



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

A Profile of Lincoln's Healthcare Industry Cluster

Final Report

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Lincoln Partnership for Economic Development**

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A Profile of Lincoln's Healthcare Industry Cluster

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 residential 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 3,165 jobs between 2003 and 2012 in the Lincoln Metropolitan Statistical Area (MSA). This amounted to a 15.37% rate of growth over the ten-year period. At the same time, the share of local employment belonging to the healthcare cluster increased from 10% to 11%. Total healthcare cluster employment reached 26,576 by 2012, the last year for which complete data is available.
- The three segments of the primary healthcare industry are ambulatory care, hospitals, and nursing and residential care facilities. Healthcare employment in 2012 was fairly evenly divided among these three segments. Further, ambulatory care and nursing and residential care employment grew significantly.
- 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 grew more than 10.90% in the Lincoln MSA between 2003 and 2012.
- Growth in Lincoln's healthcare cluster, while strong, lagged behind the growth rates found in other metropolitan areas. In particular, nursing and residential care employment grew very rapidly, but hospital employment growth was weak in comparison to the other metropolitan areas.
- Healthcare practitioners and those in technical health-related occupations make above average wages.
- Ten different institutions offering post-secondary healthcare degrees serve the Lincoln MSA. These institutions offer 28 different healthcare-related undergraduate and 18 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 cluster 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 products, treatments, and services constantly under development and brought to the market. Demand for healthcare services will accelerate as more of the baby-boom generation reaches 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 in the Affordable Care Act.

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 contains a large group of suppliers to healthcare providers, including many industries and businesses that can help healthcare

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providers become more efficient. For this reason, our report pays careful attention to trends in 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 MSA over the 2003 to 2012 period. The third section examines Lincoln's entire healthcare cluster, which includes healthcare support industries, and 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, which includes San Antonio, Raleigh, Nashville, Sioux Falls, Tulsa, and Louisville. The fifth section identifies and compares employment and wages in healthcare industries and occupations. The final section provides a summary of study results.

2. Primary Healthcare Industry Characteristics and Trends in the Lincoln Metropolitan Area, 2003-2012

The primary healthcare sector 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 19,289 in 2012, which was 10.82% of the 178,300 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 2,657 jobs between 2003 and 2012, for a cumulative growth rate of 16%. This increase accounted for nearly twenty percent of job growth in the local economy during the decade. There was a total increase of 13,300 jobs across all industries in Lincoln between 2003 and 2012. Results in Table 2.1 do not include growth in healthcare support industries, which are featured in Chapter 3.

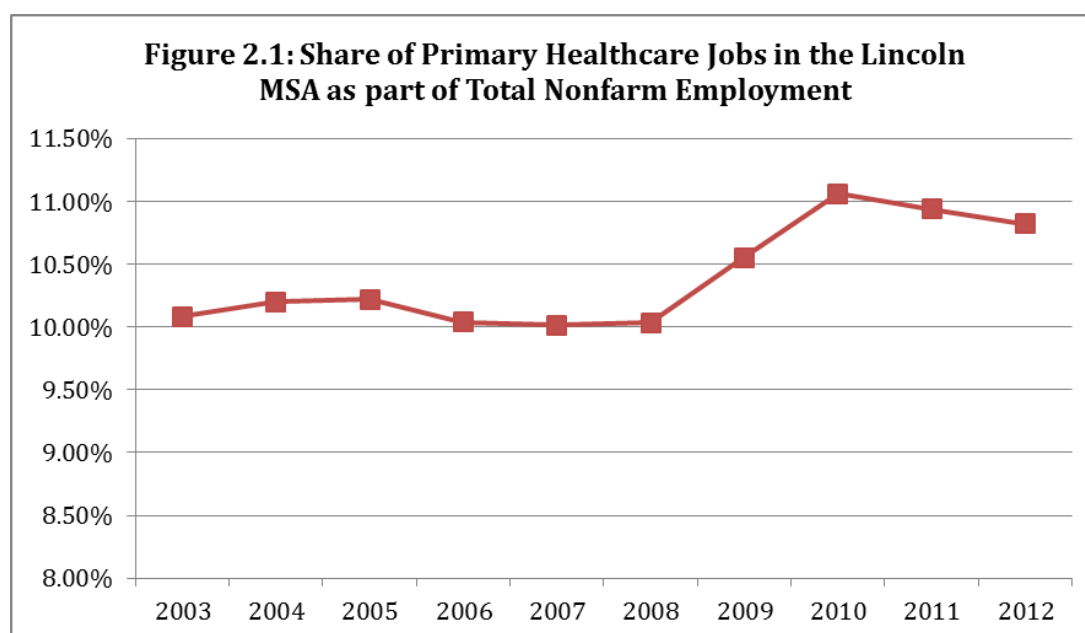
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Table 2.1: Share of Primary Healthcare Jobs in the Lincoln MSA as part of Total Nonfarm Employment

Year	Healthcare Jobs	Tot. Nonfarm Jobs	Share
2003	16,632	165,000	10.08%
2004	16,985	166,500	10.20%
2005	17,287	169,200	10.22%
2006	17,270	172,000	10.04%
2007	17,382	173,600	10.01%
2008	17,580	175,200	10.03%
2009	18,214	172,600	10.55%
2010	19,068	172,400	11.06%
2011	19,054	174,200	10.94%
2012	19,289	178,300	10.82%

Source: Bureau of Labor Statistics - Quarterly Census of Employment and Wages (Healthcare), Current Employment Statistics (Nonfarm)

Primary healthcare's share of total nonfarm employment rose from 10.08% to 10.82% between 2003 and 2012. As is evident in Figure 2.1, the primary healthcare share of metropolitan area employment was relatively stagnant between 2003 and 2008, but experienced growth between 2008 and 2010. 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 in the subsequent three years during and just after the recession. Appendix 1 compares trends in primary healthcare employment with trends in other Lincoln industries.



