



A Bureau of Business Research Report  
From the University of Nebraska—Lincoln

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## **Final Report**

# **A Profile of Lincoln's Healthcare Cluster**

**Prepared for the Lincoln Partnership for Economic Development**

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# A Profile of Lincoln's Healthcare Cluster

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## Executive Summary

Healthcare is a critical component of any metropolitan area economy. It is also a diverse industry composed of primary healthcare providers such as the ambulatory care providers (such as physicians' offices), hospitals, and nursing and recreational care facilities, as well as health care support industries and businesses. This report catalogues the characteristics and trends in the healthcare cluster found in the Lincoln, Nebraska Metropolitan Area. There were 6 principle findings from the analysis.

- Healthcare industry cluster employment grew by 4,400 between 2001 and 2009 in the Lincoln Metropolitan Statistical Area (MSA). This accounted for a large share of metropolitan area job growth during the period. Total healthcare cluster employment reached 25,700 by 2009.
- The three segments of the primary healthcare industry are ambulatory care, hospitals, and nursing and residential care facilities. Healthcare employment in 2009 was fairly evenly divided among these three segments. Further, employment in all three segments grew by more than 20% between 2001 and 2009.
- Employment in healthcare support industries that supply equipment, medicines, or research to the healthcare industry or provide insurance or financial support to consumers of healthcare also grew by more than 20% between 2001 and 2009.
- Growth in Lincoln's healthcare cluster, while strong, was typical of the growth rates found in other metropolitan areas. In particular, healthcare employment growth in the Lincoln MSA was at the median growth rate of a group of 7 comparison metropolitan areas including San Antonio, Raleigh, Nashville, Sioux Falls, Tulsa, Louisville, and Des Moines.
- Healthcare practitioners and those in technical health-related occupations make above average wages.
- Nine different institutions offering post-secondary healthcare degrees serve the Lincoln MSA. These institutions offer 31 different healthcare-related bachelor and 17 post-graduate (M.A. & Ph.D) degrees. Four additional research programs are contributors to the healthcare cluster in Lincoln.

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## **1. Introduction – The Importance of the Healthcare Cluster to the Lincoln Economy**

Lincoln's healthcare cluster contributes to the Lincoln metropolitan economy in multiple ways. Most fundamentally, the cluster provides a key service that affects the life of nearly every resident. This service is an important component of local quality of life in Lincoln, and therefore, influences the ability of the community to attract households and businesses to the metropolitan area. The Lincoln healthcare cluster also serves a regional market, attracting patients from well outside the boundaries of the metropolitan area. Further, healthcare support businesses within the cluster such as pharmaceuticals and medical device manufacturers, health insurance providers, and biological researchers contribute to the Lincoln economy by reaching national and international markets.

The component industries of the healthcare cluster include 1) ambulatory care providers such as physicians' offices, 2) hospitals, 3) nursing and residential care facilities, and 4) healthcare support. But, more generally, the healthcare cluster is composed of for-profit and non-profit healthcare businesses located throughout the Lincoln MSA as well as local healthcare education and research institutions. The healthcare education component of the cluster that trains healthcare workers includes post-secondary institutions such as the University of Nebraska-Lincoln, Nebraska Wesleyan University, UNMC Lincoln, Southeast Community College, Doane College, Bryan LGH College, Kaplan University, and Concordia University, among others. The research institutions include the UNL Center for Biotechnology, the Nebraska Center for Virology, and the Redox Biology Center.

This healthcare clusters is an interesting sector of the economy because it is changing, as well as large. The healthcare cluster is a center of innovation in the economy, with new productions, treatments, and services constantly under development and brought to the market. Demand for healthcare services will accelerate as more baby-boom generation population reach retirement age. The funding structure for the industry is also changing, with workers beginning to pay a growing share of health care expenses through rising copayments and deductibles. The industry is also facing significant new regulations due to the new federal health care law.

While the first two factors will contribute to growth for some types of healthcare providers, the latter two factors will limit spending growth by households and government. Such limits may create pressure for increased efficiency for health care providers, limiting employment growth in primary health care industries that directly serve patients.

Job growth from the broader health care cluster may maintain its strong pace, however, since the broader health care sector includes much more than just health care providers. The broader sector including a larger group of suppliers to healthcare providers, including many industries and businesses that can help healthcare providers become more efficient. For this reason, our report pays careful attention to trends in

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health care support businesses in the Lincoln MSA, as well as to trends in primary healthcare industries.

The next section of the report reviews trends among primary healthcare industries, the industries that directly provide health care services, in the Lincoln metropolitan area over the 2001 to 2009 period. The third section examines Lincoln's entire healthcare clusters, which also includes healthcare support industries, or individual healthcare support businesses that are part of other industries. The fourth section contrasts industry trends in Lincoln with those in a group of comparison metropolitan areas that includes San Antonio, Raleigh, Nashville, Sioux Falls, Tulsa, Louisville, and Des Moines. The fifth section identifies and compares employment and wages in healthcare industries and occupations. The final section provides a summary of study results.

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### 2. Primary Healthcare Industry Characteristics and Trends in the Lincoln Metropolitan Area, 2001-2009

The primary healthcare industry accounts for most employment in the healthcare cluster and includes a wide variety of service providers. The components of the sector include 1) ambulatory service providers such as physicians' offices, 2) hospitals, and 3) nursing and residential care facilities. Altogether, the primary healthcare sector accounts for over one in ten jobs in the Lincoln metropolitan area. As is evident in Table 2.1, healthcare employment was 18,310 in 2009, which was 10.6% of the 171,000 nonfarm jobs in the Lincoln metropolitan area in that year.

#### A. Growth in Primary Healthcare Employment

The sector also has been growing as a share of the Lincoln economy, as is evident in Table 2.1 and Figure 2.1. Primary healthcare employment grew by 3,700 jobs between 2001 and 2009, for a cumulative growth rate of 26%. This increase accounted for nearly three-quarters of job growth in the local economy during the decade, which was a period of slow growth both for the Lincoln metropolitan area and the nation. There was a total increase of 5,000 jobs across all industries in Lincoln between 2001 and 2009. Results in Table 2.1 do not include growth in healthcare support industries, which are featured in Chapter 3.

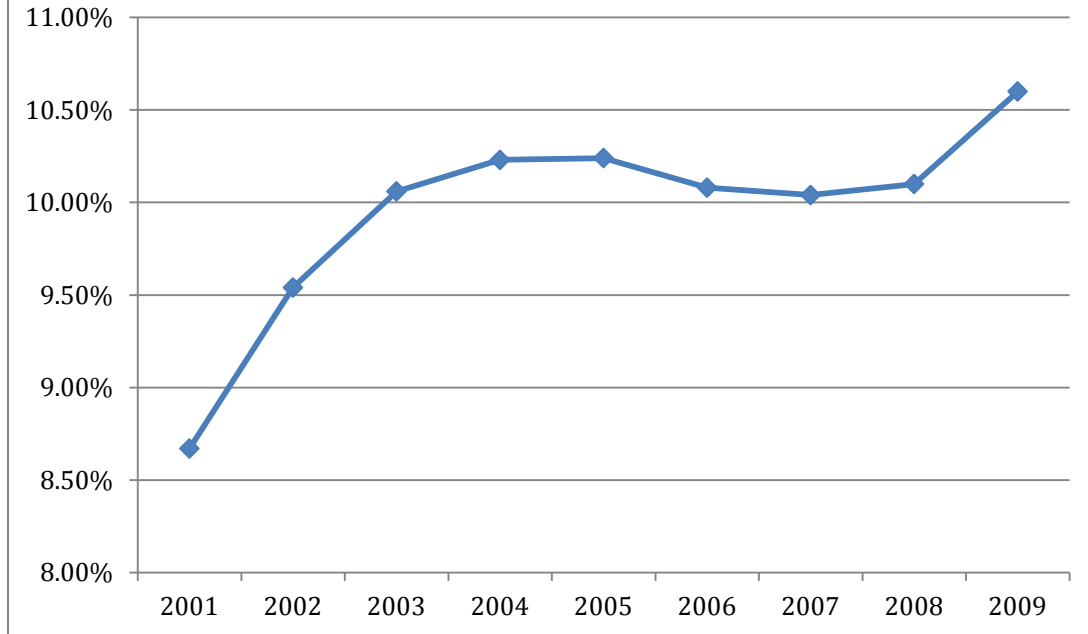
**Table 2.1: Share of Primary Healthcare Jobs in the Lincoln MSA as part of Total Nonfarm Employment**

