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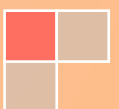
The Health Care Industry in the Nashville MSA: Its Scope and Impact on the Regional Economy

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THE HEALTH CARE INDUSTRY IN THE NASHVILLE MSA*: EXECUTIVE SUMMARY

Executive Summary

Health care is a growth industry that is relatively immune to economic cycles. Over the years, the health care sector has been driving employment growth in the national economy, and considering such factors as the health care worker shortage across the United States along with an increasingly aging population, it is likely that this trend will continue.

Amid overall growth in the health care sector throughout the United States, Nashville provides a unique example of a hub of the national health care industry. More than 56 major health care companies (public and private) have chosen Nashville as their home, and seven of the nation's 12 leading for-profit acute care hospital companies are located in Nashville, controlling more than one-third of the investor-owned hospitals in the United States.

The scope of the health care industry in Nashville ranges from basic-service providers such as physicians to major hospital management companies, large renal dialysis companies, health information technology, and advanced life sciences research. This study presents two views of Nashville's health care industry: (1) the core health care industry, defined as ambulatory services, hospitals, and nursing and residential care facilities that provide care in the Nashville MSA*, and (2) the health care industry cluster, which encompasses the core health care industry and other related health care industries such as health care management companies, life sciences research, and professional services firms that operate on a local, national, or international basis. Also included in this study is a profile of Nashville Health Care Council (NHCC) member companies and the NHCC member *CEO Confidence Survey*.

Overview of the Core Health Care Industry

The concept of the core health care industry refers to health care services classified as such under the NAICS (North American Industrial Classification System): 621 (Ambulatory Services), 622 (Hospitals), and 623 (Nursing and Residential Care Facilities).

Nation

- **By 2018, one in every six new jobs** in the nation will be in health care, and the resulting 2.8 million additional workers will be spread throughout this large and diverse sector from health care practitioners' offices, outpatient clinics, and hospitals to nursing and residential care facilities.
- **A total of 19.4 percent of the gross domestic product (GDP)** is projected to be health care expenditures in 2019, up from 16.2 percent in 2008.

Tennessee

- **One in every seven new jobs** in Tennessee is projected to be in health care by 2016.

Nashville MSA

- **For every 100 nonfarm jobs created, 26 were in the health care sector** between 2004 and 2008.
- **One in every 12 occupations was a health care occupation in 2008.**

Employment, Establishment, and Wages in the Nashville MSA

- **In 2008, nearly 90,300 people were employed by Nashville's core health care sector**, a more than 22 percent increase from 2004.
- Between 2004 and 2008, **a total of 466 new core health care establishments emerged** in Nashville, bringing the total to 2,703, up 9 percent from 2004.
- **Wages totaling \$4.7 billion were paid in 2008** by the core health care industry in the Nashville MSA, up 44 percent from 2004.
- The **average wage for health care occupations is \$62,010**, significantly higher than Nashville's average annual wage of \$39,280.

Core Health Care Spending in the Nashville MSA

- **More than 70 percent of core health care spending** goes to individuals as either payroll or proprietary income in the Nashville MSA, increasing the purchasing power of many people in the region.

Overview of the Nashville Health Care Industry Cluster

The greater health care industry cluster in Nashville encompasses the core health care industry and other related health care industries such as health care management companies, life sciences research, and professional services firms that operate on a local, national, or international basis.

Nashville-Based Health Care Headquarter Companies

- **In 2008, 17 publicly traded health care companies headquartered in Nashville** had combined worldwide employment of more than 145,000 and revenue of nearly \$26 billion.
- **In 2008**, the 22 Nashville-based public and private investor-owned health care management companies accounted for more than **\$61 billion in revenue and over 375,000 jobs globally.**

Health Care Industry Cluster Employment and Office Space

- **In 2008, the health care industry cluster directly employed 113,453 people in the Nashville MSA, up 20.3 percent from 2004,** making the health care industry cluster the largest employer in the region.
- **Fifteen of every 100 nonfarm employees** in the Nashville MSA were in health care.
- **Seventy-nine percent of Nashville health care industry cluster employment** was in the core health care industry.
- In 2008, the Nashville health care industry cluster occupied **31 million square feet of office space, 16.4 percent of Nashville's total office and industrial space.**

Employment Impact

- In 2008, the health care industry cluster in the Nashville MSA accounted for **211,059 jobs (direct, indirect, and induced), up 36.4 percent from 2004.**
- This accounts for **8 percent of Tennessee's and 28 percent of the Nashville MSA's nonfarm employment** in 2008.
- **Every 100 industry cluster jobs create an additional 86 jobs** in the Nashville economy.
- The Nashville health care industry cluster includes nearly **3,582 establishments, up 9 percent from 2004.**

Personal Income Impact

- The Nashville health care industry cluster generated **\$13.4 billion (direct, indirect, and induced) in personal income** in 2008, up 59 percent from 2004.
- **Every \$100 of personal income generated an additional \$39** in the local economy.
- Nashville health care industry cluster direct personal income was \$6 billion.
- This corresponds to nearly 22 percent of the Nashville MSA's total personal income in 2008.

Economic Impact

- The health care industry cluster in the Nashville MSA created **\$29.2 billion (direct, indirect, and induced) in business revenues in 2008, an increase of 60 percent from 2004.**
- **Of this total, \$16.8 billion was directly** injected into the economy.
- **Every \$100 of health care cluster spending generates an additional \$74** in business revenues.
- The Nashville health care industry cluster accounted for **an estimated \$1.2 billion in state and local taxes in 2008.**

Health Care Financial Infrastructure Access to Capital

- Nashville ranks first among a comparison of 13 MSAs in terms of **number of major health care industry cluster management companies** (both public and private), their revenues, and their employment.
- Nashville also ranks first in terms of business climate and **relative health care competitiveness**.

Nashville Health Care Council (NHCC) Member Companies

More than 149 NHCC member companies were surveyed and profiled in order to gain an up-to-date and accurate picture of NHCC membership.

NHCC Member Impact on the Nashville MSA

- **In 2009, NHCC member companies employed nearly 70,000 people** in the Nashville MSA, up 69.7 percent from 2005.
- Total Nashville-based **payroll of NHCC member companies is \$4.9 billion, an increase of 36 percent from 2005.**
- **The average annual wage per employee is \$70,015**, substantially higher than the average nonfarm wage in the Nashville MSA.

NHCC Member Office Space

- NHCC member companies in the Nashville MSA occupied **11 million square feet of office space** in 2009.

NHCC Member Nashville-Based Sales

- NHCC member companies generated **an estimated \$37.8 billion in Nashville-based sales** in 2009, an increase of more than 100 percent from 2005.

NHCC Members' Global Impact

- NHCC member companies **employed 374,111 people** globally with a total **revenue of \$131 billion.**

* This study is a detailed analysis of the Nashville MSA, which includes Cannon, Cheatham, Davidson, Dickson, Hickman, Macon, Robertson, Rutherford, Smith, Sumner, Trousdale, Wilson, and Williamson counties.

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I. INTRODUCTION

Health care is a growth industry that is relatively immune to economic cycles. The health care sector has been the only sector consistently adding jobs throughout the recent economic crisis. Historical employment data and recent Bureau of Labor Statistics (BLS, www.bls.gov) surveys indicate that the basic health care services sector is driving employment growth in the national economy. Considering the health care worker shortage across the United States, it is likely that this growth trend will continue. Moreover, the baby boomer generation is expected to increase the demand for health care services over the years, further increasing the demand for health care workers. In fact, population projections (www.census.gov) suggest that the share of seniors (65+) in total population will increase to nearly 20 percent by 2030, up from about 13 percent in 2010.

Amid overall growth in the health care sector throughout the United States, Nashville provides a unique example of a national health care industry hub. More than 56 major health care companies (public and private) have chosen Nashville as their home, and seven of the nation's 12 leading for-profit acute care hospital companies are located in Nashville, controlling more than one-third of investor-owned hospitals in the United States.¹

The scope of the health care industry in Nashville ranges from basic service providers such as physicians to advanced life sciences research companies. This study presents two views of Nashville's health care industry: (1) the core health care industry, defined as ambulatory services, hospitals, and nursing and residential care facilities, and (2) the health care industry cluster, which encompasses the core health care industry and other related health care industries, including management companies and health information technology. This approach is necessary

¹ According to the 2009 American Hospital Association survey, the number of investor-owned hospitals is 958. The number of health care companies is extracted from ReferenceUSA and LexisNexis Academic Universe. BERCC included only headquarter companies with over 100 employees and \$500,000 annual revenues in these estimates. These companies are part of the broadly defined Nashville health care industry cluster.



because the presence and quality of both components profoundly affect a region's economic status.²

Through a variety of methods, this study examines the reasons Nashville has become a salient locus in the national health care industry and analyzes the trends and scope of the core health care industry in Nashville from a comparative perspective. In addition, it provides a detailed assessment of the economic impact of the health care industry cluster on the regional economy. Furthermore, it provides a benchmarking initiative that compares Nashville with 12 peer Metropolitan Statistical Areas (MSAs) using a host of selected health care-related indicators. Finally, the study profiles the member companies of the Nashville Health Care Council (NHCC) and presents the results of a *CEO Confidence Survey*. This study is a detailed analysis of the Nashville MSA, which includes Cannon, Cheatham, Davidson, Dickson, Hickman, Macon, Robertson, Rutherford, Smith, Sumner, Trousdale, Wilson, and Williamson counties. Wherever Nashville is mentioned in the study, it refers to the entire Nashville MSA. From a variety of sources, these data allow the Business and Economic Research Center (BERC) at Middle Tennessee State University to accurately determine the reasons Nashville has become a focal point in the national health care industry, assess the relationship between the health care industry and other sectors of the regional economy, and address other questions concerning Nashville's health care industry.

The rest of this study is organized as follows. Chapter two presents an overview of trends in the core health care industry—comprising ambulatory services, hospitals, and nursing and residential care facilities—in the nation, Tennessee, and the Nashville MSA. This chapter also compares trends in the core health care industry across these three geographical units. Chapter three briefly details the study's goals and methodology. Chapter four puts trends in the core health care industry in the Nashville MSA under close scrutiny, exploring various aspects and growth dynamics of this industry. Chapter five adopts a broader view of the health care industry and assesses the scope, size, and impact of the health care industry cluster on Nashville's economy. Furthermore, this chapter highlights the importance of publicly traded health care management companies in Nashville's economy. Chapter six compares Nashville's core health care industry with that of 12 of

² Quality of health care providers is closely related to the quality of life in a region. Similarly, the presence and quality of health care-related industries are considered crucial to a region's business infrastructure.



its peer MSAs. Chapter seven profiles Nashville Health Care Council member companies and presents the results of the *CEO Confidence Survey*. Chapter eight concludes the study. The last chapter provides survey material and technical information on various study components.



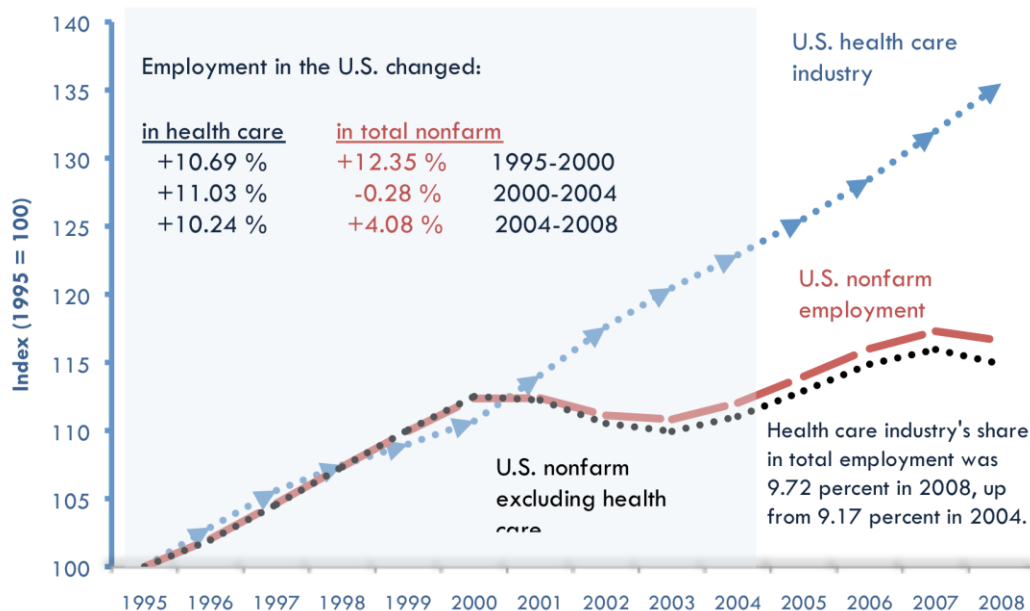
II. OVERVIEW OF THE CORE HEALTH CARE INDUSTRY

The concept of the core health care industry refers to health care service providers classified as such under the NAICS (North American Industrial Classification System): 621 (Ambulatory Services), 622 (Hospitals), and 623 (Nursing and Residential Care Facilities).¹

II.1. National Trends

Regarding national trends, increasing demand for health care services by the retiring baby boomer generation likely will fuel further growth in core health care industry employment. According to Census Bureau population projections, the percent of people over age 65 will increase to nearly 20 percent by 2030 from 13 percent in 2010. Nationally, the core health care industry has grown significantly faster than nonfarm employment in the past 13 years.

National Trend in Health Care Employment (1995 = 100)



Source: Bureau of Labor Statistics (www.bls.gov) and BERC calculations

¹ For a detailed analysis, see the methodology section.



Nationally, core health care industry employment grew more than 10 percent between 2004 and 2008, while total nonfarm employment recorded about a 4 percent growth rate. Nonfarm employment excluding health care grew about 3.5 percent in the same period. To give a better perspective on changing employment dynamics in the nation, one in 14 jobs created between 1995 and 2000 was in the health care sector. This has changed dramatically in recent years, as one in 4.35 jobs created between 2004 and 2008 was in the health care sector.²

The growth trend in employment in the health care sector since 2000 is expected to continue through 2018, when core health care industry employment is projected to be the dominant source of employment growth. Health care occupations are projected to add nearly 2.8 million new jobs nationally between 2008 and 2018. In this period, growth in health care occupations is expected to be 24 percent versus 10 percent for all occupations. By 2018, health care occupations' share in total employment is projected to be 8.63 percent, nearly a percentage-point increase from 2008.

Health care occupations will account for one in every six new jobs, and the resulting 2.8 million additional workers will be spread throughout this large and diverse sector from health care practitioners' offices, outpatient clinics, and hospitals to nursing and residential care facilities.³ According to the Bureau of Labor Statistics, seven health care occupations are projected to be in the top 10 fastest-growing occupations in the U.S.

Fastest growing occupations in the U.S., 2008 and projected 2018 (number in thousands)

	Employment		Change	
	2008	2018	Number	Percent
Biomedical engineers	16	28	12	72
Network systems and data communications analysts	292	448	156	53
Home health aides	922	1,383	461	50
Personal and home care aides	817	1,193	376	46
Financial examiners	27	38	11	41
Medical scientists, except epidemiologists	109	154	44	40
Physician assistants	75	104	29	39
Skin care specialists	39	54	15	38
Biochemists and biophysicists	23	32	9	37
Athletic trainers	16	22	6	37

Source: U.S. Department of Labor, Bureau of Labor Statistics (www.bls.gov).

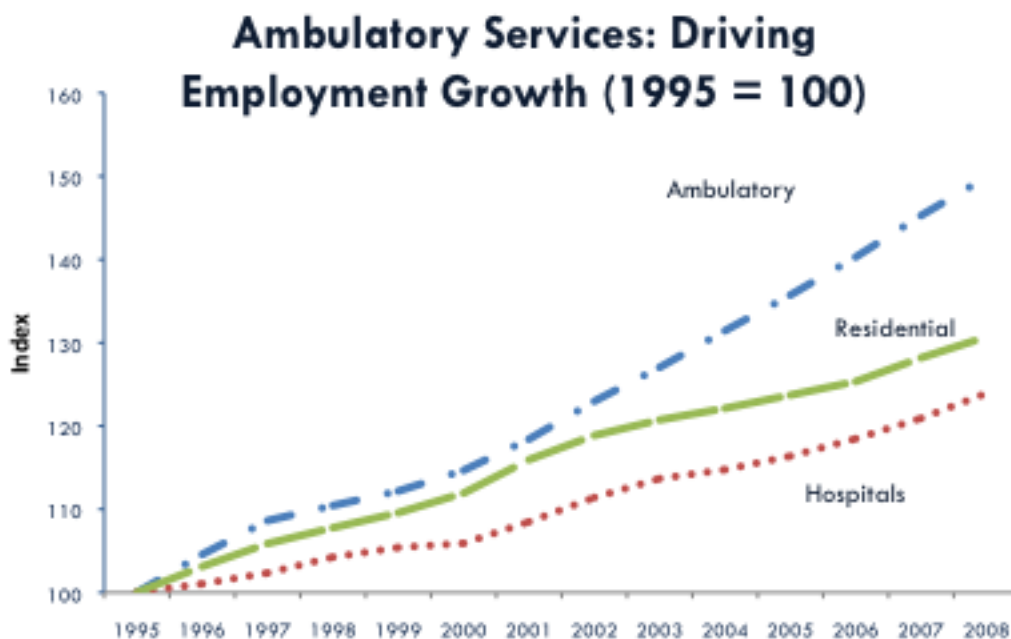
² This section uses the broader "health care and social services" for the Nashville MSA to allow comparison across geographical units. A detailed breakdown of health care services is not publicly available at the Nashville MSA level due to state disclosure rules.

³ Employment projections are from the U.S. Department of Labor, Bureau of Labor Statistics (www.bls.gov). Occupations include (a) health care practitioners and technicians and (b) health care support occupations.



Furthermore, national health care expenditures are expected to reach \$4.7 trillion by 2019, representing nearly 19.4 percent of gross domestic product (GDP), up from 16.2 percent in 2008.⁴

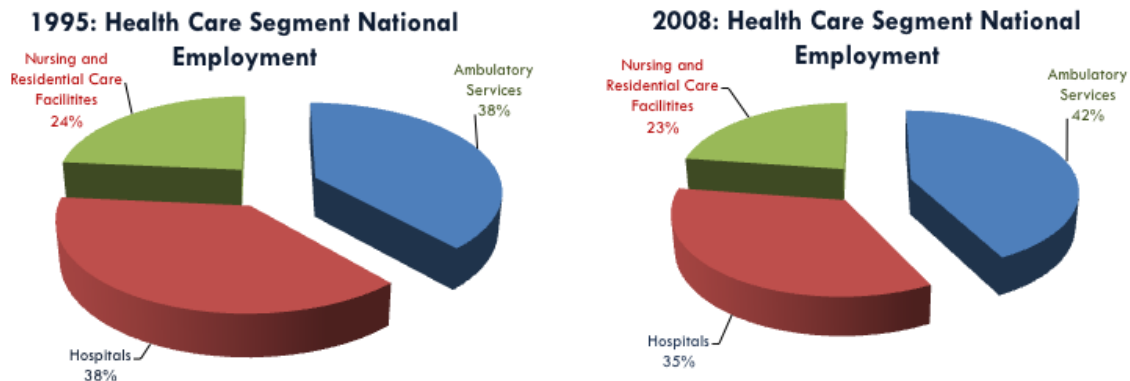
Among national health care sectors, growth in ambulatory services outpaced growth in both nursing care facilities and hospital employment. Hospital and nursing care facilities employment grew 24 percent and 31 percent, respectively, while ambulatory services recorded 50 percent growth between 1995 and 2003.



⁴ Health expenditure projections are from the Center for Medicare and Medicaid Services (www.cms.hhs.gov).



The share of ambulatory services in total national health care employment increased considerably over the past 13 years. For example, ambulatory services accounted for 38 percent of total health care employment, residential care facilities 24 percent, and hospitals 38 percent in 1995. From 1995 to 2008, the share of ambulatory services employment grew (increasing to 42 percent) at the expense of primarily hospital employment, which declined to 35 percent in 2008.



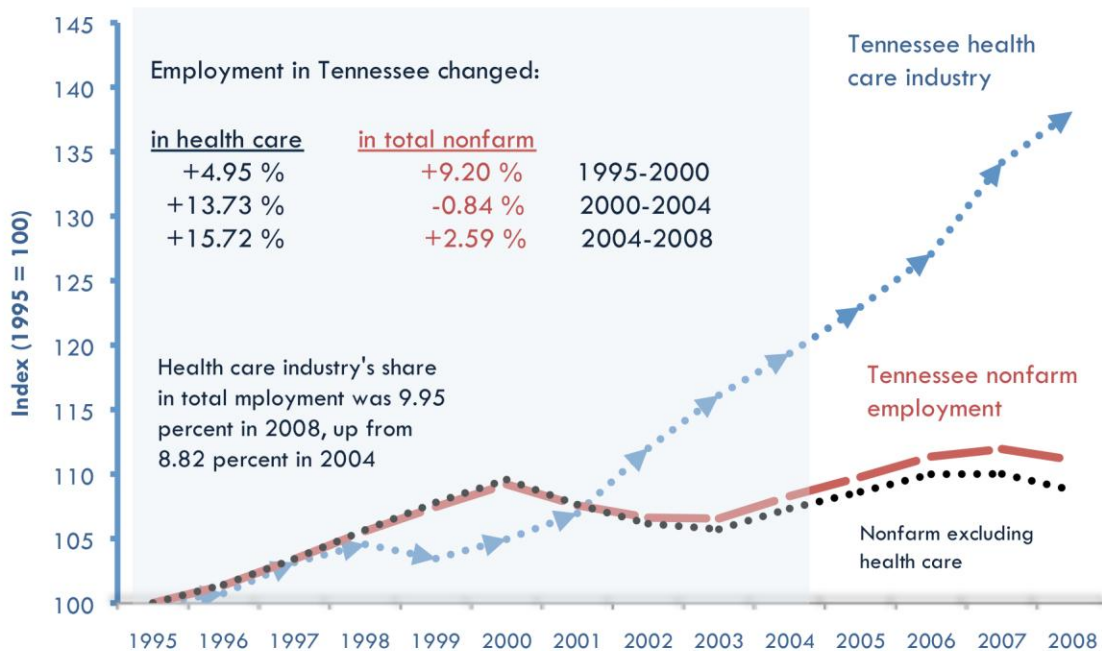
II.2. Trends in Tennessee

Tennessee's health care sector demonstrated significant resilience after a slow growth period between 1995 and 2000. As core health care employment grew nearly 16 percent between 2004 and 2008. In the same period, nonfarm employment grew substantially less, just 2.5 percent.

From a historical perspective, employment growth in Tennessee shows a reversal of trends between total nonfarm and health care employment. From 1995 to 2000, nonfarm employment shows a rigorous growth trend of nearly 10 percent versus a mere 5 percent for health services employment. However, this early growth pattern has changed dramatically. From 2000 to 2004, health services employment grew nearly 14 percent versus nearly a 1 percent decline in total nonfarm. While the growth in health services employment accelerated from 2004 to 2008, increasing nearly 16 percent, total nonfarm employment recorded an increase of only 2.6 percent, which corresponds to an annual average growth rate of 0.7 percent.



Trend in Health Care Employment in Tennessee (1995 = 100)



Source: Bureau of Labor Statistics (www.bls.gov) and BERC calculations

As previously noted, the growing share of seniors in the total population is likely to increase the demand for health care services dramatically, and is projected to increase to 19.21 percent of the population in 2030. According to Census Bureau projections, the share of the population older than 65 years old in Tennessee is expected to increase from 13.30 percent in 2010 to 19.21 percent in 2030.

Although only three out of the 10 fastest growing occupations in Tennessee are in health care, health care occupations are projected to increase 24.29 percent from 2006 to 2016.

Compared to the 12.30 percent growth in all occupations, health care occupations' share in total employment will increase 8.58 percent in 2016, up from 7.75 percent in 2006. Overall, health



care occupations are projected to add 56,980 new jobs, accounting for one in every seven projected jobs between 2006 and 2016.