Source: Bureau of Labor Statistics - Quarterly Census of Employment and Wages, Current Employment Statistics

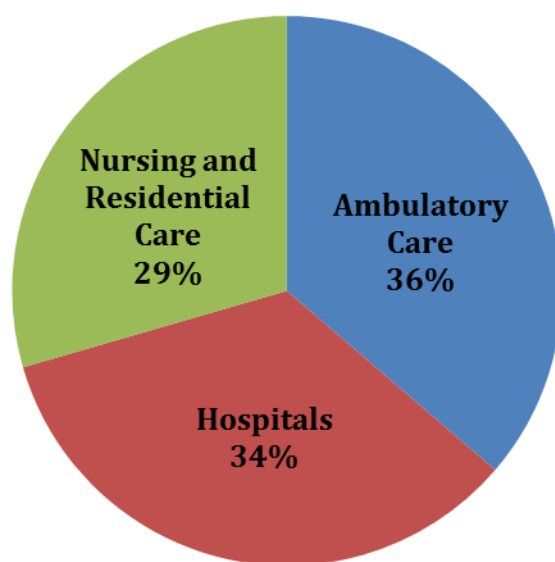
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B. Employment Growth in Segments of the Primary Healthcare Industry

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-six 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 29% of jobs in 2012. These shares translate into roughly 7,000 jobs ambulatory care industry, and 6,600 in the hospitals, as seen in Table 2.2. There are also nearly 5,700 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 2003 and 2012 hospital employment held steady, while ambulatory care employment grew by 24.2% and nursing and residential care facility employment grew by 29.4%. Hospital employment led all three categories up until 2010, as is seen in Figure 2.3 However, in 2010, ambulatory care 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, 2012



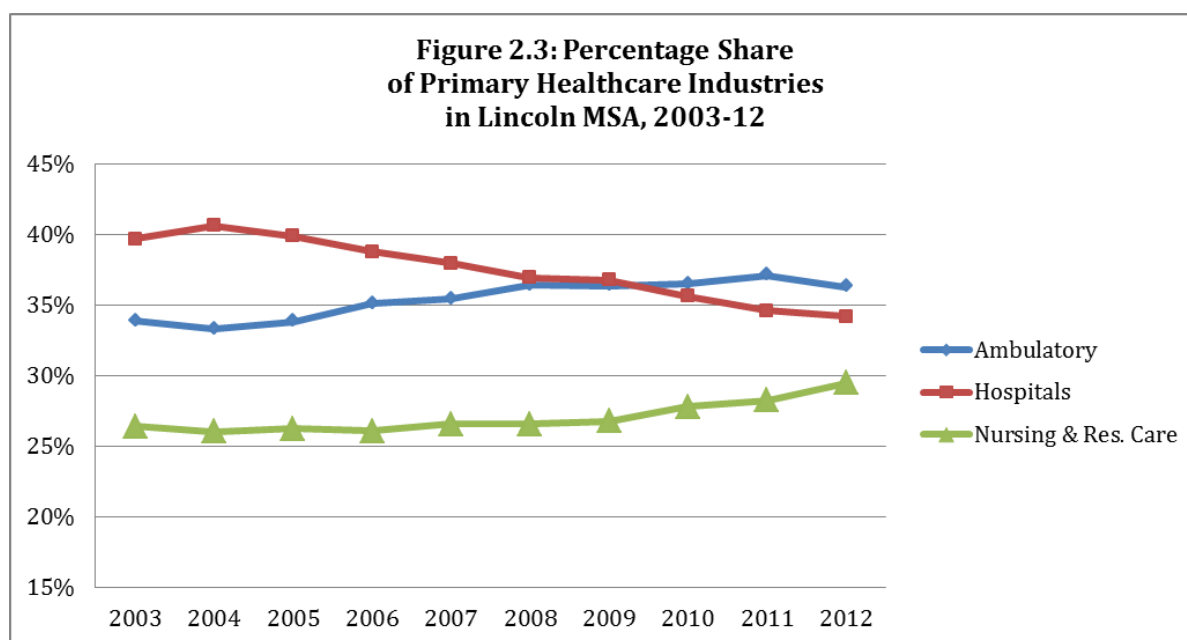
Source: U.S. Bureau of Labor Statistics – Quarterly Census of Employment and Wages

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Table 2.2: Growth of Primary Healthcare Segments, 2003 to 2012

	Jobs, 2003	Jobs, 2012	Growth
Ambulatory	5,635	7,001	24.2%
Hospitals	6,600	6,600	0.0%
Nursing & Res. Care	4,397	5,688	29.4%

Source: Bureau of Labor Statistics - Quarterly Census of Employment and Wages



Source: U.S. Bureau of Labor Statistics - Quarterly Census of Employment and Wages

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 area 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 1.15 in 2012. This figure suggests that Lincoln is above the national average in terms of healthcare employment.

Lincoln's location quotient figures of 1.18 for hospital employment and 1.51 for nursing and residential care employment both project that a portion of the employees in that category provide services to patients from outside the Lincoln MSA. On the other hand, the 0.94 location quotient for ambulatory care shows that the employees in that category are approximately at the level expected given local demand.

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Table 2.3: Location Quotients for Primary Healthcare Segments in Lincoln MSA, 2012

Primary Healthcare	1.15
Ambulatory Care	0.94
Hospital	1.18
Nursing and Residential Care	1.51

Source: Bureau of Labor Statistics - Quarterly Census of Employment and Wages

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 BryanLGH 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 2012 alone, the colleges and universities in Lincoln graduated nearly 800 students with bachelor's degrees in majors related to this sector, another 600 with associate's degrees, and over 300 with graduate degrees (see Chapter 5 for a more detailed breakdown).