Year	Healthcare Jobs	Total Nonfarm Jobs	Share
2001	14,391	166,000	8.7%
2002	15,763	165,200	9.5%
2003	16,535	164,400	10.1%
2004	16,958	165,800	10.2%
2005	17,248	168,500	10.2%
2006	17,261	171,200	10.1%
2007	17,359	172,800	10.0%
2008	17,602	174,300	10.1%
2009	18,130	171,000	10.6%

Source: Bureau of Labor Statistics

Primary healthcare's share of total nonfarm employment rose from 8.7% to 10.6% between 2001 and 2009. As is evident in Figure 2.1, primary healthcare share of metropolitan area employment grew rapidly between 2001 and 2003 and 2008 and 2009, but held steady between 2003 and 2008. This pattern occurred because the primary healthcare sector grows steadily over the course of the business cycle. Growth in primary healthcare employment matched other sectors when the economy was expanding in Lincoln from 2003 to 2008, but grew much faster during and just after the recessions of 2001 and 2007 through 2009. Appendix 1 compares trends in primary healthcare employment with trends in other Lincoln industries.

**Figure 2.1: Share of Primary Healthcare Jobs in the Lincoln MSA as part of Total Nonfarm Employment**



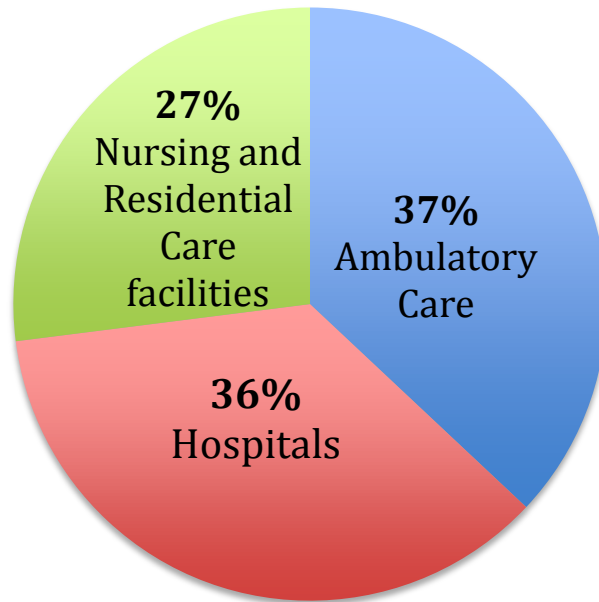
Source: Bureau of Labor Statistics

### **B. Employment Growth in Segments of the Primary Healthcare Industry**

As is evident from Figure 2.2, primary healthcare employment in the Lincoln metropolitan area is split among three segments, and split fairly evenly. Thirty-seven percent of employment is in ambulatory care with a slightly lower share in hospitals. Nursing and residential care facilities also are a significant share of industry employment accounting for 27% of jobs in 2009. These shares translate into roughly 6,600 jobs each in the ambulatory care industries and in hospitals sector, as seen in Table 2.2. There are 4,900 jobs among nursing and residential care facilities.

Historically, hospitals were the largest share of the healthcare industry, but over the past decade employment has grown faster among ambulatory care providers such as physician's offices, and among nursing and residential care facilities. Table 2.2 indicates that between 2001 and 2009 hospital employment grew by approximately 22%, while ambulatory care employment grew by 28% and nursing and residential care facility employment grew by 29%. Hospital employment led all three categories for seven out of the eight years in the 2001 to 2009 period, as is seen in Figure 2.3 However, in 2009, ambulatory care provider employment surpassed hospital employment. Appendix 2 shows trends in primary healthcare employment in detailed industry segments.

**Figure 2.2: Primary Healthcare Jobs in Lincoln MSA by percentage, 2009**



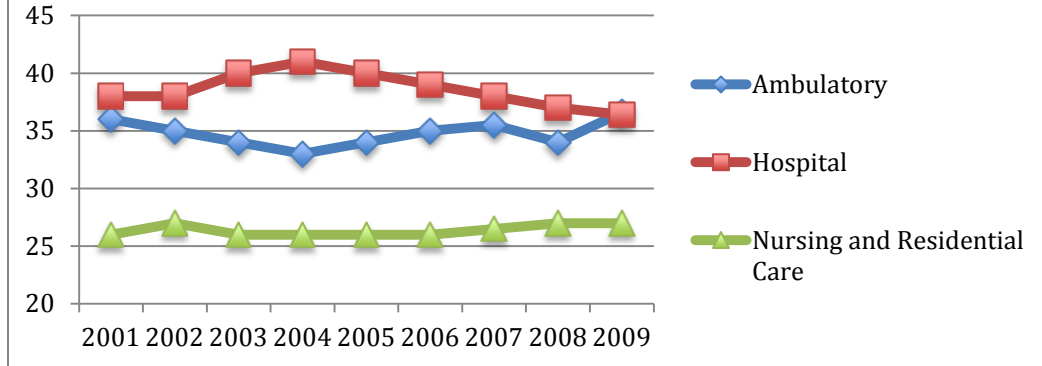
Source: U.S. Bureau of Labor Statistics

**Table 2.2: Growth of Primary Healthcare Segments, 2001 to 2009**

	Jobs, 2001	Jobs, 2009	Growth
Ambulatory	5,191	6,630	27.7%
Hospitals	5,400	6,600	22.2%
Nursing and Res. Care	3,800	4,900	29.0%

Source: Bureau of Labor Statistics

**Figure 2.3: Percentage Share of Primary Healthcare Industries in Lincoln MSA, 2001-09**



Source: U.S. Bureau of Labor Statistics

**C. Location Quotients for Lincoln**

A location quotient measures the concentration of an industry within a metropolitan area’s economy. Formally, a location quotient is an industry’s share of total metropolitan areas employment, divided by that industry’s share of total U.S. employment. A location quotient value of 1.0 therefore means that the industry is as concentrated in the metropolitan area as it is in the nation. As seen in Table 2.3 below, the location quotient for the primary healthcare industry in Lincoln was 1.026 in 2009. This figure suggests that Lincoln is roughly at the national average in terms of healthcare employment.

Lincoln’s location quotient figures of 1.080 for hospital employment and 1.218 for nursing and residential care employment both project that a portion of the employees in that category provide services to patients from other areas. For comparison, the 0.879 location quotient for ambulatory care shows that the employees in that category are not meeting local demand.

**Table 2.3: Location Quotients for Primary Healthcare Segments in Lincoln MSA, 2009**

Healthcare	1.026
Ambulatory Care	0.879
Hospital	1.080
Nursing and Residential Care	1.218

Source: Bureau of Labor Statistics

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### D. Healthcare Education and Research Resources in the Lincoln Metropolitan Area

Lincoln's primary healthcare cluster benefits from the vast array of programs that support the development of a specialized workforce for this industry. The University of Nebraska Medical Center (UNMC), University of Nebraska-Lincoln (UNL), Union College, Nebraska Wesleyan University, Concordia University, Doane College, and Bryan LGH College all provide a wide array of programs in the Lincoln MSA tailored to the needs of the primary healthcare industry, as is seen in Table 2.4. In 2008 alone, the colleges and universities in Lincoln graduate nearly 500 students with bachelor's degrees in majors related to this sector, another 450 with associate's degrees, and over 250 with post-graduate degrees (see Chapter 4).