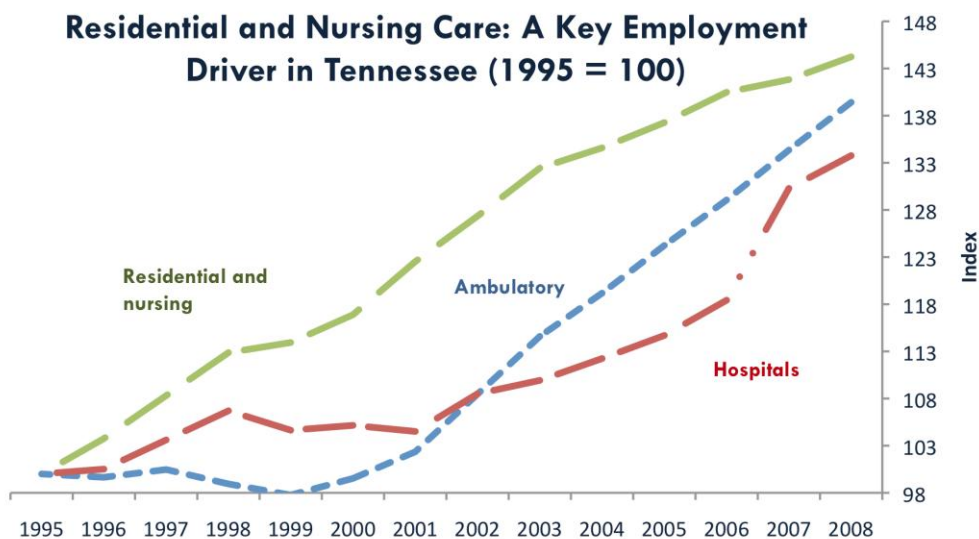
Fastest growing occupations in Tennessee, 2006 and projected 2016*

	Employment		Change	
	2006	2016	Number	Percent
Court reporters	170	300	72	20
Pharmacy technicians	7,970	12,540	57	700
Environmental engineers	900	1,410	56	80
Umpires, referees, and other sports officials	140	220	55	10
Network systems and data communications analysts	2,810	4,340	54	210
Motorboat mechanics	380	590	53	30
Fence erectors	490	730	48	30
Orthotists and prosthetists	230	330	45	10
Home health aides	10,760	15,610	45	580
Animal trainers	730	1,040	43	40

Source: State Occupational Projections at <http://www.projectionscentral.com>.

*State projections are not available for 2008-2018.

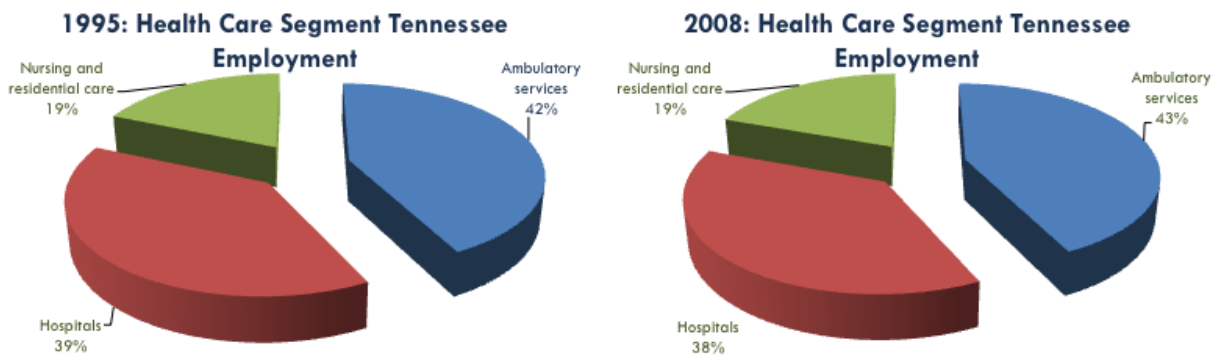
In Tennessee, unlike the U.S. as a whole, the growth in health care employment was primarily driven by residential and nursing care facilities between 1995 and 2008; the nursing care facilities sector grew markedly faster than the other two health care sectors, ambulatory services and hospitals. Nursing care facilities grew more than 44 percent, while ambulatory services recorded a growth rate of 39 percent. Hospitals grew at a much slower pace than the other two health care segments with a growth rate of 34 percent.



Source: Tennessee Department of Labor and Workforce Development and BERC estimates



Even though the residential and nursing home facilities segment has grown faster than the other two health care segments, its share in Tennessee health care employment is still smaller than its national share in total health care employment. Ambulatory services increased its employment share one percentage point from 1995 to 2008 at the expense of hospital employment.



II.3. Trends in the Nashville MSA

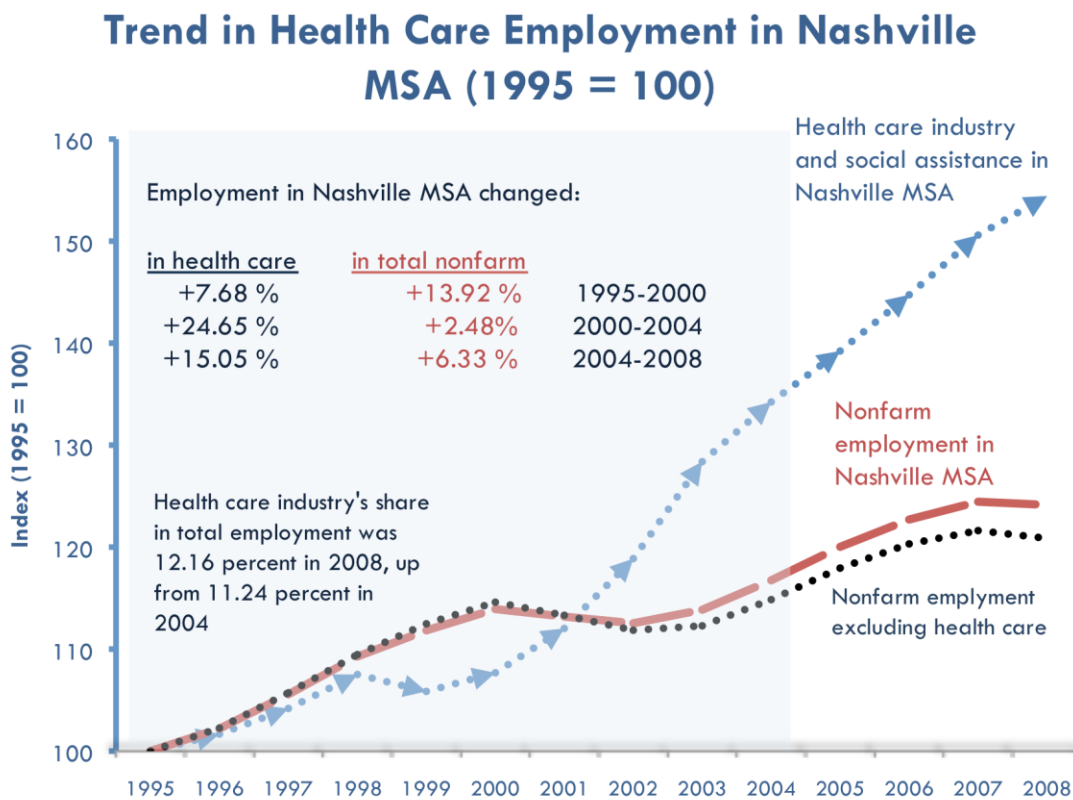
Nashville's health care employment grew faster than total nonfarm employment between 1995 and 2008. While nonfarm employment recorded a 2.5 percent growth rate between 2000 and 2004, Nashville's health care employment recorded a 25 percent growth rate during the same period. Albeit smaller, this growth trend continued between 2004 and 2008 when the nation was moving into its worst recession in recent history. During that period, Nashville's health care sector recorded a 15 percent growth rate.

From a historical perspective, Nashville's health care sector grew 54 percent from 1995 to 2008, adding more than 30,000 jobs. In this period, for every 100 nonfarm jobs, 22 were in health care. The period between 2000 and 2004 was very active for Nashville's health care sector, which added nearly 16,000 jobs; for every 100 nonfarm jobs created during this time, 92 were in the health care sector. Between 2004 and 2008, for every 100 nonfarm jobs, 26 were in the health care sector.



In line with national and state population growth trends, the share of seniors in the adult population in Davidson County is projected to reach 16 percent in 2025, up from 11.94 percent in 2010, further increasing the demand for health care services.⁵

Health care occupations in Nashville represented 8.5 percent of total jobs, or one in every 12 occupations in 2008. In terms of the share of health care sector in total nonfarm employment, one in every eight workers was employed by the health care industry.



Source: Bureau of Labor Statistics (www.bls.gov) and BERC calculations

Unlike the trend in previous periods, the share of nursing care facilities in the Nashville MSA in total nonfarm employment decreased between 2004 and 2008 to 16 percent. Nursing care employment increased about 6 percent from 2004. The increase in hospital and ambulatory

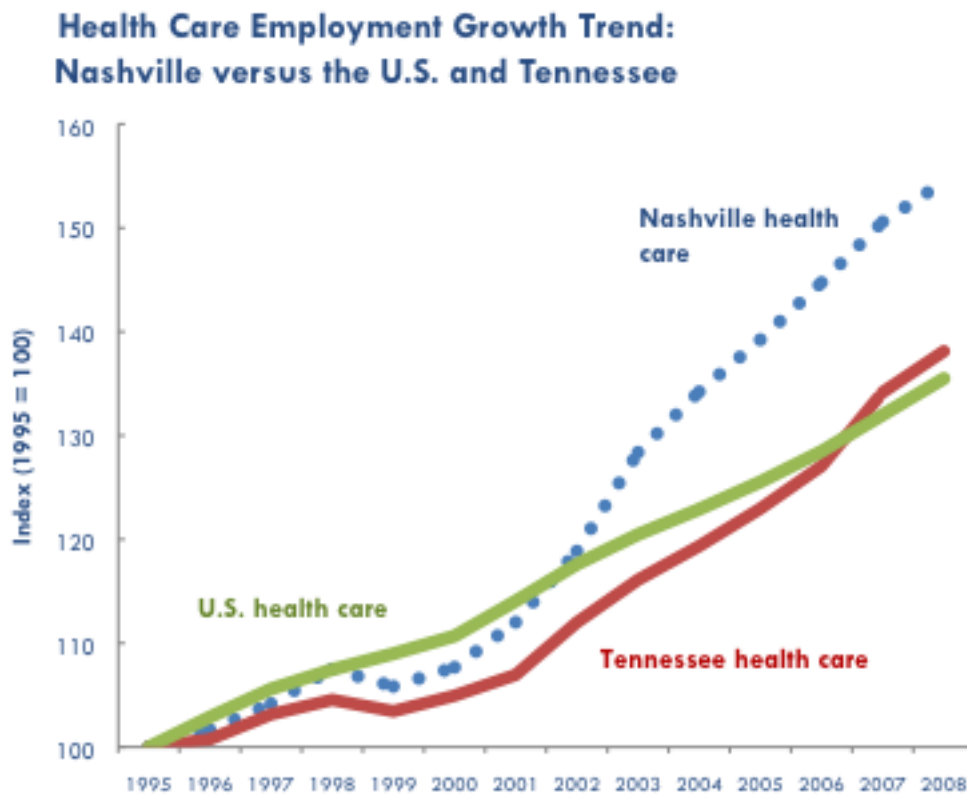
⁵ Data is from TACIR (Tennessee Advisory Commission on Intergovernmental Relations) at www.state.tn.us/tacir/population.htm.



services employment between 2004 and 2008 was remarkable: 27 percent and 21 percent, respectively. Hospitals' share in health care jobs jumped nearly two percentage points to 46 percent in 2008.

II.4. Comparative Perspective on Trends in the Core Health Care Industry

Employment growth in Nashville's core health care industry has been faster than that of national and state health care employment since 2002.

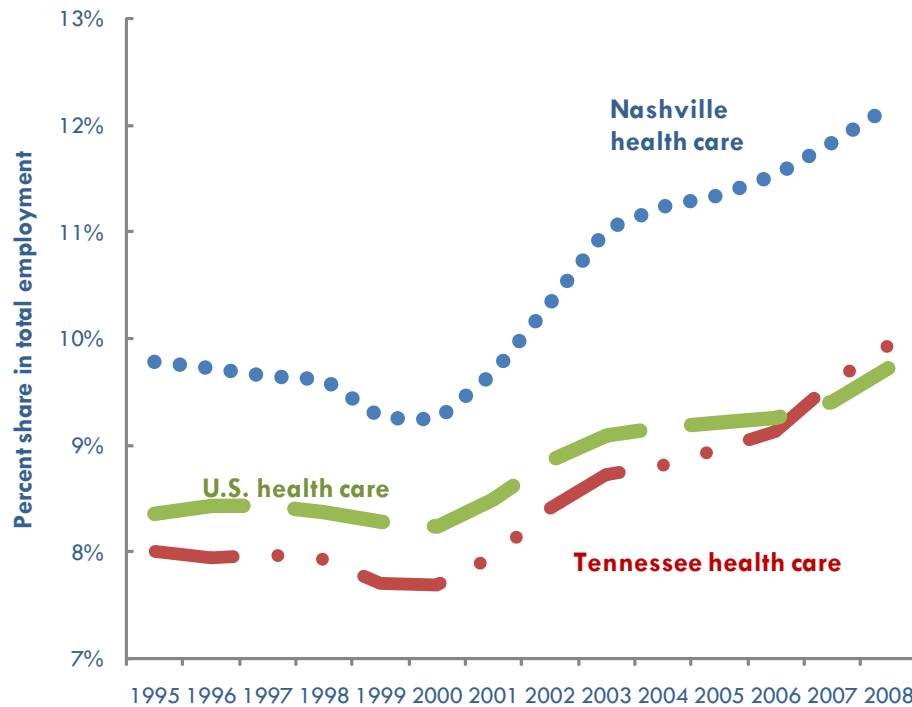


The core health care sector plays a more prominent role in Nashville's economy than in the state and national economies. More than 12 of every 100 Nashville nonfarm jobs in 2008 were core health care jobs. The graph below clearly shows that the employment share of the health care industry substantially increased in Nashville from 2001 to 2008 following a decline in the share of health care employment in total nonfarm employment between 1997 and 2001.



This period coincides with substantial health care spending cuts as a result of the 1997 Balanced Budget Act, which affected Nashville, a national health care industry hub, more than both the state and the nation. However, as the growth trend shows, Nashville recovered and moved forward faster than the U.S. and Tennessee.

Percent Share of Health Care Employment in Total Nonfarm: Nashville versus the U.S. and Tennessee



Source: Tennessee Department of Labor and Workforce Development and BEREC estimates



III. STUDY GOALS AND METHODOLOGY

III.1. Goals of the Study

The goals of this study are sixfold:

- What are the trends, scope, and impact of the core health care industry and health care industry cluster on the regional economy?
- What is the economic significance to the region of health care companies headquartered in Nashville?
- How does Nashville's health care industry compare with the health care industry in 12 of its peer MSAs?
- How does the Nashville MSA rank relative to its 12 peer MSAs in terms of selected health care indicators?
- What is the economic significance of Nashville Health Care Council (NHCC) members on the regional economy?
- What are the expectations of NHCC member company CEOs for the national and local economies?

III.2. A Review of Selected Literature

Given the importance of the health care industry in the national and regional economies, many studies have treated this sector as an engine of growth. According to a recent study, "Economic Contribution of the Healthcare Industry to the City of Seattle (2004)," one in every five jobs in Seattle is tied to the health care sector. Considering the increasing share of national health care expenditures in GDP, the Seattle study highlights the challenges and opportunities the explosive demand for health care services creates for businesses, government, and individuals.¹

Because this industry seems impervious to business cycles, many regional studies have emerged that place the health care industry at the center of regional economic growth. For example, 2010

¹ For a detailed assessment of the health care industry in Seattle, see Huckell/Weinman Associates (2004).



and 2005 studies by Market Street Services Inc. identified Nashville's health care industry cluster as a key industry cluster in the regional economy.² Many studies, however, examine the health care-related infrastructure industries such as health care management, life sciences research, professional services firms, and others. These studies lack the necessary broader perspective—viewing health care providers as a core health care industry at the center of a health care industry cluster. Greater growth potential in the health care industry is expected to result from increasing interaction between the core health care industry and health care-related infrastructure industries such as health care management, health care finance, life sciences research, and others.

The cluster perspective allows for a clearer understanding of not only health care providers but also other industrial linkages to the core health care industry and their combined economic impact on a regional economy. The Seattle study is a good example of the cluster treatment applied to the economic impact of the health care industry on a regional economy. A 2001 study of the health care industry in Louisville also presents the health care issue from a broader perspective that provides inter-industry linkages as well as a regional comparison.³ The critical conclusion reached by the Louisville and Seattle studies, which apply the cluster perspective, is that life sciences and medical research play a substantial role in the development of the health care industry and consequently greatly affect the regional economy. This salient fact remained unnoticed by studies that focused solely on health care providers without taking into consideration industrial linkages.

Missing from such presentations of the health care industry cluster, however, is the growing role of health care management and health care services companies in the health care industry cluster. A classic example of the importance of management companies is seen in the growth of the health care industry in Nashville, where accumulated knowledge of health care management and entrepreneurship is a foundation for innovations and breakthroughs that fuel the ever-changing national health care industry landscape. A brief history of Nashville's health care industry attests to this fact (Nashville Health Care Council, www.healthcarecouncil.com). Therefore, this study includes health care management companies as part of the health care industry cluster.⁴

² For more information, see *Target Business Analysis: Nashville, TN* (Market Street Services Inc., 2010 and 2005).

³ For more information, see Paul A. Coomes and Raj Narang (2001), *Louisville's Health-Related Economy: Size, Character, and Growth* (University of Louisville).

⁴ For a sample of selected studies, see bibliography.



III. 3. Method and Data

Indicators for this study are collected from different sources. It is often difficult to find comparable figures for the peer MSAs due to data suppression. BEREC used a multitude of different sources to estimate comparable figures for these MSAs. This analysis is guided by the availability of data for health care-related indicators. Throughout this study, there may be some slight discrepancies in figures due to the estimation methods used by different employment surveys. BEREC consulted several sources to construct a time-series perspective on health care indicators for Nashville and the peer MSAs. The sources of data are presented in the appendix.

Selection of MSAs

In consultation with the Nashville Health Care Council and the Nashville Area Chamber of Commerce, BEREC has identified 12 peer MSAs for Nashville: Atlanta, Birmingham, Charlotte, Columbus, Dallas, Denver, Indianapolis, Jacksonville, Kansas City (MO), Louisville, Raleigh, and Richmond, all major U.S. MSAs with substantial health care-related economic activity. BEREC's selection of these MSAs was also guided by the literature (for example, see Coomes and Narang, 2001).

Survey Method

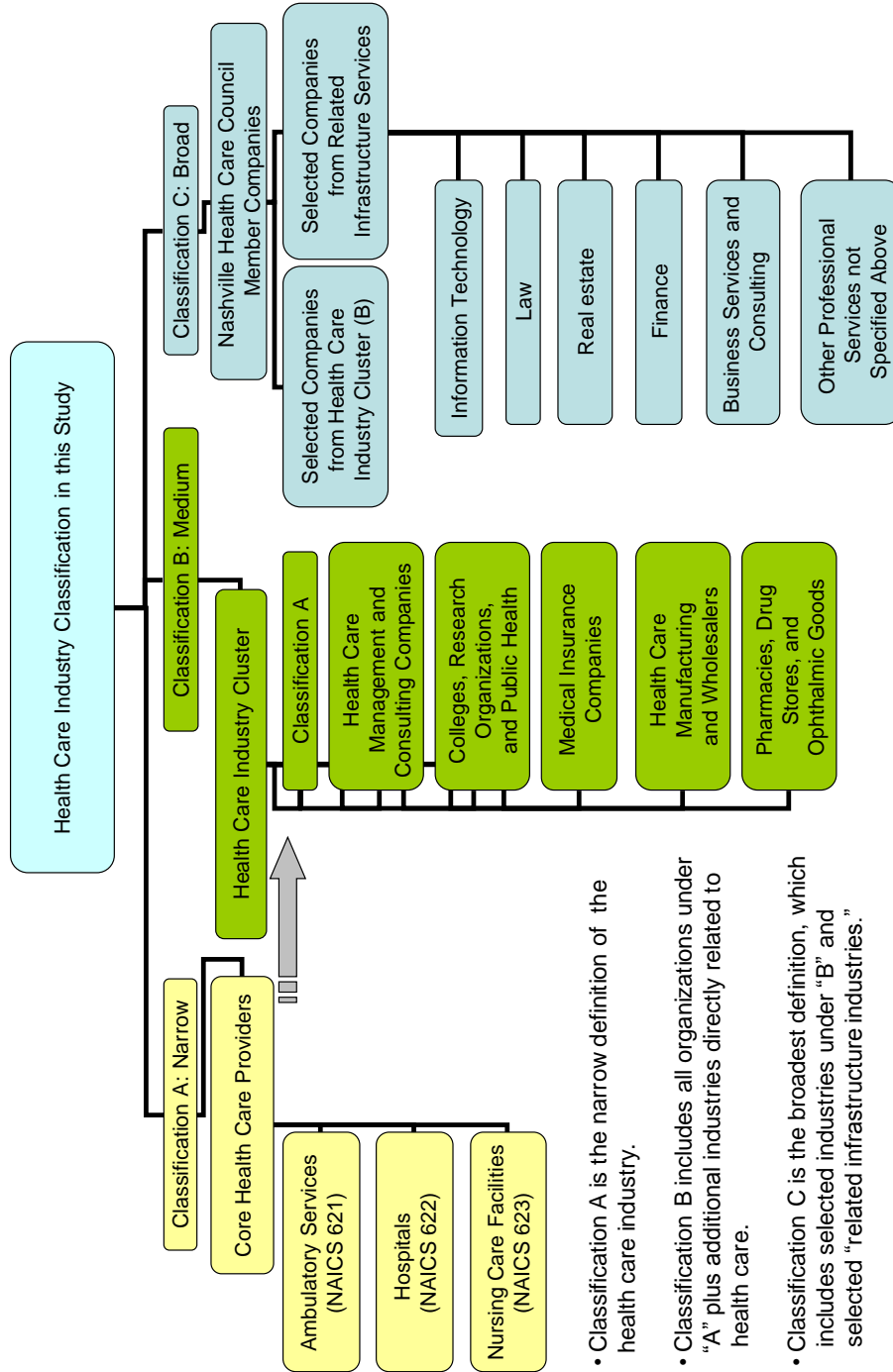
Since 1995, NHCC has promoted the growth of the health care industry in Nashville. NHCC has a unique member mix in that both health care and professional services (i.e., management, consulting, information technology, finance, and law) companies that work together to forge strong ties to accelerate growth in the health care industry. BEREC conducted a survey to develop a profile of NHCC member companies. The appendix delineates the survey instruments used.



III.3.a. Definitions

Throughout this study, BEREC classifies Nashville's health care industry into three distinct categories: (1) core health care industry, (2) health care industry cluster, and (3) Nashville Health Care Council member companies. The chart on the next page indicates the relationship between these three categories of health care industry classification. A complete industry description by NAICS code is presented in the appendix.