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

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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/mission>

Nebraska Center for Virology (NCV)

“The Nebraska Center for Virology (NCV), a Center of Biomedical Research Excellence (COBRE), was formed in the fall of 2000 under the Institutional Development Award (IDeA) program of the National Institute of Health. The Center combines the expertise and facilities of Nebraska's leading biomedical research institutions: the University of Nebraska-Lincoln, University of Nebraska Medical Center, and Creighton University. Junior and established researchers at these institutions conduct innovative and collaborative research, and provide an environment to attract and promote the development of promising investigators. Since its inception, the Center has research efforts supported by the Center's state-of-the-art core facilities, such as the imaging core, the cell analysis core, the proteomics and genomics, as well as the bioinformatics core. The Center presents a strong mentoring environment and has attracted a number of outstanding virologists to the State of Nebraska. In spring 2008, a new state-of-the-art research building, the Ken Morrison Life Sciences Center, which houses the NCV and its faculty from various departments on the UNL campus was completed. The building provides excellent research space and shared facility, including a Biosafety level 3 laboratory to support its researchers. The Center recently received an award from the National Institute of Health to add an extension to its existing building, which will increase our research space by 30%, and provide additional laboratory space for seven more research programs.”

For more information, see the source of this passage:
<http://www.unl.edu/virologycenter/directors-welcome>

Nebraska Center for Materials and Nanoscience (NCMN)

“The Nebraska Center for Materials and Nanoscience (formerly the Center for Materials Research and Analysis) was founded by the Board of Regents in 1988 to serve as the focal point of interdisciplinary research in materials in the Colleges of Arts and Sciences and Engineering and Technology. The overall goal of NCMN is to provide for the State of Nebraska and the University of Nebraska a nationally recognized center of excellence in materials research science and engineering, nanoscience, and nanotechnology. Specific aims are to: perform and publish world-class research; educate students in the relevant scientific and engineering disciplines; promote interdisciplinary group and single-investigator grants to improve the university's national research competitiveness; and to contribute to the economic development of Nebraska through industrial collaborations, spin-offs, materials analyses, and tech transfer to companies. In 1988 there were about 40 faculty in NCMN with about \$1.0 million in annual

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external research funding. Current NCMN membership is 83 and the annual external research funding 2010 figure is now \$ 19.6 million.”

For more information, see the source of this passage:
<http://www.unl.edu/ncmn/history.shtml>

Redox Biology Center (RBC)

“The Redox Biology Center (RBC) is organized as a broad-based interdisciplinary and multi-institutional entity involving researchers from the University of Nebraska-Lincoln (UNL) and the University of Nebraska Medical Center in Omaha (UNMC). The RBC is funded by the National Institute of Health grant P20 RR017675 from the COBRE program of the National Center for Research Resources.

The specific aims of the COBRE-supported Redox Biology Center (RBC) 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 two major research institutions in the state (UNL and UNMC).”

For more information, see the source of this passage:
<http://redoxbiologycenter.unl.edu/home>

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 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 2012 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.

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Table 3.1: Lincoln Healthcare Support Industry Employment, 2003 through 2012

	2003	2012	Growth
325410 Pharmaceutical and Medicine Manufacturing	1,315	1,210	-7.98%
334510 Electromedical and Electrotherapeutic Mfg.	N/A	N/A	-
333314 Optical instrument and lens manufacturing	N/A	N/A	-
339100 Medical Equipment and Supplies Manufacturing	117	112	-4.27%
423450 Medical Equipment Merchant Wholesalers	114	169	48.25%
423460 Ophthalmic Goods Merchant Wholesalers	15	36	140.00%
424210 Druggists' Goods Merchant Wholesalers	19	54	184.21%
446110 Pharmacies and Drug Stores	740	787	6.35%
446130 Optical Goods Stores	122	215	76.23%
524114 Direct Health and Medical Insurance	30	247	723.33%
525120 Health and Welfare Funds	N/A	N/A	-
532291 Home Health Equipment Rental	N/A	N/A	-
541380 Testing Laboratories	79	143	81.01%
541710 Physical, Engineering and Biological Research	614	604	-1.63%
813212 Voluntary Health Organizations	38	51	34.21%
Total Health Care Support Sector	3,272	3,628	10.88%

Source: U.S. Bureau of Labor Statistics - Quarterly Census of Employment and Wages; Census Bureau - County Business Patterns

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.¹ However, the overall rate of growth was 10.88%, which is less than the 15.98% 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 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.

¹ 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. Census Bureau.

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Table 3.2: Growth of Healthcare Industry Cluster Employment, 2003 to 2012

	2003	2012	Growth
Primary Healthcare	16,632	19,289	15.98%
Healthcare Support	3,272	3,628	10.90%
Non-employer Healthcare Businesses	696	848	21.84%
Total Healthcare Industry Cluster	20,600	23,765	15.37%

Source: U.S. Bureau of Labor Statistics - Quarterly Census of Employment and Wages; Census Bureau - County Business Patterns, Nonemployer Businesses

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 primary healthcare industries. As seen in Table 3.2 total healthcare cluster employment grew from an estimated 20,600 in Lincoln in 2003 to an estimated 23,765 in 2012. This was an aggregate growth rate of 15.37% during the 10-year period, which is 1.5% annual growth.

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 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 thirteen such businesses in the Lincoln MSA with an estimated aggregate employment of 2,811 in 2012. Including employment in these individual healthcare support businesses, there was an estimated 26,576 jobs in the healthcare cluster in the Lincoln MSA in 2012, 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 2012.

Table 3.3: Employment Estimate for Full Healthcare Cluster 2012

	2012
Cluster Employment	26,576

Source: selectlincoln.org; salesgenie.com; manta.com

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 statistical areas (MSAs). These comparison MSAs are Nashville, Raleigh, San Antonio, Sioux Falls², 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, healthcare support industries, and all nonemployer

² Due to data suppression by the Bureau of Labor Statistics and the Census Bureau, Sioux Falls is only used as a comparison MSA for each of the primary healthcare industries.

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businesses in the primary healthcare industries. In other words, it includes most employment in the healthcare cluster.³

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 that industry's share of national employment. Location quotient estimates are provided in Table 4.1 for the healthcare industry cluster.