**Table 2.4: Area Post-secondary institutions offering Healthcare degrees**

Bryan LGH College
Concordia University
Doane College
Kaplan University
Myotherapy Institute
Nebraska Wesleyan University
Southeast Community College
Union College
University of Nebraska-Lincoln

The health services industry benefits from research programs at the **University of Nebraska-Lincoln (UNL)**. UNL's extensive health services research programs and infrastructure include:

#### **UNL Center for Biotechnology**

The Center has produced leading research on genomics, proteomics, and bioinformatics. The Center promotes research in all aspects of molecular life sciences leading to improvements in agriculture, healthcare and the environment. The center is supported by the Nebraska Research Initiative funds allocated through the Center for Biotechnology and by funds from the National Science Foundation (EPSCoR Infrastructure grant). Currently there are 7 core facilities at the Center: Genomics, Structural Biology, Flow Spectrometry, Mass Spectrometry, Plant Transformation, Bioinformatics, and Microscopy.

For more information, see the source of this passage:

<http://www.biotech.unl.edu>

#### **Nebraska Center for Virology (NCV)**

The Nebraska Center for Virology, a Center of Biomedical Research Excellence (COBRE), was formed in the fall of 2000 as a joint endeavor by Nebraska's leading biomedical research institutions: the University of Nebraska-Lincoln, the University of Nebraska Medical Center, and Creighton University. The Center's research program addresses pathogenic and therapeutic questions of some the

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most devastating viral and neuroimmune disorders facing the global community including molecular, epidemiological, and biochemical approaches to address fundamental questions concerning viral replication, latency, assembly and pathogenesis. The faculty is made up of experienced researchers representing various disciplines such as virologists, immunologists, plant pathologists, cell biologists, neuropathologists, microbiologists, and geneticists. Promising new investigators with similar research interests have been and are being recruited to further the NCV's vision of creating a nationally recognized center of biomedical research excellence. In December of 2009, the Center moved one step closer to realizing its goal when it was awarded \$8 million in federal stimulus funds from the National Institutes of Health. The money will be used to expand the east campus facility.

For more information, see the source of this passage:

<http://www.unl.edu/virologycenter/index.shtml>

### **Nebraska Center for Materials and Nanoscience (NCMN)**

NCMN is a multidisciplinary organization with over 75 faculty members from UNL and other University of Nebraska campuses. The Center focuses on atomic manipulation, properties affected by nanoscale dimensions, self-assembly, ordered nanoarrays, quantum dots and wires, nanoelectronics, quantum computing, nanomechanics, nanooptics, molecular design, nanoelectro-mechanical systems, and nanobiological function and life sciences. The NCMN received a \$6.9 million grant in January of 2010, in addition to the \$8.1 million grant it was awarded in 2008; both of which will help fund the NCMN's new building and equipment. The Center awaits the completion of its new state-of-the-art facility which is scheduled to be completed in the summer of 2011. It is expected that the new facility will double its \$11 million annual funding.

For more information, see the source of this passage:

<http://www.unl.edu/ncmn/index.shtml>

### **Redox Biology Center (RBC)**

The specific aims of the nationally recognized, COBRE-supported Redox Biology Center are to buttress and expand the existing strengths in redox biology in Nebraska by mentoring junior faculty to success, recruiting new faculty with complementary research interests and strategically enhancing biomedical research structure. Scientists are amalgamated from the two major research institutions in the state: UNL and UNMC. Among others, the Center's most notable facilities are its Proteomics and Metabolomics Core and the Spectroscopy and Biophysics Core. In 2007, the University of Nebraska-Lincoln received a \$10.8 million competitive renewal grant from the National Institutes of Health to support the Redox Biology Center through 2012.

For more information, see the source of this passage:

<http://www.unl.edu/RedoxBiologyCenter/index.shtml>

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## 3. Healthcare Cluster Employment

There are many businesses and entire industries that do not directly provide healthcare services but are closely aligned with the healthcare cluster. Many of these industries are suppliers of equipment, medicines, or research to healthcare providers or supply insurance or financial support to consumers of healthcare. As key suppliers or sources of revenue, these healthcare “support” industries are a critical component of the healthcare industry cluster. In addition to these healthcare support industries, there also are individual businesses in industries throughout the economy that are focused on supplying services to healthcare providers. These businesses are also an important component of the healthcare cluster.

In this chapter, we present employment and employment trends in healthcare support industries in Lincoln. We also develop an estimate of 2009 employment in individual businesses in other industries that provide services to healthcare providers. We begin with a discussion of trends in healthcare support industries.

A list of health care support industries is provided below in Table 3.1. As is evident, these support industries are another source of employment, and employment growth, within the healthcare cluster. In fact, many of these support industries have substantial potential for growth because businesses within these industries serve national and international markets, rather than primarily local markets.

**Table 3.1: Lincoln Healthcare Support Industry Employment, 2001 through 2009**

	2001	2009	Growth
325410 Pharmaceutical and Medicine Manufacturing	1,315	1,166	-11.3%
334510 Electromedical and Electrotherapeutic Mfg.	0	0	-
333314 Optical instrument and lens manufacturing	0	0	-
339100 Medical Equipment and Supplies Manufacturing	77	169	119.5%
423450 Medical Equipment Merchant Wholesalers	109	133	22.0%
423460 Ophthalmic Goods Merchant Wholesalers	55	35	-36.4%
424210 Druggists' Goods Merchant Wholesalers	27	26	-3.7%
446110 Pharmacies and Drug Stores	741	777	4.9%
446130 Optical Goods Stores	116	197	69.8%
524114 Direct Health and Medical Insurance	28	28	0.0%
525120 Health and Welfare Funds	0	0	-
532291 Home Health Equipment Rental	39	50	28.2%
541380 Testing Laboratories	47	134	185.1%
541710 Physical, Engineering and Biological Research	194	773	298.5%
813212 Voluntary Health Organizations	42	52	23.8%
Total Health Care Support Sector	2,790	3,540	26.9%

Source: U.S. Bureau of Labor Statistics and U.S. Department of Commerce

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Looking at Table 3.1, pharmaceutical and medical device manufacturers, health insurance providers, and biological research businesses are prominent examples of healthcare support industries that serve national and international markets. These businesses are not tied to the local economy, and therefore, have potential to be the fastest growing part of Lincoln's healthcare cluster. Many of the individual industries did grow rapidly in Lincoln during the current decade.<sup>1</sup> However, the overall rate of growth was 26.9%, which is in-line with the 26.0% growth in the primary healthcare industries of ambulatory care, hospitals, and nursing and residential care facilities.

Table 3.2 shows employment for the entire healthcare cluster including both primary healthcare providers such as ambulatory care, hospitals, and nursing and residential care facilities, as well as healthcare support businesses. The table also includes the number of persons who own non-employer establishments in primary healthcare and healthcare support industries. As the name suggests, these are self-employed individuals without any employees. Therefore, these individuals would not have been included in the wage and salary employment figures for primary healthcare and healthcare support.

Total healthcare industry cluster employment is the sum of primary healthcare wage and salary employment, healthcare support wage and salary employment, and the number of non-employer businesses in healthcare industries. As seen in Table 3.2 total healthcare cluster employment grew from an estimated 17,995 in Lincoln in 2001 to an estimated 22,425 in 2009. This was an aggregate growth rate of 24.6% during the 8-year period, which is more than 3% annual growth.