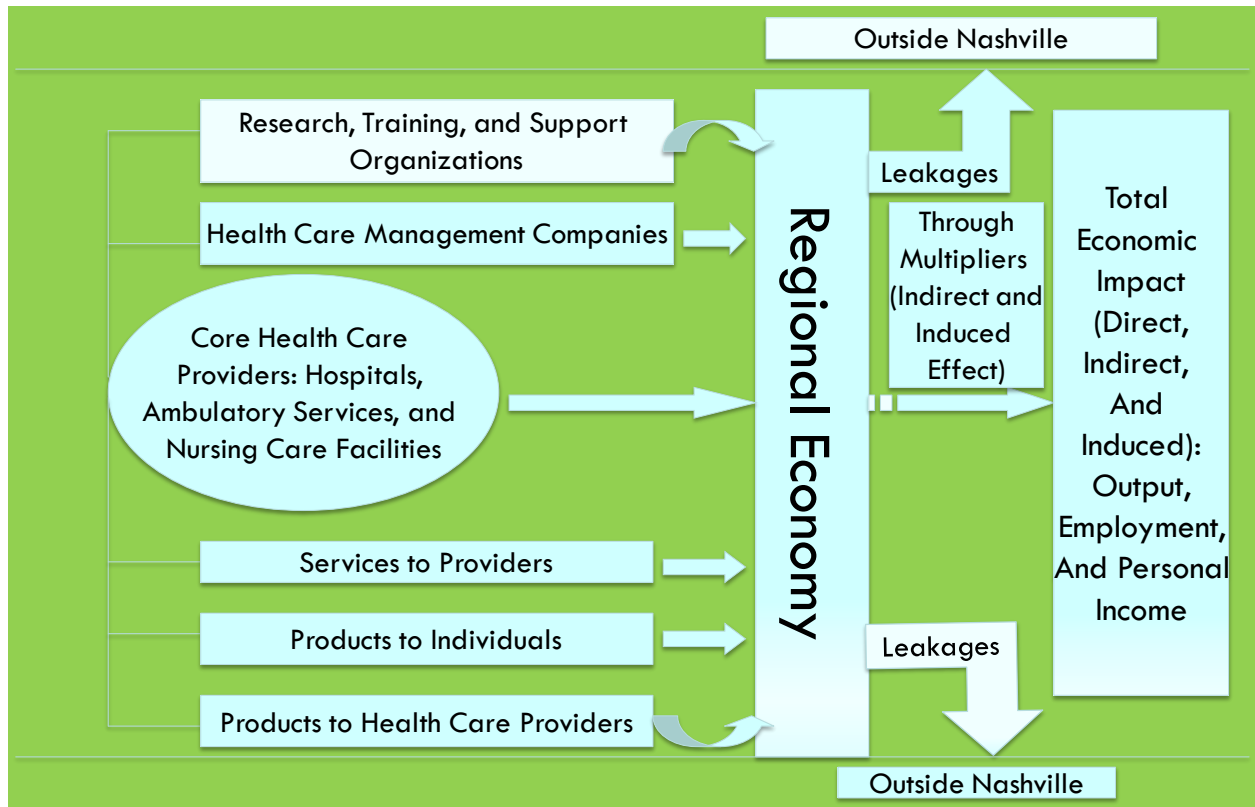
III.3.b. Conceptual Framework for Impact Analysis

The economic impact assessment of the health care industry is based on the health care industry cluster definition provided above. The goal of this assessment is to highlight what happens if the entire health care industry cluster is removed from the regional economy. BEREC reports the direct, indirect, and induced economic impact of counterfactually removing the health care industry cluster from the economy.⁵ The report presents three categories of impact: output, employment, and personal income. For each of these categories, BEREC also reports leakages out of Nashville and the relationship between the health care industry cluster and other sectors of the economy. BEREC made adjustments to the indirect and induced effects of the health care subsectors on each other within the health care industry cluster. BEREC assumes that IMPLAN (see appendix) regional purchasing coefficients (RPC) represent the current situation, and the differences between 100 percent local purchase and the default model RPCs determine the leakages outside of Nashville. To avoid double counting, the core health care providers were not allowed to stimulate the health care sector and other subsectors in the cluster. The following chart shows the conceptual framework that highlights the procedure used to calculate the economic impact of the health care cluster.

⁵ Many economic impact analyses use the concept of “net new” to describe the economic impact of a project or institution. In this study, BEREC has not adjusted employment figures to reflect the local provision of services. The reasons are twofold: (1) a recent patient-origin survey from the Tennessee Department of Health indicates that more than 83 percent of patient days represent patients from outside the Nashville MSA, and (2) BEREC treated at least 10 percent of Nashville-based patient days as recapture given the fact that the Nashville MSA has some of the most respected hospitals in the U.S.



Conceptual Framework for Impact Analysis



IV. CORE HEALTH CARE INDUSTRY IN THE NASHVILLE MSA: ITS SCOPE AND TREND

IV.1. Total Employment

Nashville's core health care sector employs just over 90,000 people, up more than 22 percent from 2004. By segment, 38 percent are in ambulatory services, 46 percent in hospitals, and 16 percent in nursing care facilities. The core health care sector includes NAICS 621, 622, and 623. The share of hospital employment increased more than two percentage points between the years 2004 and 2008, reversing the trend for years 2001 to 2004 (see below).

Core Health Care Employment in Nashville MSA (NAICS 621, 622, and 623)

Years	Ambulatory	Hospitals	Nursing Care	Total
2001	24,000	31,000	12,000	67,000
2004	28,000	33,000	13,000	74,000
2008	34,000	42,300	14,000	90,300
Change (2001-2008)	41.67%	36.45%	16.67%	34.78%
Change (2004-2008)	21.43%	28.18%	7.69%	22.03%

Source: Tennessee Department of Labor and Workforce Development and BERC estimates. BERC used several data sources including IMPLAN and the Census Bureau County Business Pattern to estimate employment by segment.

Each segment of the Nashville MSA core health care industry experienced phenomenal growth over both the long and short terms. From 2001 to 2008, ambulatory services grew nearly 42 percent, hospitals 37 percent, and nursing care 17 percent. In the short run between 2004 and 2008, hospitals experienced a nearly one-third increase in employment, followed by ambulatory services with 21 percent growth and nursing care with 8 percent.



Employment by Occupation

A salient difference between employment in the health care sector and employment by health care occupations is that the former includes all occupations in the sector, ranging from accountant to medical doctor. However, health care occupations refer to medical professionals and allied health occupations and do not include occupations in health care education and research. Nonetheless, health care occupations account for about 8 percent of total occupations in the Nashville MSA. Overall, average wage for health care occupations at \$62,010 is significantly higher than Nashville's average annual wage of \$39,280.

Employment by Occupation in Nashville

	Employment		Average Wage	
	Total Number	Percent Share	Average Wage	Percent Difference from Nashville Average
All Occupations	773,500	100%	\$39,280	0.00%
Management occupations	48,980	6%	\$85,940	118.79%
Business and financial operations occupations	30,030	4%	\$57,710	46.92%
Computer and mathematical science occupations	15,860	2%	\$60,740	54.63%
Architecture and engineering occupations	9,710	1%	\$61,350	56.19%
Life, physical, and social science occupations	4,120	1%	\$50,190	27.77%
Community and social services occupations	9,190	1%	\$36,680	-6.62%
Legal occupations	3,470	0%	\$82,790	110.77%
Education, training, and library occupations	37,270	5%	\$43,500	10.74%
Arts, design, entertainment, sports, and media occupations	13,120	2%	\$46,100	17.36%
Health care practitioners and technical occupations	46,810	6%	\$62,010	57.87%
Health care support occupations	18,330	2%	\$25,480	-35.13%
Protective service occupations	17,060	2%	\$34,350	-12.55%
Food preparation and serving related occupations	67,360	9%	\$18,740	-52.29%
Building and grounds cleaning and maintenance occupations	20,730	3%	\$22,260	-43.33%
Personal care and service occupations	14,910	2%	\$22,470	-42.80%
Sales and related occupations	81,120	10%	\$33,460	-14.82%
Office and administrative support occupations	136,290	18%	\$31,670	-19.37%
Farming, fishing, and forestry occupations	320	0%	\$24,380	-37.93%
Construction and extraction occupations	31,910	4%	\$34,820	-11.35%
Installation, maintenance, and repair occupations	32,340	4%	\$40,720	3.67%
Production occupations	66,180	9%	\$34,690	-11.69%
Transportation and material moving occupations	68,380	9%	\$29,990	-23.65%



IV.2. Sectoral Diversity

The health services sector (the core health care industry) is the third largest in Nashville's economy, after government and professional and business services, representing about 12.16 percent or 92,500 of total nonfarm jobs. This is a significant increase from 2004, when it ranked fifth after manufacturing and retail trade.¹ A significant jump from 2004, more than 15 percent, made the sector a pillar of Nashville's economy.

Employment by Sector in Nashville MSA (2008)

	Employment		
	Number (in thousands)	Growth from 2004 (%)	Current Share (%)
Nonfarm	760.6	6.33%	100.00%
Mining, Logging and Construction	39.3	14.24%	5.17%
Manufacturing	73.4	-12.20%	9.65%
Wholesale	37.8	8.93%	4.97%
Retail	86.9	4.83%	11.43%
Transportation and Utilities	29.9	5.28%	3.93%
Information	21.1	8.76%	2.77%
Financial Activities	45.9	3.15%	6.03%
Professional and Business Services	100.6	9.95%	13.23%
Educational Services	19.6	8.89%	2.58%
Health and Social Assistance	92.5	15.05%	12.16%
Leisure and Hospitality	79.5	10.42%	10.45%
Other Services	30.9	4.04%	4.06%
Government	103.1	7.51%	13.56%

In this context, we would like to briefly address the perennial issue of which sector ranks first in the Nashville MSA. In evaluating this issue, we would like to emphasize that employment is only aspect of an economic sector's contribution to the regional economy: business revenue, value added, personal income, and indirect business taxes are additional, often overlooked considerations. What follows is a guide of an economic sector's role in a region's economy.

¹ NAICS (North American Industrial Classification System) 62 provides an aggregate view of health and social services. Social services includes community services, individual and family services, and child day care services. For more information, see www.census.gov/eos/www/naics/.



Contributing to Nashville's Economy: How Much?

	Employment			Business Revenue			Value Added (GDP)			Cumulative Ranking	
	Number (in thousands)	Score	Rank	Total (in millions)	Score	Rank	Total (in millions)	Score	Rank	Average Score	Final Rank
Nonfarm	760.6	n/a	n/a	\$115,358	n/a	n/a	\$59,058	n/a	n/a	n/a	n/a
Mining, Logging and Construction	39.3	0.27	8	\$4,928	0.33	9	\$1,963	0.19	10	0.26	9
Manufacturing	73.4	0.68	6	\$36,026	1.00	1	\$9,287	0.96	1	0.88	1
Wholesale	37.8	0.25	9	\$7,096	0.42	6	\$4,617	0.52	6	0.40	8
Retail	86.9	0.82	4	\$6,742	0.41	7	\$4,523	0.51	7	0.58	6
Transportation and Utilities	29.9	0.18	11	\$4,757	0.33	10	\$2,569	0.25	9	0.25	10
Information	21.1	0.12	12	\$3,357	0.27	11	\$1,813	0.17	11	0.19	11
Financial Activities	45.9	0.34	7	\$11,544	0.62	3	\$7,304	0.84	3	0.60	5
Professional and Business Services	100.6	0.91	2	\$11,175	0.61	4	\$6,970	0.81	4	0.78	3
Educational Services	19.6	0.11	13	\$1,394	0.20	13	\$844	0.10	13	0.14	13
Health and Social Assistance	92.5	0.86	3	\$11,656	0.63	2	\$7,614	0.87	2	0.78	2
Leisure and Hospitality	79.5	0.75	5	\$5,572	0.36	8	\$3,087	0.31	8	0.47	7
Other Services	30.9	0.19	10	\$1,857	0.22	12	\$1,016	0.11	12	0.17	12
Government	103.1	0.92	1	\$8,050	0.47	5	\$6,564	0.77	5	0.72	4

Employment figures are from BLS (www.bls.gov). Business revenue (value of production) and value added (GDP-equivalent) per worker are derived from IMPLANpro 2008 data for the Nashville MSA.

As the above demonstrates, employment is only one measure of the effect of economic activities on a region's economy. Although its ranking by employment is behind other sectors, manufacturing is still number one in terms of creating economic value in the region. Overall, health care ranks second and professional and business services third.²

² For detailed information about a specific sector, please see the North American Industrial Classification System (NAICS) at www.census.gov/eos/www/naics/.



IV.3. Establishments

Ambulatory services account for almost 90 percent of establishments (a single business location of a company) in the core health care industry. Nursing care facilities and hospitals account for about 10 percent of establishments. This table includes only health care establishments under NAICS 621, 622, and 623.

Core Health Care Establishments in Nashville MSA (NAICS 621, 622, and 623)

Years	Ambulatory	Hospitals	Nursing Care	Total
2001	1,890	46	166	2,102
2004	2,317	53	214	2,584
2008	2,417	52	234	2,703
Change (2001-2008)	27.88%	13.04%	40.96%	28.59%
Change (2004-2008)	4.32%	-1.89%	9.35%	4.61%

BERC estimates: BERC used several data sources including IMPLAN and the Census Bureau County Business Pattern to estimate establishment by segment.

The number of health care establishments increased dramatically from 2001 to 2004. Total nonfarm establishments exhibited a slower growth rate but a sharp increase after 2002. **Between 2004 and 2008, a total of 466 new health care establishments emerged in Nashville, for a total of 2,703.**



IV.4. Wages

In 2008, wages in the core health care industry in Nashville totaled \$4.7 billion, with hospitals and ambulatory services accounting for 92 percent of those wages. Moreover, total wages across core health care industry segments increased between 2004 and 2008: ambulatory services wages increased from \$1.43 billion to \$1.87 billion; hospital wages increased from \$1.49 billion to \$2.45 billion; and nursing care facilities wages rose from \$0.34 billion to \$0.39 billion. Of the three health care industry segments, hospitals experienced the greatest increase in total wages, 64 percent. Ambulatory services wages increased 31 percent and nursing care 15 percent.

Core Health Care Wages in Nashville MSA (NAICS 621, 622, and 623) (Billion \$)

Years	Ambulatory	Hospitals	Nursing Care	Total
2001	\$1.13	\$1.21	\$0.28	\$2.62
2004	\$1.43	\$1.49	\$0.34	\$3.26
2008	\$1.87	\$2.45	\$0.39	\$4.71
Change (2001-2008)	65.49%	102.48%	39.29%	79.77%
Change (2004-2008)	30.77%	64.43%	14.71%	44.48%

BERC estimates: BERC used several data sources including IMPLAN and the Census Bureau County Business Pattern to estimate wages by segment.



IV.5. Export Potential of Core Health Care Industry Segments

Location quotient (LQ) is often used to describe the relationship between the local and national economies. If the LQ for an industry is larger than 1, that industry has a larger presence in the local economy than its national economic counterpart. Ambulatory services and hospitals employ substantially more people in the Nashville MSA than in the U.S. Consequently, these findings suggest that supply in the region exceeds local demand for hospitals and ambulatory services and that these health care establishments serve residents outside the Nashville area. In the case of nursing care, Nashville area residents are most likely to use long-term care services outside the local economy.

Export Potential of Core Health Care Industry in Nashville



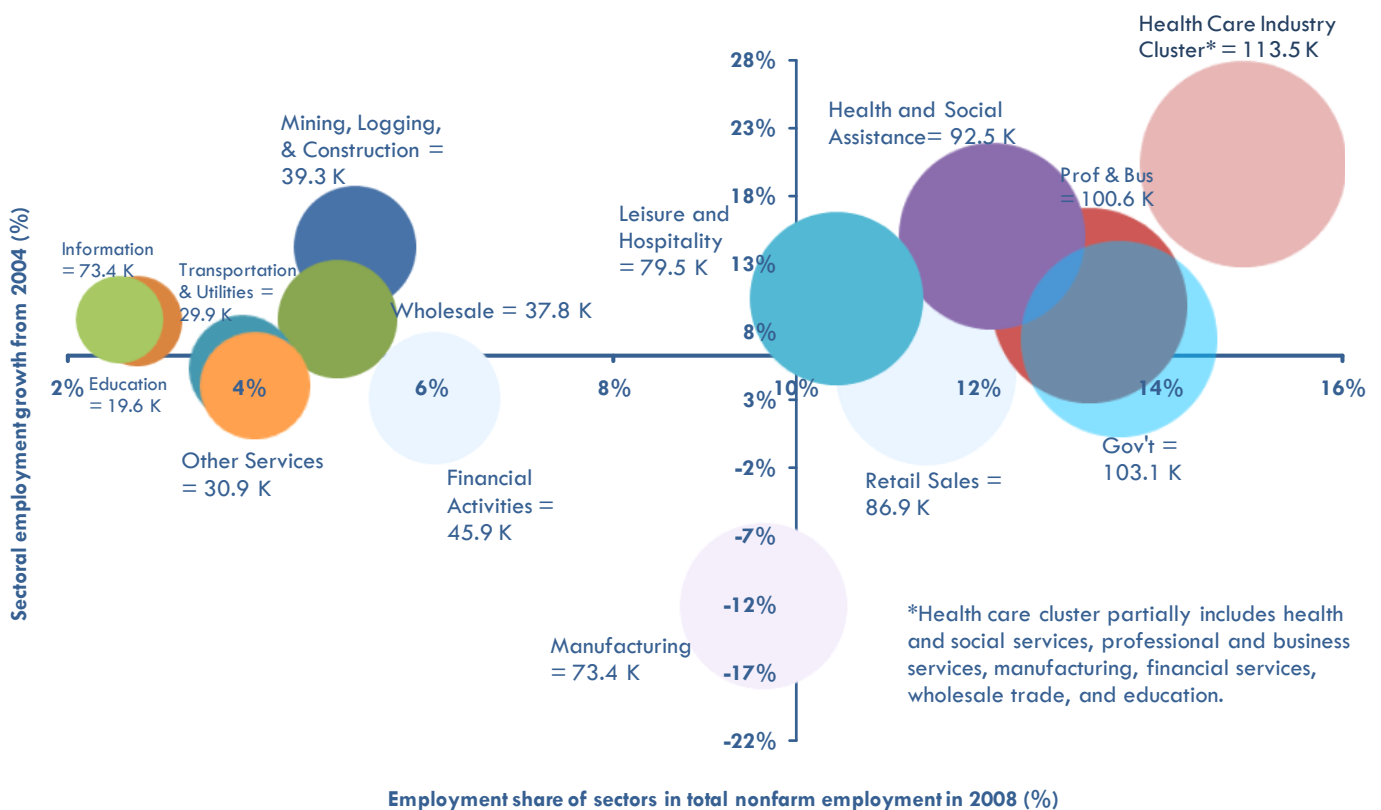
Sources: Bureau of Labor Statistics (www.bls.gov) and BERC calculations



IV.6. Relative Growth Performance of Core Health Care Segments

The health care and social services sector grew faster than other sectors in the Nashville MSA (see the chart below). Growth in health care and social services was substantially larger than the average sector growth rate of 6.3 percent. Furthermore, its current (2008) share in total employment is 5 percent above the average for all sectors.³

"Core Health Care Industry" Trend in Nashville: Relative Performance from 2004 to 2008 (spheres show the actual employment level of each aggregated sector)



³ See Chapter V for information about the health care industry cluster.



IV.7. Core Health Care Industry and the Local Economy

More than 70 percent of core health care spending goes to individuals as either payroll or proprietary income in the Nashville MSA. Real estate, pharmaceuticals, employment services, wholesale trade, and securities investment are the top five sectors that benefit most from the business expenditures of core health care establishments in Nashville.

Where does \$1 million in core industry spending go in the local economy? (Major industries only)

<i>Industry</i>	Value	%
Services to buildings and dwellings	\$4,645	0.46
Other basic organic chemical manufacturing	\$4,665	0.47
Office administrative services	\$4,884	0.49
Postal service	\$5,774	0.58
Management consulting services	\$6,319	0.63
Power generation and supply	\$6,533	0.65
Surgical and medical instrument manufacturing	\$6,894	0.69
Plastic, plumbing fixtures and all other plastics	\$6,930	0.69
Management of companies and enterprises	\$7,657	0.77
Food services and drinking places	\$8,044	0.80
Other ambulatory health care services	\$9,401	0.94
Legal services	\$9,742	0.97
Securities-commodity contracts-investments	\$10,795	1.08
Wholesale trade	\$10,878	1.09
Employment services	\$11,995	1.20
Pharmaceutical and medicine manufacturing	\$13,099	1.31
Real estate	\$46,040	4.60
Other sectors	\$106,798	10.68
<i>Institutions/Individuals</i>		
Employee Compensation	\$383,057	38.31
Proprietary Income	\$255,646	25.56
Other Property Income	\$70,934	7.09
Indirect Business Taxes	\$9,270	0.93
Total	\$1,000,000	100

Source: IMPLANpro Inc. and BEREC estimates.

Note: Calculations are based on assumption that all spending occurs in the local economy.



V. NASHVILLE'S HEALTH CARE INDUSTRY CLUSTER

In order to measure the economic impact of Nashville's health care industry cluster, BEREC uses the counterfactual approach. This differs from the "net new concept" in that the counterfactual approach removes the whole health care industry cluster from the economy and then measures the total economic impact that the subtraction generates across the remaining economy. Besides the counterfactual approach, BEREC also uses employment by sector as an input when assessing the economic impact of the health care industry cluster. Finally, in the absence of detailed industry spending by zip code and vendor, BEREC uses default regional purchasing coefficients to allow for outside leakage. Then BEREC treats the outside leakages as the difference between the impact results with the default regional purchasing coefficients and the impact results with 100 percent local purchasing.

BEREC assumes that each group of sectors in the health care industry cluster is not only closely linked to the core health care sector but that each sector also has its own independent effect on the local economy. Therefore, BEREC measures the economic impact of the individual groups of sectors independent of each other and then adjusts the measure of the economic impact to take into consideration the indirect impact of group on the core health care sector and vice versa. When the health care industry cluster is removed from the economy, BEREC assumes that an economic shock to the core health care providers should not have a ripple effect on themselves. An adjustment for this purpose has been made to the study results.

In this study, BEREC reports on the direct, indirect, and induced impacts of the Nashville health care industry cluster. The direct impact refers to the current state of employment, sales, and personal income generated by the cluster in an economy. The indirect impact refers to the employment, sales, and personal income generated in the local economy by a business-to-business transaction. For example, a hospital purchases goods and services from local businesses for its operation. This hospital's spending in the local economy means additional jobs, business revenues, and personal income in other sectors. Induced impact refers to the employment, sales, and personal income generated in the local economy by employee spending. For example, a hospital employs and pays many individuals for their work at the hospital. These workers then spend their earnings in



the local economy to maintain their lifestyle. This process generates additional jobs, business revenues, and personal income across the local economy. Finally, BERC also estimates linkages between the health care industry cluster and other sectors in the local economy.

V.1. Employment and Office Space

The Nashville health care industry cluster employs 113,453 people (2008), which corresponds to 15 of every 100 nonfarm employees in Nashville. Nashville health care industry cluster employment increased 20.3 percent from 2004. As an industry cluster, its employment is the largest among major aggregate sectors in the Nashville MSA. **Additionally, the Nashville health care cluster accounts for nearly 31 million square feet of office space, up 19 percent from 2004, which corresponds to 16.4 percent of Nashville's total office and industrial space.¹**

Nashville Health Care Industry Cluster: Employment and Office Space

Major Sectors	Employment*	Employment per 1,000 Sq. ft.**	Office Space (Square Foot)
Health Care Management & Consulting (NAICS 551, 5412, 5415, 5416, 561, 813920)	9,604	4.10	2,342,439
Health Care Providers (NAICS 621, 622, 623)	90,282	4.10	22,020,000
Research, Training and Support Organizations			
<i>Educational (NAICS 6112, 6113, 6115)</i>	1,335	2.55	523,529
<i>Research and Public Health (NAICS 54171, 92312)</i>	2,940	2.55	1,152,941
Services to Providers (NAICS 524114)	1,438	4.10	350,732
Products to Health Care Providers			
<i>Manufacturing (NAICS 3391, 3254)</i>	623	3.03	205,611
<i>Wholesalers (NAICS 42345, 42346, 4242)</i>	3,086	1.28	2,410,938
Products to Individuals (NAICS 44611, 44613)	4,145	2.22	1,867,117
Total	113,453		30,873,306

Notes: *BERC estimated employment figures from Tennessee Department of Labor and Workforce Development Database.

