

# An Evaluation of the Cedar Rapids / Linn County Economy

Dave Swenson  
Liesl Eathington  
Iowa State University  
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## Overview

This report investigates historical and structural aspects of the Cedar Rapids / Linn County economy. There are four over-riding evaluative sections that will follow an introductory demographic and economic overview of the area. Section 1 describes the area's overall industrial diversity. This assessment relies on input-output tables of the area for 2006, the latest year those data are available, and helps us identify industrial contributions to jobs, earnings, and value added. It also lets us key-in on the region's base economic structure. Measures are used to indicate regional specialization and the degree to which that specialization sustains export-serving jobs. In addition, we will assess which industries have the greatest economic impact – the total number of jobs that are linked, via multipliers, to export production in the region.

Section 2 assesses industrial competitiveness in the area. It includes a detailed analysis of the industrial job change over this decade, primarily. When compared to the United States, this section will identify three explanatory sources of industrial job growth or decline: the amounts due to national factors, the amounts that are attributable to the particular mix of jobs in the region, and the amounts that are due to outright local competitiveness. This analysis will give a detailed snap-shot of industrial performance vis á vis the U.S. It allows us to look at some of the more competitive and noncompetitive aspects of the regional economy.

Section 3 is an occupational assessment. Using a national industry-to-occupation matrix survey, this section is a somewhat detailed estimation of regional occupations and how those occupations have changed over-time using the same criteria for industries in Section 2: national changes, regional occupational structure, and overall competitiveness. This assessment is useful because economic development planners must increasingly evaluate their occupational competitiveness and human capital content when determining their capacities for growth. Lastly in this section the industrial job changes that were determined in Section 2 are translated into occupational changes in the region.

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Section 4 evaluates overall trade and regional competitiveness. This is a major metropolitan area with intense trade and service competition to its south in the Iowa City – Coralville area. This analysis looks at overall trade performance over time first. Then a broader look is taken to ascertain the pattern of trade change and attribute that change to population change, income change, and lastly, area competitiveness.

Each section will provide basic conclusions about the regional economy, its performance, and its human capital structure to allow for solid and reliable inputs into strategic planning. Importantly, this assessment provides baseline data for assessing future performance and it provides clear methods of those assessments that can be replicated.

## Economic and Human Capital Overview

### Population Trends

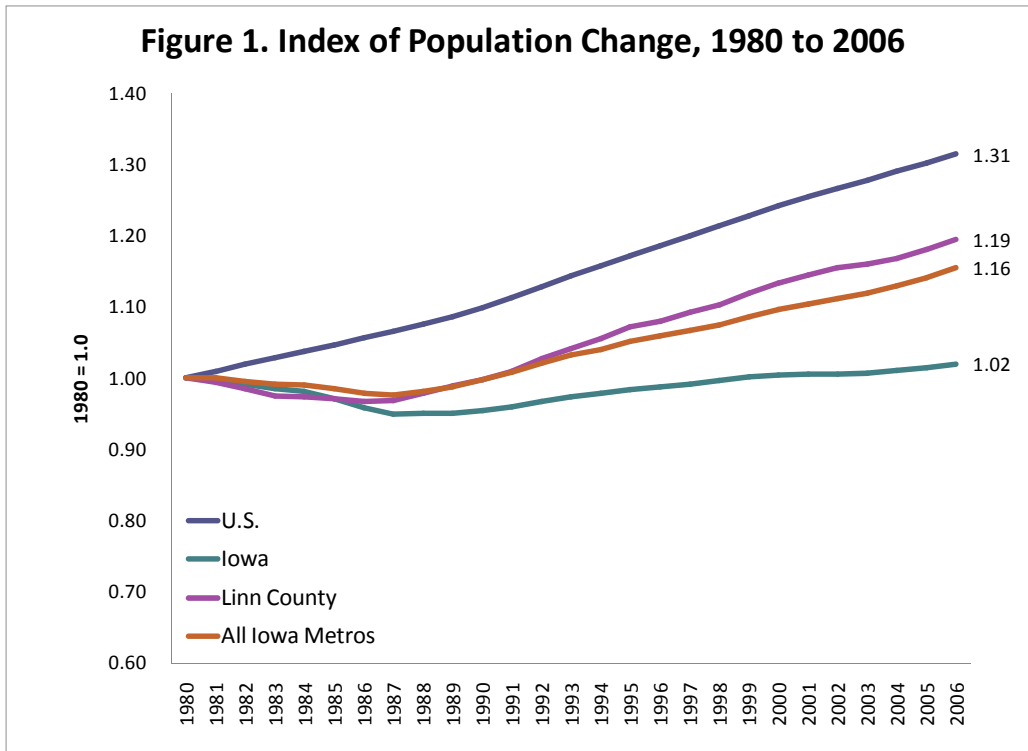
Linn County Iowa is the hub of the Cedar Rapids metropolitan region, which also includes Benton and Jones County. Looking at Table 1 it is evident that the overall metropolitan area grew smartly, but lagged the growth of all Iowa metropolitan areas combined just half of a percentage point. Still, the region grew at more than three times the rate as the state as a whole, and Linn County did even better by growing 7 percent. This decade, over 91 percent of the Cedar Rapids metro growth occurred in Linn County.

**Table 1. Population Estimates, 2000 to 2007**

	2000	2007	Percentage Change
State	2,928,246	2,988,046	2.0%
All Metros (Iowa counties only)	1,329,116	1,419,049	6.8%
Cedar Rapids Metro	237,843	252,784	6.3%
Linn County	192,293	205,836	7.0%

However well Linn County or the Cedar Rapids metro are doing in terms of population growth, they lag seriously the pace of growth nationally. Figure 1 is an indexed representation that looks at population change in the state, all Iowa metros, and in Linn County as compared to the U.S. experience since 1980. Over this period, the nation grew by 31 percent. Iowa only posts a 2 percent gain over its 1980 population. All Iowa metros grew by 16 percent, and Linn County, considering the period measured, performed better with 19 percent growth.

There are two important patterns to take away from this display: first, Iowa's net growth is obviously concentrated in its metropolitan regions; and second, the Linn County area, in all, is performing slightly better than the sum of all metros. Were we to index all metro changes and Linn County to 1990 instead we would eliminate the harsh impacts of the state's farm debt crisis of the early to mid-1980s coupled with a strong recession, and we would find that the overall pace of growth in Linn County was more similar to the national pattern with the sum of all Iowa metropolitan areas still lagging the national pattern.



The point to be made is important: the state along with its metro counties has lost significant ground to the rest of the nation over the past quarter century. Given the overall changes that have and continue to occur to the Midwest's economies, it is not realistic to expect that lost ground will be made up. In short, there have been serious reductions in the state's and the region's share of national activity over time. As it stands, however, Linn County has contributed strongly to the meager net growth that the state has enjoyed since beginning to grow again in the mid-1980s.

The basic elements of change in the county as compared to the state overall are discerned in Table 2. First, looking at the totals, 23 percent of the population gains in the state of Iowa this decade can be attributed to Linn County growth. In arriving at those totals, the ways in which populations change are itemized and displayed. The first is natural change, the sum of all births minus deaths. Population grows from international migration. These are persons that come to the area from some other country without living somewhere else in the U.S. first. That was 1,886 persons for Linn County, just 13 percent of its total gain. International migration is a much more important component of state growth where the 36,217 person gain represented almost 59 percent of the state's growth. Domestic migration represents an inflow of persons that live somewhere else in the U.S. or in Iowa. Persons already living in Iowa but moving to Linn County would be considered domestic migrants, and the county posted 2,656 in gains. In

contrast, the state’s attractiveness to persons from other U.S. states overshadows the gains from domestic migration with a loss of 50,248. Due to all migration alone, Linn County gained 4,452 residents, but the state posted net losses of 14,031.

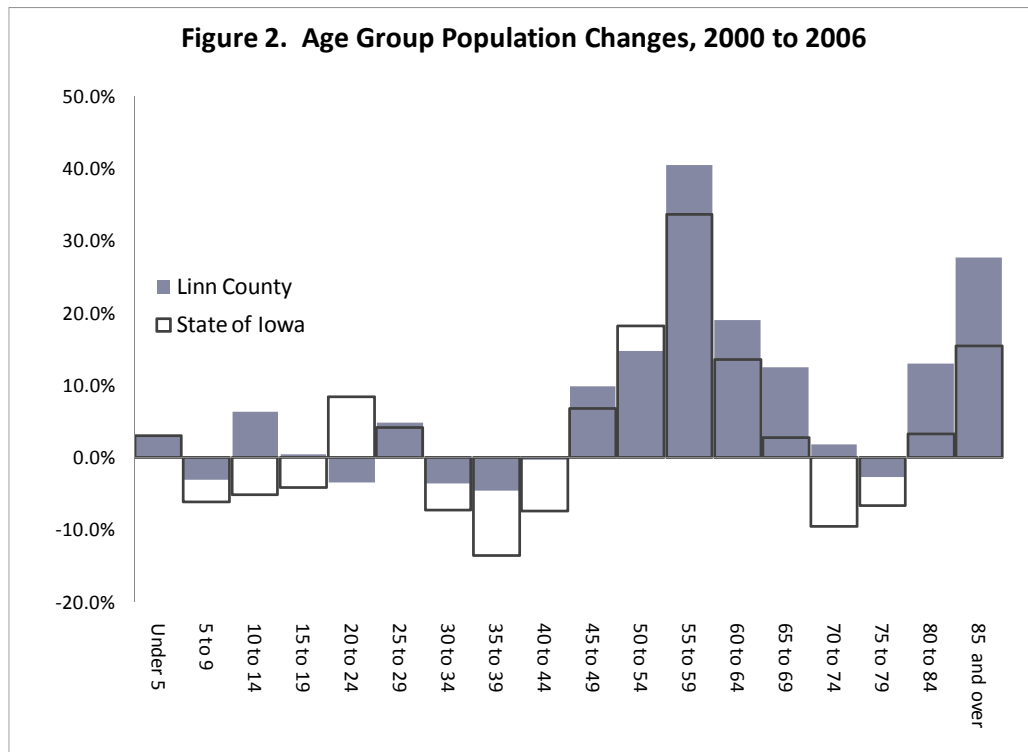
**Table 2. Composition of Population Change, 2000 to 2007**

	Linn County	State of Iowa
Natural Change	9,530	81,489
<i>plus</i> International Migration	1,886	36,217
<i>plus</i> Domestic Migration	2,656	(50,248)
<i>plus</i> Other	63	(5,794)
<i>equals</i> Total Change	14,135	61,664

There are other ways to decompose change. One of the important elements of area vitality concerns the overall age distribution of the population and how that distribution is changing over time. Economic activity flows towards suitable labor and suitable labor flows to where it expects to find meaningful employment. We expect business firms to be particularly attracted to pools of workers in the 25 to 39 age range. Comparable growth in those populations usually indicates either economic growth or the potential for growth. Importantly, those are also the ages of adults that form families and have children, so having an adequate proportion of young adults also has a generational impact for a community or region.

