in terms of the products produced by a region to understand what industries are relatively strong. A Skillshed helps to understand not only where the region's competitive strengths currently lie, by understanding the current workforce mix, but also in which occupations or industries could the region grow into by understanding the difference between the current skill set and that skill set needed by emerging markets. The outcome of the Skillshed helps to analyze three key findings:

- Emerging occupations, projected employment growth, and median salary
- Factors affecting the labor market
- Gap analysis between the current set of skills and education and that set needed by emerging occupational clusters

The current skill set of the region was measured by translating the current jobs held by the workforce into a set of knowledge levels and work activities. Location quotients and shift-share analysis was also performed by occupational category to understand the current strengths of the region. By clustering the skill set of the current workforce, we found the emerging occupational categories that were statistically closest in skills and education.

The analyses address two primary areas. Namely, the supply of workers and the demand for workers. Further, the factors affecting these areas, a gap analysis to highlight different needs, and probable solutions are studied.

The need for a Skillshed lies in the ability to match the current skills of the workforce with the skills needed in high-growth, high-pay jobs and to do so in the most efficient way possible. This is possible because the Skillshed matches the skills of the current workforce with the closest cluster of emerging occupations. In this way, a region can prepare for future occupational needs but do so spending the least amount of resources and placing fewer educational demands on its workforce.



Supply of Workers

Through use of the Laborshed study, the current occupations and skills of the region were identified. The table below compares the Laborshed for the region to that of the state, to help identify those categories of occupations in which the region may have a competitive advantage.

Table 1 shows the top 11 jobs held in the region by percentage of total. Next to each occupation is the projected 10 year growth in employment¹ and the median wage². The average projected growth rate for all jobs in the state of Iowa is 11.0 percent with a median wage of \$14.00 per hour. For those jobs with lower than average growth rates, this lack of demand for the occupation will also have a downward effect on wages offered. It is this section of the workforce that will most benefit from skills training and will most benefit the region.

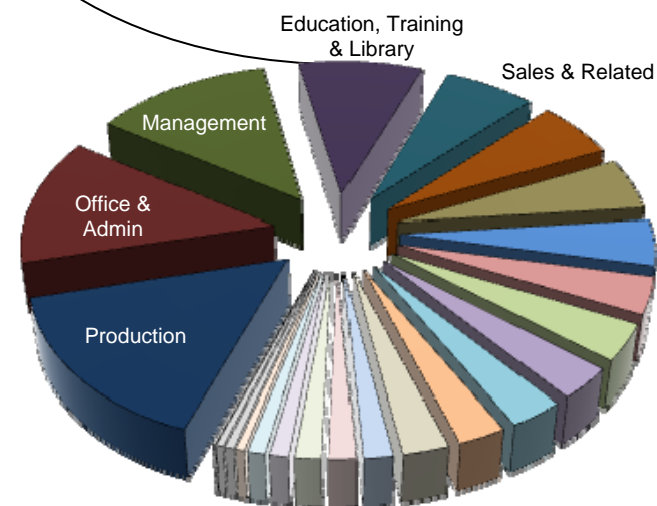
**Table 1
Occupational Experience in Region**

Occupation	Projected Employment Growth 2006-2016 ¹	Regional Median Wage ²
First-Line Supervisors/Managers of Production & Operating Workers	1.5%	\$22.19
Registered Nurses	23.0%	\$21.99
Training and Development Specialists	20.0%	\$18.49
Truck Drivers, Heavy & Tractor-Trailer	18.9%	\$15.70
Automotive Service Technicians & Mechanics	15.7%	\$14.36
Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	11.0%	\$14.07
Average of All Jobs in the State of Iowa	11.0%	\$14.00
Bookkeeping, Accounting, & Auditing Clerks	11.3%	\$13.35
Production Workers	-1.5%	\$11.41
Office Clerks	9.7%	\$10.67
Nursing Aides, Orderlies, & Attendants	13.9%	\$10.30
Teachers (Secondary, Except Special & Vocational Education)	3.3%	N/A