**Several studies were consulted to calculate employment density by major sectors, including Urban Land Institute studies.

BERC also used an in-house establishment survey to calculate employment density in several sectors for which data are unavailable.

As the table above indicates, the Nashville health care industry cluster consists of diverse groups of sectors, with health care providers (ambulatory services, hospitals, and nursing care facilities) at the core. **The core health care industry employs 79.6 percent of Nashville health care industry cluster employees.** The rest (20.4 percent) are shared by five major industry groups, of which

¹According to a quarterly MarketView report for Nashville by CB Richard Ellis, Nashville had approximately 189 million square feet of office and industrial space in the first quarter of 2009. For details, see www.cbre.com.



health care management and consulting organizations have the largest share with 9,604 employees.

V.2. Establishment and Wages

The Nashville health care industry cluster, consisting of nearly 3,600 establishments, accounts for \$6.02 billion in wages. From 2004 to 2008, the number of establishments increased nearly 9 percent, while the cluster wages increased 40.36 percent over the same period. Average health care cluster wage is estimated at around \$52,773 in 2008. This average wage is significantly higher than Nashville's average nonfarm wage of \$39,280. Nashville's health care cluster average wage increased about 16 percent from 2004.

Nashville Health Care Cluster Profile: Wages and Establishments (2008)

Major Sectors	Wages (Million \$)	Establishments
Health Care Management & Consulting (NAICS 551, 5412, 5415, 5416, 561, 813920)	\$653.33	222
Health Care Providers (NAICS 621, 622, 623)	\$4,701.98	2,703
Research, Training and Support Organizations		
<i>Educational (NAICS 6112, 6113, 6115)</i>	\$71.62	5
<i>Research and Public Health (NAICS 54171, 92312)</i>	\$119.63	15
Services to Providers (NAICS 524114)	\$98.92	20
Products to Health Care Providers		
<i>Manufacturing (NAICS 3391, 3254)</i>	\$20.89	53
<i>Wholesalers (NAICS 42345, 42346, 4242)</i>	\$206.31	171
Products to Individuals (NAICS 44611, 44613)	\$143.45	393
Total	\$6,016.13	3,582

Source: BERC's estimates from Tennessee Department of Labor and Workforce Development Database.

V.3. Investor-Owned Health Care Management Companies (Public and Private)

Many studies examine the locational patterns of large corporate headquarters in the U.S. The findings suggest that the presence of large corporate headquarters provides substantial benefits to the regional economy since such headquarters (1) bring high-paying jobs, (2) increase the competitive advantage of the host cities, (3) promote innovative technologies through acquisition



and dissemination of information, and (4) spur growth in critical infrastructure industries, such as law, finance, and other professional and business services.²

Furthermore, the location decision of large corporate headquarters is also shaped by the presence of certain qualities in the host region, primarily (1) a good quality of life, (2) major transportation and communication infrastructure, (3) a diverse economic base, (4) a sound financial infrastructure, (5) professional services, and (6) a highly skilled labor force.

As an epicenter of corporate headquarters activities, Nashville presents a unique combination of these qualities. According to Klier and Testa's findings (2002), Nashville was one of the few large cities to experience phenomenal relocation of major corporate headquarters between 1990 and 2000. During this period, 16 large corporations chose Nashville as their new headquarters location for a growth rate of 177.8 percent. From 2006 to 2009, more than 30 company headquarters have relocated to the Nashville MSA (www.nashvillechamber.com). Recently, MarketWatch's 2009 annual survey named the Nashville MSA as the 15th best city for business in the U.S. (www.nashvillechamber.com). In addition, the April (2010) issue of *Site Selection* magazine named the Nashville Chamber's economic development team one of the 10 best in the nation.

Nashville is truly the center of gravity for national health care industry company headquarters with 56 major public and private companies calling it home. Only companies with more than \$500,000 in revenue and at least 100 employees are included in this analysis. As of 2009, 494 out of 958 investor-owned hospitals in the U.S. were owned or operated by Nashville-area hospital management companies. **In 2008, the 56 health care industry cluster companies headquartered in Nashville counted revenues of more than \$62 billion and employed nearly 400,000 people worldwide.**³

² For a review of literature on locational patterns of company headquarters, see Thomas Klier and William Testa's (2002) "Location Trends of Large Company Headquarters during the 1990s," *Economic Perspectives* (Federal Reserve Bank of Chicago). For detailed information on the concept of cluster and competitive advantage, see Michael Porter's (2000) "Location, Competition, and Economic Development: Local Clusters in the Global Economy," *Economic Development Quarterly*, vol. 14, pp. 15-34.

³ Source: 2008 American Hospital Association Annual Survey Database, ReferenceUSA, LexisNexis Academic Universe, *Becker's Hospital Review*, and company Web sites.



Nashville is also a hub for publicly traded health care companies in the U.S. **As of 2008, 17 such companies calling Nashville home had a combined employment of more than 145,000 globally and combined revenue of nearly \$26 billion.**

The following is a profile of these publicly traded health care management companies as well as the largest investor-owned private companies. Together, they form a powerful worldwide presence in the Nashville health care industry cluster with \$61 billion in business revenues and more than 375,000 employees. These companies represent, by far, the largest contributors to worldwide jobs and revenue among headquarters in Nashville's health care industry cluster.

Nashville-Based Investor-Owned and Publicly Traded Health Care Management Companies

Company Name	Ticker	Global No. of Employees	Global Sales /Revenue
ADVOCAT INC.	AVCA	5,809	\$302,031,000
AMERICA SERVICE GROUP INC.	ASGR	4,100	\$606,176,000
AMERICAN HOMEPAIENT INC.	AHOM	2,362	\$236,297,000
AMSURG CORP.	AMSG	1,630	\$668,752,000
ARDENT HEALTH SERVICES LLC.	Private	8,800	\$1,800,000,000
BIOMIMETIC THERAPEUTICS INC.	BMTI	88	\$3,148,384
BROOKDALE SENIOR LIVING INC.	BKD	23,500	\$2,023,068,000
CAPELLA HEALTHCARE INC.	Private	2,700	\$500,000,000
COMMUNITY HEALTH SYSTEMS INC.	CYH	55,579	\$12,107,613,000
CUMBERLAND PHARMACEUTICALS INC.	CPIX	53	\$43,500,000
EMDEON INC.	EM	2,200	\$853,600,000
HCA INC.	Private	191,000	\$28,374,000,000
HEALTHCARE REALTY TRUST INC.	HR	229	\$257,178,000
HEALTHSPRING INC.	HS	1,800	\$2,661,755,000
HEALTHSTREAM INC.	HSTM	300	\$57,398,000
HEALTHWAYS INC.	HWAY	3,500	\$717,426,000
IASIS HEALTHCARE LLC.	Private	10,775	\$2,070,000,000
LIFEPOINT HOSPITALS INC.	LPNT	15,700	\$2,962,700,000
NATIONAL HEALTH INVESTORS INC.	NHI	1	\$70,127,000
NATIONAL HEALTHCARE CORP.	NHC	12,000	\$668,221,000
PSYCHIATRIC SOLUTIONS INC.	PSYS	16,000	\$1,805,361,000
VANGUARD HEALTH SYSTEMS	Private	17,100	\$2,300,000,000
Total	22	375,226	\$61,088,351,384

Sources: ReferenceUSA, BERC, LexisNexis Academic Universe

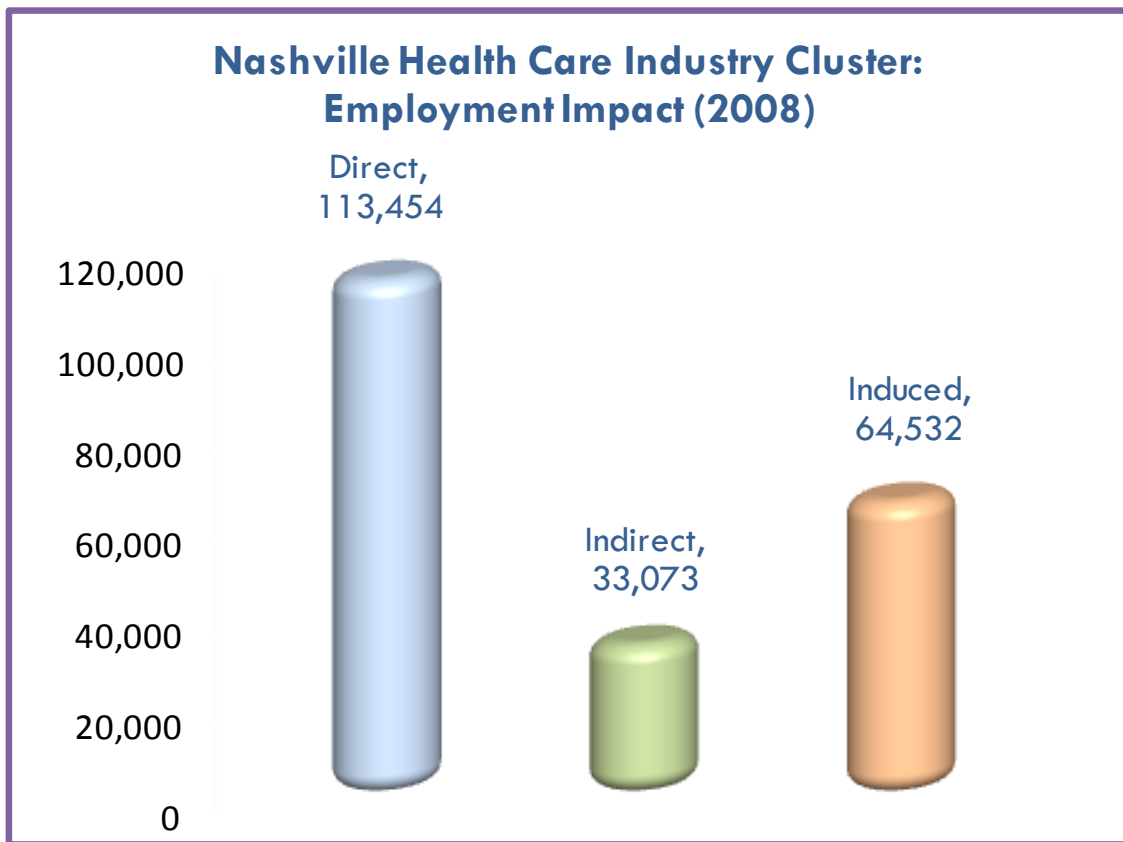


V.4. Economic Impact of the Nashville Health Care Cluster

V.4.a. Employment Impact

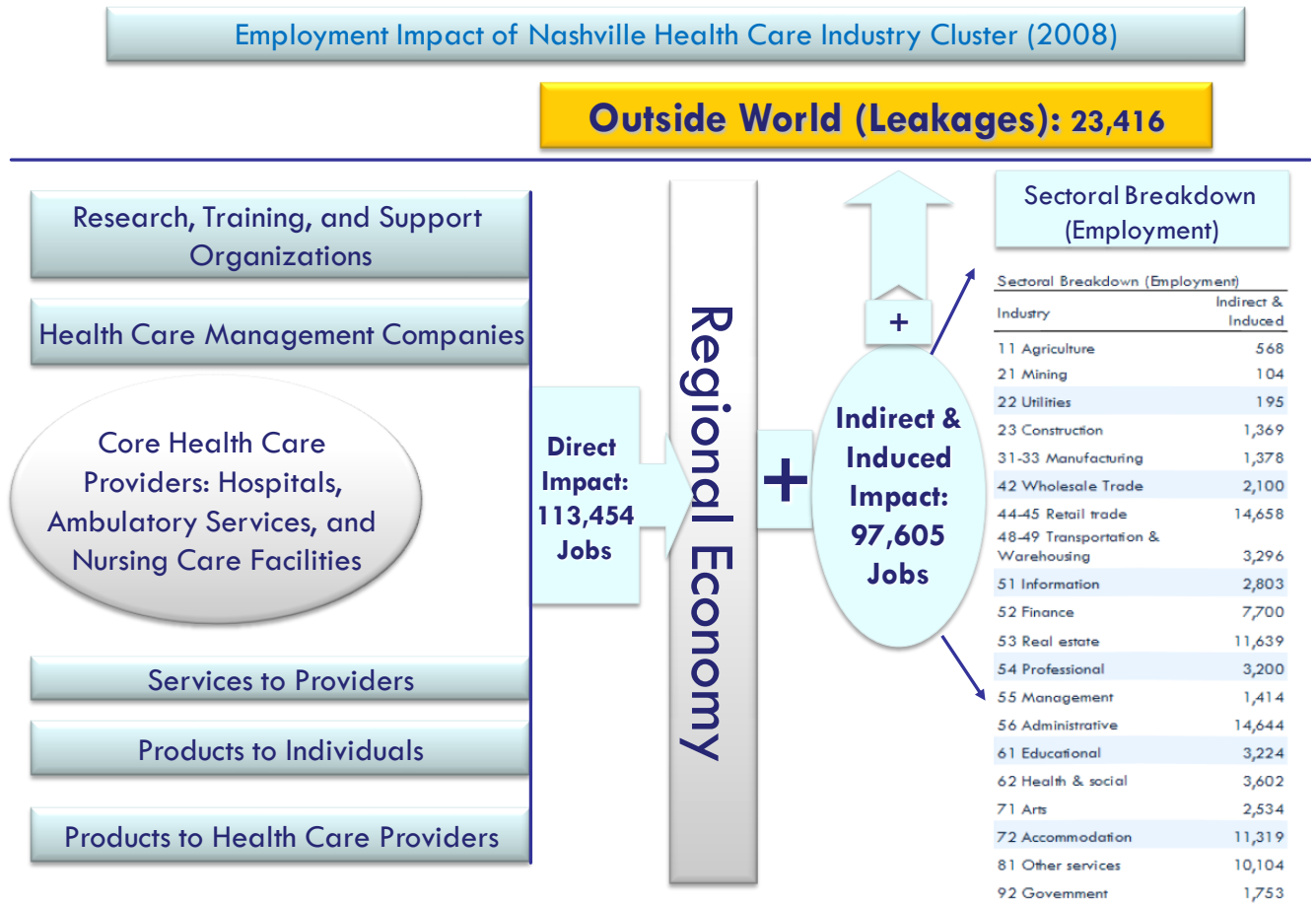
The health care industry cluster's total employment impact is 211,059, which equals eight percent of Tennessee's and 28 percent of the Nashville MSA's nonfarm employment in 2008.

One hundred industry cluster jobs create an additional 86 jobs in the Nashville economy. The employment impact of Nashville's health care industry cluster increased 36.4 percent from 2004.



Sectoral Impact

The largest sectors impacted by the health care industry cluster are retail trade and administrative and waste management services, with almost 15,000 jobs each. Because of interregional transactions, Nashville's health care industry cluster creates nearly 23,416 additional jobs across sectors outside Nashville.



Industry Linkages

For every direct 1,000 jobs in the Nashville health care industry cluster, an additional 129 jobs are created in retail trade and administrative services, 103 in real estate, 100 in accommodation, 89 in other services, 68 in finance, 32 in health and social services, and 29 in transportation.

Employment Linkages between Health Care Industry Cluster and Sectors of Nashville's Economy

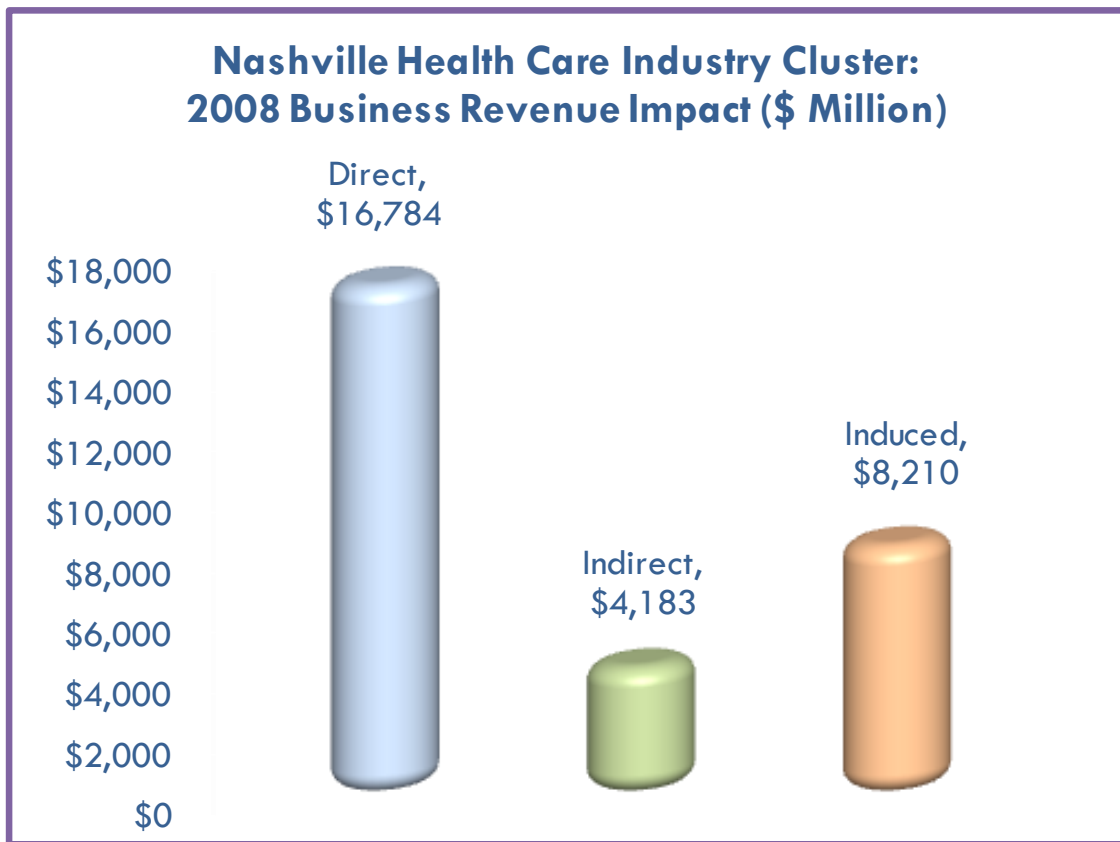
Industry	Indirect & Induced	Number of jobs created per 1,000 health care industry cluster jobs
44-45 Retail trade	14,658	129
56 Administrative	14,644	129
53 Real estate	11,639	103
72 Accommodation	11,319	100
81 Other services	10,104	89
52 Finance	7,700	68
62 Health & Social	3,602	32
48-49 Transportation & Warehousing	3,296	29
61 Educational	3,224	28
54 Professional	3,200	28
51 Information	2,803	25
71 Arts	2,534	22
42 Wholesale Trade	2,100	19
92 Government	1,753	15
55 Management	1,414	12
31-33 Manufacturing	1,378	12
23 Construction	1,369	12
11 Agriculture	568	5
22 Utilities	195	2
21 Mining	104	1

Source: BERC's estimates based on IMPLANpro Inc. impact figures



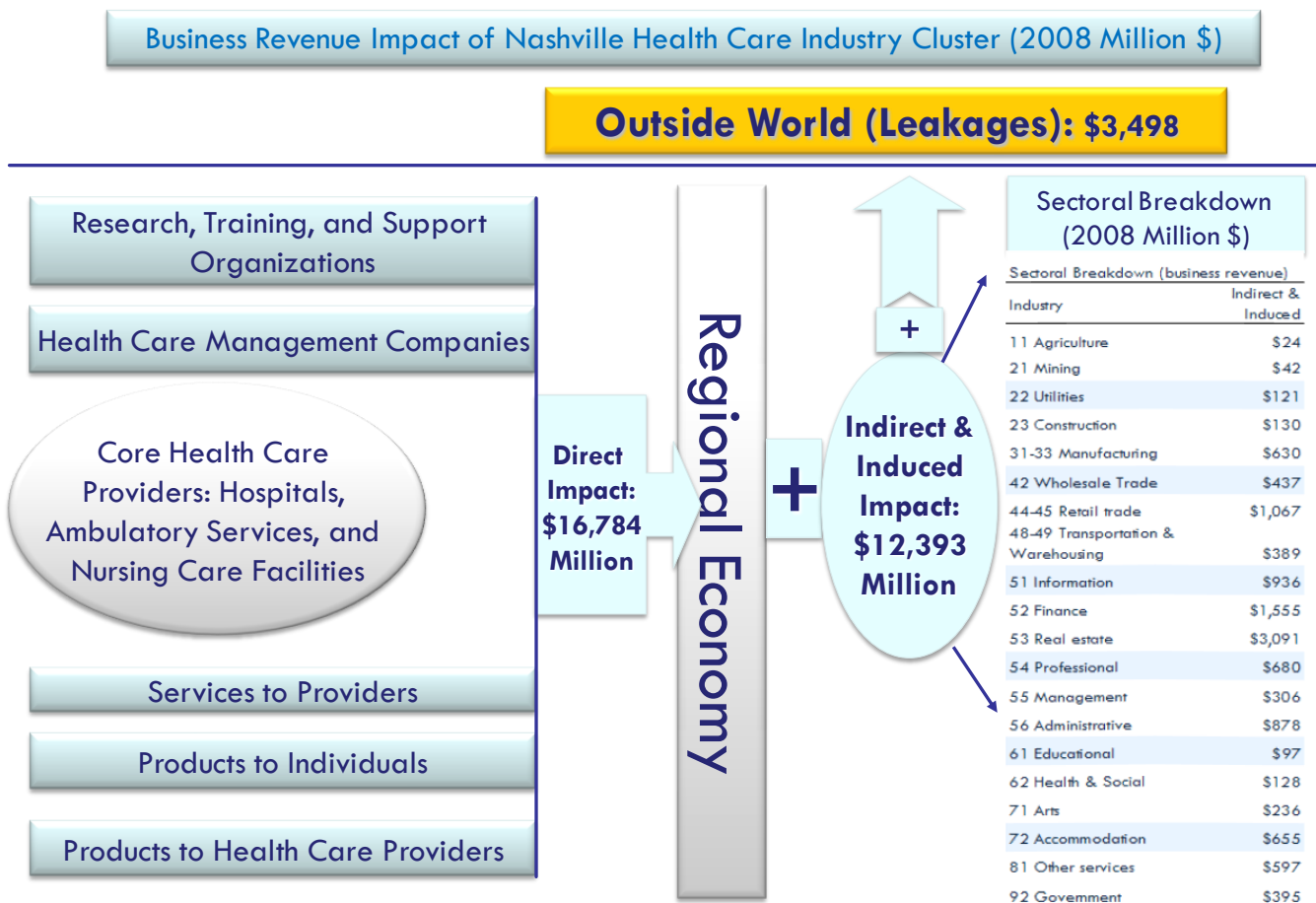
V.4.b. Business Revenue Impact

The total business revenue impact of the health care industry cluster is \$29.2 billion, \$16.8 billion of which is directly injected into the economy. The business revenue impact of Nashville's health care industry cluster increased 60 percent from 2004. This amount is equivalent to nearly 6 percent of Tennessee's and 19 percent of Nashville's total business revenues in 2008. Every \$100 in health care cluster spending generates an additional \$74 in business revenues.



Sectoral Impact

The real estate and rental sector in Nashville greatly benefits from the health care industry cluster, garnering \$3.1 billion in business revenues as a result. Moreover, leakage outside of Nashville is about \$3.5 billion across sectors.



Industry Linkages

Every \$1,000 in business revenue generated by the health care industry cluster generates additional revenue of \$184 in real estate, \$93 in finance, \$64 in retail trade, and \$56 in information. Other sectors seeing substantial benefits are administrative and waste management (\$52), professional and business services (\$41), and accommodation (\$39). The impact on other sectors ranges from \$38 in manufacturing to \$1 in agriculture.