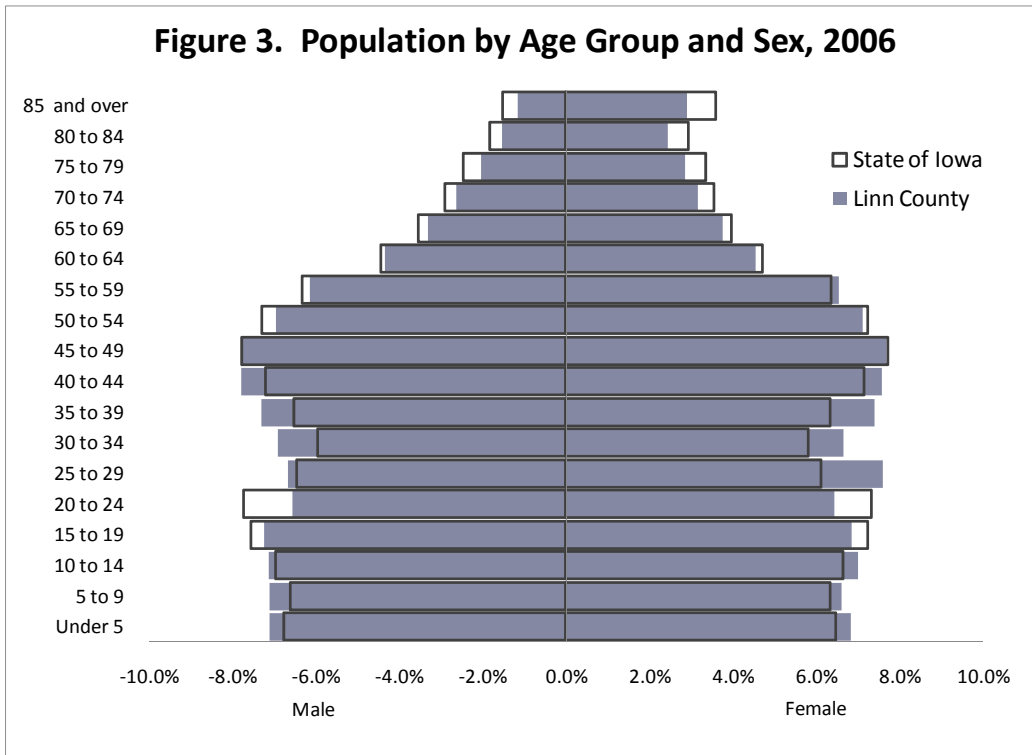
Figure 2 compares Linn County and Iowa Population changes by age group. The first and most prominent component of that graph is the large percentage growth of persons in the 45 to 60 age groups. These are the Baby Boomers, and the county, the state, and the nation all have a surplus in this age group. The peak population, ages 55 to 59, will “age-out” of the middle ages into elderly groups over the years trailed by the somewhat smaller cohorts ages 45 to 54. While population gains in this segment might seem desirable, as boomers are usually in their peak earnings years, a disproportionate concentration of “boomers” is usually a sign of weakness elsewhere in the population. Weakness for the state is evident for the 30 to 44 age groups where percentage losses were estimated. Losses are also indicated for Linn County, but the proportions are less than for the state overall. Recalling that young adults produce children, we see an “echo” of this overall loss: the number of children ages 5 to 19 also post losses for the state overall. The county’s performance in these groups is more positive. Last, we see proportionate growth in the number of persons ages 80 and over. The percentage growth for Linn County is much greater than the state experience indicating that there is a greater

propensity for our oldest citizens to locate in the Linn County region than the state experience would indicate.



At any point in time we can compile a population pyramid of males and females by 5 year age group. This description gives a clear indication of the size of different age groups, and from it we can infer a region’s demographic strengths and weaknesses. The 2006 population pyramid for Linn County and the State of Iowa follows in Figure 3.

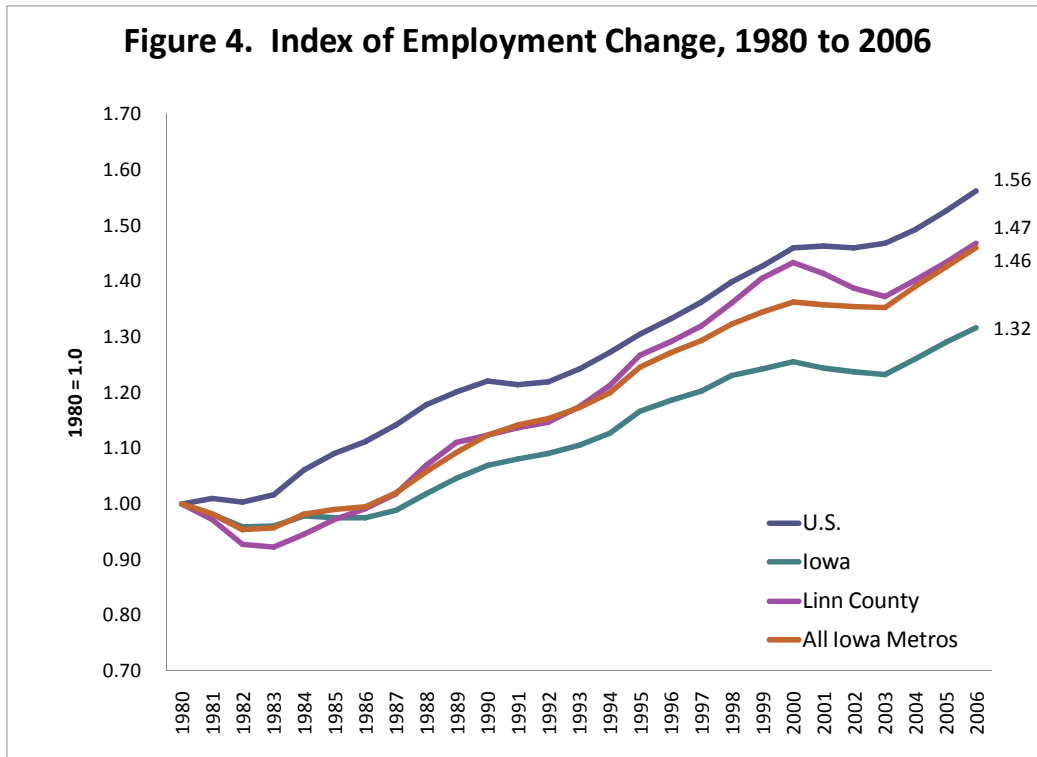
First, in the important 25 to 39 year categories, and even upward through age 44, the county has proportionately more men and women than the state average. In terms of potential job growth, then, this indicates a superior pool of persons to whom businesses would be attracted. That advantage is evident too in its echo: there are more persons ages 14 and under. The city has a much smaller fraction of persons ages 15 through 24. This is primarily due to college-related outmigration. Overall, if the area has proportionately desirable attributes, those must be offset by deficits in other groups. The area posts slightly smaller proportions of ‘boomers’ and, importantly, smaller fractions of elderly persons – those over age 65.



**Basic Economic Trends**

Populations, or more succinctly, households, are supported, in the main, by regional commerce. In following sections we will dissect the area’s economy in high detail. This segment looks at overall trends and comparative performance for the region.

Figure 4 is an index of job growth in the U.S., Iowa, the metros, and for Linn County since 1980 where 1980 = 1.0 (or 100 percent). Since 1980, jobs in the U.S. have grown by 56 percent, 47 percent in Linn County, 46 percent in all metros in Iowa, and by 32 percent for the state as a whole.



Indexed values can mask volatility in the economy, and it is evident that there were strong contractions in Linn County during the 1980s, much more so, proportionately, than the state as whole or all of its metros realized. It is also evident that from the mid 1990s through the 2000 that Linn County had growth rates that eclipsed those of the nation. While the Iowa economy posted erosions after 2000, Linn County declined much more sharply through 2003 – there is evidence of boom and bust activity, somewhat indicative of the dot-com patterns that were evidenced in many other places over precisely those same periods. Through 2006, Linn County and the rest of the state posted sharp recoveries.

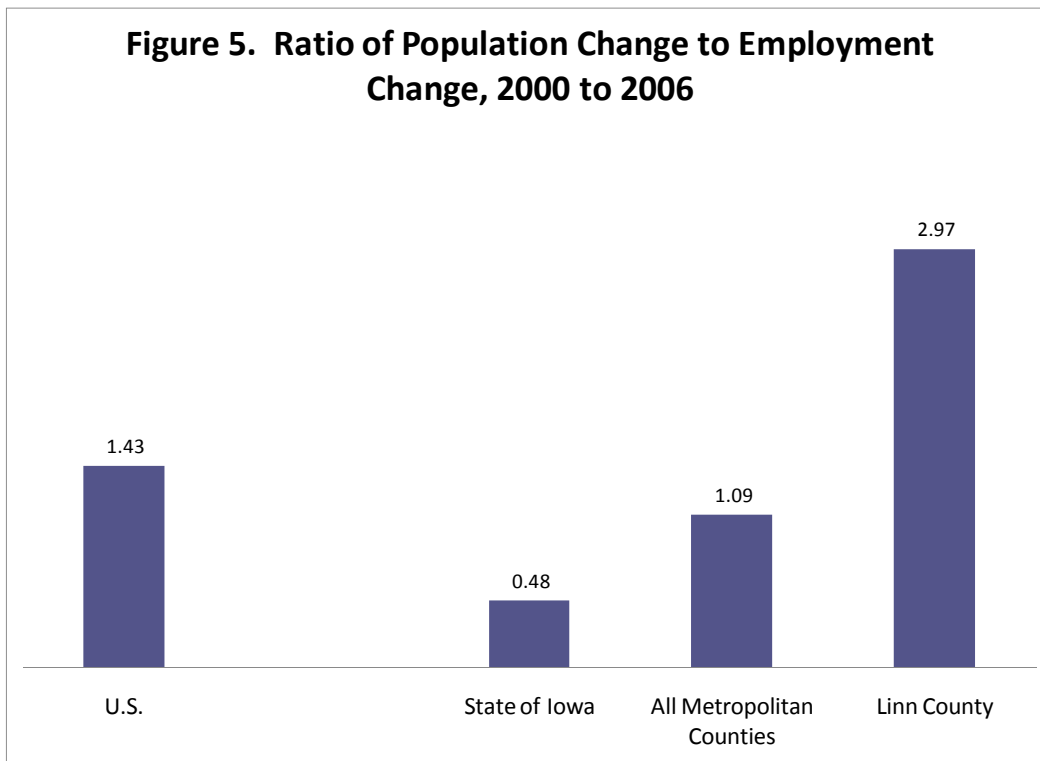
Table 3 summarizes the current decade. Population loss rates in Linn County were more than twice the state rate and six-and-a-half times the overall metro rate in the first half of the measured period. From 2003, though, the region exceeded the national and state rates, but still lagged the overall metro rate by nearly a percentage point. For the decade, the area has posted just a 2.4 percent gain in employment, half the state rate and a third the rate of gain of the metros. While it is not necessarily appropriate to generalize too much from only two major events, there is some evidence that the overall economic structure and the types of economic gain the region has had have led more jobs volatility than the state as a whole and its metropolitan counties.



**Table 3. Total Full and Part-Time Job Growth, 2000 to 2006**

	2000	2003	2006	Percentage Changes		
				2000 to 2003	2003 to 2006	2000 to 2006
U.S.	166,758,800	167,553,500	178,332,900	0.5%	6.4%	6.9%
State of Iowa	1,934,077	1,898,264	2,027,293	-1.9%	6.8%	4.8%
All Metropolitan Counties	1,083,402	1,076,578	1,161,972	-0.6%	7.9%	7.3%
Linn County	145,686	139,453	149,185	-4.3%	7.0%	2.4%

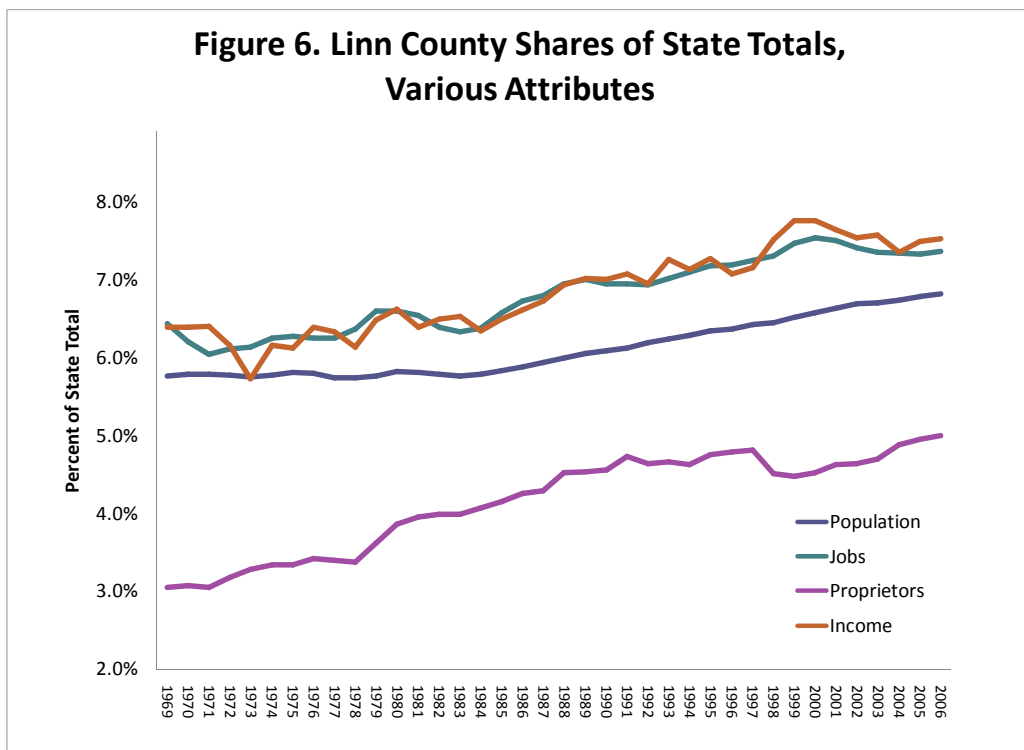
An alternative indication of the value of job growth can be determined by looking at the pace of population growth relative to job change over time. In Figure 5 the ratio of population to job change is displayed for the 2000 to 2006 period. The nation averaged 1.43 persons for every job created. The state of Iowa, much like it did during much of the 1990s posted a gain of just under one-half of a person for each job created. The average for all metros was about 1.1 persons per job, and the average for Linn County was nearly 3.