**Table 3.2: Growth of Healthcare Industry Cluster Employment, 2001 to 2009**

	2001	2009	Growth
Primary Healthcare	14,391	18,130	26.0%
Healthcare Support	2,870	3,529	23.0%
Non-employer Healthcare Businesses	734	766	4.4%
Total Healthcare Industry Cluster	17,995	22,425	24.6%

Source: U.S. Bureau of Labor Statistics and U.S. Department of Commerce

Note that the estimates in Table 3.2 do not include employment from individual businesses in other industries that provide services to healthcare providers. Such businesses are found in industries throughout the economy. An

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<sup>1</sup> Data for many healthcare support industries was available from the U.S. Bureau of Labor Statistics, which was the source of information about employment in ambulatory care businesses, hospitals, and nursing and personal care facilities. However, when data was not available from this source, employment estimates were drawn from the *County Business Patterns* database of the U.S. Department of Commerce. This data, however, was only available from 2001 through 2008, and 2008 data were utilized as estimates for 2009 employment.

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example from Lincoln is the National Research Corporation, which provides services to hospitals across the country. Such individual businesses are a source of thousands of additional healthcare related jobs in the Lincoln Metropolitan Area. Such employment should be included in order to get a full picture of the healthcare cluster employment in the Lincoln Metropolitan Area. We identified a dozen such businesses in the Lincoln MSA with an estimated employment of 3,230 in 2009. Including employment in these individual healthcare support businesses there was an estimated 26,655 jobs in the healthcare cluster in the Lincoln MSA in 2009, as is reported in Table 3.3. Unfortunately, it is not possible to obtain employment estimates for these individual healthcare support businesses from previous years. We can only present this snapshot of employment for 2009.

**Table 3.3: Employment Estimate for Full Healthcare Cluster 2009**

	2009
Cluster Employment	25,655

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## 4. Trends in Lincoln Relative to National and Comparison Areas

This chapter compares the magnitude and growth of healthcare industry employment in Lincoln and in comparison metropolitan areas (MSAs). These comparison MSAs are Nashville, Raleigh, San Antonio, Des Moines, Sioux Falls, Tulsa, and Louisville. Comparisons are made using the healthcare industry cluster in each metropolitan area. Recall that the healthcare industry cluster includes primary healthcare industries and all healthcare support industries. In other words, it includes most employment in the healthcare cluster.<sup>2</sup>

The first step in the analysis is to compare location quotients for the healthcare industry cluster in the Lincoln MSA with those of the comparison metropolitan areas. Recall that location quotients are calculated by dividing an industry's share of MSA employment by its share of national employment. Location quotient estimates are provided in Table 4.1 for the healthcare industry cluster.

The Lincoln MSAs location quotient for the healthcare industry cluster is very close to 1. This implies that the healthcare industry cluster is the same share of the Lincoln economy as it is of the national economy. Another way to look at Lincoln's location quotient is that the Lincoln MSA is capturing its share of healthcare industry activity but it is not a net exporter of healthcare services to other metropolitan areas or rural areas. This was also true of many of the comparison metropolitan areas. The location quotients for San Antonio and Nashville were also very close to 1. The location quotient was well below 1 in Raleigh, Des Moines, and Tulsa. Only in Sioux Falls and Louisville was the location quotient was well above 1. Overall, location quotient results suggest that Lincoln did not achieve the level of cluster concentration and exporting of services as several comparison MSAs but Lincoln compared well to its peers as a group.

**Table 4.1: Healthcare Industry Cluster Location Quotients, 2009**

Lincoln	1.002
Nashville	1.002
Raleigh	0.906
San Antonio	0.992
Des Moines	0.927
Sioux Falls	1.232
Tulsa	0.969
Louisville	1.096

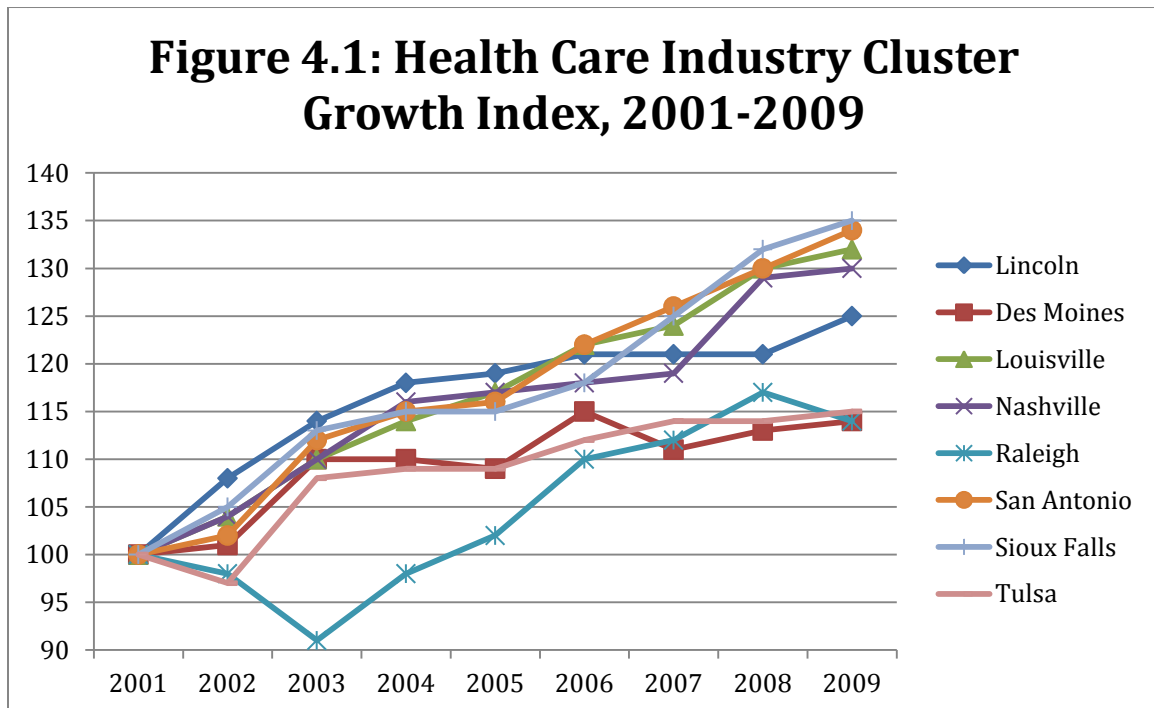
Source: U.S. Bureau of Labor Statistics, U.S. Department of Commerce, BBR Calculations

<sup>2</sup> The healthcare industry cluster does not include individual healthcare support businesses in other industries that supply goods and services to healthcare providers. We were able to estimate employment in these businesses for the Lincoln MSA in 2009 but do not have that information for other metropolitan areas or for other years.

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We also are interested in the relative rate of *growth* in healthcare employment in Lincoln and comparison metropolitan areas. In Figure 4.1, we calculated an index for employment growth in the healthcare industry cluster for the 2001 to 2009 period. In the index, employment in all years is divided by 2001 employment and multiplied by 100. Thus, the index starts at the value of 100 for all metropolitan areas in 2001, and over time the index shows the cumulative growth in employment in each metropolitan area.

As was noted in Chapter 3, Lincoln enjoyed solid growth in healthcare industry cluster employment during the 2001 to 2009 period. As is evident in Figure 4.1, employment in Lincoln's healthcare industry also grew at an average rate for its comparison regions. Cluster employment grew more rapidly in Sioux Falls, San Antonio, Louisville, and Nashville than in Lincoln. But, the cluster grew more rapidly in Lincoln than in Raleigh, Des Moines, and Tulsa. These results also suggest that the performance of the Lincoln healthcare industry clusters is solid, but not spectacular.



Source: Bureau of Labor Statistics

This result also can be seen in Table 4.2, which provides employment data for each metropolitan area. Results show a steady improvement in healthcare industry employment. In Lincoln, and several other metropolitan areas, total healthcare industry employment increased each year between 2001 and 2009. Data on the number of healthcare establishments in Lincoln and comparison metropolitan areas are in Appendix 3.