Business Revenue Linkages between Health Care Industry Cluster and Sectors of Nashville's Economy

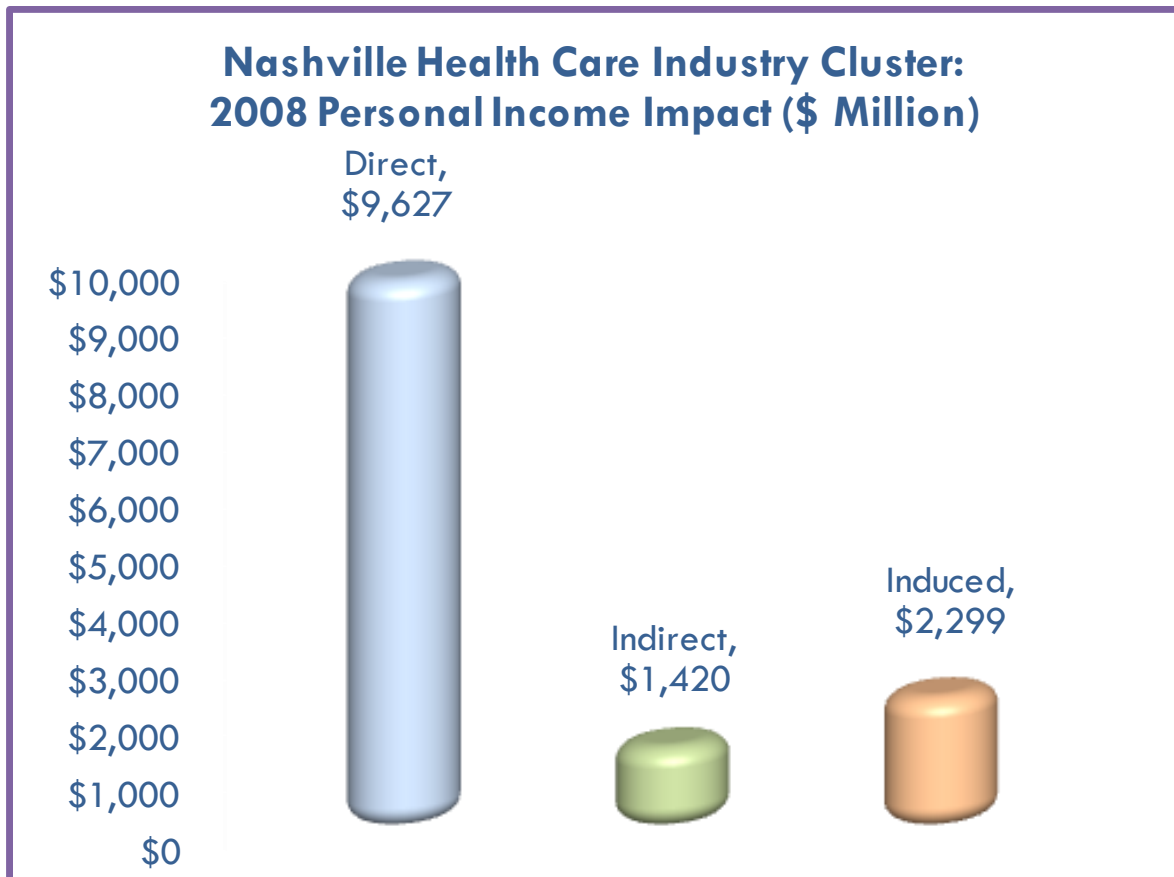
Industry	Indirect & Induced	Revenues generated per \$1,000 health care industry cluster business revenue
53 Real estate	\$3,091	\$184
52 Finance	\$1,555	\$93
44-45 Retail trade	\$1,067	\$64
51 Information	\$936	\$56
56 Administrative	\$878	\$52
54 Professional	\$680	\$41
72 Accommodation	\$655	\$39
31-33 Manufacturing	\$630	\$38
81 Other services	\$597	\$36
42 Wholesale Trade	\$437	\$26
92 Government	\$395	\$24
48-49 Transportation & Warehousing	\$389	\$23
55 Management	\$306	\$18
71 Arts	\$236	\$14
23 Construction	\$130	\$8
62 Health & Social	\$128	\$8
22 Utilities	\$121	\$7
61 Educational	\$97	\$6
21 Mining	\$42	\$3
11 Agriculture	\$24	\$1

Source: BERC's estimates based on IMPLANpro Inc. impact figures



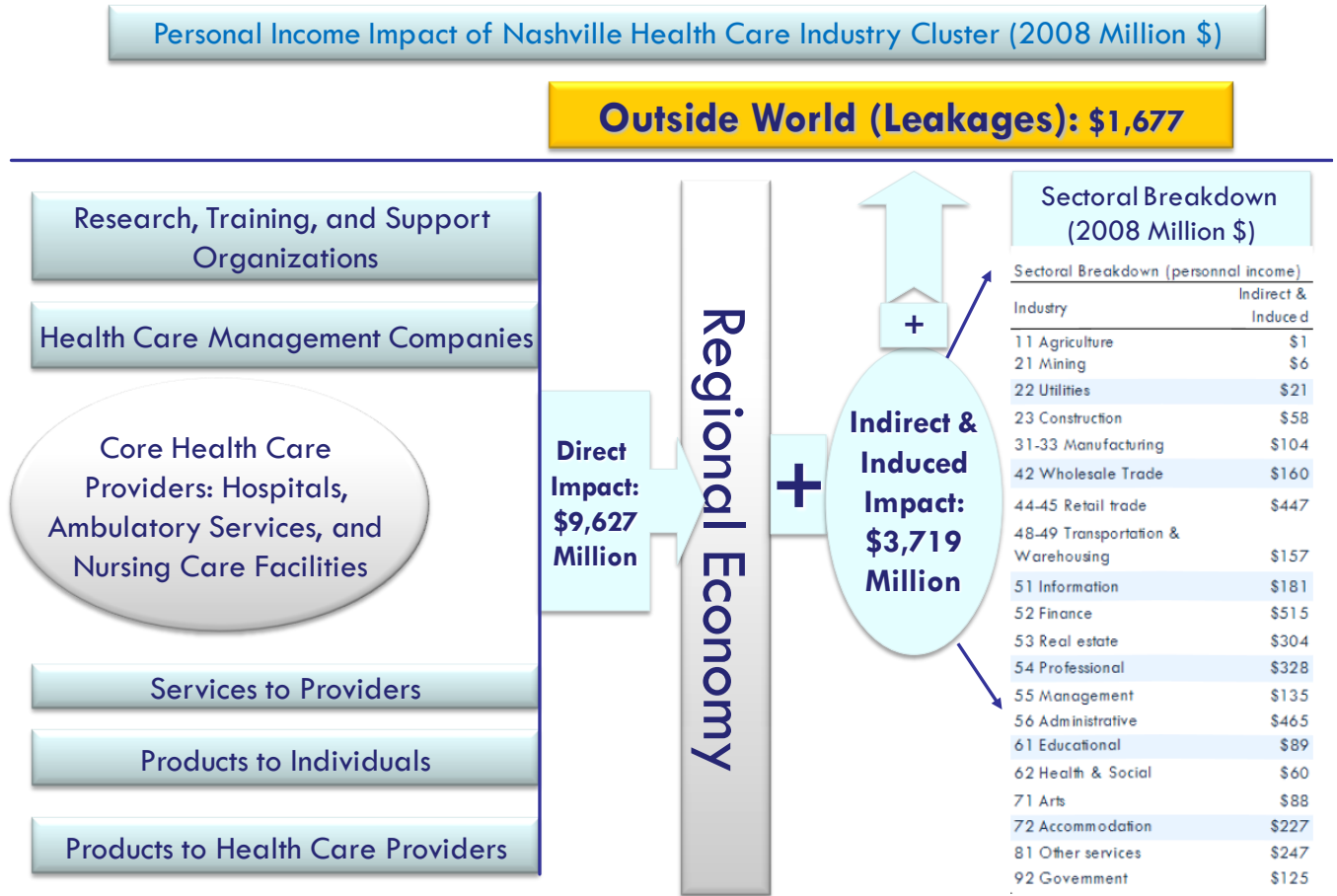
V.4.c. Personal Income

The Nashville health care industry cluster generates about \$13.4 billion in personal income for the local economy. This corresponds to 6 percent of Tennessee's and nearly 22 percent of the Nashville MSA's total personal income in 2008. Moreover, every \$100 of personal income generates an additional \$39 in the local economy. The personal income impact of Nashville's health care industry cluster increased 59 percent from 2004 to 2008.



Sectoral Impact

The largest sectoral impact is in finance with \$515 million. Other notable sectors benefiting from the Nashville health care industry cluster are administrative and waste services (\$465 million), retail trade (\$447 million), and professional and business services (\$328 million). Total outside leakage is estimated at \$1.7 billion across sectors.



Industry Linkages

Every \$1,000 in personal income earned in the health care industry cluster creates an additional \$53 in finance, \$48 in administrative and waste management, and \$46 in retail trade. In addition, there are substantial impacts on professional services (\$34), real estate (\$32), other services (\$26), and accommodation (\$24). Finally, the impact on other sectors ranges from \$19 in the information sector to \$0.05 in the agriculture sector.

Personal Income Linkages between Health Care Industry Cluster and Sectors of Nashville's Economy

Industry	Personal income created by sector per \$1,000 personal income in health care industry cluster	
	Indirect & Induced	
52 Finance	\$515	\$53
56 Administrative	\$465	\$48
44-45 Retail trade	\$447	\$46
54 Professional	\$328	\$34
53 Real estate	\$304	\$32
81 Other services	\$247	\$26
72 Accommodation	\$227	\$24
51 Information	\$181	\$19
42 Wholesale Trade	\$160	\$17
48-49 Transportation & Warehousing	\$157	\$16
55 Management	\$135	\$14
92 Government	\$125	\$13
31-33 Manufacturing	\$104	\$11
61 Educational	\$89	\$9
71 Arts	\$88	\$9
62 Health & Social	\$60	\$6
23 Construction	\$58	\$6
22 Utilities	\$21	\$2
21 Mining	\$6	\$1
11 Agriculture	\$1	\$0

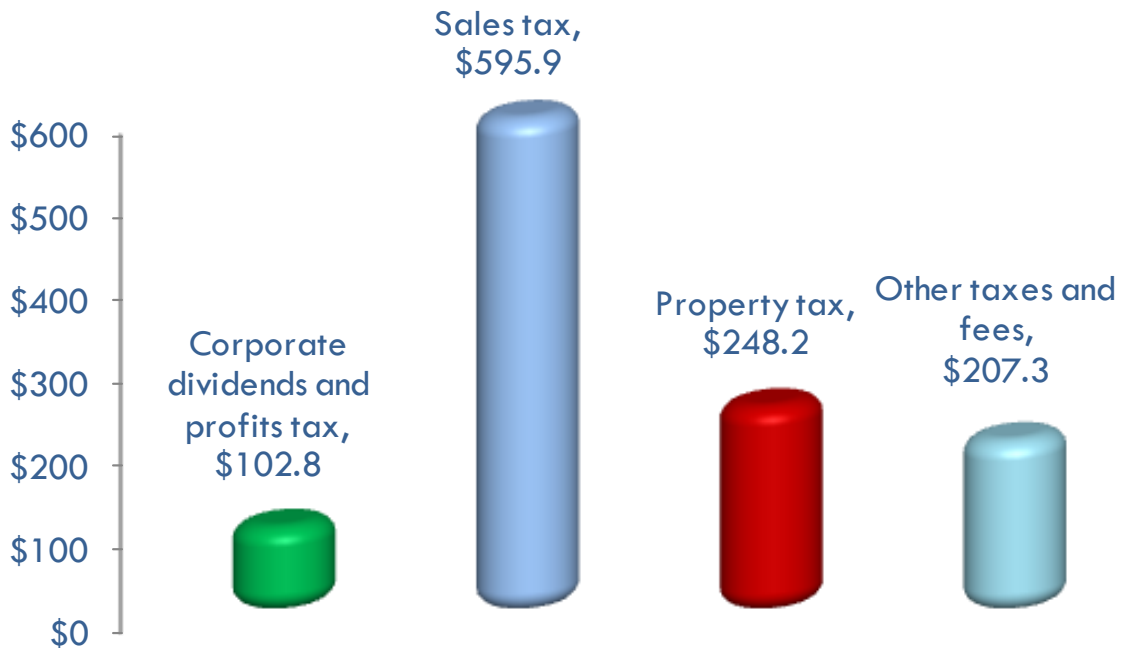
Source: BERC's estimates based on IMPLANpro Inc. impact figures



V.5. Fiscal Impact of the Nashville Health Care Industry Cluster

The Nashville health care industry cluster accounts for \$1.2 billion in state and local taxes. Of this amount, nearly half stems from sales tax while property tax, corporate dividends and profit taxes and other taxes and fees make up the remainder. Compared to 2004, the fiscal impact of Nashville's health care industry cluster is up nearly 55 percent. From a comparative perspective, this figure represents more than 7 percent of all taxes collected in Tennessee and nearly 20 percent of all taxes collected in the Nashville MSA in 2008.

Fiscal Impact of Nashville Health Care Industry Cluster (2008 Million \$)



VI. COMPARATIVE PERSPECTIVE ON NASHVILLE'S HEALTH CARE INDICATORS

VI.1. Employment Growth and Export Potential

Indicators of health care employment suggest that the Nashville MSA has a strong health care industry presence compared to its peer MSAs. Health care employment per capita is the largest among the peers with 59 employees per 1,000 people. Similarly, employment share of the health care sector is the largest among the peers with 12.16 percent in 2008. Finally, in terms of growth of health care employment from 2004, all MSAs show a positive growth trend: the Nashville MSA ranks sixth with 15.05 percent.

Comparative perspective on selected health care indicators

	Export Potential*		Health Care Employment		
	Health care export capacity (LQ)	% Change in export capacity (2004-2008)	Health care employment per capita	Health care employment share (%)	Health care employment growth (%)
Atlanta	0.74	1.37	39	8.59	16.11
Birmingham	0.98	-4.00	50	11.26	6.07
Charlotte	0.67	1.86	39	7.76	21.68
Columbus	0.90	0.11	55	9.70	9.88
Dallas	0.82	0.26	44	9.40	18.19
Denver	0.79	-0.79	40	9.07	13.93
Indianapolis	0.94	1.52	58	10.83	13.14
Jacksonville	0.96	-5.92	53	11.13	8.13
Kansas City	0.90	1.16	52	10.43	13.63
Louisville	1.00	-3.60	57	11.49	6.89
Nashville	1.05	1.14	59	12.16	15.05
Raleigh	0.83	-3.58	46	9.59	19.90
Richmond	0.96	15.51	57	11.12	29.10

*A score greater than "1" indicates that MSA is exporting health care services. A score less than "1" indicates that health care services are primarily used by area residents.

Source: Bureau of Labor Statistics and BERCC estimates



Furthermore, the Nashville MSA's health care industry overall has the best export potential among 13 comparable MSAs. A score greater than one "1" ($LQ > 1$) suggests that an MSA is exporting health care services; that is, residents from other areas are traveling to the region to use its health care services. The Nashville MSA performed better than its peer MSAs in 2008 and also showed a positive growth trend with a 1.14 percent increase from 2004.

VI.2. Health Care Industry Cluster Headquarters and Global Impact

Nashville ranks first among the 13 MSAs in terms of number of major health care industry cluster management companies (both public and private), their revenues, and their employment.

Nashville's global impact is quite substantial with more than 400,000 jobs and \$62 billion in annual business revenues generated by investor-owned health care management companies.

Comparative Perspective on Health Care Cluster Headquarters* (Public and Private)

MSAs	Number of Cluster Headquarters	Total Global Employment ('000)	Total Revenues (2009 Billion \$)	Composite Score	Rank
Nashville	56	400.78	\$62.58	0.87	1
Dallas	99	210.53	\$31.42	0.79	2
Indianapolis	36	134.13	\$100.55	0.69	3
Columbus	45	78.33	\$108.56	0.68	4
Atlanta	60	120.21	\$9.74	0.58	5
Denver	37	73.25	\$11.74	0.41	6
Louisville	27	89.39	\$12.89	0.38	7
Richmond	24	22.93	\$18.84	0.31	8
Kansas City	26	24.22	\$4.99	0.28	9
Birmingham	23	34.14	\$5.00	0.27	10
Charlotte	25	24.45	\$2.58	0.26	11
Jacksonville	15	24.77	\$4.43	0.23	12
Raleigh	14	13.92	\$1.85	0.21	13

Notes: * Companies with greater than \$500,000 in annual revenue and 100 employees. List includes health care industry cluster companies defined throughout this study. Two sources are used for this profile: LexisNexis Academic Universe and ReferenceUSA.com. Composite score includes relative rankings of each MSA with regard to (1) the number of headquarter companies, (2) their total revenues, and (3) their total number of employees.



VI.3. Health Care Occupations

Nashville ranks second among the 13 MSAs in terms of percent of health care occupations among all occupations. Nashville ranks fourth among 13 MSAs in health care occupations per 1,000 people.

Health Care Practitioners and Support Occupations			
MSAs	Total	Health Care Occupations as Percent in Total	Health Care Occupations Per Capita
Atlanta	141,500	5.88	26
Birmingham	48,870	9.44	44
Charlotte	58,360	6.64	34
Columbus	78,430	8.42	44
Dallas	193,480	6.49	31
Denver	82,040	6.54	33
Indianapolis	75,810	8.38	44
Jacksonville	46,470	7.67	35
Kansas City	80,920	7.97	40
Louisville	51,640	8.36	41
Nashville	65,140	8.42	42
Raleigh	37,240	7.22	34
Richmond	49,470	8.05	40

Note: Health care occupations per 1,000 people. Average wage represents the average wage for health care practitioners and support occupations.

Source: Bureau of Labor Statistics (www.bls.gov)



VI.4. Venture Capital Flow

Tennessee ranks fourth among 12 states in terms of venture capital flow in medical devices, equipment, health services, and biotechnology. In Tennessee, the total value of venture capital in these industry fields between 1998 and 2009 was about \$1 billion. Due to data availability, state-level figures are used. However, the major MSAs in these states are the primary recipients of these capital flows.

Venture Capital Flow by State between 1998 and 2009* in Medical Devices and Equipment, Health Services, and Biotechnology (Million \$)

MSAs	1998-2003	2004-2009	1998-2009	Rank**
Tennessee (Nashville)	\$673.5	\$314.6	\$988.1	4
Alabama (Birmingham)	\$74.3	\$42.5	\$116.8	12
Colorado (Denver)	\$629.8	\$939.9	\$1,569.7	3
Florida (Jacksonville)	\$358.7	\$483.0	\$841.7	6
Georgia (Atlanta)	\$460.8	\$431.9	\$892.7	5
Indiana (Indianapolis)	\$55.0	\$268.5	\$323.4	9
Kentucky (Louisville)	\$68.4	\$93.1	\$161.5	11
Missouri (Kansas City)	\$177.6	\$105.3	\$282.9	10
North Carolina (Charlotte & Raleigh)	\$1,275.8	\$1,430.6	\$2,706.5	1
Ohio (Columbus)	\$253.5	\$337.9	\$591.4	8
Texas (Dallas)	\$965.2	\$885.6	\$1,850.7	2
Virginia (Richmond)	\$395.5	\$222.4	\$617.9	7
U.S. Total	\$32,492.7	\$44,261.3	\$76,754.0	

Source: PricewaterhouseCoopers/Venture Economics/National Venture Capital Association Money Tree Survey

Notes: *Data reflect the venture capital flow in the following sectors: (1) medical devices and equipment, (2) health services, and (3) biotechnology.

**Ranking is based on the cumulative value (1998-2009).



Venture Capital by Sectoral Breakdown

Total value of venture capital in Tennessee between 1998 and 2009 was \$283 million in medical equipment, \$578 million in health services, and \$127 million in biotechnology. Tennessee's share of venture capital in health services in U.S. health services venture capital was 9.10 percent. Much of this amount flowed to the Nashville MSA. This assigns a clear leadership position to Nashville in access to funding for health care services companies.

Venture Capital Flow by State between 1998 and 2009 (Million \$)

MSAs	Medical Equipment	Health Services	Biotechnology
Tennessee (Nashville)	\$282.93	\$578.17	\$126.97
Alabama (Birmingham)	\$65.05	\$23.86	\$27.84
Colorado (Denver)	\$382.59	\$126.28	\$1,060.82
Florida (Jacksonville)	\$307.60	\$237.39	\$296.76
Georgia (Atlanta)	\$415.11	\$169.00	\$308.59
Indiana (Indianapolis)	\$42.15	\$124.25	\$157.02
Kentucky (Louisville)	\$19.11	\$52.43	\$89.93
Missouri (Kansas City)	\$160.78	\$27.20	\$94.93
North Carolina (Charlotte & Raleigh)	\$642.07	\$239.40	\$1,825.00
Ohio (Columbus)	\$369.04	\$18.77	\$203.55
Texas (Dallas)	\$634.30	\$469.67	\$746.75
Virginia (Richmond)	\$170.93	\$290.33	\$156.65
U.S. Total	\$26,636.97	\$6,350.42	\$43,766.57
	Medical Equipment	Health Services	Biotechnology
	% in U.S. Total	% in U.S. Total	% in U.S. Total
Tennessee (Nashville)	1.06	9.10	0.29
Alabama (Birmingham)	0.24	0.38	0.06
Colorado (Denver)	1.44	1.99	2.42
Florida (Jacksonville)	1.15	3.74	0.68
Georgia (Atlanta)	1.56	2.66	0.71
Indiana (Indianapolis)	0.16	1.96	0.36
Kentucky (Louisville)	0.07	0.83	0.21
Missouri (Kansas City)	0.60	0.43	0.22
North Carolina (Charlotte & Raleigh)	2.41	3.77	4.17
Ohio (Columbus)	1.39	0.30	0.47
Texas (Dallas)	2.38	7.40	1.71
Virginia (Richmond)	0.64	4.57	0.36

Source: PricewaterhouseCoopers/Venture Economics/National Venture Capital Association MoneyTree(tm) Survey, and BEREC estimates



VI. Where does the Nashville MSA stand relative to its peers?

There are many studies for both academic and public policy purposes that analyze quality of life, business climate, infrastructure, and socioeconomic productivity across cities. While many of these studies are comprehensive in terms of their use of indicators and coverage area, some focus on a single issue, such as education.¹ The rankings serve many purposes: business groups use them as a marketing tool, policymakers address the deficiencies in their respective regions, and individuals and businesses make their relocation decisions based on these rankings. From these perspectives, the rankings play an important role in understanding socioeconomic dynamics across regions.

A glance at various rankings demonstrates that Nashville is in the top 10 among comparable MSAs in terms of infrastructure and human capital.² Most recently, Tennessee has been ranked the 13th most business tax friendly state in 2010. Furthermore, Franklin, Tennessee, is ranked among the best city for startup companies.³ Along similar lines, this study provides rankings of 13 comparable MSAs in the area of health care services. This study uses two categories of ranking: health care business climate and health care infrastructure. For ranking purposes, BERC identified 14 indicators for the health care business climate and 21 for health care infrastructure.

Selection of indicators was affected by (1) availability of reliable data across peer MSAs and (2) literature on business climate and infrastructure indicators. Before rankings, each indicator was converted to a unitless relative score bounded between zero and one [0, 1]. These relative scores were then averaged across indicators for each MSA within the given category (business climate or infrastructure).

BERC's final rankings are based on two fundamental assumptions: (1) each indicator contributes equally to the final score for a given category (no weights are assigned to the indicators), and (2) each indicator's contribution to a given category is linear.

¹ For a review of literature on different aspects of city rankings, see Fred Carstensen et al. (2001), *The Second MetroHartford Regional Performance Benchmark*, Connecticut Center for Economic Analysis, University of Connecticut, Storrs, CT.

² See Carstensen et al. (2001). These rankings are based on 56 comparable MSAs in the U.S.

³ For a list of rankings, see Nashville Area Chamber of Commerce at www.nashvillechamber.com.