Regions or states that are significantly below or above the national norm are worthy of scrutiny. The state of Iowa continuously produces jobs but has paltry population change – this in and of

itself is an indictment of the jobs that are created. Many of the job gains are not of the kind that can sustain population growth or mitigate persistent outmigration, as demonstrated in Table 2. Most of the growth in employment in Iowa has been in its metropolitan areas as has population growth, but population growth lags job growth, though nowhere to the degree evidenced by the state as a whole. Linn County, is still a very strong population growth center, and on net has added significantly more persons than jobs over this decade owing to the subpar job growth.

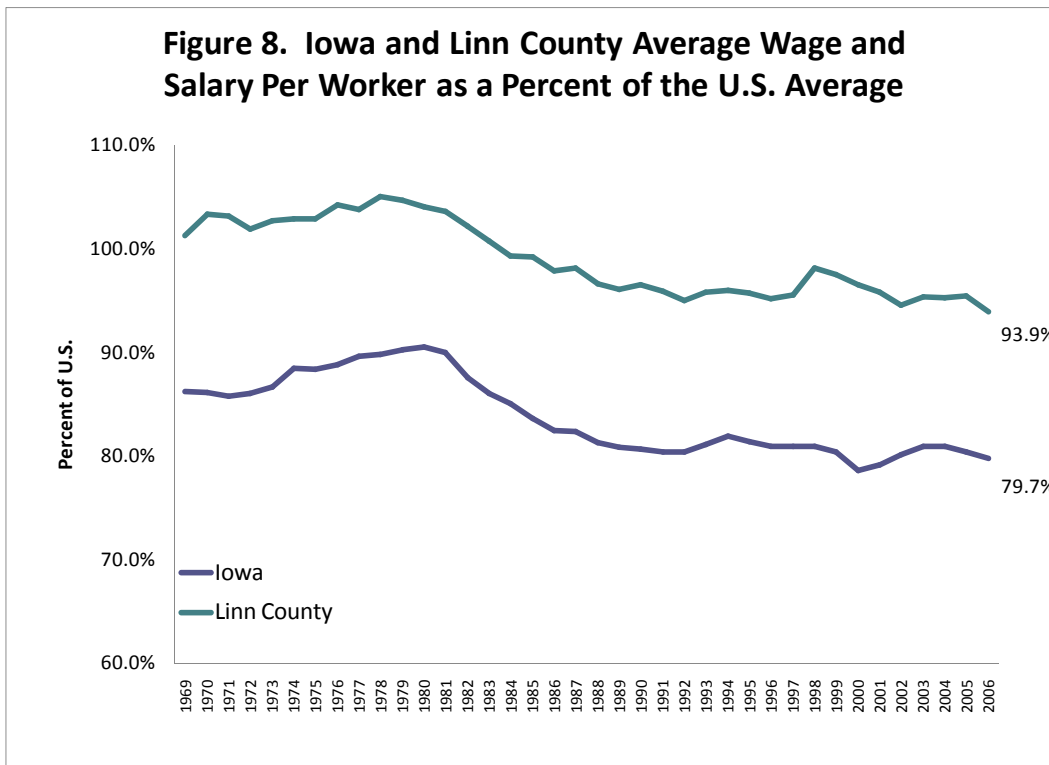
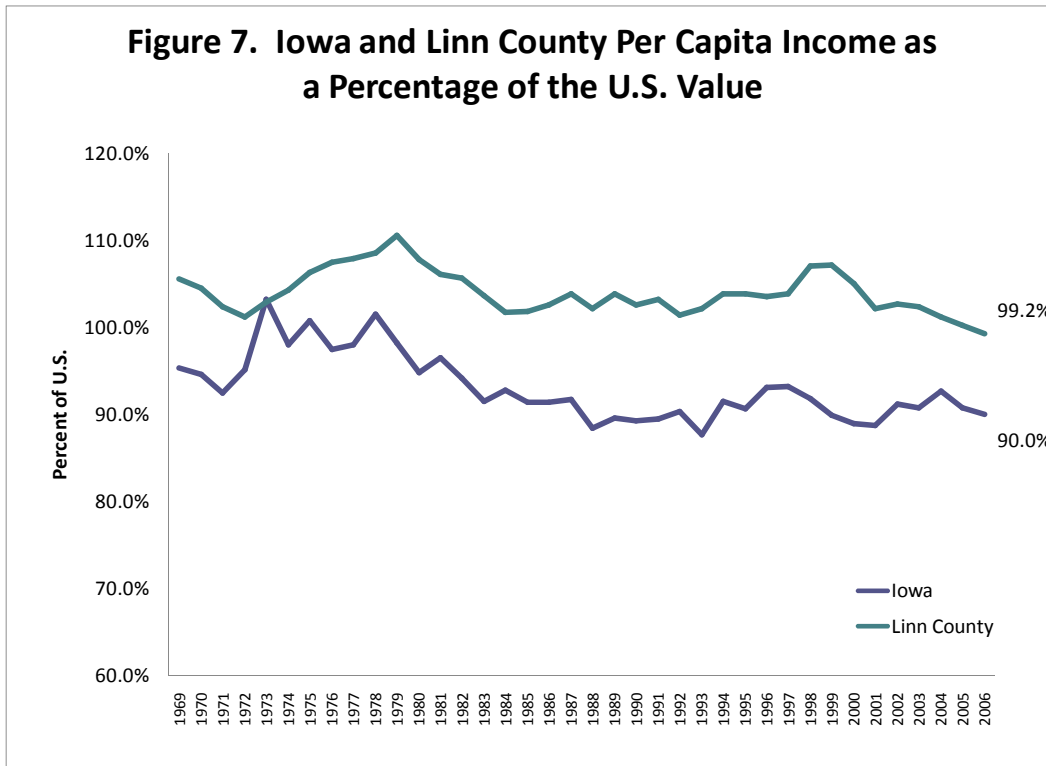
The question remains, then, how is the county doing? Figure 6 displays four measures of performance for Linn County in comparison to the state of Iowa as measured as shares of state totals. Since the early 1980s, the county's share of state population has remained relatively constant and growing. Its share of jobs is greater than its share of people because it is an employment center drawing workers in from surrounding counties. Of note is the closing of the gap between population shares and job shares during this decade. Total income is greater than the population share as well because incomes earned in the county are higher than the state average. We see, though, a decided reduction in shares during this decade with growth posted, however, since 2004.



The last component is all proprietors. This number includes farmers and nonfarmers that own businesses as sole proprietors or in simple partnerships. The county's shares of these kinds of businesses are much lower over time than population would suggest. Where the county posts 7.5 percent of the state's income accruing to 6.8 percent of its population, it only has 5 percent of proprietors. This low level of proprietorships can mean several things. First it might be that overall job opportunities are strong and relatively well-paying thus mitigating the necessity of starting businesses. It can also mean that the area is not conducive to entrepreneurship. It is not likely that is the case and that the first explanation prevails. Also, the number of proprietorships may mask that fact that existing proprietorships in the area typically employ more workers than the state average, which is generally true in more urbanized areas. Still, it appears that the slowdown of the early part of this decade took a toll on the region's share of this important category of employment.

Another important measure of regional well-being is per capita income. Incomes are derived from three sources: the combined earnings from working, which includes all wages, salaries, and benefits; all unearned income that is derived passively from rents, dividends, and interest payments; and transfer payments like Social Security and Medicare for the elderly, along with Food Stamps, Temporary Assistance for Needy Families, and Medicaid for the indigent and the disabled. Most income in urban economies is derived from earnings. Figure 7 shows that Linn County has about the national average at 99.2 percent as compared to the state which comes in at just 90 percent. Notable, however, is the general decline realized over time by the county and the state. Per capita incomes in 1979 were 111 percent of the U.S. average in the county, and 105.8 percent in 1999. The state was at 101 percent of the national norm in 1979, but has cycled between 90 percent and 93 percent since the mid 1990s. Again, for Linn County, the recent trend is downward indicating some stagnation in income growth even after the local economy began growing in 2003. That growth has not been strong enough to curb that decline.

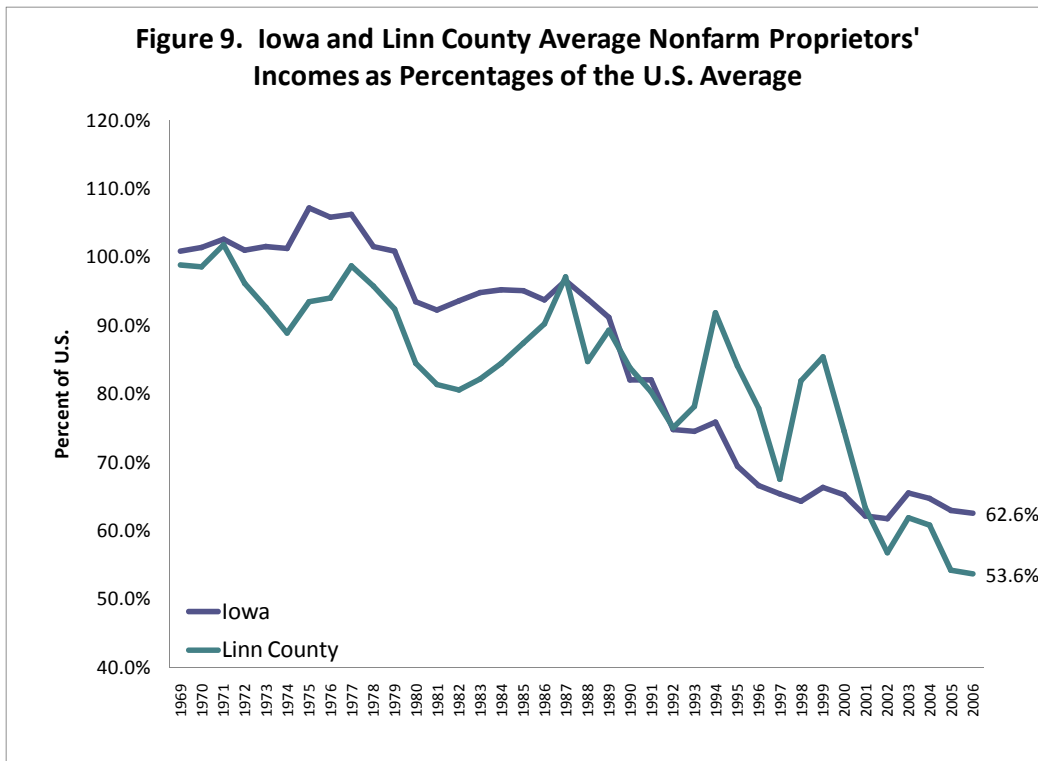
Evidence of that is contained in Figure 8. Though posting average wages and salaries per worker of 105 percent of the national average in 1979, the county found its average at 93.9 percent in 2006 – an 11 percentage point drop. The state of Iowa average was about 90 percent of the national average in 1979 but found itself at 78.7 percent in 2006 – more than an 11 percentage point drop. This erosion in earnings is often explained away by the somewhat lower cost of living enjoyed in the Midwest, although there is significant research indicating that were that the case, all things equal, there would be less outmigration on average than has been posted over the past 18 years.



As bad as the indicators are for average wage and salary returns, the returns to non-farm proprietors when compared to the nation are much worse. In 1975 the average Linn County non-farm proprietor's income was 107 percent of the national average. By 1987 it had dropped

to 97 percent, and by 2006 it had plummeted to less than 54 percent. This statistic alone invalidates the previous supposition that Linn County proprietorships are larger than the state average. The state, too, posted large erosions from at or near the national norm 30 years ago to a low of 63 percent in 2006.