**Figure 1
Population by Occupational Category**

Occupational Category	Percentage of All Workers
Production	15.7%
Office & Administrative Support	13.0%
Management	12.8%
Education, Training, & Library	8.9%
Sales & Related	6.6%
Transportation & Material Moving	5.8%
Healthcare Practitioner & Technical	5.2%
Healthcare Support	4.7%
Food Preparation & Serving Related	3.8%
Construction & Extraction	3.8%
Business & Financial Ops	3.3%
Installation, Maintenance, & Repair	3.0%
Building & Grounds Cleaning & Maintenance	2.7%
Personal Care & Service	2.6%
Architecture & Engineering	1.6%
Community & Social Services	1.5%
Arts, Design, Entertainment, Sports, & Related	1.5%
Protective Service	1.1%
Life, Physical & Social Science	1.0%
Legal	0.5%
Farming, Fishing, & Forestry	0.5%
Computer & Mathematical Science	0.4%
Military Specific	0.2%

Figure 1 presents the occupational categories for the region. The region has a high relative concentration of workers in the production, office & administrative support, and management occupational categories.



The requirements of the advanced manufacturing occupational cluster are close to the current skill set of the region. The current workforce lacked some of the formal education required for the occupations within the cluster. The regional workforce showed a need for coursework in the areas of computers & electronics, engineering & technology, and design. On average, the educational need was less than two years of additional coursework at the associate degree level or less.

The current workforce also needs skills training in the areas of repairing & maintaining electronic equipment, making decisions & problem solving, and interacting with computers. **Table 8** presents the most widely held jobs within the region and their closest match within the advanced manufacturing cluster. Engineering occupations of all types are among the occupations projected to be in high demand for the cluster. The focus here has been placed on engineering technicians because these positions require fewer years of education and experience but are still projected to outpace the statewide averages for growth and wages.

**Table 8
Gap Analysis Selected Occupations in Advanced Manufacturing**

Occupation	Education Needed	Skills Training Needed	Emerging Advanced Manufacturing Occupations
Assemblers and Fabricators	Less than One Year coursework: Computers and Electronics	One Year training: Repairing and Maintaining Electronic Equipment	Medical Equipment Repairer
Machine Tool Setter	One to Two Years coursework: Engineering Technology, Design	Less than One Year: Communicating with Others, Making Decisions and Problem Solving, Updating and Using Relevant Knowledge	Industrial Engineering Tech
Production Worker	One to Two Years coursework: Computers and Electronics	One to Two Years: Making Decisions and Solving Problems, Repairing and Maintaining Electronic Equipment, Interacting with Computers	Electrical and Electronics Repairer
Home Appliance Repair	Less than One Year coursework: Design, Mechanical, Engineering Technology	None	Industrial Machinery Mechanic

¹ <http://iwin.iwd.state.ia.us/iowa/ArticleReader?itemid=00003928>
² <http://www.iowaworkforce.org/lmi/occupations/wages/index.htm>

Gap Analysis

Three occupational clusters have been selected for gap analysis. The clusters are business services, agribusiness & food technology, and advanced manufacturing. They were selected for their projected employment growth, high average wages, and the proximity between required skills for the occupations and the current skill set of the workforce. For these reasons, the workforce will be able to transfer into these occupations easily and with the most value added to the regional economy. **Table 6, Table 7, and Table 8** (next page) provide examples of the education and skills necessary to transition from an occupation currently in great supply within the regional workforce to an emerging occupation.

Within the business services cluster of occupations, the regional workforce fell short with respect to education in computers & electronics, engineering, and telecommunications. On average, the occupations within the cluster demand an associate degree, while the level of educational attainment of the regional workforce is slightly below the associate degree level. With respect to experience, the current workforce requires training in computer skills and information processing skills. This gap was approximately one to two years of additional training.

The table below summarizes the education and experience needed to transition one of the occupations held within the workforce to an occupation within the business services cluster.