VI.1. Health Care Business Climate Indicators

The health care business climate in Nashville is substantially better than in the 12 other MSAs.

Health Care Business Climate Indicators	Atlanta	Birmingham	Charlotte	Columbus	Dallas	Denver	Indianapolis	Jacksonville	Kansas City	Louisville	Nashville	Raleigh	Richmond
Health care employment share (% , 2008)	8.59	11.26	7.76	9.7	9.4	9.07	10.83	11.13	10.43	11.49	12.16	9.59	11.12
Health care employment per 1,000 people (2008)	39	50	39	55	44	40	58	53	52	57	59	46	57
Health care pay (average \$, 2008)	\$57,443	\$47,654	\$53,279	\$54,337	\$55,709	\$59,163	\$55,009	\$51,353	\$53,411	\$50,784	\$51,731	\$52,234	\$52,932
Health care occupations (% , 2008)	5.88	9.44	6.64	8.42	6.49	6.54	8.38	7.67	7.97	8.36	8.42	7.22	8.05
Health care occupations per 1,000 people (2008)	26	44	34	44	31	33	44	35	40	41	42	34	40
Total private health care cluster headquarters' employment ('000)	107.02	12.03	19.98	44.01	155.70	19.15	44.94	21.09	15.54	38.41	255.98	13.52	11.47
Total private health care cluster headquarters' revenue (billion \$)	\$7.49	\$2.93	\$1.45	\$5.85	\$17.79	\$2.14	\$12.22	\$2.48	\$2.84	\$6.11	\$36.47	\$1.51	\$1.73
Number of private health care cluster headquarters (2009)	49	20	20	37	81	23	31	14	22	22	39	10	20
Total public health care cluster headquarters' employment ('000)	13.19	22.11	4.47	34.32	54.84	54.09	89.19	3.68	8.68	50.98	144.81	0.40	11.46
Total public health care cluster headquarters' revenue (billion \$)	\$2.25	\$2.06	\$1.12	\$102.72	\$13.63	\$9.61	\$88.34	\$1.95	\$2.15	\$6.78	\$26.11	\$0.34	\$17.12
Number of public health care cluster headquarters (2009)	11	3	5	8	18	14	5	1	4	5	17	4	4
Health care export capacity (LQ, 2008)	0.74	0.98	0.67	0.9	0.82	0.79	0.94	0.96	0.9	1	1.05	0.83	0.96
Change in export capacity (2004-2008)	1.37	-4	1.86	0.11	0.26	-0.79	1.52	-5.92	1.16	-3.6	1.14	-3.58	15.51
Health care employment growth (% , 2004-2008)	16.11	6.07	21.68	9.88	18.19	13.93	13.14	8.13	13.63	6.89	15.05	19.9	29.1



VIII.2. Health Care Infrastructure Indicators

Nashville's performance is better than the average of the 13 MSAs in health care cost, venture capital in health services, medical devices and equipment, and a number of four-year colleges. Venture capital indicators are state-level indicators. However, a substantial portion of these funds flow to the major MSAs in their respective states.

Health Care Infrastructure Indicators	Atlanta	Birmingham	Charlotte	Columbus	Dallas	Denver	Indianapolis	Jacksonville	Kansas City	Louisville	Nashville	Raleigh	Richmond
Cost per dental visit (\$, 2006)	\$74	78	76	84	78	74	62	67	63	69	59	75	76
Percent of 108 hospital services available (2006)	96.30	96.30	93.52	97.22	96.30	99.07	95.37	86.11	100.00	95.37	94.44	84.26	97.22
Health care cost index (U.S. = 100, 2006)	104.4	91.4	101	96.6	107.5	125.3	99.7	88.3	96	90.2	82.7	104.3	89.5
Cost per doctor visit (\$, 2006)	\$80	61	79	69	88	82	69	63	71	73	71	66	70
Hospital beds per 100,000 people (2006)	242.6	537.4	268.6	310.1	256.7	236.1	357	353.5	400.8	435.8	419.7	269.1	514.1
Number of 4-year colleges (2006)	32	9	13	17	19	28	11	12	29	12	19	6	10
Number of teaching hospitals (2006)	11	10	5	10	17	18	9	6	15	6	5	2	4
Per capita income (\$, 2006)	\$28,214	\$24,186	\$27,603	\$26,569	\$27,942	\$30,599	\$26,927	\$24,895	\$26,523	\$24,792	\$25,727	\$28,820	\$26,653
Physicians per 100,000 people	211	324.1	209.6	280.7	217.7	253	326	257.3	263.3	276.1	299.6	186.7	287.9
Unemployment rate (% , March 2009)	8.8	8.6	11.1	8	7.3	8.5	8.9	9	8.4	10.5	9.3	8.5	7.3
Venture capital in biotechnology--state level (% , 2004-09)	0.74	0.013	3.74	0.22	1.45	2.56	0.46	0.77	0.27	0.22	0.22	3.74	0.36
Venture deals in biotechnology--state level (% , 2004-09)	1.5	0.075	4.14	0.71	1.73	1.92	0.64	0.87	0.41	0.45	0.3	4.14	1.02
Venture capital growth in biotechnology (% , from 1998-2003)	67	-85.97	14.88	-60.25	3.1	69.74	209.96	106.39	181.96	209.96	-15.06	14.88	45.89
Venture capital in health services--state level (% , 2004-09)	0.18	0	6.42	0.61	3.97	2.09	6.48	5.22	0	2.01	8.17	6.42	2.55
Venture deals in health services--state level (% , 2004-09)	0.97	0	1.94	1.3	5.18	2.91	2.91	9.39	0	0.97	11	1.94	2.27
Venture capital growth in health services (% , from 1998-2003)	-98.19	-100	-16.89	20.32	-83.31	-61	484.57	-40.75	-100	653.95	-68.59	-16.89	-82.55
Venture capital in medical--state level (% , 2004-09)	1.43	0.237	2.1	1.64	2.66	1.44	0.24	1.18	0.21	0.02	0.72	2.1	0.52
Venture deals in medical--state level (% , 2004-09)	2.19	0.349	1.65	2.59	3.34	2.04	0.5	1.15	0.6	0.2	1.1	1.65	0.8
Venture capital growth in medical (% , from 1998-2003)	31.63	50.2	17.1	171.6	125.31	62.57	1037.1	72.75	-71.97	1783.6	-28.41	17.1	1.99
Economic diversity (2008)	0.9026	0.9014	0.9022	0.8938	0.9043	0.8999	0.9034	0.9018	0.9028	0.9048	0.9027	0.8921	0.8934
Change in diversity (2004-2008)	-0.18	-0.14	-0.29	-0.21	-0.18	-0.31	-0.15	0.27	-0.2	0.08	0.001	-0.06	-0.16



VI.3. Relative Rankings

In the health care business climate, the Nashville MSA ranks first among the 13 MSAs, while Indianapolis ranks second, Columbus third, and Richmond fourth. While Nashville maintained its ranking from a similar ranking in 2005, Louisville's ranking slipped from second to sixth. In health care infrastructure, similar to its ranking in 2005, Nashville ranks second after Indianapolis, followed by Dallas (third) and Jacksonville (fourth). Rankings of peer MSAs other than Nashville changed significantly in this category. Finally, in overall relative health care competitiveness, Nashville again tops the chart, while Indianapolis ranks second, Dallas third, Columbus fourth, and Richmond fifth. There is again a significant shift in ranking across peers.

MSAs	Health Care Business Climate Relative Rankings*		Health Care Infrastructure Relative Rankings**		Overall Rankings	
	Average Score***	Relative Rankings	Average Score***	Relative Rankings	Average Score***	Relative Rankings
Atlanta, GA	0.41	9	0.46	9	0.43	10
Birmingham, AL	0.42	8	0.40	13	0.41	11
Charlotte, NC	0.30	13	0.44	10	0.37	13
Columbus, OH	0.58	3	0.44	12	0.51	4
Dallas, TX	0.56	5	0.53	3	0.54	3
Denver, CO	0.39	10	0.52	5	0.45	8
Indianapolis, IN	0.67	2	0.57	1	0.62	2
Jacksonville, FL	0.35	11	0.52	4	0.44	9
Kansas City MO	0.44	7	0.50	6	0.47	7
Louisville, KY	0.50	6	0.50	7	0.50	6
Nashville, TN	0.78	1	0.54	2	0.66	1
Raleigh, NC	0.31	12	0.46	8	0.38	12
Richmond, VA	0.56	4	0.44	11	0.50	5

Notes: *Based on the linear combination of standardized scores of 14 indicators presented above.

**Based on the linear combination of standardized scores of 21 indicators presented above.

***The BEREC assumes that each indicator contributes to the average score equally. The selected indicators are closely related to health care business environment and infrastructure. The data availability and timeliness were two key criteria used in the data selection process.



VII. NASHVILLE HEALTH CARE COUNCIL MEMBER COMPANIES

VII.1. Survey Methodology

The Nashville Health Care Council's (NHCC) member companies are diverse, ranging from direct health care providers and health care management, health information technology, and health care finance companies to such professional service providers as law and architecture firms. BEREC's survey asked companies to report their health care-related employment, sales, office space, federal research money, payroll, and operating sites, both in Nashville and overall. Furthermore, the survey also included a *CEO Confidence Survey*, highlighting member company CEOs' evaluation of current economic conditions and business outlook. The survey materials are provided in the appendix.

Because the NHCC member companies represent a diverse group, they differ from the previous two classifications of the health care industry presented in this report: core health care providers and health care industry cluster. Core health care providers narrowly define the sector and include only companies providing direct services to individuals. Health care industry cluster includes health care providers plus companies directly linked to the core providers sector. NHCC member companies are more diverse than the previous two classifications in terms of the industry segment. Readers should review this study with these salient differences between the three groups in mind.

As of November 2009, NHCC had 170 member companies, a 53 percent increase from the 2005 study. BEREC conducted an online survey of NHCC member companies with follow-up reminders from NHCC. The survey included three parts: (A) company profile, (B) company operations, and (C) *CEO Confidence Survey*. A total of 149 member companies were invited to fill out the survey. Twenty-one companies were excluded since they did not have an employment base in the Nashville MSA. Consequently, 65 companies responded to parts A and B of the survey for a response rate of 44 percent. BEREC estimated the missing company figures using company databases (e.g., ReferenceUSA, LexisNexis Academic Universe), individual member company websites, and other BEREC sources. Through these methods of extrapolation, BEREC prepared profiles for 149 member companies.



 NHCC Member Survey: Survey Responses for Part A (Company Profile) and Part B (Company Operation)

NHCC Member Segments	Number of Companies	Percent of Companies (%)	Explanation
NHCC Member Companies Surveyed	149	88	Members Surveyed
<i>Number of Responses</i>	65	44	Survey Response Rate
<i>Company Profile Completed</i>	84	56	Percent not Responded
NHCC Members w/o Nashville Presence	21	12	Percent not Surveyed
Total Member Companies	170	100	

The response rate for the *CEO Confidence Survey* was slightly better than for previous sections: BERCC received responses from 70 businesses for a response rate of 47 percent. The *CEO Confidence Survey* was designed to include certain elements from the business confidence survey conducted quarterly by the Conference Board¹ and the business outlook survey conducted monthly by the Federal Reserve Bank of Philadelphia.²

 NHCC Member Survey: Survey Responses for Part C (CEO Confidence Survey)

NHCC Member Segments	Number of Companies	Percent of Companies (%)	Explanation
NHCC Member Companies Surveyed	149	88	Members Surveyed
<i>Number of Responses</i>	70	47	Survey Response Rate
<i>Companies with no Response</i>	79	53	Percent not Responded
NHCC Members w/o Nashville Presence	21	12	Percent not Surveyed
Total Member Companies	170	100	

VII.2. NHCC Member Companies—Employment and Wages

Operating at 217 Nashville sites, NHCC member companies employ nearly 70,000 people in the Nashville MSA, up 69.8 percent from 2005. The total Nashville-based payroll is \$4.9 billion, up 36 percent from 2005. The average payroll per employee is \$70,015, substantially higher than the average nonfarm wage in the Nashville MSA. According to Bureau of Economic Analysis (www.bea.gov) figures, the average annual wage in the Nashville MSA in 2008 was

¹ For more information, see www.conference-board.org.

² www.philadelphiafed.org.

\$39,280. Considering the difference, NHCC member companies command substantial purchasing power in the Nashville MSA, which has profound implications for the local tax base.

Many NHCC member companies are large corporate headquarters and health care management companies that employ highly skilled individuals who are experts in their respective fields. As previously discussed, these are some of the benefits that corporate headquarters bring to a region.

This survey was not designed to address corporate citizenship of NHCC member companies. However, many studies highlight the role of corporate citizenship in a community. Large companies, especially in health care, traditionally make substantial contributions to local charities, civic organizations, local governments, and individuals through direct cash donations, volunteer time, matching employee donations, in-kind contributions, and charity care.

More than one-third of NHCC member companies employ less than 20 people in the Nashville MSA. A handful of large member companies account for more than 60 percent of NHCC members' local employment. Sixty-one member companies reported total global employment of 374,111 for the period between November 10, 2009, and January 15, 2010.

Please estimate the current number of employees (by place of work).

If your business is a branch operation and your headquarter company is located outside the Nashville MSA, please report only your Nashville MSA employment.

Nashville MSA	Responses	Nashville Employment	Global	Responses	Global Employment
(All Companies)			(Headquarters Only)		(Headquarters Only)
a. 1-20	50	1,000	a. 1-20	11	220
b. 21-40	18	720	b. 21-40	4	160
c. 41-60	8	480	c. 41-60	0	0
d. 61-100	13	1,300	d. 61-100	5	500
e. 101-250	28	7,000	e. 101-250	5	1,250
f. 251-500	16	8,000	f. 251-500	6	3,000
g. 501-999	9	8,991	g. 501-999	8	7,992
h. 1,000 or more	7	42,494	h. 1,000 or more	22	360,989
Total	149	69,985		61	374,111



Not all of these jobs, however, are related to health care. As the table below shows, for more than 36 percent of the NHCC member companies, health care is not their core business, as fewer than 30 percent of their employees are related to health care.

What percent of your total number of employees is *health care-related* (by place of work)?

For example, if your business is an information technology services company and has a diverse set of business clients, your health care-related employees may be estimated by using the following ratio:

Health Care-Related Employees = (Health Care IT Revenues, or Business Clients) / (Total Revenues, or Business Clients)

Nashville MSA	Responses	Percent	Global	Responses	Percent
(All Companies)			(Headquarters Only)		
a. 1%- 15%	35	24	a. 1%- 15%	7	17
b. 16%-30%	17	12	b. 16%-30%	4	9
c. 31%-45%	6	4	c. 31%-45%	1	2
d. 46%-60%	5	3	d. 46%-60%	1	2
e. 61%-75%	5	3	e. 61%-75%	0	0
f. 76%-90%	2	1	f. 76%-90%	1	2
g. 91%-100%	77	53	g. 91%-100%	29	68
Total Reporting	147	100		43	100
Total Health Care-Related Employment in Nashville MSA			64,226		
Total Health Care-Related Employment across Countries			261,645		

Taking into account health care-related share of their employment, NHCC member companies have more than 64,000 health care-related employees in the Nashville MSA and nearly 262,000 globally.

NHCC member companies reported a total of \$4.9 billion in wages and salaries in the Nashville MSA. More than 62 percent of the companies have an annual payroll of less than \$10 million.

Please estimate total annualized payroll for *all operations* (by place of work).

If your business is a branch operation and your headquarter company is located outside the Nashville MSA, please report only your Nashville MSA payroll.

Nashville MSA	Responses	Percent of Companies	Total Payroll (Million \$)
a. Less than \$1 million	29	20	\$29
b. \$1.1-\$2 million	24	16	\$48
c. \$2.1-\$5 million	25	17	\$125
d. \$5.1-\$10 million	15	10	\$150
e. \$10.1-\$25 million	30	20	\$750
f. \$25.1-\$50 million	11	7	\$550
g. \$50.1-\$100 million	10	7	\$1,000
h. \$100.1 million and more	4	3	\$2,250
Total Responses	148	100	\$4,902



NHCC member companies reported \$4.04 billion in wages and salaries related to health care in the region. Average payroll for their health care-related operations is \$62,945, about 60 percent higher than the average nonfarm wage in the Nashville MSA. Similar to their health care-related employment figures, about 52 percent of the member companies indicated that their health care-related payroll represents less than 30 percent of their annual payroll.

What percent of your annualized payroll is for health care-related employees (by place of work)?

For example, if your business is an information technology services company and has a diverse set of business clients, your health care-related payroll may be estimated by using the following ratio:

Health Care-Related Payroll = (Health Care IT Revenues, or Business Clients) / (Total Revenues, or Business Clients)

Nashville MSA	Responses	Percent of Companies
a. 1%- 15%	36	24
b. 16%-30%	17	11
c. 31%-45%	5	4
d. 46%-60%	7	5
e. 61%-75%	4	3
f. 76%-90%	2	1
g. 91%-100%	77	52
Total Responses	148	100
Total Health Care-Related Payroll in Nashville MSA		\$4,042,715,000

VII.3. NHCC Members: Office Space and Revenues

NHCC member companies occupy more than 11 million square feet of office space in the Nashville MSA, of which 8.4 million are health care-related. This study does not differentiate between the different types of commercial spaces NHCC member companies occupy. The 11 million square feet could be in any combination of retail, office, industrial, or medical office space.³ As of the second quarter of 2009, office and industrial space in the Nashville MSA is estimated at around 189 million square feet.⁴ NHCC member companies occupy about 6 percent of office and industrial space in the Nashville MSA.

³ For a review of the Nashville office market, see quarterly reports at www.colliers.com/Markets/Nashville and www.cbre.com/USA/Research/Market+Reports/Local+Reports+Worldwide/globalresearch.htm.

⁴ See CB Richard Ellis MarketView reports for Nashville at www.cbre.com/USA/Research/Market+Reports/Local+Reports+Worldwide/globalresearch.htm.



Total Nashville-based sales of NHCC member companies are estimated at around \$37.8 billion, more than double the reported amount of \$17 billion in 2005. Total global revenues of these member companies are estimated at around \$131 billion. Nearly half of the companies reported annual revenue of less than \$10 million.

Please estimate your company's annual gross revenues by site location. If there is more than one site in a location, please include all.

If your business is a branch operation and your headquarter company is located outside the Nashville MSA, please report only your Nashville MSA revenues.

Nashville MSA			Global		
	Responses	Nashville Revenue (Million)		Responses	Global Revenue (Million)
a. Less than \$1 million	14	\$14	a. Less than \$1 million	6	\$6
b. \$1-\$5 million	32	\$160	b. \$1-\$5 million	9	\$45
c. \$6-\$10 million	21	\$210	c. \$6-\$10 million	5	\$50
d. \$11-\$25 million	22	\$550	d. \$11-\$25 million	3	\$75
e. \$26-\$50 million	16	\$800	e. \$26-\$50 million	6	\$300
f. \$51-\$100 million	18	\$1,800	f. \$51-\$100 million	4	\$400
g. \$101-\$250 million	7	\$1,750	g. \$101-\$250 million	6	\$1,500
h. \$251-\$500 million	1	\$500	h. \$251-\$500 million	3	\$1,500
i. \$0.501-\$1 billion	4	\$2,000	i. \$0.501-\$1 billion	4	\$4,000
j. More than \$1.1 billion	9	\$30,000	j. More than \$1.1 billion	10	\$123,000
Total	144	\$37,784		56	\$130,876

Nashville-based health care-related revenues of NHCC member companies are estimated at \$27.8 billion. Globally, their health care-related revenues are \$106.9 billion. For 35 percent of reporting companies, health care-related revenues account for less than 30 percent of their total revenues. As part of the survey, BERG also included a question regarding the level of federal research and development grants for scientific and clinical purposes. A total of 54 companies reported \$551.4 million in federal research and development, an increase of 106.5 percent from 2005.

What percent of your company's annual gross revenue is from your health care-related operations?

For example, if your business is an information technology services company and has a diverse set of business clients, your health care-related gross revenues may be estimated by using the following ratio:

Health Care-Related Revenues = (Health Care IT Employees, or Business Clients) / (Total Employees, or Business Clients)

Nashville MSA			Global		
	Responses	Percent of Companies		Responses	Percent of Companies
a. 1%- 15%	32	23	a. 1%- 15%	5	10
b. 16%-30%	17	12	b. 16%-30%	5	10
c. 31%-45%	4	3	c. 31%-45%	2	1
d. 46%-60%	4	3	d. 46%-60%	2	1
e. 61%-75%	7	5	e. 61%-75%	0	0
f. 76%-90%	2	1	f. 76%-90%	1	2
g. 91%-100%	75	53	g. 91%-100%	35	76
Total Responses	141	100		50	100

Health Care-Related Gross Revenue (Nashville MSA)

\$27.58 Billion

Health Care-Related Gross Revenue (Global)

\$106.94 Billion



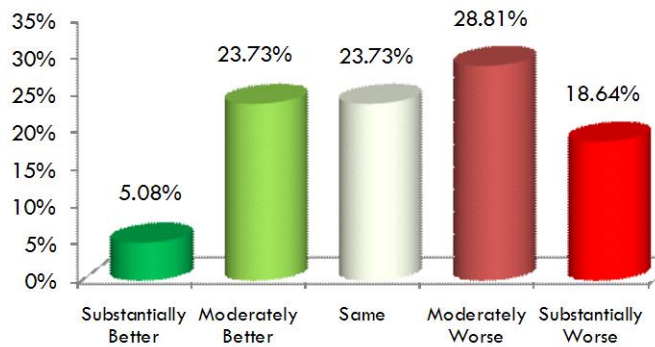
VII.4. NHCC Members: CEO Confidence Survey

BERC surveyed 149 NHCC member companies regarding their perspective on past, current, and future economic conditions in general and national and local health care in particular. A total of 70 CEOs from member companies responded to this section of the survey for a response rate of 47 percent. The survey took place between November 10, 2009, and January 10, 2010.

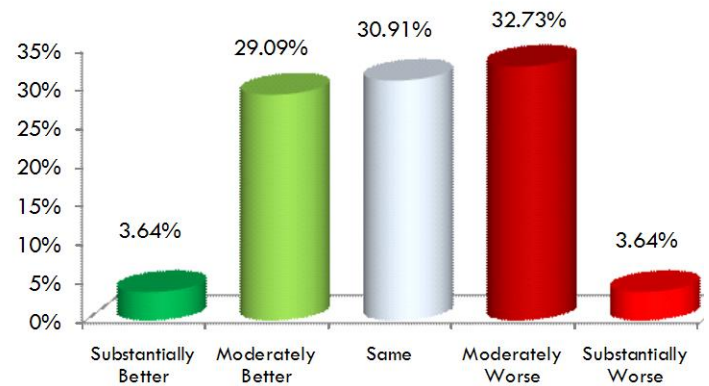
Compared to a year ago, current economic conditions in general (2009 compared to 2008)

According to member CEOs, the Nashville MSA is doing better than the nation. Current economic conditions are better for Nashville for 33 percent of CEOs versus 29 percent for the nation. Nearly half of the CEOs reported current economic conditions for the nation are worse than a year ago, compared to 36 percent indicating the same for Nashville.

C1. Compared to 12 months ago, how would you evaluate general current economic conditions in the U.S.?



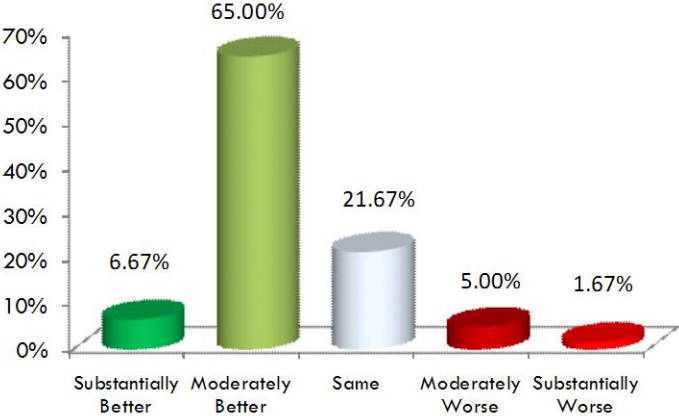
C1. Compared to 12 months ago, how would you evaluate general current economic conditions in the Nashville MSA?