The combination of wage erosion and the erosion in earnings to non-farm proprietors are ominous, structural issues for the Iowa economy. The preponderance of income is gained from labor – working for wages and salaries or by engaging in a business. If the returns from labor erode over time, there is a very strong tendency for existing workers and entrepreneurs and future workers and entrepreneurs to increase their rates of outmigration. While wages are not the only draw in an economy, they are the primary draw, and persons who attempt to discount the importance of competitive pay will always find that it is a flawed strategy absent overwhelmingly apparent and highly desired compensating and off-setting differentials like natural amenities.



## Section 1. The Regional Industrial Structure, Measures of Industrial Specialization, and the Economic Impact Value of Export Production

This section introduces the reader to the regional industrial structure. It allows an introductory understanding about the configuration of the regional economy and some of the more important elements of it. The analysis has been conducted using 2006 industrial accounts information as compiled by the U.S. Bureau of Labor Statistics and the Bureau of Economic Analysis. Table 4 is an aggregation of the industries in Linn County by broad industrial category. It lists several categories of information. The first is industrial output. This is the value of production for the calendar year. Next is labor income. That consists of all wages, salaries, benefits, and returns to proprietors. Value added consists of labor income plus returns to investors and indirect tax payments. Value added is the very same thing as Gross Domestic Product (GDP) and is the preferred way in which we measure the size of an economy or compare one economy with another. Last are jobs. Jobs are counted where the jobs are, so this number includes people living outside of the county. In addition, there are more jobs than employed persons because many people have more than one job.

**Table 4. 2006 Aggregated Industrial Characteristics for Linn County**

(Dollar amounts in \$millions)	Industrial Output	PCT of Total	Labor Income	PCT of Total	Value Added	PCT of Total	Jobs	PCT of Total
All Agriculture	134.61	0.6%	29.23	0.5%	50.86	0.5%	1,856	1.3%
Mining	20.54	0.1%	6.73	0.1%	10.94	0.1%	118	0.1%
Construction	937.34	4.3%	389.98	6.1%	448.90	4.6%	7,610	5.2%
Manufacturing	8,587.96	39.3%	1,548.72	24.2%	1,964.48	19.9%	18,643	12.8%
Trade	2,048.65	9.4%	774.62	12.1%	1,360.72	13.8%	27,333	18.7%
Transportation	802.77	3.7%	301.45	4.7%	394.58	4.0%	7,371	5.1%
Utilities	647.77	3.0%	141.05	2.2%	526.56	5.3%	1,354	0.9%
Information	1,336.75	6.1%	296.24	4.6%	608.82	6.2%	5,230	3.6%
Financial	1,793.53	8.2%	529.04	8.3%	910.10	9.2%	8,091	5.5%
Real Estate	477.97	2.2%	103.45	1.6%	292.14	3.0%	4,138	2.8%
Professional Services	721.13	3.3%	330.64	5.2%	385.36	3.9%	6,594	4.5%
All Other Services	2,892.51	13.2%	1,307.36	20.4%	1,598.10	16.2%	44,242	30.3%
All Governments	807.53	3.7%	651.52	10.2%	731.71	7.4%	13,204	9.1%
<b>Total</b>	<b>21,858.62</b>		<b>6,410.02</b>		<b>9,859.22</b>		<b>145,784</b>	

The Linn County economy had \$21.86 billion in industrial output in 2006. In so doing it generated \$9.86 billion in value added. Of that value added, \$6.41 billion was distributed to 145,784 jobs, for an average labor income per job of \$43,969. Nearly a quarter of labor incomes were generated in the manufacturing sector, and another fifth in all other services (office and business services plus services to households). Combined retail and wholesale trade provided about 12 percent of labor incomes, while 8.3 percent came from the financial sector (banking and insurance). Much different rankings accrue when we look at jobs. The other services group took up over 30 percent of the jobs. Trade was second at 18.7 percent, and manufacturing was third at 12.8 percent.

A more detailed look at area income and jobs production is contained in the next two tables. Table 5 has the top 10 industries for labor income production. These firms accounted for \$2.75 billion of payments to workers and proprietors that year, or 43 percent of the total. Search and navigation manufacturing was first followed by insurance. State and local education trailed just slightly. Governmental activity, both for education and general government, and health care delivery are prominently represented in this listing.

**Table 5. Top 10 Labor Income Producing Industries in 2006**

Industry	Labor Income
Search- detection- and navigation instruments	775.33
Insurance carriers	331.64
State & Local Education	325.73
Wholesale trade	301.32
Offices of physicians- dentists- and other health providers	275.50
Truck transportation	196.31
Hospitals	189.85
State & Local Non-Education	177.70
Breakfast cereal manufacturing	176.03
Subtotal	2,749.41
Totals	6,410.02

*Dollar amounts in \$millions*

Table 6 gives the top 10 job producing industries. Food service and drinking place jobs are first, although these kinds of jobs are often part-time, seasonal, or both. Next state and local education followed by search and navigation equipment. Combined hospital and physicians clinics are also important. The category of non-store retailers fourth, and it represents jobs that

are in direct sales – (think of Avon, Mary Kay, or your “independent-contractor” paper delivery person, among others). In all, these top 10 employing industries account for 35 percent of county jobs.

**Table 6. Top 10 Job Producing Industries**

Industry	Jobs
Food services and drinking places	8,651
State & Local Education	8,232
Search- detection- and navigation instruments	7,397
Nonstore retailers	5,456
Truck transportation	5,024
Wholesale trade	4,705
Insurance carriers	4,602
Hospitals	4,265
Offices of physicians- dentists- and other health providers	3,699
Subtotal	52,031
Totals	145,784

It is also useful to measure the degree of production specialization that exists in an economy. That degree of specialization is measured using a ratio called a location quotient (LQ). It is merely the percent of employment in an industry locally divided by the national percent of employment in that industry. If your community has 4 percent employment in an industry and the national average is 2 percent, then your LQ = 2.0, and it means that you have twice as much employment as the national average. By definition, if an area is specialized in some areas, it will be proportionately under-represented in others.

Table 7 lists the top 15 specialized industries (a table of all LQs in excess of 1.0 are included in an appendix). These industries, by virtue of their LQs are major exporters. The LQs range from 153 to 6.7. Breakfast cereal manufacturing is, by way of interpretation, 153 times the national average. Wet corn milling and search and navigation instruments also had very high LQ values at 88 and 57, respectively.

The LQ value also lets us gauge the fraction of the workforce that is producing for export. We are interested in export production, production in excess of local demand, because that brings money into a regional economy. Generally speaking, the primary way in which a regional economy grows is by satisfying external demands for goods and services. For any industry, then, if it has an LQ greater than 1.0, we can calculate an adjustment to their jobs value to determine the number that is producing for export sales. That formula is

$$\text{Jobs in an industry X (1-1/LQ)}$$



**Table 7. Top 15 Location Quotients in Linn County in 2006**

Industry	Location Quotient
Breakfast cereal manufacturing	153.2
Wet corn milling	87.6
Search- detection- and navigation instruments	56.6
Soybean processing	29.5
Copper rolling- drawing- and extruding	27.9
Database- directory- and other publishers	18.0
Metal forming machine tool	17.3
Measuring and dispensing pump	17.2
Switchgear and switchboard apparatus	16.5
Packaging machinery manufacturing	15.8
Sporting and athletic goods	11.2
Iron and steel forging	8.3
Cutlery and flatware	7.3
Other animal food manufacturing	6.9
Farm machinery and equipment	6.7

**Table 8. Top 15 Export Job Industries in Linn County in 2006**

Industry	Export jobs
Search- detection- and navigation instruments	7266
Nonstore retailers	4032
Truck transportation	3368
Insurance carriers	3241
Breakfast cereal manufacturing	1973
Business support services	1580
Database- directory- and other publishers	1207
Telecommunications	1071
Power generation and supply	1005
Grantmaking and giving and social advocacy	891
Miscellaneous store retailers	868
Hospitals	647
Wet corn milling	602
Sporting and athletic goods manufacturing	500
General merchandise stores	452

Table 8 above lists the industries with the most export producing jobs. Search and navigation instruments leads by a very wide margin, followed by nonstore retailers, truck transport, and

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insurance carriers. These 15 industries sum to 28,740 jobs or nearly 73 percent of all export-producing jobs in the region.

The identification of export-serving jobs and productivity allows us to allocate the economic impact of the region's industries. Granted all industries generate income, but economists divide industries between those that serve external markets (basic industries) and those that serve internal markets (nonbasic industries). This dichotomy allows us to differentiate between the portions of our economy dependent on external factors and, via the use of appropriate estimation procedures, the consequences of decline or gain in production in our basic industries on our overall local economy.

Accordingly, some industries in the region act primarily as suppliers of goods and services to households and industries in the region, and some act as suppliers of goods and services to consumers outside of the region. Manufacturing, for example, primarily serves external markets. High quality health care delivery serves both a local and larger, regional market. The same can be said for financial services like insurance carriers. The use of the location quotients above helped us zero in on industries that are likely serving external markets, but that calculation does not tell us which industries in the region support all of the productivity taking into account their linkages to other area industries.

To understand the degree to which industries inter-link in the production of goods and services for sale to external demand, an input-output accounting is made. This process takes into account all of the inputs into production that find their way into a final sale of an item. An item is a final sale, in this calculation if it is sold as export, consumed by governments, or consumed by households. So, for example, a manufactured food good's export sales price would include the value of all locally supplied inputs into production like grain, energy, water, transportation, services, and labor. This kind of accounting is done to help us understand the magnitude of dependence the local economy has on particular industries. The results are contained in Table 9. For simplicity's sake, only value added and jobs are displayed as they are the two most common measures of economic activity. The reader will note that the totals for these two measures are the same as in Table 4 above.

When production is re-allocated into industries based on final demand sales, then the overall texture of the regional economy changes. Based on satisfying *exogenous* demand, that is demand external to the economy, 39 percent of the region's value added and 33 percent of the region's jobs are linked to manufacturing activity. If we compare just this result with Table 4 we get a sense of the usefulness of this measure. In Table 4 it was pointed out that manufacturing alone had 12.8 percent of all Linn County jobs. On an economic impact basis, we find that in fact 33 percent of all jobs in Linn County are linked in some way to manufacturing sales. They are jobs in the manufacturing sector, jobs in the supplying sector, and jobs that take care of the

workers' household needs. Conversely, while Table 4 indicated that, for example, just over 30 percent of Linn County jobs were in other services, the accounting in Table 9 says that on an economic impact basis, just 13 percent of jobs in the region are linked to service industry industrial activity for external demand. As would be expected, the vast majority of all service and service industry linked jobs satisfy internal demand by businesses and by households.

Using this type of accounting, then, the top industrial drivers in the region as measured by value added production are manufacturing (39 percent), all governments (8.6 percent), households<sup>1</sup> (8.4 percent), finance and insurance (8.2 percent), all other services (8 percent), and construction (6.7 percent). Using jobs as the basis for ranking we get manufacturing at (33 percent), other services (13 percent), all governments (10.2 percent), households (9.5 percent), construction (7.7 percent) and finance and insurance (6 percent). This is important: 79 percent of regional value added and 79 percent of regional jobs are directly or indirectly tied to these industries' satisfaction of external demand for goods and services.

**Table 9. Economic Impact Summary of the Linn County Economy**

	Value Added	Percent of Total	Jobs	Percent of Total
Agriculture	43.46	0.4%	1,339	0.9%
Wholesale	83.27	0.8%	919	0.6%
Mining	14.12	0.1%	173	0.1%
Construction	658.22	6.7%	11,235	7.7%
Manufacturing	3,843.98	39.0%	47,748	32.8%
Retail	398.67	4.0%	9,699	6.7%
Transportation	318.90	3.2%	5,728	3.9%
Utilities	383.24	3.9%	1,773	1.2%
Information	620.96	6.3%	6,897	4.7%
Finance and Insurance	808.65	8.2%	8,735	6.0%
Real Estate	120.89	1.2%	1,812	1.2%
Professional Services	138.24	1.4%	2,370	1.6%
Other Services	790.19	8.0%	18,753	12.9%
All Governments	849.21	8.6%	14,880	10.2%
<i>Households</i>	<i>824.82</i>	<i>8.4%</i>	<i>13,792</i>	<i>9.5%</i>
Total	9,859.22	100.0%	145,784	100.0%

<sup>1</sup> A note on households. Households are final demanders of goods and services, just like exports, but they are kept inside of the modeling structure here for two reasons. First, all of their labor-related incomes are consumed and accounted as part of industrial impacts in the mathematics in this process – they are therefore, part of the “inputs” into production that are measured. Secondly, and importantly, households have incomes from external sources that get spent in the regional economy. Local persons working in Johnson County, for example, are exporting labor and bringing income into the county. Similarly, many households have significant non labor sources of income to include passive incomes (pensions, investments, etc.) and transfer payments in from the government. They are, therefore, an important driver of the local economy and must be acknowledged and should never be discounted.