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**Table 4.2: Healthcare Industry Cluster Jobs by Metro Area, 2001-2009**

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Lincoln	17,915	19,386	20,414	21,080	21,393	21,686	21,766	21,727	22,426
Des Moines	34,056	34,503	37,376	37,370	37,162	39,012	37,840	38,405	38,771
Louisville	66,269	69,057	72,949	75,484	77,258	80,959	82,190	86,233	87,148
Nashville	77,345	80,377	85,576	89,832	90,442	91,347	92,390	99,759	100,295
Raleigh	53,105	51,916	48,181	51,821	54,254	58,830	59,264	62,084	61,478
San Antonio	84,625	86,721	94,906	97,280	98,492	103,135	106,333	109,836	113,703
Sioux Falls	16,013	16,830	18,108	18,494	18,473	18,958	20,010	21,132	21,602
Tulsa	47,545	46,122	51,216	51,672	51,658	53,416	54,314	54,046	54,692

Source: Bureau of Labor Statistics

The following sections discuss growth in the four segments of the healthcare industry cluster: ambulatory care, hospitals, nursing and residential care facilities, and healthcare support industries. Generally speaking, Lincoln had average job growth in the ambulatory care, hospital, and health care support industries, and relatively rapid growth in nursing and residential care employment

### Segment 1: Ambulatory Care employees

The ambulatory care portion of the healthcare industry cluster includes physicians' offices, and the offices of other healthcare professionals. Data in Figure 4.2 shows that the cumulative rate of growth in ambulatory care employment was essentially the same in Lincoln, Des Moines, Louisville, and Sioux Falls. Growth in Lincoln between 2001 and 2009 lagged well behind the Raleigh MSA and the San Antonio MSA, two rapidly growing large metropolitan areas. The rate of growth in Lincoln only clearly exceeded one comparison MSA, Tulsa, Oklahoma. As was noted in Chapter 2, ambulatory care employment grew by nearly 30% in Lincoln between 2001 and 2009.

### Segment 2: Hospital employees

Results in Figure 4.3 show that there were significant differences in growth in hospital employment among the comparison metropolitan areas. The growth rate in the Lincoln MSA, at just over 20%, was similar to growth in the Tulsa MSA but well below growth in the Sioux Falls, Raleigh, Nashville, and Louisville MSAs.

### Segment 3: Nursing and Residential Care

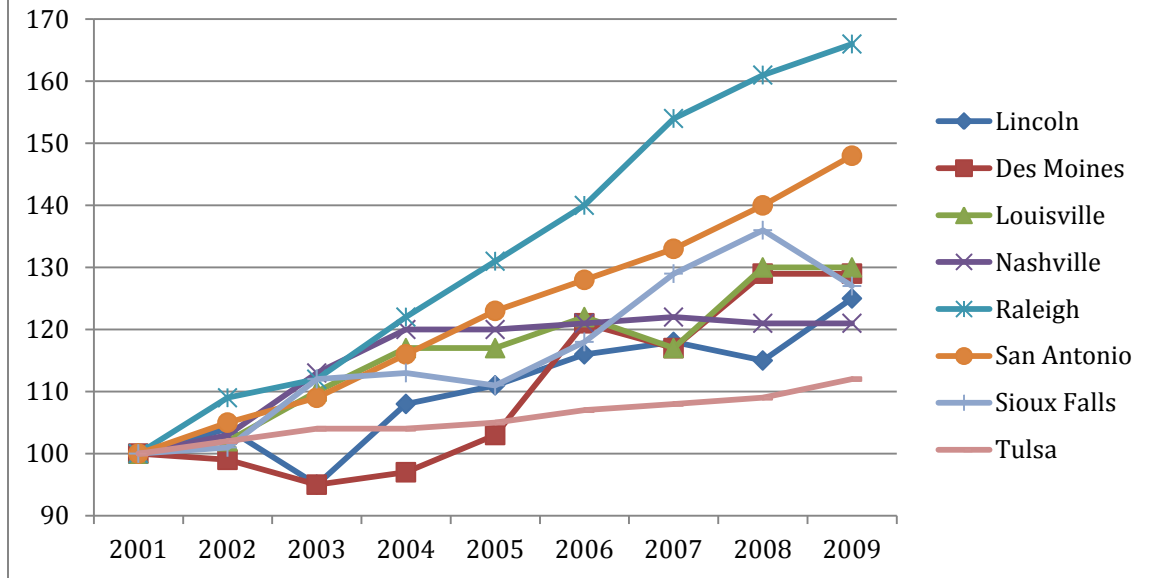
Results in Figure 4.4 show that the Lincoln MSA had the second fastest rate of growth in nursing and residential care employment. Only in the Nashville MSA did employment grow more quickly. This segment was a clear area of strength for Lincoln.

### Segment 4: Healthcare Support Industries

As is evident in Figure 4.5, Lincoln had the fourth fastest employment growth rate in healthcare support industries. Lincoln again outperformed Des Moines and Tulsa, as it had in most other segments of the healthcare industry cluster.

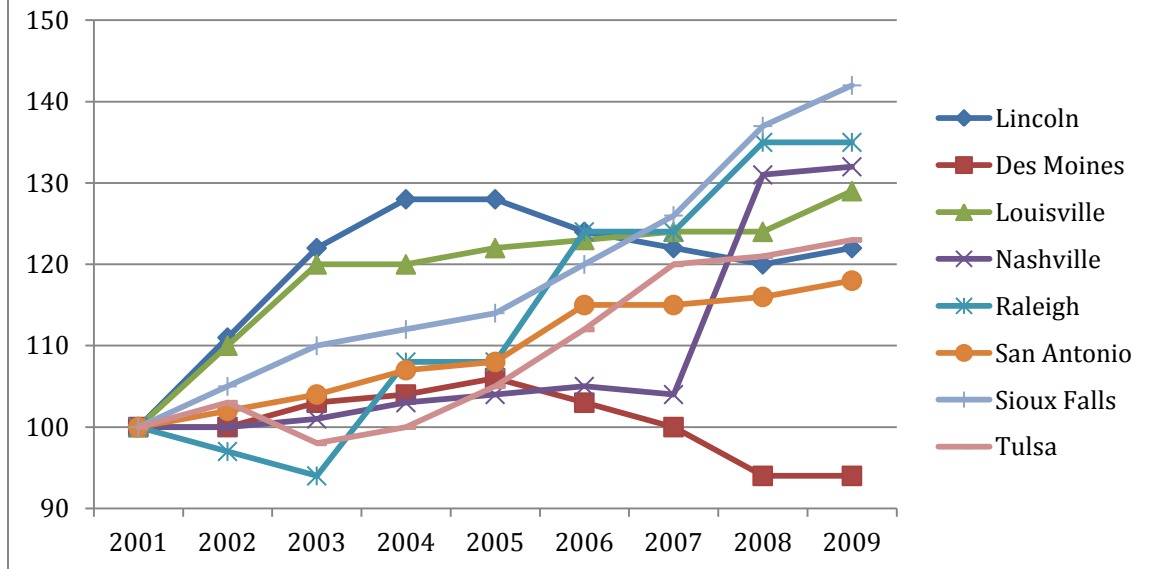
## A Profile of Lincoln's Healthcare Cluster