**Table 6
Gap Analysis Selected Occupations in Business Services**

Occupation	Education Needed	Skills Training Needed	Emerging Business Services Occupations
Automotive Service Technician	Associate level coursework: Telecommunications, Software Programs	One to Two Years: Interacting with Computers, Getting Information	Network and Computer Systems Administrator
Photographic Equipment Repair	Associate level coursework: Computers and Electronics	One to Two Years: Interacting with Computers, Making Decisions and Problem Solving	Computer Software Engineer
Office Clerk	Associate level coursework: Sales & Marketing, Administration & Management	One to Two Years: Communicating with Others, Getting Information, and Processing Information	Market Research Analyst
Bookkeeping, Accounting, & Auditing Clerk	Less than One Year coursework: Mathematics, Economics and Accounting, Law & Government	None	Actuary

The agribusiness & food technology occupational cluster was the most closely related to the set of skills and experiences held by the regional workforce. The most critical gap in education required fell within mathematics, chemistry, and food production. The gap between the current knowledge of these subjects within the regional workforce and the level of knowledge required was between the high school level and the Associate degree level, or less than one year of coursework. **Table 7** presents several examples of possible transitions.

**Table 7
Gap Analysis Selected Occupations in Agribusiness and Food Technology**

Occupation	Education Needed	Skills Training Needed	Emerging Agribusiness and Food Technology Occupations
Farmers and Ranchers	Less than One Year coursework: Mathematics, Chemistry	Less than One Year: Getting Information, Analyzing Data, Documenting/Recording Information	Food Scientist and Technologist
Inspectors, Testers, Sorters, Samplers, and Weighers	Associate level coursework: Engineering & Technology, Mathematics, Food Production	None	Agricultural Engineer
Pest Control Worker	Less than One Year coursework: Chemistry	None	Chemical Technicians
Purchasing Agents and Buyers, Farm Products	Less than One Year coursework: Chemistry, Biology, Food Production	None	Agricultural and Food Science Technician

Unemployment and Commuting Patterns

The Laborshed Study also presents data on the commuting patterns of the region's workforce. On average, workers within the region commute 10 miles each way to work for an average median wage of \$13.09 an hour. There is a slight difference in willingness to commute at different points on the pay scale. Workers making less than \$17.50 an hour are willing to commute an average of 27 miles each way to work for an average desired wage of \$19.33 an hour, while those making more would be willing to commute up to 23 miles for an average desired wage of \$19.30 an hour. This has important implications for employers trying to expand the area from which they draw their labor pool. Workers may be willing to commute from the fringe areas of the region if the starting wage meets their desired wage.

Over one-tenth (13.2%) of those within the Laborshed reported being unemployed, compared to a statewide rate of 10.0 percent. This is not to be confused with the actual unemployment rate. Many respondents may have self-reported that they did not have a job, but would be counted as students or not in the labor force within the Bureau of Labor Statistics unemployment survey. Two counties within the region have significantly higher unemployment rates than the statewide rate. These counties are Lee (8.8%) and Henry (8.2%).

Demand for Workers

The Workforce Needs Assessment reveals the vacant jobs employers reported in the region. **Table 2** shows the occupations with the most reported vacancies and the average starting wage. When comparing the occupations with the most vacancies and the occupational experience in the region (**Table 1**, previous page), there is overlap. There are several possibilities that might explain this overlap of employers and workers. Many jobs, i.e. cashiers and customer service representatives, have high employee turnover rates and employers are constantly hiring for the same position. This does not imply job growth or hiring demand, but a problem with retention. Other occupations have high vacancies because the starting wages offered may be below the median regional wage. Other occupations have high vacancies because of a high demand for the occupation. There may be a large portion of the population currently in the position, but the sector is growing faster than workers are added.

**Table 2
Occupations with Most Vacancies**

Job Title	Average Starting Wage
Registered Nurses	\$20.03
Correctional Officers and Jailers	\$16.48
Truck Drivers, Heavy and Tractor-Trailer	\$15.00
Automotive Service Technicians	\$14.06
Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	\$13.00
Emergency Medical Technicians and Paramedics	\$12.03
Packers and Packagers, Hand	\$8.25
Office and Administrative Support Workers	\$8.00
Community and Social Service Specialists	\$7.75
Cashiers	\$7.30
Installation, Maintenance, and Repair Workers	\$7.25

Table 3 (next page) shows the largest industries in the region (by employment), and the vacancies most reported by those industries. The wholesale trade and retail trade industries have been combined due to the similarity in occupational mix.