## Section 2. Private Sector National Industrial Competitiveness

This section employs a technique called shift-share analysis to decompose job change in the area. We are, owing to our data source, only analyzing private non-farm firms that had employees.<sup>2</sup> This assessment, therefore, excludes governments and it excludes non-employer firms – businesses that consist only of the owner / operator.

There are three components that explain growth in a region. The first is called the *national growth* component. We would expect our economy to emulate the national pattern of growth to a large degree. During expansion we would expand. During contraction we would contract. The next component is called the *industrial mix* component. As is apparent to everyone, not all industries grow, even though the whole economy might be growing. Service industries have grown faster over the years, and manufacturing industries have declined. Thus, an area's likelihood for growth is also a function of the particular mix of industries that make up its employment base. If it has a concentration of industries that are not growing nationally, then it has a negative or undesirable industrial mix. The last component that we study is the *competitive share* component. This simply tells us whether industries in our region are growing faster than or slower than the national experience for those industries. The actual change in employment, according to this method, is the sum of the three components.

Table 10 lists summaries of shift-share measures for the 2000 to 2003 period, a period of contraction, the 2003 to 2006 period, a time of local recovery, and the overall performance of the economy from 2000 to 2006. The downturn period from 2000 to 2003 that has already been talked about at length was explained very strongly by a combination of national and industry mix factors (which are combined as “non-local factors” in later graphs). The other half of the change was due to local competitive share factors – the region simply declined even more rapidly, on net than the nation.

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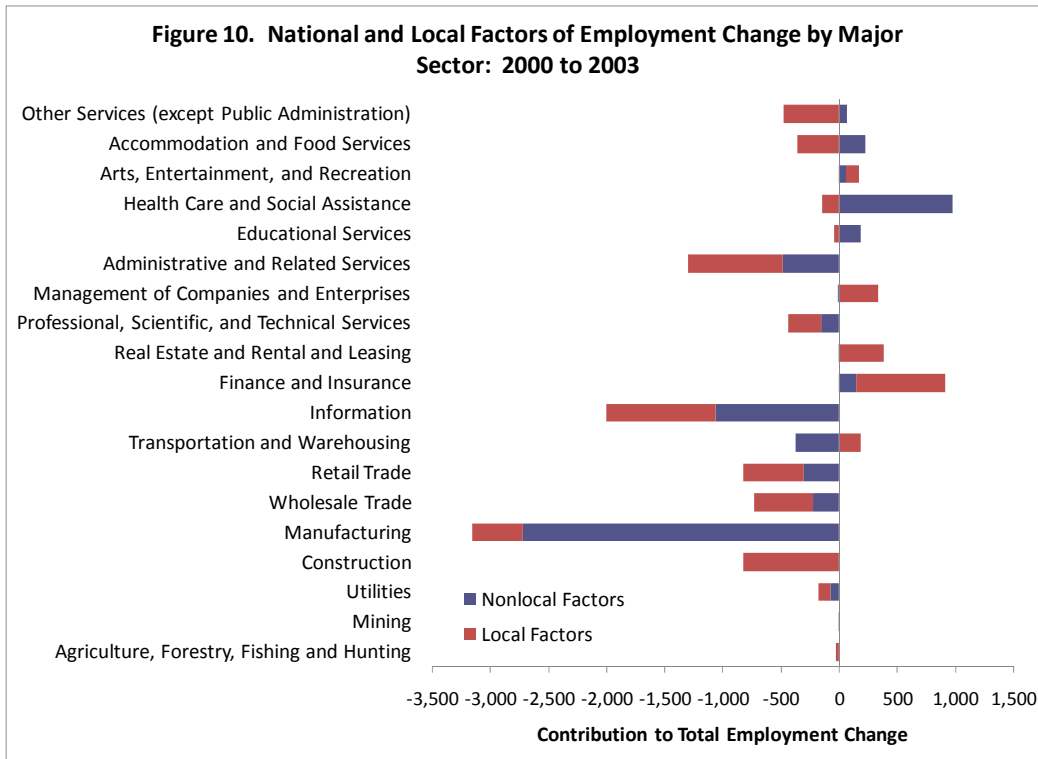
<sup>2</sup> These data are from the Bureau of Labor Statistics' series Quarterly Census of Employment and Wages (QCEW). These data are for private, nonfarm firms that have employees. Nonemployer firms are excluded, usually simple sole proprietorships, and governments as well. This analysis focuses on the performance of the conventional private sector in job growth. Accordingly, job totals as well as job growth over time will differ from other tables in this report.

**Table 10. Decomposing Private Non-farm Industrial Change in Linn County, Selected Periods, 2000 to 2006**

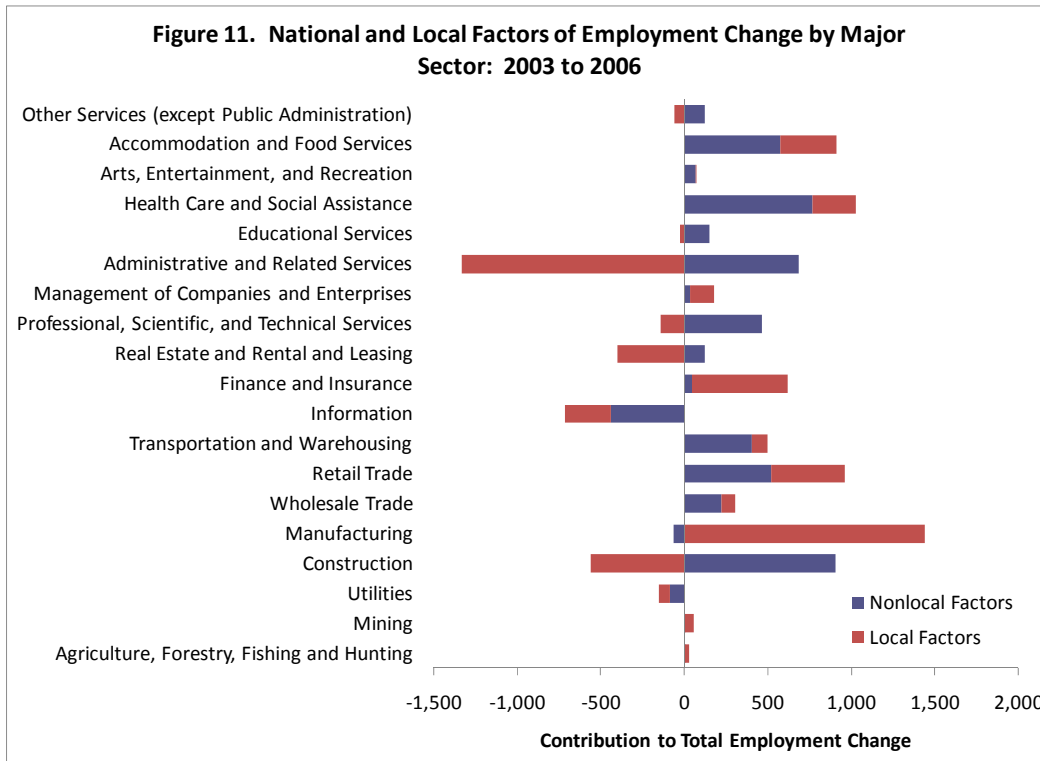
	2000 to 2003	2003 to 2006	2000 to 2006
Base Year Employment	109,900	102,526	109,900
Employment Change	(7,374)	5,112	(2,261)
<i>Due to:</i>			
National Growth	(2,955)	5,414	2,692
Industry Mix	(756)	(901)	(1,810)
Competitive Share	(3,662)	599	(3,143)
Sum	(7,374)	5,112	(2,261)

During the recovery period of 2003 to 2006, the region added 5,112 private, non-farm jobs. Non-local factors (national growth minus industrial mix) explain the vast majority of those gains. Outright local competitive performance explains just 599 of the jobs, a mere 12 percent. And for the overall 2000 to 2006 period, this important component of the regional economy posted a reduction in jobs of 2,261. Had the region grown as the nation had over this time it should have grown by nearly 2,700 jobs, which would have been offset, however, by 1,810 job losses due to a negative industrial mix. Overall, however, the most dramatic aspect is an aggregate slow-down in the region's local competitive performance. The gains from 2003 to 2006 only partially offset the strong losses posted in the previous three years.

Figures 10 through 11 display aggregated industrial performance over this period. There are 270 industrial sectors in our analysis, but those sectors have been reduced to 19 categories for summary purposes. Figure 10 shows the sectors that gained and lost during 2000-2003 and the contributions of local and non-local factors to those changes. Health care and social assistance grew primarily because of non-local factors. The strongest losses were in manufacturing, which were explained in the main by national economic declines, followed by information services and administrative and related services which were influenced strongly by both non-local and local competitiveness factors. Finance and insurance, real estate, and company management grew strongly owing significantly to increases in local competitiveness, while trade and construction jobs declined owing significantly to erosions in local competitiveness.



In Figure 11 we get to see the recovery period of 2003 to 2006. It is most apparent that the preponderance of information is on the right side of the graph indicating growth. First, in contrast to the earlier period, manufacturing posted robust gains owing exclusively to local competitiveness. Similarly, finance and insurance grew very strongly due to local competitiveness much more so than national expectations. Conversely, though administrative and related services should have grown due to non-local factors, an absence of local performance offsets those gains resulting in net losses. Health care and social services, accommodation and food services, and trade and transport industries all posted gains, too, that were in the main explained significantly by non-local factors. Information services continued its declines due to both local and nonlocal considerations, and, on net, all of the growth in construction is explained by non-local factors as the competitive performance of the sector lagged.



In this more modern period, 2003 to 2006, we are interested in competitive (local) gains and losses. The region has demonstrable competitive strengths in manufacturing, retail, finance and insurance, and to lesser degrees health care and social assistance, and in accommodation and food services. It is demonstratively competitively weak in administrative and related services, real estate, information, and construction.

Table 11 summarizes the top 10 competitive gaining industries and the top 10 competitive losing industries in the region for the 2000 to 2006 period. These industries are among the 270 original groups, not the aggregated totals. The area shows strong competitive growth in insurance and finance, navigational manufacturing, some business and management services, and trade and accommodations. It shows strong competitive weaknesses in communications and business related services, department stores, some durable goods manufacture, and construction.

**Table 11**

<b>2000 to 2006 Top Competitive Gaining Industries*</b>	<b>2000 to 2006 Top Competitive Losing Industries*</b>
Insurance Carriers	Business Support Services
Navigational, Measuring, Electro-medical, and Control Instruments Manufacturing	Employment Services
Electronic Shopping and Mail-Order Houses	Wired Telecommunications Carriers
General Freight Trucking	Department Stores
Other General Merchandise Stores	Building Equipment Contractors
Management of Companies and Enterprises	Software Publishers
Office Administrative Services	Warehousing and Storage
Depository Credit Intermediation	Electrical Equipment Manufacturing
Full-Service Restaurants	Industrial Machinery Manufacturing
Internet Service Providers and Web Search Portals	Residential Building Construction

\* Ranked from most to least



### Section 3. Linn County Occupational Competitiveness

The location quotient approach used above to identify industrial specializations can be applied to occupations as well. We are interested in the occupational content of an economy for the same reason that we are interested in the industrial content: we want to know where the region demonstrates historical strengths and weaknesses – where it is competitive or not.<sup>3</sup> To begin is a basic assessment of 23 occupational aggregations in Table 12.