### Figure 4.2: Ambulatory Care Employment Growth Index, 2001-2009



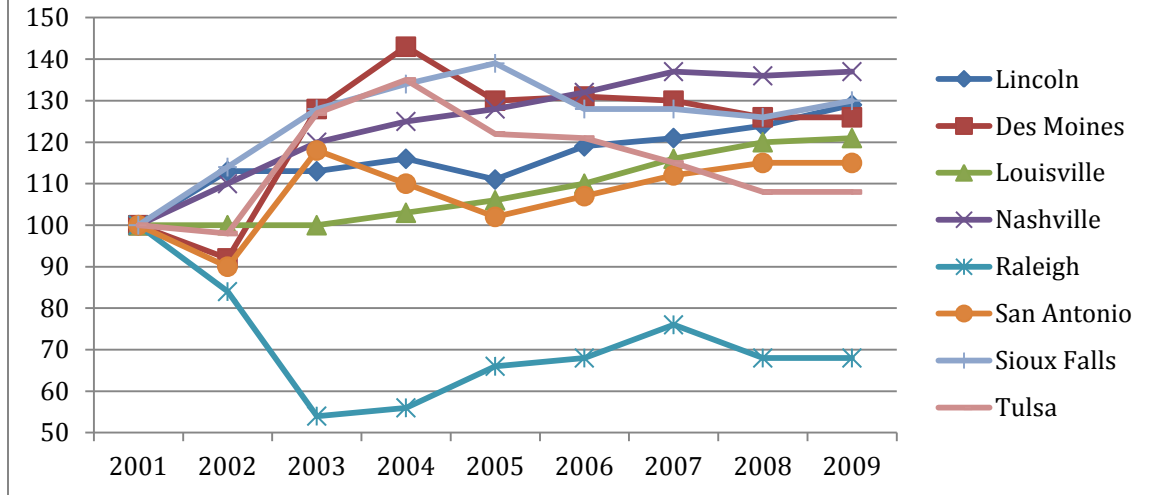
Source: Bureau of Labor Statistics

### Figure 4.3: Hospital Employment Growth Index, 2001-2009



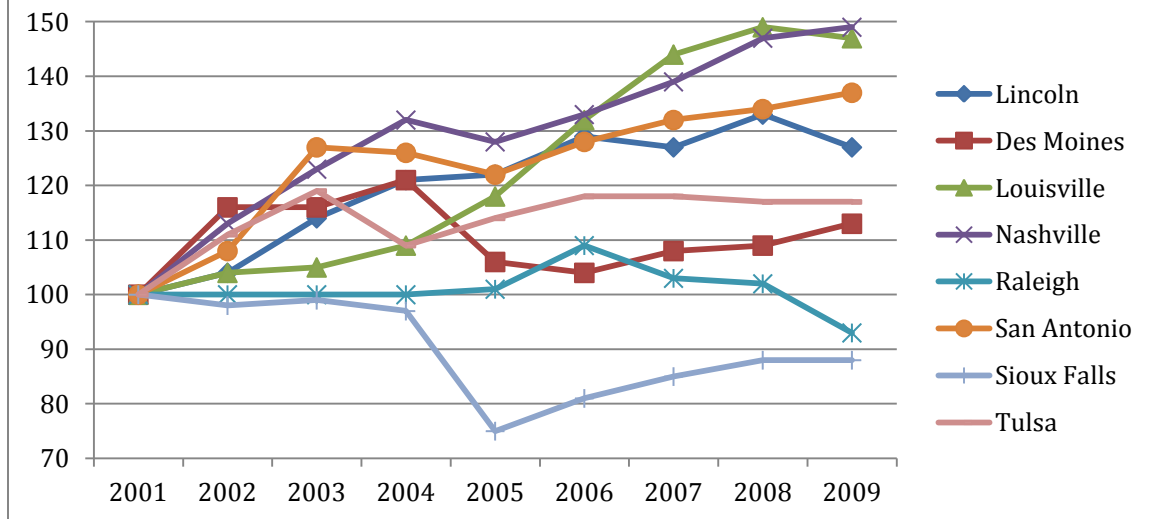
Source: Bureau of Labor Statistics

**Figure 4.4: Nursing and Residential Care Employment Growth Index, 2001-2009**



Source: Bureau of Labor Statistics

**Figure 4.5: Health Care Support Employment Growth Index, 2001-2009**



Source: Bureau of Labor Statistics

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### 5. Healthcare Wages by Industry and Occupation

A skilled labor force is critical to the success of an industry cluster. With this point in mind, the current chapter considers the skill of Lincoln’s healthcare workforce and the wages received by Lincoln healthcare workers. The focus is on wages and occupations in primary healthcare industries rather than healthcare support industries. This is because primary healthcare jobs are concentrated in a coherent set of occupations, as will be seen below, rather than spread throughout the entire occupation code, as is the case with healthcare support occupations.

The chapter examines occupations and wages in both the Lincoln MSA and in comparison metropolitan areas. One main finding is that average wages are high in many healthcare occupations, but that wages vary a great deal among occupations. Another main finding is that healthcare wages are similar in the Lincoln MSA, the nation, and comparison MSAs, in most cases. Wages in Lincoln typically fall in the middle rank of wages in comparison MSAs.

Table 5.1 lists wages by primary healthcare industry in the Lincoln MSA and comparison metropolitan areas. The Table shows that Lincoln workers in ambulatory care businesses earned a higher average salary than workers in every comparison metro except Sioux Falls. The table also shows that Lincoln workers in nursing and residential care businesses earned a middle-of-the-road salary compared to their counterparts in other MSA’s. Data was not available on the wages of hospital workers. In comparison to the U.S. average, ambulatory workers in Lincoln earned over \$6,000 more annually than the average worker in the U.S., while nursing and residential care workers in Lincoln earned nearly \$4,000 less than the national average. These results are noteworthy, however, given that the average Lincoln worker across all industries earns less than the average worker in all comparison MSAs and \$5,000 less than the average worker nationally.

**Table 5.1: Average Annual Wages of Primary Healthcare Industries in Lincoln and Comparison MSA’s, 2009**

Annual Wage	Ambulatory	Hospital	Nursing and Residential Care	All Industries
Lincoln	\$59,589	N/A	\$24,514	\$36,281
Nashville	N/A	\$59,151	\$30,432	\$43,811
Raleigh	\$58,039	\$49,904	\$23,625	\$44,016
San Antonio	\$43,523	\$47,049	\$25,380	\$39,596
Des Moines	N/A	N/A	N/A	\$44,073
Sioux Falls	\$77,727	\$45,743	\$23,025	\$37,562
Tulsa	N/A	\$42,451	\$23,478	\$40,108
Louisville	\$55,230	\$48,847	\$28,308	\$41,101
U.S. Average	\$53,202	\$52,545	\$27,476	\$45,559

Source: Bureau of Labor Statistics

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Tables 5.2 and 5.3 report wages by occupation in the Lincoln MSA. Table 5.2 shows the high mean hourly wages earned by healthcare practitioners and managers. The results in Table 5.3, which focuses on annual wages, are that wages vary a great deal by detailed occupation. Further, it is evident that experienced workers earn much higher wages than the mean worker.