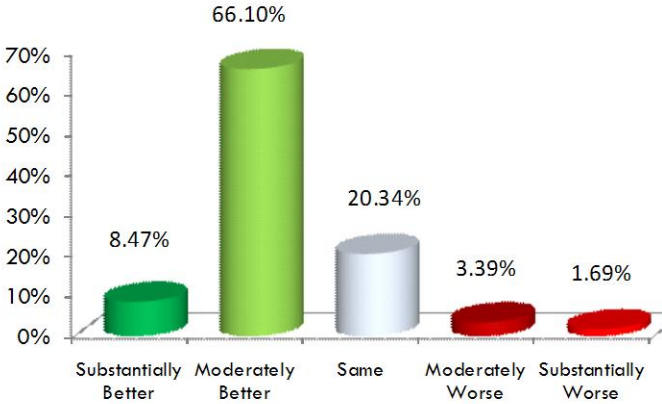
Expectations for overall economic conditions for the next year (2010)

NHCC member CEOs are slightly more hopeful about the Nashville MSA economy than about the U.S. economy. Nearly 75 percent of the CEOs expect the Nashville area economy to be better in 2010. About 72 percent have the same expectations for the U.S. economy.

C2. Looking forward to 12 months from now, what is your expectation for the U.S. economy?



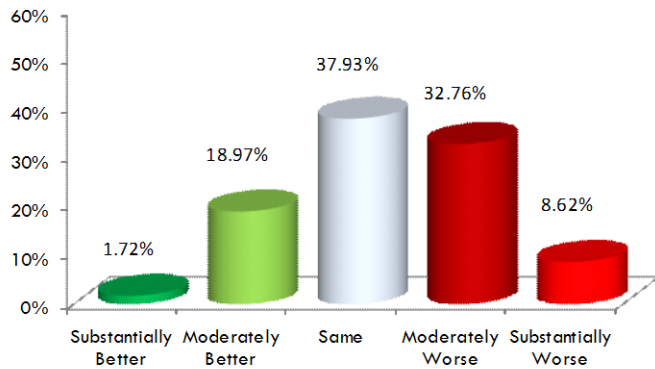
C2. Looking forward to 12 months from now, what is your expectation for the Nashville MSA economy?



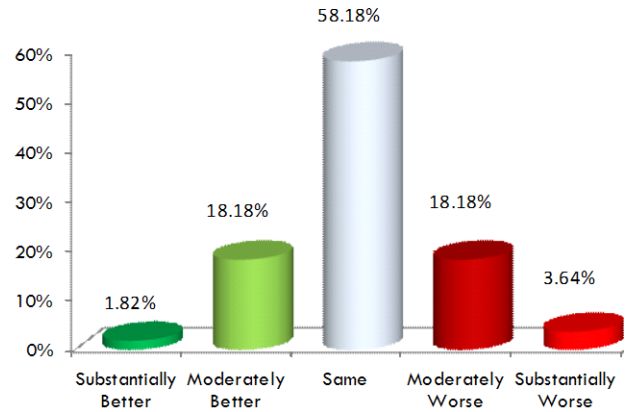
Compared to a year ago, current conditions for health care industry and their own companies (2009 compared to 2008)

NHCC member CEOs see their companies better positioned than the national and local health care industry in general.

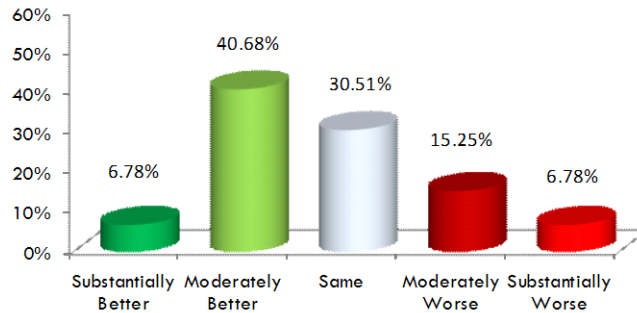
C1a. Compared to 12 months ago, how would you evaluate current conditions in the health care industry in the U.S.?



C1a. Compared to 12 months ago, how would you evaluate current conditions in the health care industry in the Nashville MSA?



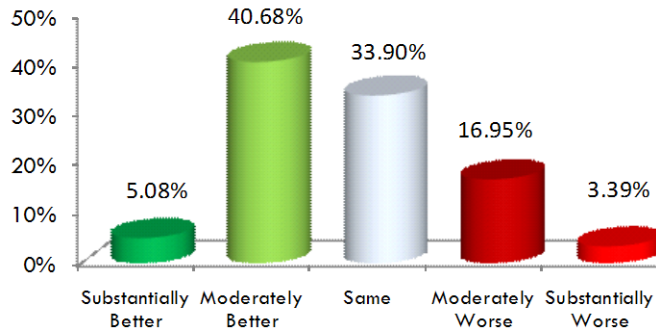
C1b. Compared to 12 months ago, how would you evaluate current conditions in your company?



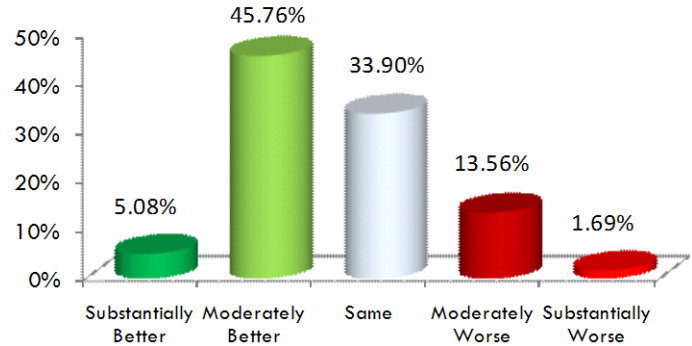
Future expectations for the health care industry (2009)

CEOs are more upbeat about the future of the health care industry in the Nashville MSA than in the nation.

C2a. Looking forward to 12 months from now, what is your expectation for the health care industry in the U.S.?



C2a. Looking forward to 12 months from now, what is your expectation for the health care industry in the Nashville MSA?

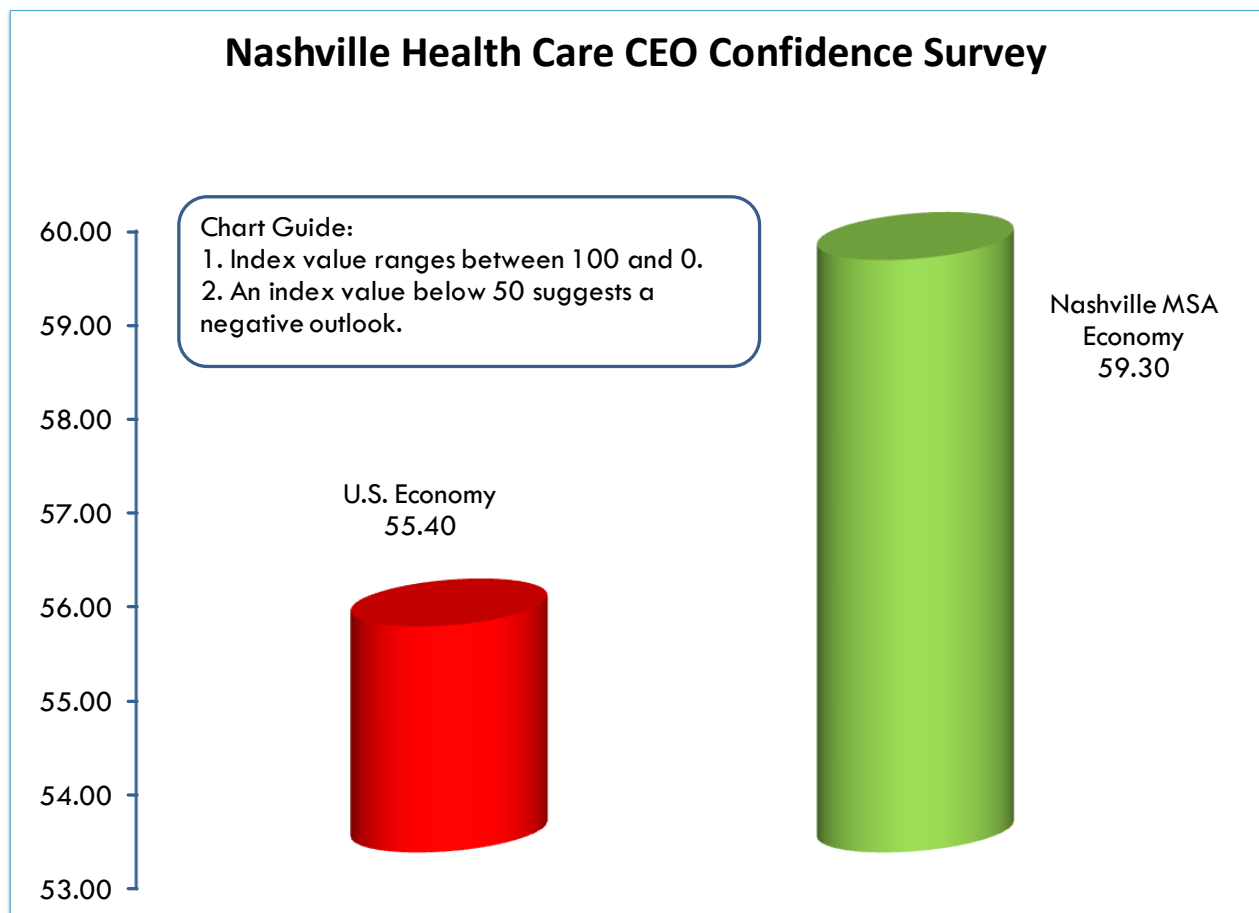


CEO Confidence Survey

The *CEO Confidence Survey* is the average value of standardized scores for the three survey questions highlighted above. These are (1) current general economic conditions compared to a year ago (labeled as question # C1), (2) future expectations for the overall economy (labeled as question # C2), and (3) future expectations for the health care industry (labeled as question # C2a).



As presented below, overall, the CEO outlook is positive for both the U.S. and Nashville MSA economies. An index value of 50 and higher suggests a positive outlook. These figures are comparable to the CEO business confidence survey conducted quarterly by the Conference Board. To give a context for *BERC CEO Confidence Survey*, the first quarter reading of the Conference Board CEO Confidence Index is 62, suggesting a positive outlook. As noted below, the health care CEO outlook for the Nashville MSA is 59.30, nearly four points higher than the health care CEO outlook for the nation.⁵



Hiring and profit expectations

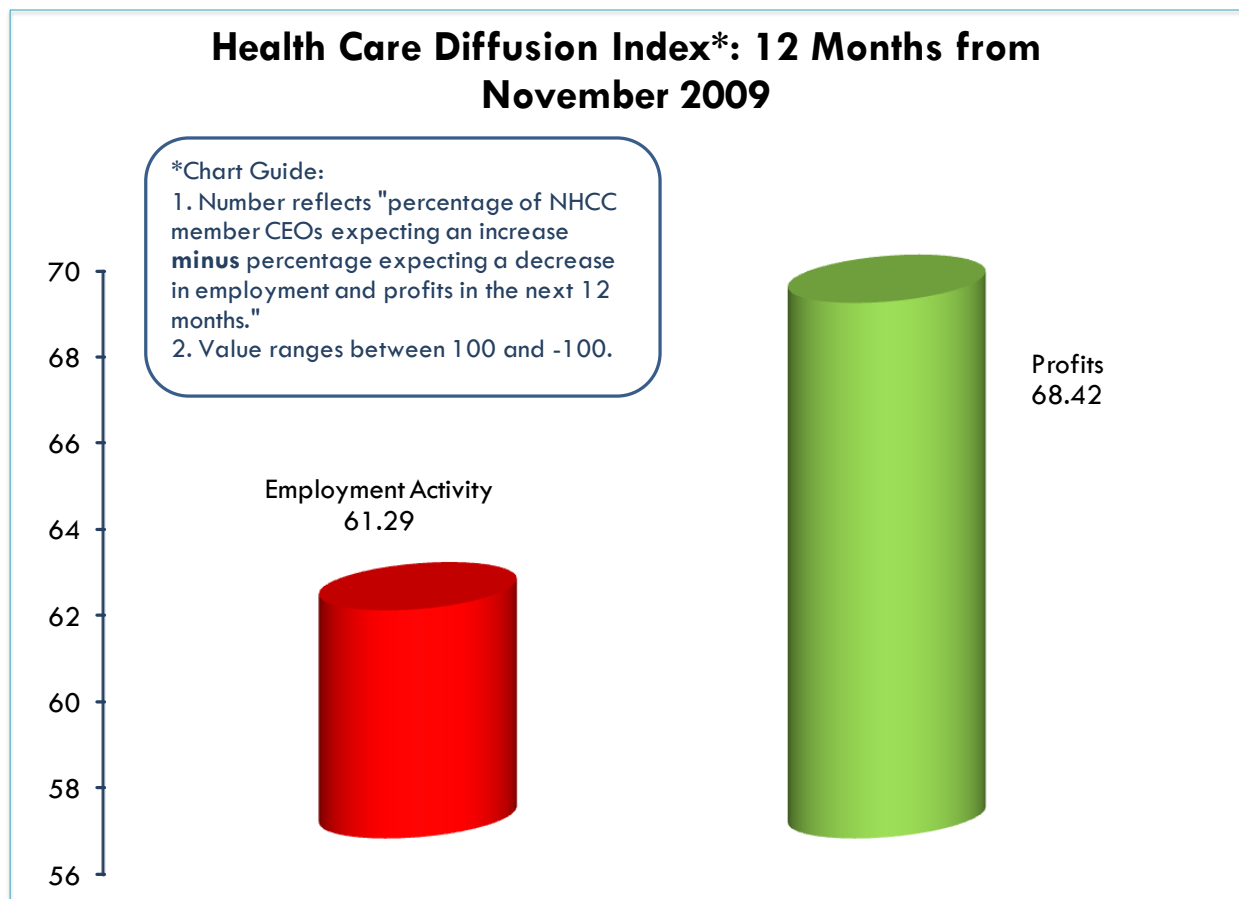
The extensive analysis of the health care sector suggests that the industry is a growth industry even in the face of the worst economic recession in recent history. NHCC member CEOs suggest that this trend will continue. The employment activity index, which ranges from -100 to +100, with -100 being very negative and +100 being very positive, shows a strong hiring expectation in the

⁵For the latest survey, see www.conference-board.org.



year following November 2009. This index number is constructed as the difference between the percent of CEOs expecting an increase in hiring and the percent of CEOs expecting a decrease. The current reading of the employment activity index is 61.29. The employment activity index is comparable to the business outlook survey for the manufacturing industry by the Federal Reserve Bank of Philadelphia.⁶ The April 2010 reading of the Federal Reserve Bank survey is 44, suggesting expanding economic activities in the manufacturing sector.

As the chart below shows, along with hiring expectations, there is also a strong profit expectation among the NHCC member CEOs: the index number for profits is 68.42.

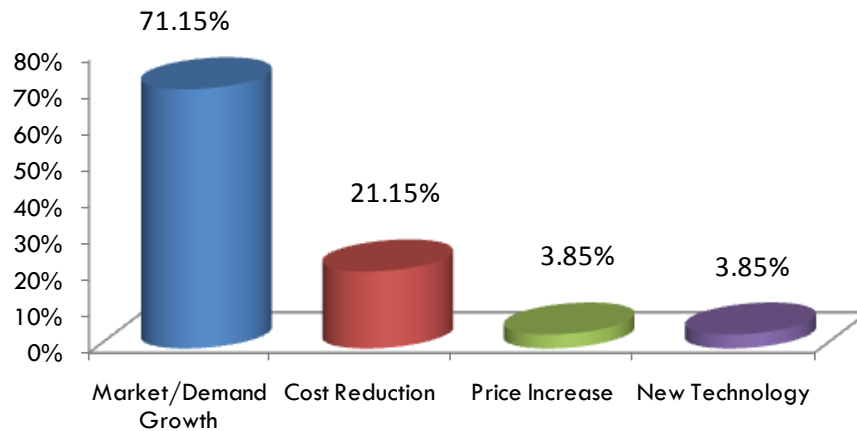


⁶ For a recent survey, see www.philadelphiafed.org.



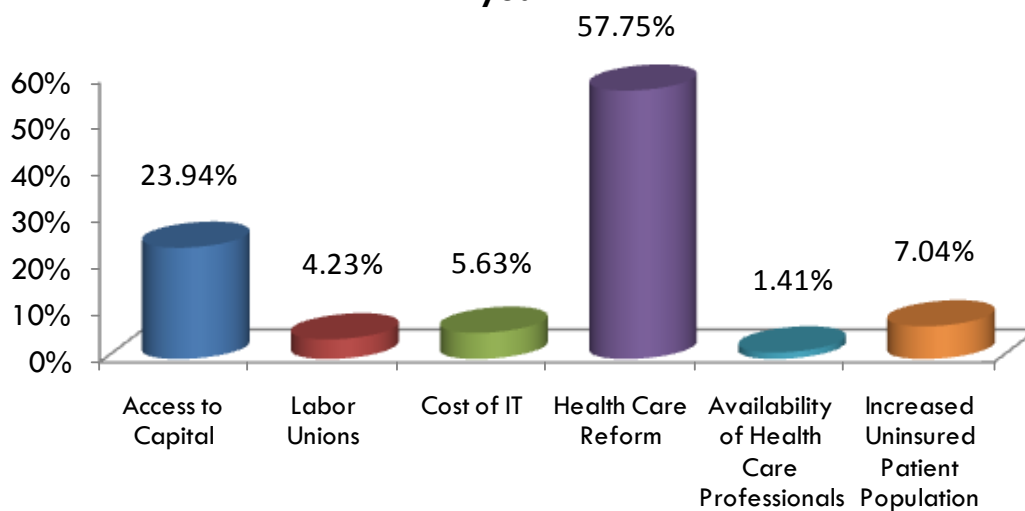
What is the driving force for increasing profit expectations? More than two-thirds of NHCC member CEOs expect the growth in demand for health services to be the driving force for profits. About one-fifth of the health care CEOs cite cost reduction as a primary reason for increasing profit expectations.

C5. If you expect your profits from health care related operations to increase, what would be the primary reason?



What is the biggest business concern over the next year? Before proceeding further, a note of explanation is in order. This survey was conducted between November 19, 2009, and January 10, 2010 during a period of national-level debate on health care reform. It is not surprising to see nearly three-fifths of the member CEOs citing health care reform as the biggest business concern. It is not clear, however, whether the content of the reform, uncertainty surrounding the reform, or both are the cause of business concerns. Access to capital ranked second with nearly one-fourth of the CEOs citing it as their biggest business concern.

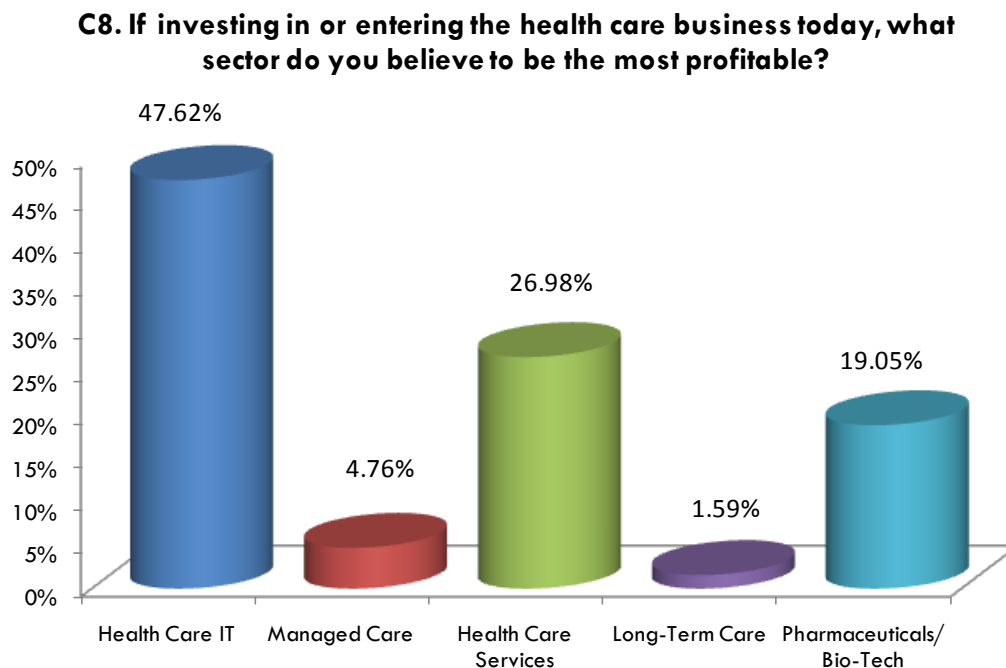
C6. What is your biggest business concern over the next year?



What are the plans for next year? Nearly 50 percent of member CEOs indicated that their organizations will grow organically. Mergers and acquisitions ranked second: 28 percent of CEOs expect their organizations to acquire. Nearly 27 percent indicated that their organizations will focus on operations.

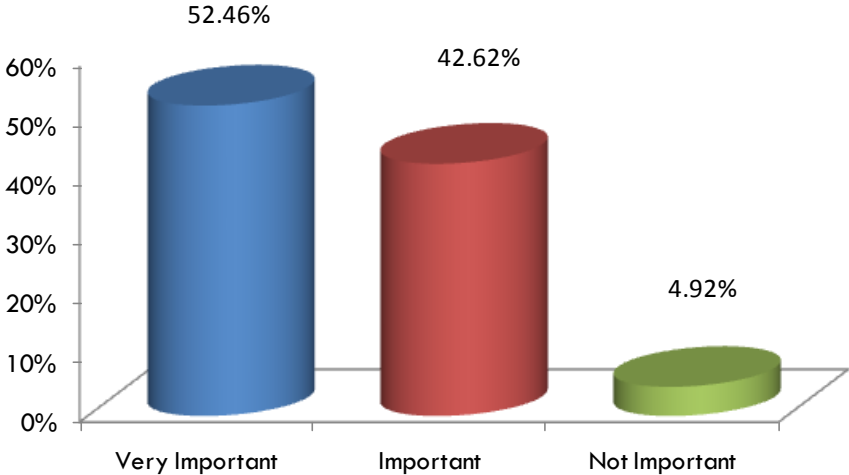


What are the profitable investment areas in the health care business? Nearly half of NHCC member CEOs suggested that the most profitable sector in the health care business is health care IT. Overall, health care services were cited next by 27 percent, followed by pharmaceuticals/bio-tech industry (19 percent).



How important is a Nashville location to your business? Does Nashville make a difference for your business? Overall, 95 percent of the NHCC member CEOs indicated that Nashville is important for their business; 53 percent said it is very important.

C9. How important is it to your business to be located in Nashville?



VIII. CONCLUSION

Nashville is truly the epicenter of the health care industry in the nation. Indicators utilized in this study demonstrate that Nashville's health care industry has a substantial impact on the MSA's economy and plays a critical role in shaping the future of the health care industry landscape across the globe. Confirming this is the presence of health care company headquarters and the flow of venture and private equity capital to the Nashville area. Overwhelmingly, NHCC member companies confirm that a Nashville location is important to their business. These member companies play a vital role in the Nashville MSA economy. A missing but important factor from this analysis is the impact of corporate citizenship of these global companies on the local economy. Additional growth opportunities are suggested in health information technologies, as well as policies surrounding the implementation of health care reform and an emphasis on global growth and economic development.



IX. SELECTED BIBLIOGRAPHY

Bergman, Edward M., and Edward J. Feser. *Industrial and Regional Clusters: Concepts and Comparative Advantages*. Morgantown, WV: Regional Science Institute, West Virginia University, 1999. The Web Book of Regional Science. www.rri.wvu.edu/WebBook/Bergman-Feser/contents.htm.