**Table 12. Cedar Rapids Metropolitan Area Occupations, 2006**

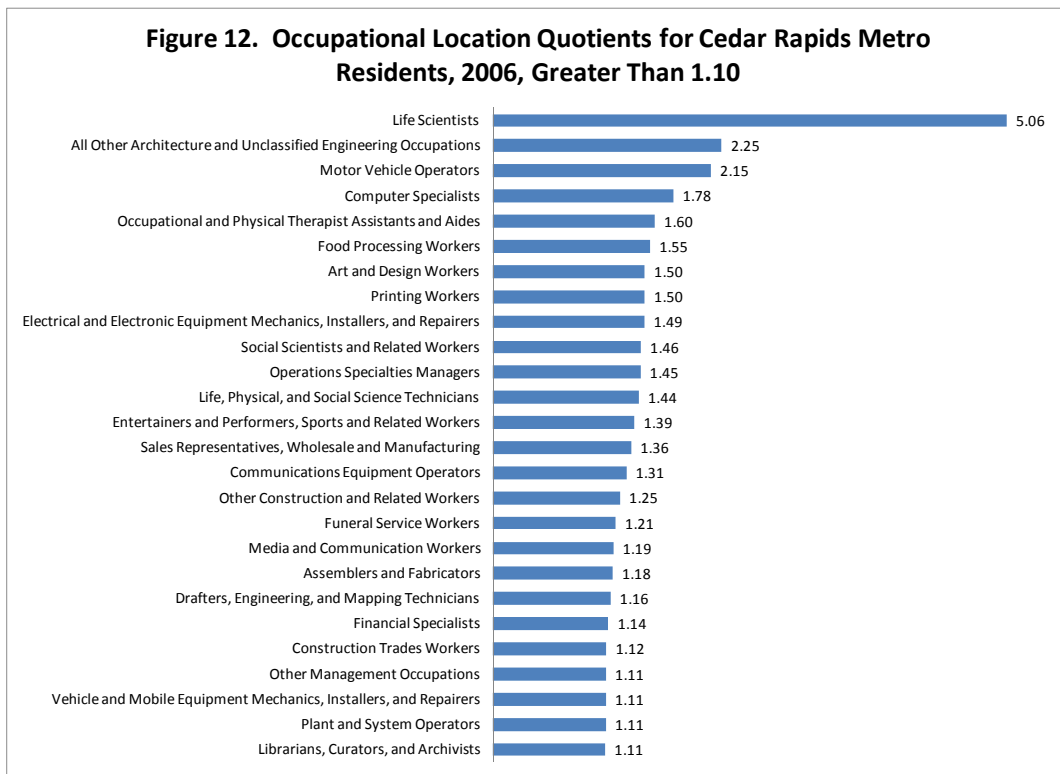
Occupation Group	Estimated Occupations	Percent of Total	U.S. Percentages of Total
Office and Administrative Support	20,900	15.6%	17.3%
Sales and Related	14,860	11.1%	10.7%
Transportation and Material Moving	12,540	9.4%	7.2%
Food Preparation and Serving Related	10,430	7.8%	8.4%
Production	10,130	7.6%	7.6%
Education, Training, and Library	8,520	6.4%	6.2%
Construction and Extraction	6,710	5.0%	5.0%
Business and Financial Operations	6,520	4.9%	4.5%
Healthcare Practitioners and Technical	6,250	4.7%	5.1%
Management	5,840	4.4%	4.5%
Computer and Mathematical	5,500	4.1%	2.4%
Installation, Maintenance, and Repair	5,200	3.9%	4.0%
Building and Grounds Cleaning and Maintenance	3,960	3.0%	3.3%
Architecture and Engineering	3,540	2.6%	1.9%
Healthcare Support	3,210	2.4%	2.7%
Personal Care and Service	2,680	2.0%	2.5%
Protective Service	2,020	1.5%	2.3%
Community and Social Services	1,780	1.3%	1.3%
Arts, Design, Entertainment, Sports, and Media	1,720	1.3%	1.3%
Life, Physical, and Social Science	840	0.6%	0.9%
Legal	580	0.4%	0.7%
Farming, Fishing, and Forestry	300	0.2%	0.3%
All	134,030	100.0%	100.0%

Office and administrative support jobs make up 15.6 percent followed by sales and related occupations, transportation related, food preparation and serving, and production. These top five occupation groups account for just over half of all jobs. The table also gives comparable U.S. percentages. In categories where the metropolitan area has greater or lesser percentages,

<sup>3</sup> This assessment applies a national industry-to-occupation matrix to the industrial structure of the region. It is an estimate of expected occupations or staffing given the industries in the region.

we can quickly infer relative specialization or lack thereof. For example, transportation and material moving occupations show strong concentrations in the metro compared to the U.S., as do computer and mathematical, and architecture and engineering. The area demonstrates comparable deficits in sales and related jobs, food preparation and serving, personal care, and protective services.

As was already mentioned, location quotients for occupations were calculated. The next table lists occupational LQs that are greater than 1.10 for the metropolitan area. These data are in about three times more detail than the data in the previous table and they give us a sense of particular types of occupational strengths in the area. The region has a very strong comparative concentration of life scientists, engineers, motor vehicle operators, computers specialists, and occupational and physical therapist assistants and aids. Overall, the region is well represented with scientific and technical occupations, occupations associated with production and production maintenance and management, transportation related occupations, and communications.



While this figure gives us an indication of relative occupational concentrations, the accompanying Table 13 shows the number of jobs in those occupational specializations. While life scientists had far and away the greatest LQ, there were only an estimated 50 jobs, compared to 7,180 motor vehicle jobs, 5,410 computer specialists, and 5,160 construction trade workers. While the region may have a demonstrable competitive advantage in an area,

the actual number may be quite meager. Conversely, the area may demonstrate so-so specialization in an occupational category yet have a relatively large pool of workers in those groups. Industries look at both factors. Some are looking for evidence of specialization, while others may be looking for a reasonably large-sized pool of specialized workers.

**Table 13. Total Employment in Occupations Demonstrating Strong Specialization in the Cedar Rapids Metro, 2006**

Occupation	Jobs
Motor Vehicle Operators	7,180
Computer Specialists	5,410
Construction Trades Workers	5,160
Sales Representatives, Wholesale and Manufacturing	2,590
Financial Specialists	2,530
Other Management Occupations	2,290
Assemblers and Fabricators	2,220
Operations Specialties Managers	2,030
All Other Architecture and Unclassified Engineering Occupations	2,010
Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	1,450
Electrical and Electronic Equipment Mechanics, Installers, and Repairers	630
Art and Design Workers	570
Food Processing Workers	570
Social Scientists and Related Workers	510
Media and Communication Workers	500
Printing Workers	490
Drafters, Engineering, and Mapping Technicians	370
Other Construction and Related Workers	340
Librarians, Curators, and Archivists	290
Entertainers and Performers, Sports and Related Workers	230
Communications Equipment Operators	210
Plant and System Operators	120
Life, Physical, and Social Science Technicians	120
Life Scientists	50
Funeral Service Workers	40
Occupational and Physical Therapist Assistants and Aides	40

The last presentation in this section looks at the consequences of industrial change on occupations in the area for the 2000 to 2006 period looking only at the non-farm, private jobs data that were presented in Section 2. This analysis is a synthetic estimate of occupational change based on the same national-level matrix of occupations by industry. That matrix has been applied to the industrial job changes that occurred in the region to infer the expected occupational consequences.

The information displayed in Figure 13 gives us a sense of the occupational gains the area realized over the measured period. The top 25 estimated occupation gains are compiled. The greatest gains were in food and beverage service workers, motor vehicle operators, health diagnosis practitioners, cooks and food preparation workers, and health technicians and specialists. Seven of the 25 occupations were related to health care or social services delivery, four were associated with food production and three each were found in education and in business and office trades.

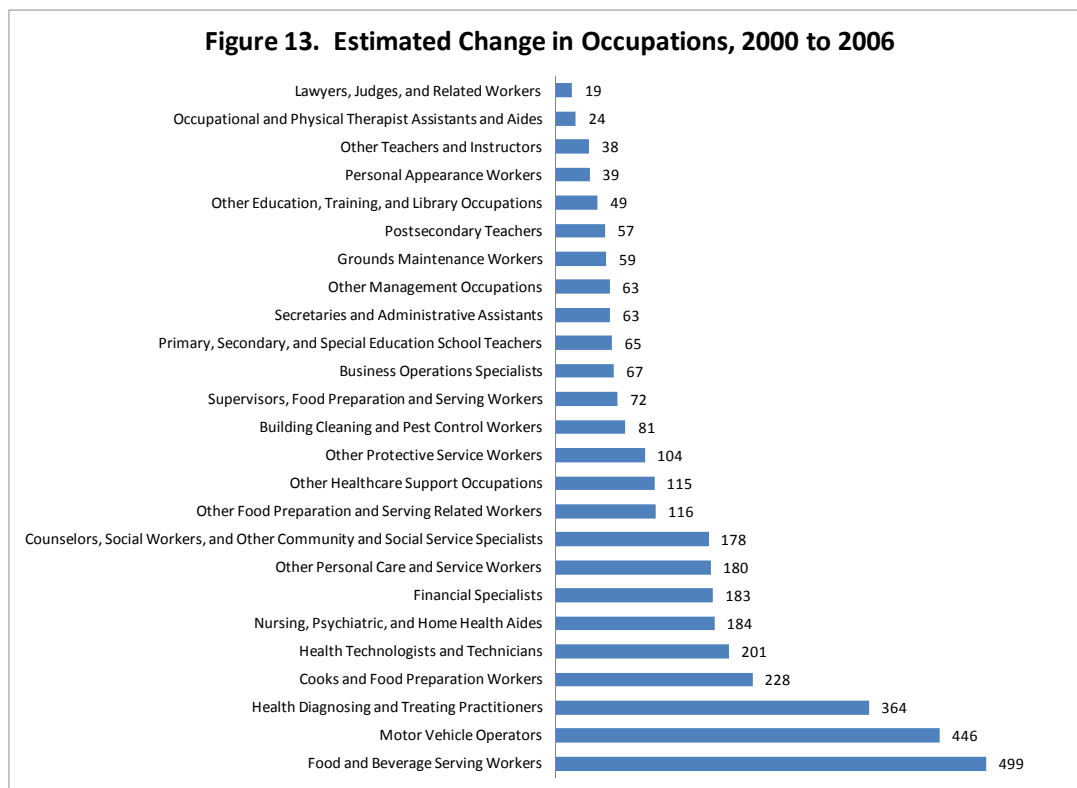
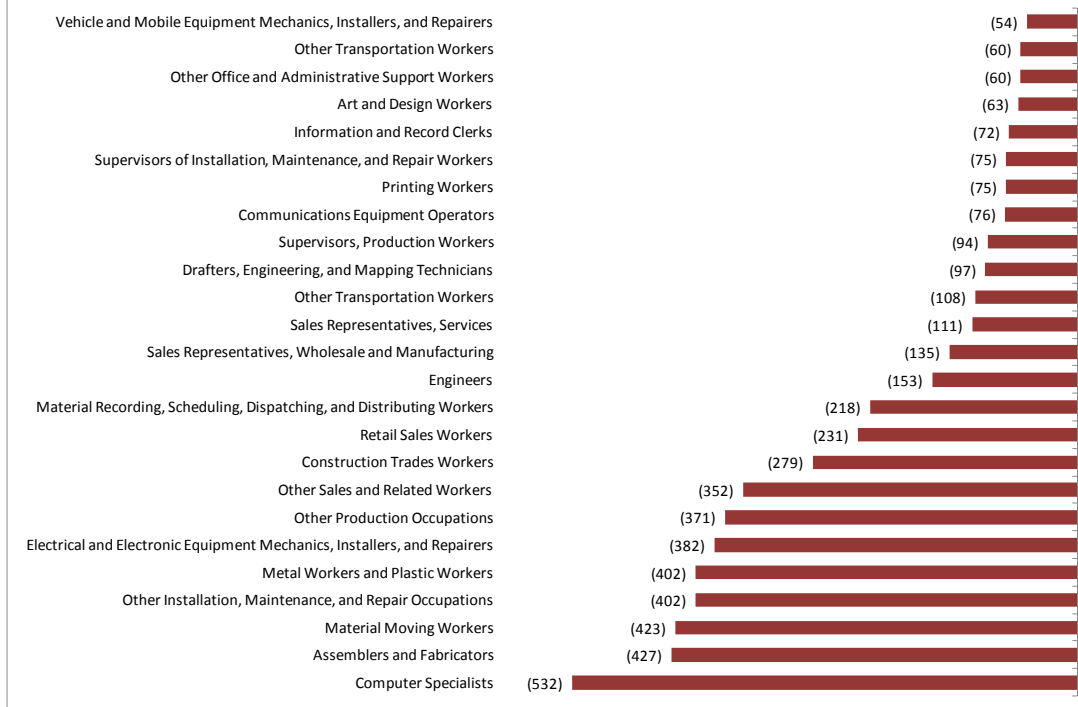


Figure 14 lists the major estimated losing occupations during this period. The major losers were 502 computer specialist occupations, 427 assemblers and fabricators, 423 material movers, and 402, respectively, of other maintenance and of metal and plastic workers. Five of the 25 occupations were primarily in production jobs, three were scientific and technical in nature, and three were related strongly to transportation services.