The Lincoln MSA's location quotient for the healthcare industry cluster is slightly greater than 1. This implies that the healthcare industry cluster is a slightly larger share of the Lincoln economy than 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, and it is a small exporter of healthcare services to other metropolitan or rural areas. This is also the case in San Antonio and Louisville, but to a lesser extent. On the other hand, the location quotients for Nashville, Raleigh, and Tulsa are slightly less than 1. This means that the healthcare industry cluster is a smaller share of these economies than it is of the national economy. Lincoln's location quotient is greater than the location quotients of all the comparison metropolitan areas. This implies that the healthcare industry cluster is more heavily concentrated in Lincoln than it is elsewhere.

Table 4.1: Healthcare Industry Cluster Location Quotients, 2012

Lincoln	1.098
Nashville	0.987
Raleigh	0.889
San Antonio	1.063
Tulsa	0.964
Louisville	1.040

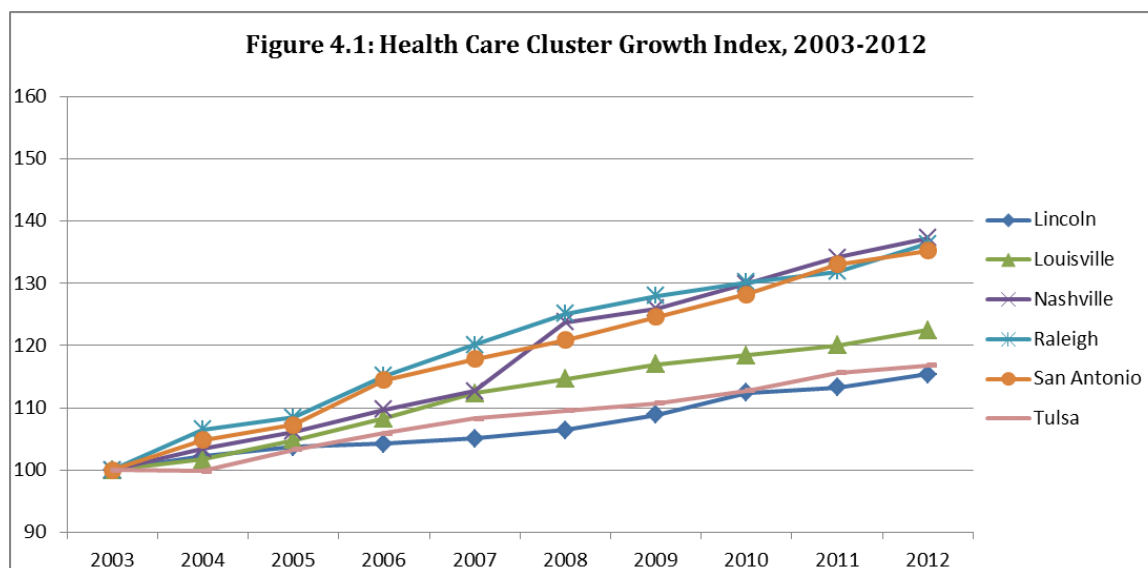
Source: U.S. Bureau of Labor Statistics - Quarterly Census of Employment and Wages; Census Bureau - Community Business Patterns, Nonemployer Businesses

We also are interested in the relative rate of growth in healthcare employment in Lincoln and in the comparison metropolitan areas. In Figure 4.1, we calculated an index for employment growth in the healthcare industry cluster for the 2003 to 2012 period. In the index, employment in all years is divided by 2003 employment and multiplied by 100. Thus, the index starts at the value of 100 for all metropolitan areas in 2003, and over time the index shows the cumulative growth in employment in each metropolitan area.

³ 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 2012 but do not have that information for other metropolitan areas or for other years.

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As was noted in Chapter 3, Lincoln enjoyed solid growth in healthcare industry cluster employment during the 2003 to 2012 period. But, as is evident in Figure 4.1, employment growth in Lincoln's healthcare industry cluster lagged behind that of the comparison metropolitan areas. Cluster employment grew significantly more in Nashville, Raleigh, and San Antonio than it did in Lincoln. In fact, the only comparison metropolitan area exhibiting similar growth to that of Lincoln is Tulsa. While fifteen percent growth over a decade is significant, other metropolitan areas experienced even greater growth in healthcare industry cluster employment.



Source: Bureau of Labor Statistics – Quarterly Census of Employment and Wages; Census Bureau – Community Business Patterns, Nonemployer Businesses

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 2003 and 2012. Data on the number of healthcare establishments in Lincoln and comparison metropolitan areas are in Appendix 3.

Table 4.2: Healthcare Industry Cluster Jobs by Metro Area, 2003-2012

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Lincoln	20,600	21,041	21,367	21,465	21,643	21,926	22,425	23,151	23,331	23,765
Louisville	71,711	72,897	75,173	77,661	80,551	82,169	83,909	84,919	86,105	87,851
Nashville	77,278	79,889	82,058	84,784	87,071	95,631	97,335	100,388	103,662	106,083
Raleigh	45,782	48,736	49,653	52,721	54,986	57,268	58,600	59,597	60,385	62,418
San Antonio	91,643	96,073	98,294	104,880	107,967	110,794	114,160	117,541	121,919	123,936
Tulsa	48,261	48,165	49,824	51,115	52,253	52,844	53,446	54,404	55,788	56,389

Source: Bureau of Labor Statistics - QCEW; Census Bureau - County Business Patterns, Nonemployer Businesses

Removed Des Moines and Sioux Falls due to data suppression by the BLS and Census Bureau

The following sections discuss growth in the four segments of the healthcare industry cluster: ambulatory care, hospitals, nursing and residential care facilities,

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and healthcare support industries. Generally speaking, Lincoln had average job growth in the ambulatory care and health care support industry employment, and relatively rapid growth in nursing and residential care employment.

Segment 1: Ambulatory Care employees

Data in Figure 4.2 shows that, from 2003 to 2012, Lincoln experienced average growth in ambulatory care employment among the comparison metropolitan areas. Ambulatory care employment grew more rapidly in Lincoln than it did in Louisville, Tulsa, and Sioux Falls, while it grew at a slower pace in Lincoln than it did in Nashville, San Antonio, and Raleigh. As was noted in Chapter 2, ambulatory care employment grew by 24% in Lincoln between 2003 and 2012.