**Table 5.2: Healthcare Employment and Hourly Wages By Occupation, 2009**

<b>Occupation</b>	<b>Employment</b>	<b>Mean Hourly Wage</b>
Medical and Health Services Managers	370	\$40.47
Healthcare Practitioners and Technical Occs.	9,180	\$29.31
Other Healthcare Occupations	4,240	\$12.88

Source: Bureau of Labor Statistics

**Table 5.3: Average Annual Salary by Detailed Occupation, Lincoln MSA, 2009**

	<b>Annual Salary</b>		
	Entry	Experience	Mean
<b>TOTAL ALL OCCUPATIONS</b>	\$18,200	\$47,365	\$30,960
<b>MANAGEMENT OCCUPATIONS</b>	\$45,950	\$108,915	\$78,420
Medical and health services managers	\$50,665	\$97,070	\$74,980
<b>HEALTHCARE PRACTITIONERS AND TECHNICAL OCCUPATIONS</b>	\$31,450	\$75,785	\$49,350
Physical Therapists	\$48,960	\$77,315	\$65,745
Radiation Therapists	\$48,435	\$76,940	\$63,175
Medical and clinical laboratory technologists	\$26,450	\$34,325	\$30,560
Medical and Clinical Laboratory Technicians	\$26,450	\$34,325	\$30,560
Dental Hygienists	\$51,860	\$74,565	\$67,845
Licensed practical and licensed vocational nurses	\$29,840	\$41,775	\$37,520
Medical Record and Health Information Technicians	\$22,555	\$35,890	\$29,485
<b>HEALTHCARE SUPPORT OCCUPATIONS</b>	\$21,310	\$29,225	\$25,040
Home health aids	\$21,770	\$26,160	\$24,725
Nursing aides, orderlies and attendants	\$21,085	\$26,355	\$24,285
Physical Therapy Assistants	\$36,125	\$48,900	\$44,750
Dental Assistants	\$27,465	\$32,065	\$30,215
Medical assistants	\$22,545	\$29,865	\$25,650
Medical Transcriptionists	\$26,035	\$37,195	\$33,625

Source: Bureau of Labor Statistics

Results in Table 5.3 emphasized that wages vary widely between the broad occupational categories within the healthcare practitioners and technical

## A Profile of Lincoln's Healthcare Cluster

occupations group and the healthcare support occupation group. Given this market reality, it is fortunate that there are many degree programs available in the Lincoln MSA to allow residents to prepare for these higher wage occupations. Table 5.4 lists the 2008 graduates in healthcare provider occupations from education institutions by major and degree program. The first part of the table focuses on undergraduate programs and the second on graduate programs.

**Table 5.4: Graduates with Healthcare Degrees from Area Post-Secondary Institutions**

Bachelor's Degrees Awarded	BryanLGH College	Concordia University	Doane College	Kaplan University <sup>A</sup>	Myotherapy Institute <sup>A</sup>	Nebraska Wesleyan University	Southeast Community College <sup>A</sup>	Union College	UNL	UNMC Lincoln Campus
Athletic Training/Trainer									8	
Biochemistry						12			55	
Biomedical/Medical Engineering									11	
Chemical Engineering									22	
Chemistry, General		1	1			6		4	12	
Clinical Laboratory Science/Medical Technology Technologist								1		
Clinical/Medical Laboratory Technician							14			
Clinical/Medical Social Work							53			
Community Health Services/Liason/Counseling									1	
Dental Hygiene										24
Dental Assisting/Assistant							32			
Diagnostic Medical Sonography/Sonographer & Ultrasound Technician		10 <sup>A</sup>								
Foods, Nutrition and Wellness Studies, General Health Professions and Related Clinical Sciences, Other			3						102	
Health Services/Allied Health/Health Science, General								11		
International Public Health/International Health								10		
Licensed Practical/Vocational Nurse Training							104			
Kinesiology and Exercise Science		6				8				
Massage Therapy/Therapeutic Massage					38					
Medical/Clinical Assistant				41						
Medical Radiologic Technology/Science-Radition Therapist							34			
Nursing Administration (MSN, MS, PhD)						37				
Nursing/Registered Nurse (RN, ASN, BSN, MSN)		23					53	27		35
Nutrition Sciences									102	
Pharmacy Technician/Assistant							11			
Pre-Dentistry Study									1	
Pre-Pharmacy Studies									1	
Respiratory Care Therapy/Therapist							24			
Speech-Language Pathology/Pathologist									26	
Surgical Technology/Technologist							36			

A: Associates Degrees  
Source: <http://nces.ed.gov/collegenavigator/>

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Post Graduate Degrees (M.A. & Ph.D.) Awarded	<i>Doane College</i>	<i>Nebraska Wesleyan University</i>	<i>Union College</i>	<i>UNL</i>	<i>UNMC Lincoln Campus</i>
Audiology/Audiologist and Hearing Sciences				4	
Audiology/Audiologist and Speech-Language Pathology/Pathologist				26	
Biochemistry				16	
Biomedical Sciences, General				2	
Chemical Engineering				2	
Chemistry, General				7	
Counseling Psychology	40				
Dental Surgery					45
Engineering Mechanics				2	
Environmental/Environmental Health Engineering				9	
Foods, Nutrition, and Wellness Studies, General				18	
Mechanical Engineering				11	
Nutrition Sciences				21	
Nursing Administration (MSN, MS, PhD)		24			
Physics, General				2	
Physician Assistant			27		
Toxicology				1	

Source: <http://nces.ed.gov/collegenavigator/>

Results in Table 5.5 compare wages by occupation in the Lincoln MSA with wages in comparison metropolitan areas and the national average. Wages in Lincoln are modestly lower than the national average for the manager and practitioner occupation groups. Focusing on medical and health services managers, Lincoln's hourly wages exceed those of Tulsa and are within \$0.12 of wages in Nashville, Louisville, and San Antonio. Among healthcare practitioners, wages are above those in Sioux Falls and Tulsa, but are \$0.50 to \$3 below wages in the other metropolitan areas. Wages for other healthcare occupations are relatively high in the Lincoln MSA. Lincoln wages exceed the U.S. average, and are higher than in Nashville, Raleigh, San Antonio, Sioux Falls, and Tulsa.

**Table 5.5: Mean Hourly Wages by Healthcare Occupation and Metropolitan Area, 2009**

Annual Wage	Medical and Health Services Managers	Healthcare Practitioners	Other Healthcare Occupations
Lincoln	\$40.47	\$29.31	\$12.88
Nashville	\$40.54	\$30.35	\$12.57
Raleigh	\$42.61	\$32.94	\$12.60
San Antonio	\$40.59	\$31.32	\$11.38
Des Moines	\$43.34	\$29.90	\$13.09
Sioux Falls	\$41.86	\$28.86	\$12.66
Tulsa	\$30.79	\$27.90	\$11.27
Louisville	\$40.58	\$30.04	\$12.96
U.S. Average	\$43.74	\$33.51	\$12.84

Source: Bureau of Labor Statistics

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### 6. Summary

Healthcare is an important component of local quality of life in Lincoln, and therefore, influences Lincoln's ability to attract households to the metropolitan area. The healthcare cluster in Lincoln is also an important source of job growth in Lincoln with potential for future growth. Given this importance, a profile was developed of Lincoln's healthcare cluster. The profile revealed a number of key findings.

Lincoln's healthcare cluster is diverse and growing. Healthcare cluster employment grew by 4,400 jobs in the Lincoln MSA between 2001 and 2009. This was a large share net jobs created in the Lincoln MSA during that period. Total healthcare cluster employment reached 25,700 by 2009.

Among industry sectors, ambulatory care facilities such as physician's offices accounted for the most employment in 2009, closely followed by hospitals and by nursing and residential care facilities. However, nursing and residential care was the fastest-growing sector between 2001 and 2009. Healthcare support industries that supply equipment, medicines, research, and insurance services to the healthcare industry or its customers generated another 660 jobs between 2001 and 2009.

By 2009, Lincoln had an 8% higher share of hospital employment and a 20% higher share of nursing and personal care employment than the United States overall. Given that Lincoln has an average-age population, the latter result may reflect the migration of older Nebraskans to Lincoln for its healthcare facilities and for proximity to children who migrated to Lincoln over the last few decades. .

Lincoln's healthcare cluster benefits from the support of education institutions throughout the metropolitan area and a set of biomedical research centers at the University of Nebraska-Lincoln. A variety of state, private non-profit, private for-profit, and industry run education institutions in the Lincoln metropolitan area help provide a trained workforce for the industry cluster. This education is valuable. Healthcare practitioners and those in technical health-related occupations make above average wages.