A direct comparison of Figures 13 and 14 gives a sense of the region's estimated occupational gains and losses, as they relate to industrial changes. If just the top 5 categories are compared in each, the texture of job change is made evident: gainers were in foods services, trucking and health care technicians. Losses were in computer specialists, production jobs, and repair and maintenance jobs.

**Figure 14. Estimated Change in Occupations, 2000 to 2006**



## **Section 4. Retail Trade Shifts and Performance**

There has been a persistent shift in jobs, people, and trade into Iowa's metropolitan areas over the past 15 years. From just 2000 to 2007, Iowa's metropolitan areas posted more than three times the rate of growth as the state. Consequently, the metropolitan comparative advantage in retail trade and service delivery is growing at the expense of the rest of the state.

This section focuses primarily on a 10 year period in the Cedar Rapids metropolitan area's growth. This assessment will indirectly account for the very large expansion in trade capacity to the south of the metro due to the Coral Ridge Mall development. When that project developed, concerns were voiced about the impact of the development on the overall retail and service health of the greater region: the supposition was that gains in Coralville would come at the expense of existing malls and trade areas in the region, and Cedar Rapids to the north was, by virtue of travel distance, very susceptible to the draw of the new shopping center.

That said, there have been major changes in the metropolitan area since. Both the area to the south and the Cedar Rapids area have been enjoying continuous growth. This analysis allows us to gauge the magnitude of trade changes accumulating to the MSA as a whole, and the extent to which trade shifted within the region. It sorts out the area trade winners and losers, and it provides several intuitively clear interpretations of the value of the changes that have accumulated over the decade measured.

### **Methods, Data, and Adjustments**

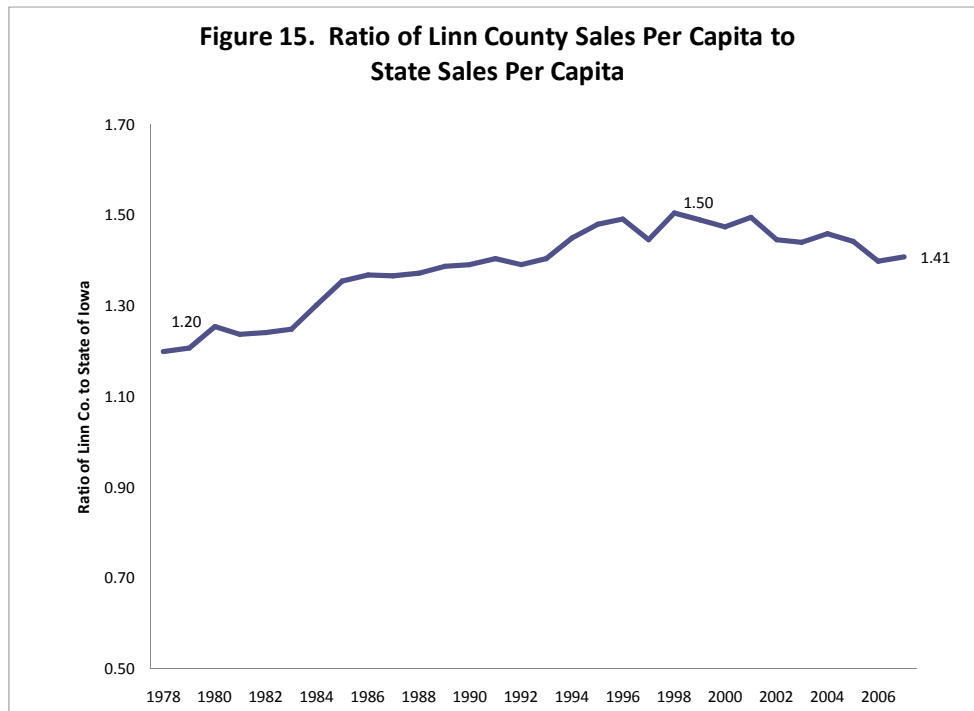
Iowa State University researchers have compiled retail trade statistics for Iowa's cities and counties for years.<sup>4</sup> Our measurement of net changes in trade, however, requires several adjustments that allow us to standardize our results. First, as we are dealing with economic values over time, we need to remove the effects of inflation. The statistics that we report will be in estimated constant (or inflation adjusted) 2007 amounts or they will be standardized as ratios so as to not distort the effects of time. Next, as was already mentioned, the region is not static: jobs, people, and incomes are changing in all of the areas that we are studying. Our analysis factors in the effects of income and people growth in all the cities that were measured in order to gauge expected levels of retail consumption and retail change over the measurement period. Growing places would be expected to have more sales than declining places. Similarly, communities that were accumulating incomes faster than surrounding areas would be expected to have more purchasing power.

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<sup>4</sup> Readers are encouraged to go to [http://www.recap.iastate.edu/local/retail/files/retail\\_19113.pdf](http://www.recap.iastate.edu/local/retail/files/retail_19113.pdf) to obtain a comprehensive evaluation of all Linn County retail trade activity over the past two decades.

Population estimates for the measured cities and counties come directly from the U.S. Bureau of the Census. Adjustments for income change were made using a combination of data. Metropolitan area per capita incomes are available from the U.S. Bureau of Economic Analysis. Next, we adjust for variations in per capita income across communities using school district level data on state income tax filings. This adjustment allows our wealthier communities both in total and on a per capita basis to have greater expected purchasing power than those in communities with lower per capita incomes.<sup>5</sup>

Figure 15 demonstrates the real retail sales per capita performance of Linn County as compared to the state of Iowa as a whole. In 1978, a time when earnings in Cedar Rapids were significantly above the national average, the county averaged 20 percent more sales per capita than the state as a whole. In 1998, the county averaged 50 percent more than the state average. Since, the average has trended downward to about 41 percent more than the state's value by 2007. While we know that there was increased regional competition to the south, we also know that the region realized losses in jobs during the early 2000s and erosions in overall income growth during that period. There are many potential explanations to this downward trend.



<sup>5</sup> Lower income consumers dedicate higher fractions of their incomes towards the consumption of retail goods and services than persons with higher incomes. Our data made adjustments for area income levels using factors derived from the Current Population Survey that measures the difference in retail and service purchases by income level. These factors were applied to our communities to estimate per capita consumption.

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## **Findings**

Detailed city and county level summaries of our analysis for the Cedar Rapids metro and for Johnson County are contained in the tables at the end of this section. There are two areas of interest in this assessment: the overall performance of the Cedar Rapids MSA as a major trade center, and the overall pattern of change that occurred within the MSA over the period measured in light of the strong gains in Johnson County. Table 14 summarizes the areas analyzed. In it the city of Cedar Rapids is separated out from the wider metropolitan area.

There is a great amount of information in this table. First, the data are all adjusted for inflation, so the values that are reported are in 2007 amounts. Total growth in real sales in the Cedar Rapids for the period was over a quarter of a billion dollars, but growth in just Johnson County was nearly \$520 million. Cedar Rapids, surprisingly, accounted for less than half of the metro's growth at 45 percent. Now turn to the detail. The upper portion of the table contains the sales change data. The lower portion translates those data into full-time shopper equivalents.

Of the \$114.9 million in real sales gains in Cedar Rapids, \$93.3 million, 81 percent is explained by population and income change over the decade measured. The remaining 19 percent is due to competitive gains – the city is attracting sales in excess of local population and income changes. The remainder of the metropolitan area would have been expected to have \$153.6 million in real sales gain, but it lost \$14.2 million in its competitive position posting a \$139.4 million net gain. The overall metro posted positive competitive gains of \$7.4 million accounting for not quite 3 percent of the gains over the period.

Looking at the bottom half of the table where the data are translated into shopping equivalents, Cedar Rapids added 10,826 shopping equivalents, 2,036 of whom were due to competitive gains. The whole MSA added 23,961 shopping equivalents for a net competitive gain of just under 700. Metropolitan wide, then, the area is holding its own considering the two periods measured.

The performance of Johnson County is different. The Iowa City metropolitan area is much smaller than the Cedar Rapids metro, but its real sales gains were twice as great. Of that amount, \$360.24 million, 69 percent were due to competitive shifts. Of their gain in 48,955 shopping equivalent persons, 15,009, just 31 percent, were due to population changes, and 33,946 were due to boosts in the area's competitive position.



**Table 14. Trade Changes in the Cedar Rapids and Johnson County Regions in Inflation Adjusted Amounts and in Full-Time Shopper Equivalents for Fiscal 1997 to 2007**

	City of Cedar Rapids	Remainder of the Cedar Rapids Metropolitan Area	Cedar Rapids Metropolitan Area	Johnson County
<i>Changes Due To</i>				
Local Population and Income Growth	93,282,306	153,609,841	246,892,147	159,275,608
Competitive Shifts	21,605,034	-14,220,644	7,384,390	360,236,839
Total	\$114,887,340	\$139,389,197	\$254,276,538	\$519,512,447
<i>Changes in Full-Time Shopper Equivalents Due To</i>				
Local Population and Income Growth	8,790	14,475	23,265	15,009
Competitive Shifts	2,036	-1,340	696	33,946
Total	10,826	13,135	23,961	48,955

Table 15 displays the magnitude of variance with the two study areas. Here the 10 largest communities, as ranked by base sales in 2007, are displayed. Though Cedar Rapids had the greatest base sales, real sales gains in the upstart Coralville were over three times greater at \$367.2 million, and competitive shift gains explain 83 percent of that growth. Much smaller Iowa City's gains were also strong at \$103.9 million, 87 percent of which were due to competitive shifts.

Measured on a full time shopper equivalent basis, strong competitive gains were realized in Coralville at 28,834, Iowa City at 8,531, and in Hiawatha at 3,839 for a net boost to that city of 4,062 shoppers. Strong competitive losses were realized in North Liberty at -2,835, but its overall strong population growth led to net real sales and shopper gains. The same pattern was noticed in Mt. Vernon. Conversely, Vinton, Monticello, and Belle Plaine all suffered population and income based erosions coupled with losses in competitive position to post total real reductions in sales and in shopper equivalents.

**Table 15. Trade Changes in the Cedar Rapids and Johnson County Regions in Inflation Adjusted Amounts and in Full-Time Shopper Equivalents: Top 10 Cities**

City (Sorted by Total Sales in 2007)	Real Sales Changes Due To:			Full-Time Equivalent Shopper Changes Due To:		
	Population and Income Growth	Competitive Shifts	Total	Population and Income Growth	Competitive Shifts	Total
Cedar Rapids	93,282,306	21,605,034	114,887,340	8,790	2,036	10,826
Iowa City	13,327,860	90,528,898	103,856,757	1,256	8,531	9,787
Marion	83,714,805	-1,475,288	82,239,518	7,889	-139	7,750
Coralville	61,252,106	305,980,882	367,232,989	5,772	28,834	34,606
Hiawatha	2,402,260	40,708,041	43,110,301	226	3,836	4,062
Vinton	-4,693,616	-13,468,061	-18,161,677	-442	-1,269	-1,711
North Liberty	68,269,239	-30,080,680	38,188,559	6,433	-2,835	3,599
Monticello	-1,690,362	-2,811,160	-4,501,522	-159	-265	-424
Mt Vernon	5,987,201	-1,551,080	4,436,121	564	-146	418
Belle Plaine	-1,890,942	-4,748,181	-6,639,123	-178	-447	-626

The shifts that have occurred in the two regions comparing 1997 with 2007 are displayed in the next three figures for the reporting cities in the two metropolitan areas. These are dot-density representations of the three components of change outlined above. Each dot represents one full-time shopper equivalent, with red indicating losses and blue indicating gains.