Segment 2: Hospital employees

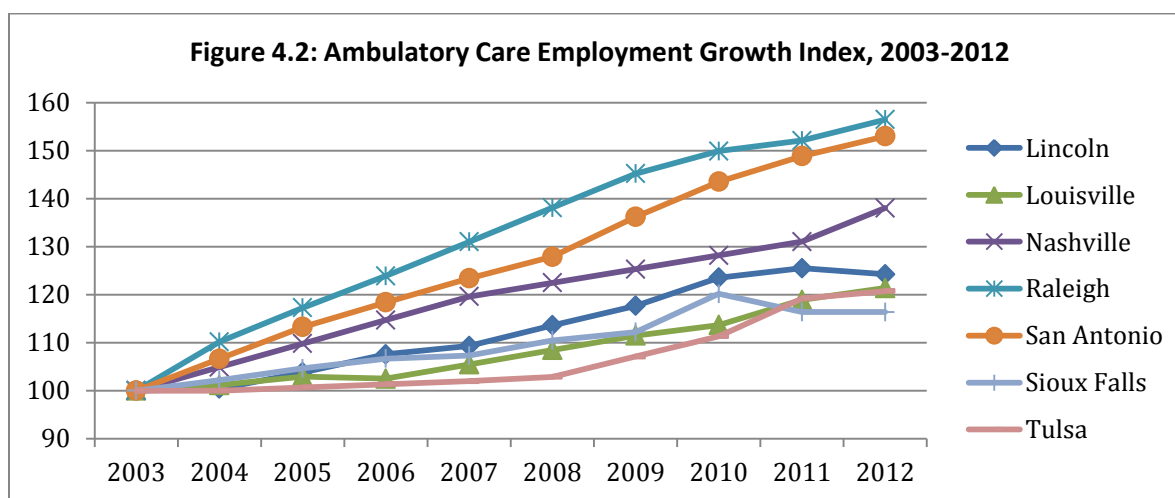
Results in Figure 4.3 show that there were significant differences in growth in hospital employment among the comparison metropolitan areas. Lincoln experienced roughly no growth in hospital employment from 2003 to 2012, while the comparison metropolitan areas exhibited growth rates from five to forty-five percent for the ten year period.

Segment 3: Nursing and Residential Care

Results in Figure 4.4 show that Lincoln tied San Antonio for the fastest rate of growth in nursing and residential care employment from 2003 to 2012. This segment was a clear area of strength for Lincoln.

Segment 4: Healthcare Support Industries

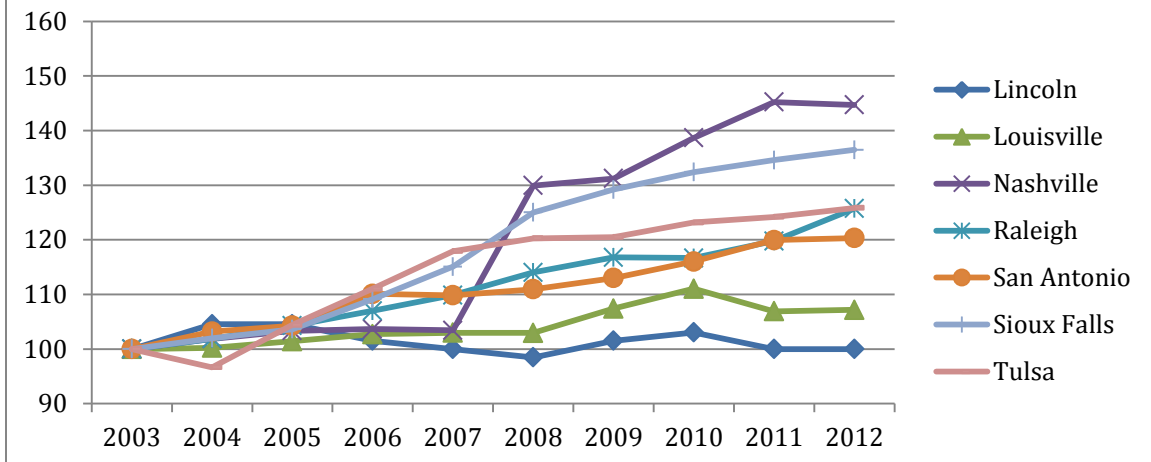
As is evident in Figure 4.5, compared to the other metropolitan areas, Lincoln experienced average growth in healthcare support industries. Lincoln exhibited higher growth than Tulsa and San Antonio, but exhibited less growth than Raleigh, Nashville, and Louisville.



Source: Bureau of Labor Statistics – Quarterly Census of Employment and Wages; Census Bureau – Community Business Patterns, Nonemployer Businesses

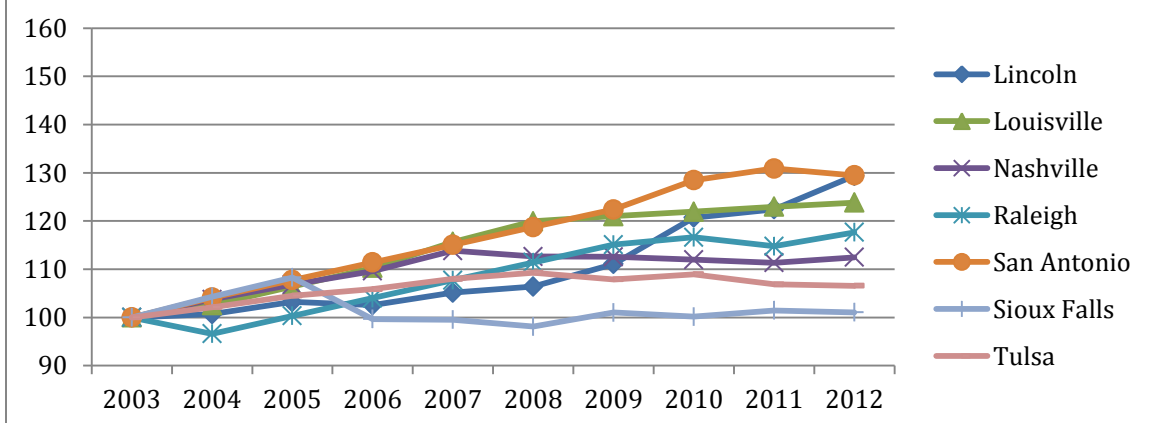
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Figure 4.3: Hospital Employment Growth Index, 2003-2012