# A Profile of Lincoln's Healthcare Cluster

## Appendix 1

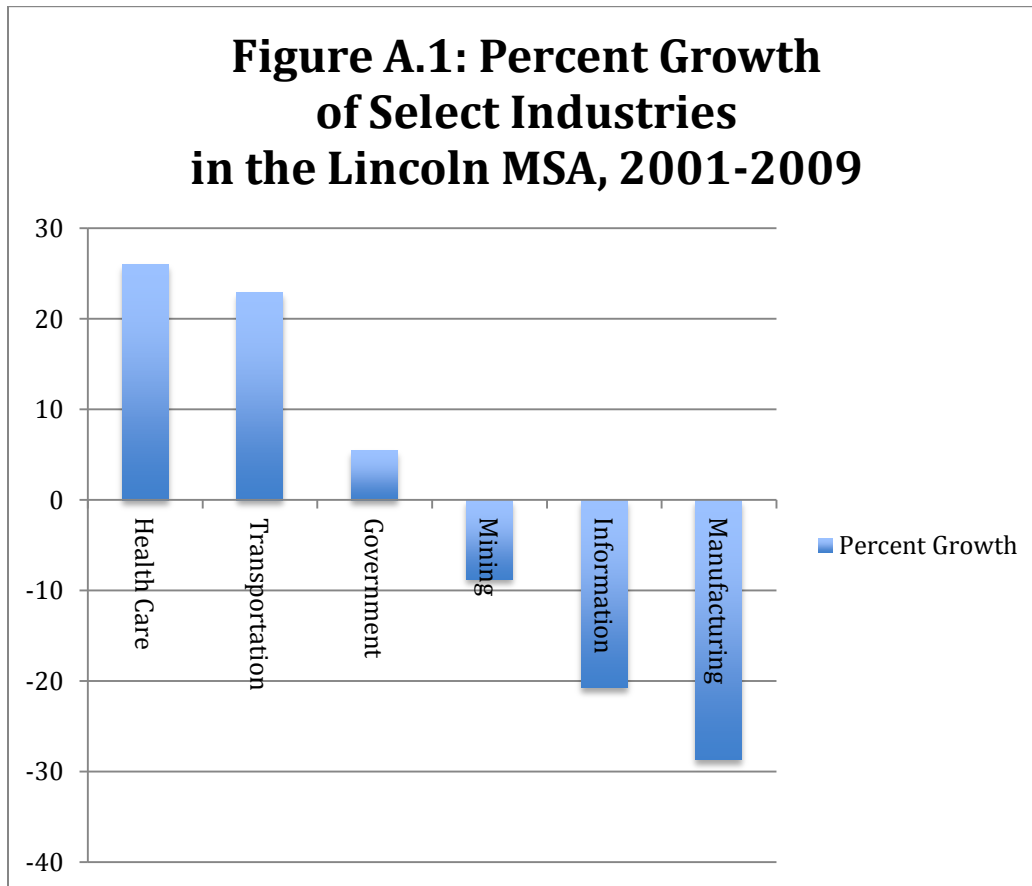
### Relative Growth of Primary Healthcare Employment in Lincoln MSA

Compared to other industries in the Lincoln MSA, primary healthcare industries fared quite well between 2001 and 2009, with an increase of 26.0 percent in total jobs. That increase was greater than industries such as transportation (22.9%) and government (5.5%) in the Lincoln MSA.

**Table A1.1: Percent Growth of select industries in the Lincoln MSA, 2001-09**

Industry	Jobs, 2001	Jobs, 2009	Change
Primary Healthcare	14,391	18,130	26.0%
Transportation	8,300	10,200	22.9%
Government	36,100	38,700	5.5%
Mining	8,000	7,300	-8.8%
Information	2,300	2,900	-20.7%
Manufacturing	18,500	13,200	-28.7%

Source: Bureau of Labor Statistics



Source: U.S. Bureau of Labor Statistics

## A Profile of Lincoln's Healthcare Cluster

### Appendix 2 Employment Trends in Detailed Sub-segments of Lincoln's Primary Healthcare Industries

Table A2.1 compares employment trends in the Lincoln MSA and the United States for detailed sub-segments of Lincoln's primary healthcare industry. In particular, results are provided for 6 sub-segments within ambulatory care and 2 sub-segments within nursing and residential care facilities.

In reviewing the results, note that employment figures and growth rates for the ambulatory care and nursing and residential care facilities segments differ from what was reported in Table 2.2. This is because the data below in Table A2.1 are from a different data source. The data in this appendix are from the U.S. Bureau of Labor Statistics' *Quarterly Census of Employment and Wages*. Data in the chapters 2 through 4 are from the U.S. Bureau of Labor Statistics' *Current Employment Survey*. The *Current Employment Survey* does not provide data for Lincoln in these detailed industry sub-segments.

Results in Table A2.1 show that patterns of employment growth in the Lincoln MSA largely followed national patterns. There was rapid growth in employment in sub-segments of ambulatory care, particularly in specialties such as offices of chiropractors, offices of podiatrists, or offices of other practitioners. Lincoln, however, did show a decline in medical and diagnostic labs compared to solid growth nationwide. Lincoln exhibited especially rapid growth within sub-segments of nursing and residential care facilities. In particular, there was very rapid employment growth in home health care services in the Lincoln MSA.

**Table A2.1: National and Lincoln MSA Primary Healthcare Employment, 2001-2009**

	Lincoln MSA				United States			
	2001	2009	change	% change	2001	2009	change	% change
Ambulatory Care	5237	6630	1393	26.5%	4,340,427	5,886,454	1,546,027	35.6%
Offices of Dentists	797	900	103	12.9%	704,115	818,458	114,343	16.2%
Offices of Oth. Practitioners	462	756	294	63.6%	457,737	648,717	190,980	41.7%
Offices of Chiropractors	112	205	93	83.0%	98,863	116,928	18,065	18.3%
Offices of Podiatrists	23	30	7	30.4%	30,640	34,731	4,091	13.3%
Other Outpatient Centers	229	316	87	37.9%	265,427	379,105	113,678	42.8%
Medical and Diagn. Labs.	601	360	-241	-40.1%	169,727	218,634	48,907	28.8%
Nursing and Res. Facilities	3650	4884	1234	33.8%	2,876,435	3,299,597	423,162	14.7%
Home Health Care Services	257	717	460	178.9%	641,196	1,034,403	393,207	61.3%
Other Residential Facilities	55	148	93	169.1%	188,130	181,146	-6984	-3.7%

Source: Bureau of Labor Statistics

## A Profile of Lincoln's Healthcare Cluster

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### Appendix 3 Primary Healthcare Establishments Counts

Jobs aside, there also was rapid growth in the number of private healthcare establishments in the Lincoln MSA. Establishment growth was solid in Lincoln, at nearly 8% (or 1% growth per year). Further, establishment growth rates in the Lincoln MSA exceed growth rates in all comparison MSAs, except San Antonio.

**Table A3.1: Primary Healthcare Establishments of Comparison Metro Areas as a Percent of all Industry Establishments, 2001-2009**

	All Industries	Healthcare only	Percent
Lincoln	8,562	663	7.74%
Nashville	37,332	2,699	7.23%
Raleigh	32,814	2,026	7.14%
San Antonio	41,490	3,827	9.22%
Des Moines	18,099	1,141	6.3%
Sioux Falls	8,318	466	5.6%
Tulsa	25,052	1,933	7.72%

Source: U.S. Bureau of Labor Statistics

**Table A3.2: Primary Healthcare Establishments of Comparison Metro Areas by Sector, 2001-2009**

Establishments	Ambulatory	Hospitals	Nursing and Residential	Total
Lincoln	571	10	82	663
Nashville	2,420	46	233	2,699
Raleigh	1,829	8	189	2,026
San Antonio	3,467	57	303	3,827
Des Moines	978	19	144	1,141
Sioux Falls	363	10	93	466
Tulsa	1,616	34	283	1,933

Source: U.S. Bureau of Labor Statistics