Figure 16 shows the expected change in full time shoppers that would be explained by population and income changes. As is quite evident, the core metropolitan cities in both MSAs show strong population and income driven growth. The outlying, smaller trade centers of Vinton, Belle Plaine, and Monticello, however, show declines in this category, as do several of the other smaller towns. In all, however, there are more towns posting gains in this category than losses

Figure 16

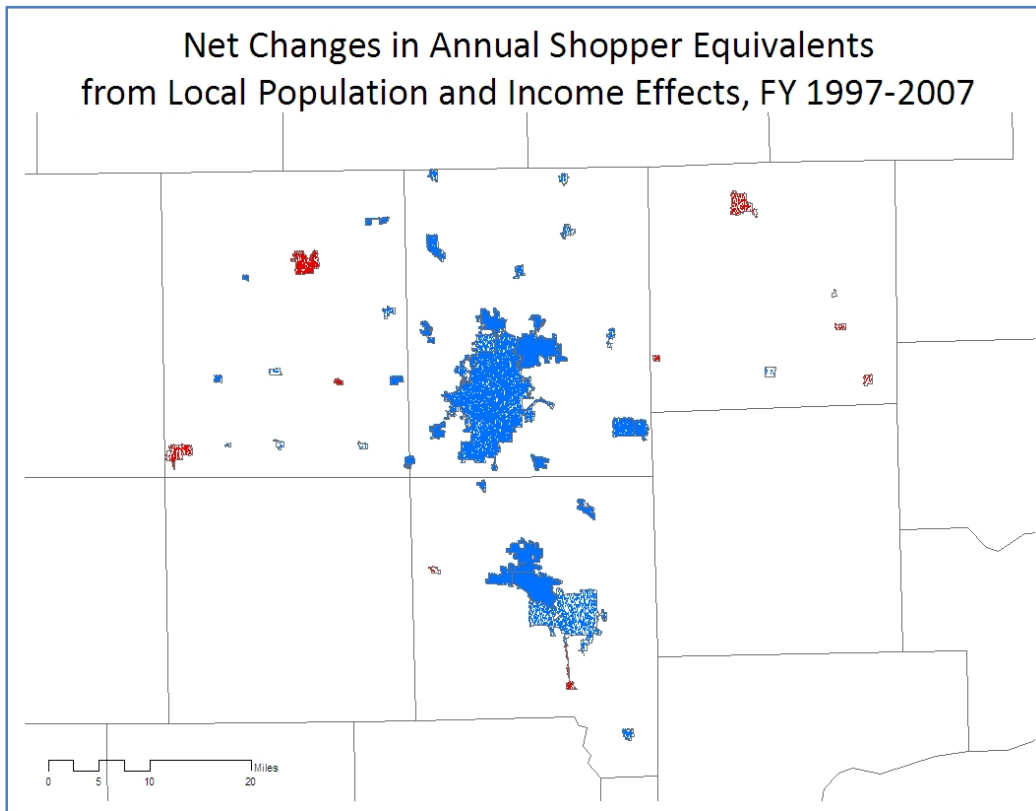
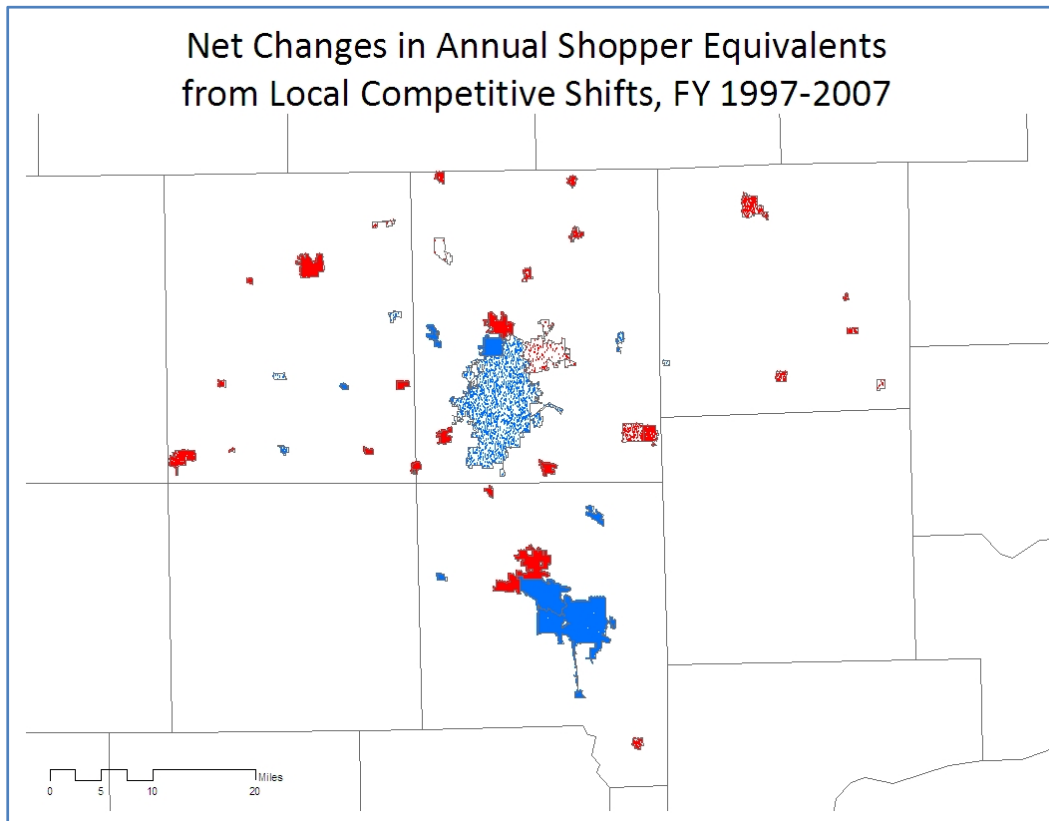


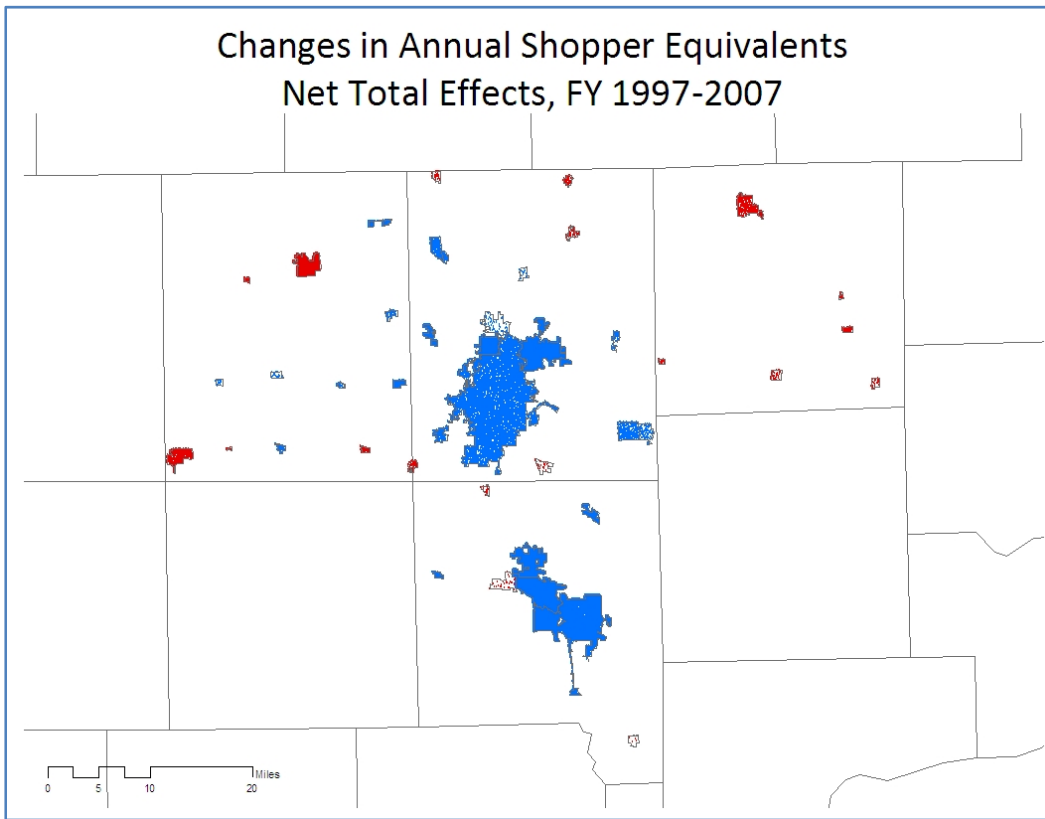
Figure 17 controls for all expected changes in population and income for our communities and only represents our estimate of the communities' shifts in competitive position considering all retail trade in Iowa, not just the two MSAs. It tells where the areas are gaining or losing shares of sales after accounting for population and income changes. While we have only highlighted major gains and losses in our summary analysis above, it is very evident that there have been strong comparative erosions in shopper equivalents across the four counties that comprise these MSAs. The core metropolitan areas demonstrate competitive strength while most outlying communities post strong competitive declines, especially the communities on the fringe of the metro core cities and the whole of Jones County. Again, the trade centers of Vinton, Belle Plaine, and Monticello show strong losses, as also do North Liberty and Tiffin in Johnson County, and Marion, Mount Vernon, and Lisbon in Linn County.

Figure 17



The last map in Figure 18 is simply the sum of the two previous maps. It shows that while many of the cities in the two MSAs posted competitive declines, overall population growth offset many of those losses. Still strong losses in shopper equivalents were posted in both Jones and in Benton County

Figure 18



## Appendix ?

### Linn County Location Quotients > 1.0 in 2006

Industry	Location Quotient
Breakfast cereal manufacturing	153.21
Wet corn milling	87.60
Search- detection- and navigation instruments	56.61
Soybean processing	29.48
Copper rolling- drawing- and extruding	27.92
Database- directory- and other publishers	17.99
Metal forming machine tool manufacturing	17.35
Measuring and dispensing pump manufacturing	17.20
Switchgear and switchboard apparatus manufact	16.47
Packaging machinery manufacturing	15.76
Sporting and athletic goods manufacturing	11.21
Iron and steel forging	8.32
Cutlery and flatware- except precious- manufa	7.33
Other animal food manufacturing	6.88
Farm machinery and equipment manufacturing	6.67
Conveyor and conveying equipment manufacturin	6.59
All other industrial machinery manufacturing	5.61
Industrial mold manufacturing	4.84
Frozen food manufacturing	4.64
Other communications equipment manufacturing	4.13
Flavoring syrup and concentrate manufacturing	4.08
Power boiler and heat exchanger manufacturing	3.96
Power generation and supply	3.88
Nonstore retailers	3.83
Custom architectural woodwork and millwork	3.72
Sheet metal work manufacturing	3.63
Plastics packaging materials- film and sheet	3.42
Insurance carriers	3.38
Truck transportation	3.03
Soft drink and ice manufacturing	2.96
General and consumer goods rental except vide	2.96
Paperboard container manufacturing	2.93
Construction machinery manufacturing	2.89
Business support services	2.86
Tradebinding and related work	2.85
Commercial machinery repair and maintenance	2.58
Grantmaking and giving and social advocacy or	2.53
Machinery and equipment rental and leasing	2.50
Concrete pipe manufacturing	2.15
Telecommunications	2.12
Dental laboratories	2.08

**Linn County Location Quotients > 1.0 in 2006**

Industry	Location Quotient
Other basic organic chemical manufacturing	2.04
Office administrative services	1.99
Data processing services	1.97
Book publishers	1.91
Oilseed farming	1.84
Stone mining and quarrying	1.71
Manufacturing and industrial buildings	1.67
Highway- street- bridge- and tunnel construct	1.66
Miscellaneous store retailers	1.66
Sporting goods- hobby- book and music stores	1.64
Commercial printing	1.61
Grain farming	1.60
Surgical appliance and supplies manufacturing	1.54
Miscellaneous fabricated metal product manufa	1.49
Electronics and appliance stores	1.45
Rubber and plastics hose and belting manufact	1.42
Radio and television broadcasting	1.41
Paint and coating manufacturing	1.39
Health and personal care stores	1.36
Concrete block and brick manufacturing	1.34
Information services	1.29
Fitness and recreational sports centers	1.29
Elementary and secondary schools	1.26
Bowling centers	1.25
Rail transportation	1.21
Motor vehicle body manufacturing	1.20
Motor vehicle and parts dealers	1.19
Hospitals	1.18
General merchandise stores	1.18
Turned product and screw- nut- and bolt manuf	1.16
Couriers and messengers	1.16
Personal care services	1.15
Animal production- except cattle and poultry	1.15
Building material and garden supply stores	1.14
Food and beverage stores	1.11
Vitreous china and earthenware articles manuf	1.09
Gasoline stations	1.06
Ready-mix concrete manufacturing	1.06
Nursing and residential care facilities	1.05
Food services and drinking places	1.05
Colleges- universities- and junior colleges	1.05
Custom computer programming services	1.03
Offices of physicians- dentists- and other he	1.03
Special tool- die- jig- and fixture manufactu	1.00
Newspaper publishers	1.00

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## Appendix ?



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