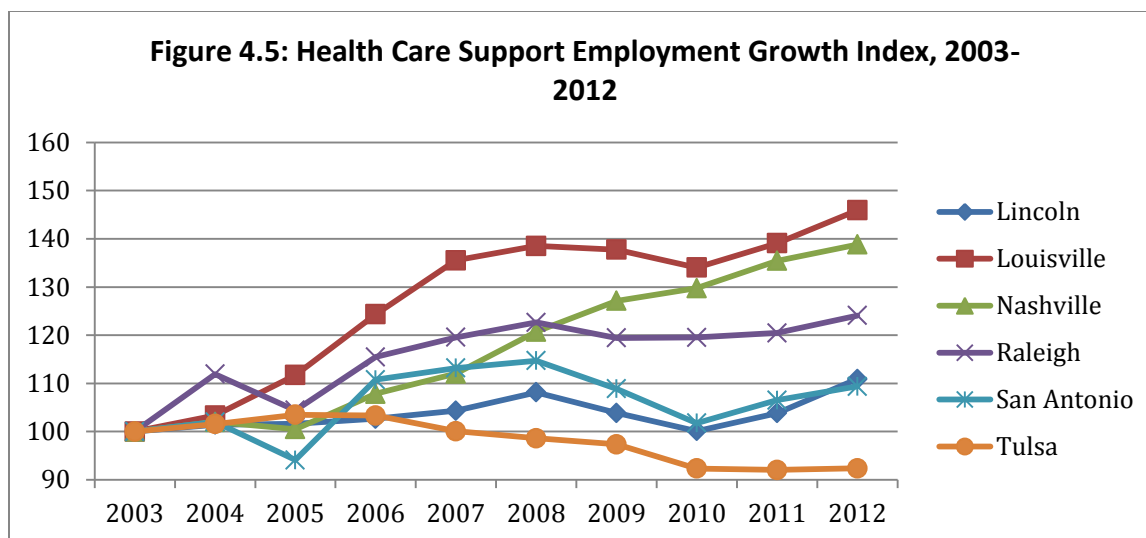
Source: Bureau of Labor Statistics – Quarterly Census of Employment and Wages; Census Bureau – Community Business Patterns, Nonemployer Businesses

Figure 4.4: Nursing and Residential Care Employment Growth Index, 2003-2012



Source: Bureau of Labor Statistics – Quarterly Census of Employment and Wages; Census Bureau – Community Business Patterns, Nonemployer Businesses

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Source: Bureau of Labor Statistics – Quarterly Census of Employment and Wages; Census Bureau – Community Business Patterns, Nonemployer Businesses

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 MSAs. Data was not available on the wages of hospital workers. In comparison to the U.S. average, ambulatory workers in Lincoln earned over \$11,000 more annually than the average worker in the U.S., while nursing and residential care workers in Lincoln earned nearly half national average wage for all industries. These results are noteworthy, however, given that

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the average Lincoln worker across all industries earns less than the average worker in all comparison MSAs and \$10,000 less than the average worker nationally.

Table 5.1: Average Annual Wages of Primary Healthcare Industries in Lincoln and Comparison MSA's, 2012

	Ambulatory	Hospital	Nursing, Res. Care	All Industries
Lincoln	\$61,273	N/A	\$26,459	\$39,013
Louisville	\$57,935	\$54,933	\$28,691	\$44,132
Nashville	\$59,869	\$63,776	\$31,480	\$48,386
Raleigh	\$61,270	\$54,104	\$24,222	\$46,721
San Antonio	N/A	\$49,837	\$27,122	\$42,952
Sioux Falls	\$77,645	N/A	\$24,105	\$41,014
Tulsa	\$56,029	\$48,053	N/A	\$44,857
U.S. Average	\$55,995	\$55,502	\$27,505	\$49,289

Source: Bureau of Labor Statistics - Quarterly Census of Employment and Wages

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, 2012

Occupation	Employment	Mean Hourly Wage
Medical and Health Services Managers	390	\$44.73
Healthcare Practitioners and Technical Occs.	9,630	\$32.46
Other Healthcare Occupations	4,230	\$13.60

Source: Bureau of Labor Statistics - Occupational Employment Statistics

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Table 5.3: Average Annual Salary by Detailed Occupation, Lincoln MSA, 2013

Healthcare - Average Annual Salary, Lincoln MSA, Q4 2013			
Occupation	Annual Salary		
	Entry	Experienced	Mean
TOTAL ALL OCCUPATIONS	\$19,550	\$50,700	\$40,316
MANAGEMENT OCCUPATIONS	\$48,950	\$123,695	\$98,780
Medical and Health Services Managers	\$59,351	\$104,171	\$89,231
HEALTHCARE PRACTITIONERS AND TECHNICAL OCCUPATIONS	\$35,224	\$83,142	\$67,170
Physical Therapists	\$57,843	\$87,369	\$77,527
Radiation Therapists	\$48,438	\$86,938	\$74,104
Medical and Clinical Laboratory Technologists	\$41,841	\$60,734	\$54,437
Medical and Clinical Laboratory Technicians	\$26,471	\$40,082	\$35,544
Dental Hygienists	\$50,627	\$72,314	\$65,085
Licensed Practical and Licensed Vocational Nurses	\$33,336	\$41,690	\$38,905
Medical Record and Health Information Technicians	\$25,959	\$41,875	\$36,569
HEALTHCARE SUPPORT OCCUPATIONS	\$21,059	\$30,514	\$27,362
Home Health Aids	\$19,823	\$27,088	\$24,666
Nursing Assistants	\$21,185	\$26,454	\$24,698
Physical Therapy Assistants	\$39,848	\$56,963	\$51,258
Dental Assistants	\$25,789	\$36,340	\$32,823
Medical Assistants	\$23,500	\$32,696	\$29,630
Medical Transcriptionists	\$26,160	\$35,820	\$32,600
Source: https://neworks.nebraska.gov/HistoricalDataAnalysis:Emp.andWageData,OccupationData,OccupationalWageRates(OES)			

Results in Table 5.3 emphasized that wages vary widely between the broad occupational categories within the healthcare practitioners and technical 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 2012 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.