In some instances, employers may have difficulty filling a vacancy in one industry but can fill the same occupation in another industry quite easily. Aside from differences in starting wages, these cases can occur because work duties and educational requirements may be similar across industries, but the work environment may be different and applicants may need some industry specific knowledge.

Employers in the region reported requiring less experience and fewer years of formal education for their vacancies than those levels generally reported on O*NET or other occupational planning sources. This indicates that employers are willing to work with applicants to develop the skills and knowledge for the job rather than demanding that an applicant possess all skills at the outset.

Average hourly wage across industries varied from \$21.50 in professional & technical services to \$7.44 in accommodation & food services. The top four industries by average wage were: professional & technical (\$21.50), educational services (\$19.50), public administration (\$18.36), and transportation & warehousing (\$17.74).

**Table 3
Top Jobs Demanded by Industry**

Industry	Occupation	Education Required	Experience Required	Average Starting Wage
Manufacturing	Computer support specialists	High School	1-2 years	\$20.62
	Industrial Engineers	Bachelor Degree	1-2 years	\$27.00
	Machinists	High School	1-2 years	\$21.33
	Water and Liquid Waste Treatment Plant Operators	High School	1-2 years	\$13.50
	Assemblers and Fabricators	High School	None	\$9.50
	Production	High School	None	\$9.20
Transportation & Warehousing	General and Operations Managers	Associate Degree	3-5 years	\$25.00
	Truck Driver (Heavy Equipment)	High School	Less than 1 year	\$15.25
	Production	High School	None	\$9.35
	Automotive Service Tech	High School	Less than 1 year	\$8.81
Wholesale & Retail Trade	Automotive Service Tech	Certification	None	\$13.33
	Machinist	High School	1-2 years	\$13.00
	Office Clerks	High School	None	\$9.25
	Cashiers	High School	None	\$7.30
	Pharmacy Technician	High School	None	\$7.25
Information Technology	Managers	Associate Degree	3-5 years	\$24.03
	Engineering Technicians	High School	1-2 years	\$18.75
	Sales and Related Workers	High School	None	\$15.00
	Advertising Sales Agents	High School	1-2 years	\$14.00
Healthcare	Registered Nurse	Associate Degree	Less than 1 year	\$18.00
	Emergency Medical Technicians	Certification	None	\$15.00
	Community and Social Service Specialists	High School	None	\$10.68
	Nurse Aides	Certification	None	\$8.92
	Cooks	High School	None	\$8.50

Table 4 shows the top work activities and their corresponding skills and knowledge required by employers to fill current positions. Overwhelmingly, employers reported their need for workers that could interact and communicate with others inside and outside the organization. Further, the current workforce was found to be highly qualified in level of skill in necessary work activities, but lacked the formal education or certification for a specific job.

**Table 4
Employer Needs**

Work Activities	Skills	Knowledge
Communicating with Supervisors, Peers, or Subordinates	Judgment and Decision Making	Administration and Management
Establishing and Maintaining Interpersonal Relationships	Active Listening	Customer and Personal Service
Documenting/Recording Information	Critical Thinking	Clerical
Evaluating Information to Determine Compliance with Standards	Coordination	Computers and Electronics
Getting Information	Monitoring	Education and Training
Identifying Objects, Actions, and Events	Reading Comprehension	English Language
Inspecting Equipment, Structures, or Material	Service Orientation	Law and Government
Making Decisions and Solving Problems	Social Perceptiveness	Mathematics
Monitor Processes, Materials, or Surroundings	Speaking	Psychology
Performing General Physical Activities	Writing	Public Safety and Security

Table 5 (next page) presents a sample of emerging occupations, their projected growth rates, and median wages. Based on Batelle Studies and the current workforce skills, it was determined that the region is particularly well suited for jobs in business services, agribusiness & food technology, and advanced manufacturing. The jobs within these categories present projected growth rates and median wages well above the statewide averages of 11.0 percent and \$14.00 an hour.