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

Associate's and Bachelor's Degrees Awarded (School Year 2012-13)	Concordia University	Doane College	Kaplan Uni. ^B	Nebraska Wesleyan Uni.	Myotherapy Institute ^A	Southeast Comm. College ^A	Union College	Bryan LGH College ^A	UNL	UNMC Lincoln Campus	Total
Athletic Training/Trainer					8					17	25
Biochemistry			14		8					64	86
*Biology/Biological Sciences, General		22	25		33			5	120		205
Biomedical/Medical Engineer									30		30
*Cardiovascular Technology										11	11
Chemical Engineer									29		29
Chemistry, General		3						2	14		19
Clinical/Medical Laboratory Technician							14				14
Clinical/Medical Social Work							56				56
Dental Hygiene										24	24
Dental Assisting/Assistant							27				27
Diag. Med. Sonography/Sonographer & Ultrasnd. Tech.										5	5
Foods, Nutrition and Wellness Studies, General									153		153
*Health Care Administration/Management				6			11				17
Health Professions and Related Clinical Sciences, Other			7								7
Health Services/Allied Health/Health Science, General								12		14	26
International Public Health/International Health								8			8
Licensed Practical/Vocational Nurse Training							106				106
Kinesiology and Exercise Science		11			23			3			37
Massage Therapy/Therapeutic Massage						24					24
Medical/Clinical Assistant				24			32				56
Med. Radiologic Tech./Science-Radiation Therapist							30				30
Nursing/Registered Nurse (RN, ASN, BSN, MSN)			14	39	55		54	31		95	288
Pharmacy Technician/Assistant							3				3
*Physical Therapy Technician/Assistant							17				17
Respiratory Care Therapy/Therapist							35				35
Speech-Language Pathology/Pathologist								64			64
Surgical Technology/Technologist							17				17
Total	36	60	69	127	24	402	61	491	125	24	1419
A: Associates Degrees; B: Associates and Bachelors Degrees											
* - New addition to table											
Removed (due to lack of data or category reorganization): Clinical Laboratory Science, Technology Technologist, Community Health Services/Liason/Counseling, Nursing Administration, Nutrition Sciences, Pre-Dentistry, Pre-Pharmacy											
Source: http://nces.ed.gov/collegenavigator/											

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Graduate Degrees (M.A. & Ph.D.) Awarded	<i>Bryan LGH College</i>	<i>Doane College</i>	<i>Nebraska Wesleyan Uni.</i>	<i>UNL</i>	<i>Union College</i>	<i>UNMC Lincoln Campus</i>	Total
Audiology/Audiologist and Hearing Sciences				8			8
Aud./Audiolgst. & Speech-Lang. Path./Pathologist				43			43
Biochemistry				4			4
Biomedical Sciences, General				3			3
Chemical Engineering				4			4
Chemistry, General				21			21
Counseling Psychology		45					45
Dentistry						45	45
Engineering Mechanics				5			5
Environmental/Environmental Health Eng.				6			6
Foods, Nutrition, & Wellness Studies, General				24			24
Mechanical Engineering				21			21
*Nurse Anesthetist	15						15
Nutrition Sciences				5			5
Nursing Administration (MSN, MS, PhD)			20				20
Physics, General				11			11
Physician Assistant					26		26
Toxicology				1			1
Total	15	45	20	156	26	45	307
* - New addition to table							
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 San Antonio, and are within \$2.75 of wages in Nashville and Louisville. Among healthcare practitioners, wages are above those in Nashville, Sioux Falls, and Tulsa, but are \$0.50 to \$2.25 below wages in the other metropolitan areas. Wages for other healthcare occupations are relatively high in the Lincoln MSA, outpacing all comparison MSAs and just below the national average.

Table 5.5: Mean Hourly Wages by Healthcare Occupation and Metropolitan Area, 2012

	Medical and Health Services Managers	Healthcare Practitioners	Other Healthcare Occupations
Lincoln	\$44.73	\$32.46	\$13.60
Louisville	\$45.88	\$32.73	\$13.50
Nashville	\$47.38	\$32.02	\$13.23
Raleigh	\$53.83	\$34.75	\$13.33
San Antonio	\$44.14	\$34.19	\$12.75
Sioux Falls	\$48.02	\$31.29	\$12.84
Tulsa	\$39.59	\$31.45	\$12.69
U.S. Average	\$48.72	\$35.93	\$13.61

Source: Bureau of Labor Statistics - Occupational Employment 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 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 3,165 jobs in the Lincoln MSA between 2003 and 2012. This amounted to a 15.37% rate of growth. While substantial, this growth is relatively in line with overall employment growth in the Lincoln MSA, as the share of employment belonging to the healthcare cluster only increased from 10% to 11% over the decade. This increase in share was buoyed by job losses in other sectors during the 2008 recession. Total healthcare cluster employment reached 26,576 by 2012.

Among industry sectors, ambulatory care facilities such as physician's offices accounted for the most employment in 2012, closely followed by hospitals and by nursing and residential care facilities. However, nursing and residential care was the fastest-growing sector between 2003 and 2012. Healthcare support industries that supply equipment, medicines, research, and insurance services to the healthcare industry or its customers created 356 jobs between 2003 and 2012.

By 2012, Lincoln had an 18% higher share of hospital employment and a 51% higher share of nursing and residential 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.

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Appendix 1

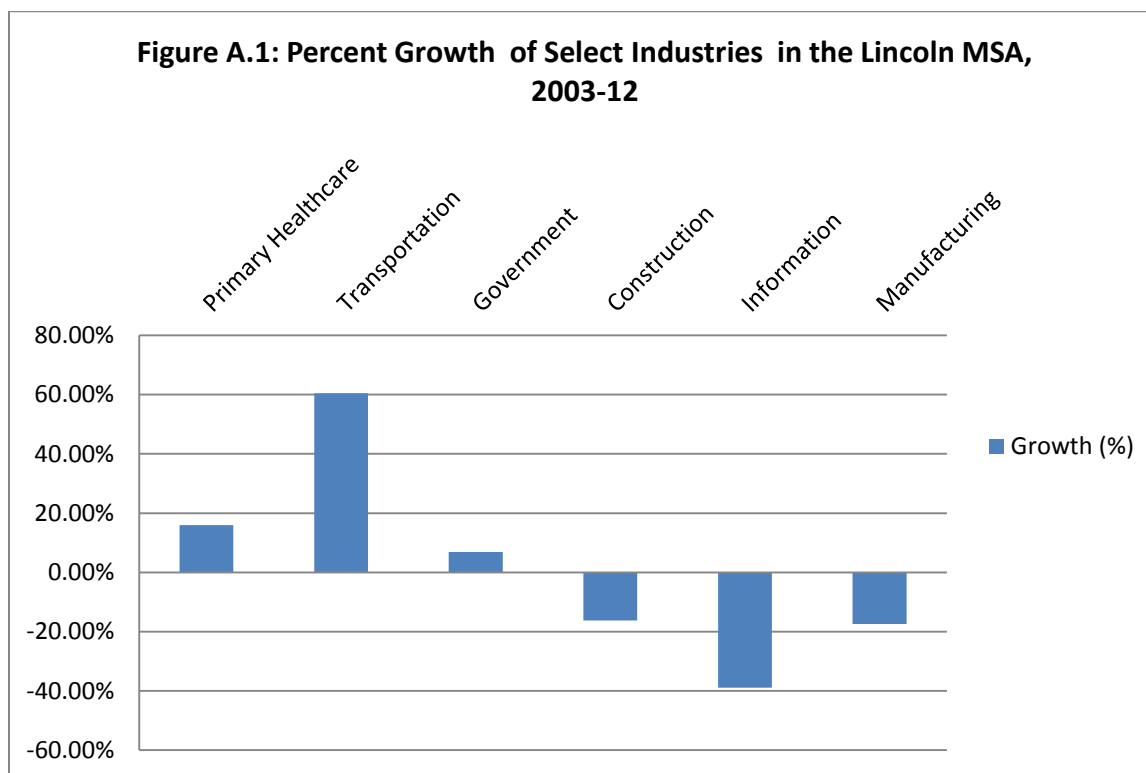
Relative Growth of Primary Healthcare Employment in Lincoln MSA

Compared to other industries in the Lincoln MSA, primary healthcare industries fared quite well between 2003 and 2012, with an increase of 15.98% in total jobs. That increase was greater than all selected industries except transportation.

Table A1.1: Percent Growth of select industries in the Lincoln MSA, 2003-12

Industry	Jobs, 2003	Jobs, 2012	Change
Primary Healthcare	16,632	19,289	15.98%
Transportation	5,542	8,895	60.50%
Government	36,300	38,800	6.89%
Construction	8,600	7,200	-16.28%
Information	3,470	2,120	-38.90%
Manufacturing	16,172	13,362	-17.38%

Source: Bureau of Labor Statistics - Quarterly Census of Employment and Wages, Current Employment Statistics



Source: Bureau of Labor Statistics - Quarterly Census of Employment and Wages, Current Employment Statistics

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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 industries. In particular, results are provided for 6 sub-segments within ambulatory care and 2 sub-segments within nursing and residential care facilities.

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 also exhibited double the national rate of growth of nursing and residential care facilities, even though home health care services grew much less in Lincoln than it they did nationwide.

Table A2.1: National and Lincoln MSA Primary Healthcare Employment, 2003-2012

	Lincoln MSA				United States			
	2003	2012	Change	% Change	2003	2012	Change	% Change
Ambulatory Care	5635	7001	1366	24.2%	4,783,403	6,300,626	1,517,223	31.7%
Offices of Dentists	815	980	165	20.2%	744,245	851,794	107,549	14.5%
Offices of Oth. Practitioners	497	974	477	96.0%	505,735	724,355	218,620	43.2%
Offices of Chiropractors	115	252	137	119.1%	108,700	123,640	14,940	13.7%
Offices of Podiatrists	22	37	15	68.2%	32,506	35,733	3,227	9.9%
Other Outpatient Centers	303	342	39	12.9%	262,515	435,555	173,040	65.9%
Medical and Diagn. Labs.	425	395	-30	-7.1%	179,717	236,028	56,311	31.3%
Nursing and Res. Facilities	4397	5688	1291	29.4%	2,776,466	3,186,324	409,858	14.8%
Home Health Care Services	512	554	42	8.2%	723,604	1,186,670	463,066	64.0%

Source: Bureau of Labor Statistics - Quarterly Census of Employment and Wages

Removed: "Other Residential Facilities"

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Appendix 3 Primary Healthcare Establishments Counts

Primary healthcare establishments make up roughly the same share of total establishments in Lincoln as they do in Louisville, Nashville, and Raleigh. Also, the share of establishments in Lincoln belonging to these industries exceeds that of Sioux Falls and falls short of that of San Antonio and Tulsa.

Table A3.1: Primary Healthcare Establishments of Comparison Metro Areas as a Percent of all Industry Establishments, 2012

	All Industries	Healthcare	Percent
Lincoln	9,761	729	7.47%
Louisville	33,880	2,512	7.41%
Nashville	37,588	2,814	7.49%
Raleigh	34,046	2,414	7.09%
San Antonio	44,021	4,120	9.36%
Sioux Falls	8,637	511	5.92%
Tulsa	26,141	2,783	10.65%

Source: Bureau of Labor Statistics - Quarterly Census of Employment and Wages