An analysis of the skills needs for these emerging occupations shows a close similarity with the skills used in many of the occupations held by the current workforce. In other words, the current workforce would need less training to fulfill these positions compared to other occupational categories. What will be needed most in order to transition a group into these emerging occupations is the training specific to each job. This presents an opportunity for education, business, and the public arena to work closely together to develop the curriculum needed.

**Table 5
Emerging Occupations**

Occupation	Projected Employment Change 2006-2016	Median Wage
Medical Equipment Repairer	20.9%	\$21.83
Industrial Engineering Technician	20.0%	\$22.77
Computer Hardware Engineer	16.0%	\$32.25
Food Scientist and Technologist	12.0%	\$25.24
Agricultural Engineer	11.0%	\$30.82
Industrial Machinery Mechanic	16.0%	\$19.17
Computer Systems Analyst	29.0%	\$33.29
Network and Computer Systems Administrator	24.0%	\$27.53
Computer Software Engineer	25.0%	\$36.16
Actuary	23.0%	\$43.81
Operations Analyst	23.0%	\$24.64

Which Jobs are at Risk for Low Demand

The average projected annual job growth reported by the Bureau of Labor Statistics 2006-2016 projections is 1.19 percent. Jobs with a projected employment growth of less than 0.5 percent per year, or a ten-year growth of less than 5 percent, are in the bottom 25 percent of all jobs and should be studied to see which skills or training would be necessary to move workers in these occupations into those with more favorable employment opportunities. Conversely, those jobs with a projected employment growth of 1.92 percent or higher, or those occupations designated as emerging occupations in this study, are in the top 25 percent in terms of employment growth. For example: home appliance repairers, an occupation only projected to grow by 2.3 percent, already possess most of the skills necessary to be qualified as a medical equipment repairer, an occupation projected to grow by 20.9 percent over the same time period.

Factors Affecting Supply & Demand

Starting wages that are below the required wage a worker would need to consider employment could present a problem for employers trying to fill a vacant position. Aside from increasing starting wages, possible solutions are those that decrease the cost of transportation for employees, increasing benefits, flexible hours, or providing training opportunities for employed people with income constraints.

Employee turnover has an affect on the job market in the Great River Region just as it does everywhere else. The Workforce Needs Survey showed high levels of vacancies for jobs in the food preparation & serving, sales & related, and the personal care & services occupational categories. High turnover in these occupations does not necessarily indicate high demand for employees. There is little economic developers can do to decrease turnover within occupational categories or the job market as a whole.

Mismatch in skills between workers and job vacancies results in those workers being underemployed. When comparing the current skills of the workforce with the skills and education needed to fulfill the requirements for the emerging occupations and occupational categories, it was found that segments of the workforce were suited to meet the experience requirements for emerging occupations but did not meet the educational requirements. This presents an opportunity for business and public organizations to work together toward training and educating these workers.

Worker/Employer connection is another factor affecting the relationship between the supply of workers in the region and the demand for those workers. The most likely cause of this imbalance in the labor market is a lack of information that leads the people with the necessary skills to those seeking employees. Counseling services, consolidated region-wide job banks, and other services promoting the dissemination of information are those most likely to clear this type of unemployment.

The media most used by job seekers in the region are: the internet (56.1%), local/regional newspapers (52.6), local Iowa Workforce Development Centers (28.5%), and networking (21.5%). The most visited internet sites for worker job search were: www.monster.com (55.1%), www.iowaworkforce.org (48.6%), and www.careerbuilder.com (31.7%). The top four media used by employers to find applicants were local/regional newspapers (87.5%), the internet (71.7%), local Iowa Workforce Development Centers (65.1%), and college/university career centers (49.3%). The most used internet sites for employers were company websites, www.iowaworkforce.org, www.monster.com, and www.careerbuilder.com.