Berry, Suzanne L., and Stan Spurlock. *Measuring the Impact of the Healthcare Sector on a Local Economy: Sharkey-Issaquena County, Mississippi*. Prepared for Mississippi Hospital Association. September 2002.

Carstensen, Fred, et al. *Second MetroHartford Regional Performance Benchmark*. Connecticut Center for Economic Analysis, University of Connecticut. Storrs, CT. 2001.

Center for Economic Development Research. *The Economic Contributions of Baptist Health Systems of South Florida*. University of South Florida. March 2001.

Chase, Robert A. *The Biotechnology and Medical Device Industry in Washington State: An Economic Analysis*. Prepared for the Washington Biotechnology and Biomedical Association. Kirkland, WA: Huckell/Weinman Associates, December 2002.

Chase, Robert A. *Economic Contribution of the Healthcare Industry to the City of Seattle*. Prepared for the City of Seattle Office of Economic Development. Kirkland, WA: Huckell/Weinman Associates, September 2004.

Clower, Terry L., and Bernard L. Weinstein. *The Dallas/Fort Worth Health Industry: Economic Impact and Growth*. University of North Texas. November 1998.

Coomes, Paul A., and Raj Narang. *Louisville's Health-Related Economy: Size, Character, and Growth*. Prepared for Greater Louisville Health Enterprises Network. Louisville, KY. May 2001.

Doeksen, Gerald A., and Val Schott. *The Economic Importance of the Health Care Sector on a Rural Economy*. Oklahoma State University. 2002.

Evans, Garen K. *East Central Mississippi Health Network: Economic Impact Analysis*. Community Resource Development Publication No: CRD05-011. Mississippi State University. September 2004.

Harris, Thomas, et al. *Economic Impact and Linkages of the Local Health Sector on the Economy of Lander County, Nevada, 2000*. University of Nevada, Reno. January 2004.

Higgins, Scott E., and Kristy Karl. *Measuring the Impact of the Healthcare Sector on Swain County, North Carolina*. Western Carolina University. 2003.



Klier, Thomas, and William Testa. "Location Trends of Large Company Headquarters during the 1990s." *Economic Perspectives*. 2002.

Lazarus, William F., and David A. Nelson. *Renville County: Economic Impact of the Healthcare Sector*. University of Minnesota. October 16, 2002.

Market Street Services Inc. *Target Business Analysis: Nashville, TN*. Atlanta, GA. 2005 and 2010.

Metropolitan Chicago Healthcare Council. *The Economic Impact of Chicago's Hospitals on the Metropolitan Chicago Area*. 2004.

Minnesota IMPLAN Group Inc. *IMPLAN*.

Partnership for Michigan's Health. *The Economic Impact of Health Care in Michigan*. Second Edition. June 2005.

Porter, Michael. *The Competitive Advantage of Nations*. New York: The Free Press, 1990.

Porter, Michael. "Location, Competition, and Economic Development: Local Clusters in the Global Economy." *Economic Development Quarterly*. Vol. 14, pp-15-34. 2000.

Washington State Hospital Association. *The Business of Caring: The Economic Impact of Hospitals in Washington State*. Seattle, Washington. October 2003.



X. APPENDIX

X.1. Data Sources

Data Sources Consulted	Web Link
Bureau of Labor Statistics	www.bls.gov
State Occupational Projections	www.projectionscentral.com
Census Bureau	www.census.gov
Tennessee Advisory Commission on Intergovernmental Relations (TACIR)	www.state.tn.us/tacir
Tennessee Department of Labor and Workforce Development	www.state.tn.us/labor-wfd
University of Tennessee, State Data Center	cber.bus.utk.edu
Nashville Health Care Council	www.healthcarecouncil.com
American Hospital Association Annual Survey Database	www.aha.org
ReferenceUSA	www.referenceusa.com
IMPLANpro, Inc.	www.implan.com
CBRE CB Richard Ellis	www.cbre.com
Urban Land Institute (Several study findings on employment density)	www.ulii.org
Bureau of Economic Analysis	www.bea.gov
PricewaterhouseCoopers/Venture Economics/National Venture Capital Association	
Money Tree Survey	www.pwcmoneytree.com
MTSU Business and Economic Research Center (Survey)	www.mtsu.edu/~BERC
Nashville Chamber of Commerce	www.nashvillechamber.com
Expansion Management	http://www.expansionmanagement.com/
Business Facilities	www.businessfacilities.com
City and Places Ranking	Hard Copy
LexisNexis Academic Universe	www.lexisnexis.com



X.2. Survey Instrument

MTSU BERCC NHCC 2009 CEO SURVEY	Page 1 of 5
<p>NASHVILLE HEALTH CARE COUNCIL MEMBER REGIONAL IMPACT AND BUSINESS CONFIDENCE SURVEY 2009</p>	
<p>The purposes of this survey are to (A) create a summary profile of Nashville Health Care Council member companies, (B) measure their local, regional, and global impacts, and (C) create a CEO business confidence index similar to the Conference Board's CEO Confidence Survey. Your cooperation to this survey at the CEO or CFO level is greatly appreciated.</p>	
<p>Please Note: (1) The Nashville MSA in this study refers to the following 13 counties: Cannon, Cheatham, Davidson, Dickson, Hickman, Macon, Robertson, Rutherford, Smith, Sumner, Trousdale, Williamson, and Wilson counties. (2) This survey has three (3) parts: (A) Company Profile, (B) Company Operation, and (C) Future Expectations.</p>	
<p>EXTREMELY CONFIDENTIAL: Individual responses will not be released.</p>	
<p>PART A. COMPANY PROFILE (Please pick one)</p>	
<p>A1. Our company in the Nashville MSA is</p>	
<ul style="list-style-type: none"> a. a branch operation b. headquarters c. both (if more than two (2) sites) 	
<p>A2. Ownership: Our company is</p>	
<ul style="list-style-type: none"> a. privately owned b. publicly traded c. not for profit d. government (including state higher education institutions) 	
<p>A3. How many sites does your company have in the Nashville MSA?</p>	
<ul style="list-style-type: none"> a. 1 b. 2 c. 3 d. 4 or more 	
<p>A4. What is the square footage of space your company occupies in the Nashville MSA (if more than one (1) site, please estimate <u>the total</u>)?</p>	
<ul style="list-style-type: none"> a. Less than 5,000 b. 5,001-10,000 c. 10,001-25,000 d. 25,001-50,000 e. 50,001-100,000 f. 100,001-250,000 g. More than 250,001 	
<p>A5. What percent of the square footage estimated in A4 is <u>health-care related</u>?</p>	
<p>For example, if your business is an information technology services company and has a diverse set of business clients, your health care related square footage may be estimated by using the following ratio:</p>	
<p>Health Care Related Square Footage = (Health Care IT Revenues, Business Clients, or Employees) / (Total Revenues, Business Clients, or Employees)</p>	
<ul style="list-style-type: none"> a. 1%- 15% b. 16%-30% c. 31%-45% d. 46%-60% e. 61%-75% f. 76%-90% g. 90%-100% 	



PART B. COMPANY OPERATION FOR FY 2008-2009 (or latest year available). Please estimate.**B1. Please estimate the current number of employees (by place of work).**

If your business is a branch operation and your headquarter company is located outside the Nashville MSA, please report only your Nashville MSA employment.

<u>Nashville MSA</u> (All Companies)	<u>Tennessee</u> (Headquarters Only)	<u>United States</u> (Headquarters Only)	<u>Global</u> (Headquarters Only)
a. 1-20	a. 1-20	a. 1-20	a. 1-20
b. 21-40	b. 21-40	b. 21-40	b. 21-40
c. 41-60	c. 41-60	c. 41-60	c. 41-60
d. 61-100	d. 61-100	d. 61-100	d. 61-100
e. 101-250	e. 101-250	e. 101-250	e. 101-250
f. 251-500	f. 251-500	f. 251-500	f. 251-500
g. 501-999	g. 501-999	g. 501-999	g. 501-999
h. 1,000-2,499	h. 1,000-2,499	h. 1,000-2,499	h. 1,000-2,499
i. 2,500-4,999	i. 2,500-4,999	i. 2,500-4,999	i. 2,500-4,999
j. 5,000-9,999	j. 5,000-9,999	j. 5,000-9,999	j. 5,000-9,999
k. 10,000 or more	k. 10,000 or more	k. 10,000 or more	k. 10,000 or more

B1a. What percent of your total number of employees is health-care related (by place of work)?

For example, if your business is an information technology services company and has a diverse set of business clients, your health care related employees may be estimated by using the following ratio:

Health Care Related Employees = (Health Care IT Revenues, or Business Clients) / (Total Revenues, or Business Clients)

<u>Nashville MSA</u> (All Companies)	<u>Tennessee</u> (Headquarters Only)	<u>United States</u> (Headquarters Only)	<u>Global</u> (Headquarters Only)
a. 1%- 15%	a. 1%- 15%	a. 1%- 15%	a. 1%- 15%
b. 16%-30%	b. 16%-30%	b. 16%-30%	b. 16%-30%
c. 31%-45%	c. 31%-45%	c. 31%-45%	c. 31%-45%
d. 46%-60%	d. 46%-60%	d. 46%-60%	d. 46%-60%
e. 61%-75%	e. 61%-75%	e. 61%-75%	e. 61%-75%
f. 76%-90%	f. 76%-90%	f. 76%-90%	f. 76%-90%
g. 91%-100%	g. 91%-100%	g. 91%-100%	g. 91%-100%

B2. Please estimate total annualized payroll for all operations (by place of work).

If your business is a branch operation and your headquarter company is located outside the Nashville MSA, please report only your Nashville MSA payroll.

<u>Nashville MSA</u> (All Companies)	<u>Tennessee</u> (Headquarters Only)	<u>United States</u> (Headquarters Only)	<u>Global</u> (Headquarters Only)
a. Less than \$1 million	a. Less than \$1 million	a. Less than \$1 million	a. Less than \$1 million
b. \$1.1-\$2 million	b. \$1.1-\$2 million	b. \$1.1-\$2 million	b. \$1.1-\$2 million
c. \$2.1-\$5 million	c. \$2.1-\$5 million	c. \$2.1-\$5 million	c. \$2.1-\$5 million
d. \$5.1-\$10 million	d. \$5.1-\$10 million	d. \$5.1-\$10 million	d. \$5.1-\$10 million
e. \$10.1-\$25 million	e. \$10.1-\$25 million	e. \$10.1-\$25 million	e. \$10.1-\$25 million
f. \$25.1-\$50 million	f. \$25.1-\$50 million	f. \$25.1-\$50 million	f. \$25.1-\$50 million
g. \$50.1-\$100 million	g. \$50.1-\$100 million	g. \$50.1-\$100 million	g. \$50.1-\$100 million
h. \$100.1-\$250 million	h. \$100.1-\$250 million	h. \$100.1-\$250 million	h. \$100.1-\$250 million
i. \$250.1-\$500 million	i. \$250.1-\$500 million	i. \$250.1-\$500 million	i. \$250.1-\$500 million
j. \$500.1-\$1,000 million	j. \$500.1-\$1,000 million	j. \$500.1-\$1,000 million	j. \$500.1-\$1,000 million
k. \$1,000.1 million or more	k. \$1,000.1 million or more	k. \$1,000.1 million or more	k. \$1,000.1 million or more

B2a. What percent of your annualized payroll is for health care related employees (by place of work)?

For example, if your business is an information technology services company and has a diverse set of business clients, your health care related payroll may be estimated by using the following ratio:

Health Care Related Payroll = (Health Care IT Revenues, or Business Clients) / (Total Revenues, or Business Clients)

<u>Nashville MSA</u> (All Companies)	<u>Tennessee</u> (Headquarters Only)	<u>United States</u> (Headquarters Only)	<u>Global</u> (Headquarters Only)
a. 1%- 15%	a. 1%- 15%	a. 1%- 15%	a. 1%- 15%
b. 16%-30%	b. 16%-30%	b. 16%-30%	b. 16%-30%
c. 31%-45%	c. 31%-45%	c. 31%-45%	c. 31%-45%
d. 46%-60%	d. 46%-60%	d. 46%-60%	d. 46%-60%
e. 61%-75%	e. 61%-75%	e. 61%-75%	e. 61%-75%
f. 76%-90%	f. 76%-90%	f. 76%-90%	f. 76%-90%
g. 91%-100%	g. 91%-100%	g. 91%-100%	g. 91%-100%



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B3. Please estimate your company's annual gross revenues by site location. If there is more than one site in a location, please include all.

If your business is a branch operation and your headquarter company is located outside the Nashville MSA, please report only your Nashville MSA revenues.

<u>Nashville MSA</u>	<u>Tennessee</u>	<u>United States</u>	<u>Global</u>
(All Companies)	(Headquarters Only)	(Headquarters Only)	(Headquarters Only)
a. Less than \$1 million	a. Less than \$1 million	a. Less than \$1 million	a. Less than \$1 million
b. \$1-\$5 million	b. \$1-\$5 million	b. \$1-\$5 million	b. \$1-\$5 million
c. \$6-\$10 million	c. \$6-\$10 million	c. \$6-\$10 million	c. \$6-\$10 million
d. \$11-\$25 million	d. \$11-\$25 million	d. \$11-\$25 million	d. \$11-\$25 million
e. \$26-\$50 million	e. \$26-\$50 million	e. \$26-\$50 million	e. \$26-\$50 million
f. \$51-\$100 million	f. \$51-\$100 million	f. \$51-\$100 million	f. \$51-\$100 million
g. \$101-\$250 million	g. \$101-\$250 million	g. \$101-\$250 million	g. \$101-\$250 million
h. \$251-\$500 million	h. \$251-\$500 million	h. \$251-\$500 million	h. \$251-\$500 million
i. \$0.501-\$1 billion	i. \$0.501-\$1 billion	i. \$0.501-\$1 billion	i. \$0.501-\$1 billion
j. \$1.1-\$5 billion	j. \$1.1-\$5 billion	j. \$1.1-\$5 billion	j. \$1.1-\$5 billion
k. \$5.1-10 billion	k. \$5.1-10 billion	k. \$5.1-10 billion	k. \$5.1-10 billion
l. \$10.1-\$20 billion	l. \$10.1-\$20 billion	l. \$10.1-\$20 billion	l. \$10.1-\$20 billion
m. More than \$20 billion	m. More than \$20 billion	m. More than \$20 billion	m. More than \$20 billion

B3a. What percent of your company's annual gross revenue is from your health care related operations?

For example, if your business is an information technology services company and has a diverse set of business clients, your health care related gross revenues may be estimated by using the following ratio:

Health Care Related Revenues = (Health Care IT Employees, or Business Clients) / (Total Employees, or Business Clients)

<u>Nashville MSA</u>	<u>Tennessee</u>	<u>United States</u>	<u>Global</u>
a. 1%- 15%	a. 1%- 15%	a. 1%- 15%	a. 1%- 15%
b. 16%-30%	b. 16%-30%	b. 16%-30%	b. 16%-30%
c. 31%-45%	c. 31%-45%	c. 31%-45%	c. 31%-45%
d. 46%-60%	d. 46%-60%	d. 46%-60%	d. 46%-60%
e. 61%-75%	e. 61%-75%	e. 61%-75%	e. 61%-75%
f. 76%-90%	f. 76%-90%	f. 76%-90%	f. 76%-90%
g. 91%-100%	g. 91%-100%	g. 91%-100%	g. 91%-100%

B4. Please estimate your annual health care related research and development (R&D) expenditures for Nashville MSA only. (Please report only "Scientific and Clinical R&D" expenditures.)

- \$0
- Less than \$100,000
- \$0.1-\$0.5 million
- \$0.6-\$1 million
- \$1.1-\$5 million
- \$5.1-\$10 million
- \$11-\$25 million
- \$26-\$50 million
- \$51-\$100 million
- \$101-\$500 million
- More than \$500 million



PART C. FUTURE EXPECTATIONS (CEO CONFIDENCE SURVEY)**C1. Compared to 12 months ago, how would you evaluate general current economic conditions?**

- | | |
|---------------------------|------------------------------------|
| <u>In the U.S.</u> | <u>In the Nashville MSA</u> |
| a. substantially better | a. substantially better |
| b. moderately better | b. moderately better |
| c. same | c. same |
| d. moderately worse | d. moderately worse |
| e. substantially worse | e. substantially worse |

C1a. Compared to 12 months ago, how would you evaluate current conditions in the health care industry?

- | | |
|---------------------------|------------------------------------|
| <u>In the U.S.</u> | <u>In the Nashville MSA</u> |
| a. substantially better | a. substantially better |
| b. moderately better | b. moderately better |
| c. same | c. same |
| d. moderately worse | d. moderately worse |
| e. substantially worse | e. substantially worse |

C1b. Compared to 12 months ago, how would you evaluate current conditions in your company?

- a. substantially better
- b. moderately better
- c. same
- d. moderately worse
- e. substantially worse

C2. Looking forward to 12 months from now, what is your expectation for

- | | |
|---------------------------------|--|
| <u>the U.S. economy?</u> | <u>the Nashville MSA economy?</u> |
| a. substantially better | a. substantially better |
| b. moderately better | b. moderately better |
| c. same | c. same |
| d. moderately worse | d. moderately worse |
| e. substantially worse | e. substantially worse |

C2a. Looking forward to 12 months from now, what is your expectation for the health care industry

- | | |
|----------------------------|-------------------------------------|
| <u>in the U.S.?</u> | <u>in the Nashville MSA?</u> |
| a. substantially better | a. substantially better |
| b. moderately better | b. moderately better |
| c. same | c. same |
| d. moderately worse | d. moderately worse |
| e. substantially worse | e. substantially worse |

C3. Looking forward to 12 months from now, do you expect the number of your employees in the Nashville MSA to

- a. decrease?
- b. remain the same?
- c. increase?

C4. What are your firm's profit expectations from health care related operations in the Nashville MSA for the next 12 months?

- a. increase substantially
- b. increase moderately
- c. remain the same
- d. decrease

C5. If you expect your profits from health care related operations to increase, what would be the primary reason?

- a. market/demand growth
- b. cost reduction
- c. price increase
- d. new technology



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C6. What is your biggest business concern over the next year? (please pick one)

- a. access to capital
- b. labor unions
- c. cost of IT
- d. health care reform
- e. availability of health care professionals
- f. increased uninsured patient population

C7. Over the next year, do you see your organization (please pick one)

- a. acquiring?
- b. growing organically and by same-store sales?
- c. focused on operations?
- d. constricting and selling off assets?

C8. If investing in or entering the health care business today, what sector do you believe to be the most profitable?

- a. health care IT
- b. managed care
- c. health care services
- d. long-term care
- e. pharmaceuticals/ bio-tech

C9. How important is it to your business to be located in Nashville?

- a. very important
- b. important
- c. not important



X.3. IMPLAN Model Information

- The impact of the health care industry cluster on the Nashville economy includes not only the direct employment, business sales, and income generated by the health care industry cluster but also the additional or secondary impacts of all economic activity related to such employment and business sales. Secondary impacts fall into two general categories: **indirect effects** including all employment, business sales, or income generated by the interaction of local businesses with the health care industry cluster and by suppliers to local business transactions, and **induced effects** including all spending by health care industry cluster employees in the local economy
- To quantify secondary impacts, a method called “input-output analysis” was employed through the use of the IMPLAN Model developed by the Minnesota IMPLAN Group, Inc. IMPLAN is a predictive model based on regional accounting matrices; it simulates the inter-industry transactions occurring for any additional increase in demand in a regional economy. In this case, the increase in demand is attributed to the presence of the health care industry cluster and has been measured by jobs, business sales, and personal income. This study also employs a hybrid approach, which means that it combines the use of a survey to gather information on direct impacts with the use of input-output analysis to calculate subsequent secondary impacts.
- Direct Effects
 - ▶ The direct effects of health care industry cluster employment include the total number of reported full-time employees of health care industry establishments.
 - ▶ The direct effect of income includes the total reported pre-tax staff payroll of the health care industry cluster.
 - ▶ The direct effect of business sales includes the total spending of the health care industry cluster to purchase goods and services in the local economy.
- Indirect Effects
 - ▶ Indirect effects include all employment, business sales, or income generated by the interaction of local businesses with the health care industry cluster and by suppliers to local business transactions.
- Induced Effects
 - ▶ Induced effects include all employment, business sales, or income generated by the spending of health care industry cluster employees in the local economy.



XI.4. Health Care Industry Classifications

Detailed Health Care Industry Cluster Definitions¹

Core Health Care Providers

1. **Ambulatory Services (NAICS 621):** Industries that provide service directly or indirectly to ambulatory patients and do not usually provide inpatient services.
2. **Hospitals (NAICS 622):** Industries that provide medical, diagnostic, and treatment services including physician, nursing, and other health services to inpatients and the specialized accommodation services required by inpatients.
3. **Nursing Care Facilities (NAICS 623):** Industries that provide residential care combined with nursing, supervisory, or other types of care as required by the residents.

Health Care Management and Consulting Companies

1. **Management of Companies and Enterprises (NAICS 551):** Industries of three main types: (1) those that hold the securities of (or other equity interests in) companies and enterprises; (2) those (except government establishments) that administer, oversee, and manage other establishments of the company or enterprise but do not hold the securities of these establishments; and (3) those that both administer, oversee, and manage other establishments of the company or enterprise and hold the securities of (or other equity interests in) these establishments.
2. **Accounting, Tax Preparation, Bookkeeping, and Payroll Services (NAICS 54121):** Establishments primarily engaged in providing services such as auditing accounting records, designing accounting systems, preparing financial statements, developing budgets, preparing tax returns, processing payrolls, bookkeeping, and billing.
3. **Computer Systems Design and Related Services (NAICS 5414):** Establishments primarily engaged in providing expertise in the field of information technologies through one or more of the following activities: (1) writing, modifying, testing, and supporting software to meet the needs of a particular customer; (2) planning and designing computer systems that integrate computer hardware, software, and communication technologies; (3) onsite management and operation of clients'

¹Abstracted from 2007 US NAICS Manual. *North American Industry Classification System—United States*. 2007, at <http://www.census.gov/epcd/www/naics.html>



computer systems and/or data processing facilities: and (4) other professional and technical computer-related advice and services.

4. **Administrative and Support Services (NAICS 561):** Establishments engaged in activities that support the day-to-day operations of other organizations.
5. **Management, Scientific, and Technical Consulting Services (NAICS 5416)**
 - a. **Management Consulting Services (NAICS 54161):** Establishments primarily engaged in providing advice and assistance to businesses and other organizations on management issues.
 - b. **Other Scientific and Technical Consulting Services (NAICS 541690):** Establishments primarily engaged in providing advice and assistance to businesses and other organizations on scientific and technical issues (except environmental issues), such as biological consulting services.
6. **Professional Organizations (NAICS 813920):** Establishments primarily engaged in promoting the professional interests of their members and the profession as a whole.

Colleges, Research Organizations, and Public Health

1. **Junior Colleges (NAICS 6112):** Establishments primarily engaged in furnishing academic or academic and technical courses and granting associate's degrees, certificates, or diplomas below the bachelor's level.
2. **Colleges, Universities, and Professional Schools (NAICS 6113):** Establishments primarily engaged in furnishing academic courses and granting degrees at bachelor's or graduate levels.
3. **Technical and Trade Schools (NAICS 6115):** Establishments primarily engaged in offering vocational and technical training in a variety of technical subjects and trades.
4. **Scientific Research and Development Services (NAICS 5417):** Establishments engaged in conducting original investigations undertaken on a systematic basis to gain knowledge (research) and/or applying research findings or other scientific knowledge to create new or significantly improved products or processes (experimental development).



6. **Administration of Public Health Programs (NAICS 92312):** Government establishments primarily engaged in the planning, administration, and coordination of public health programs and services including environmental health activities, mental health programs, categorical health programs, health statistics, and immunization services.

Medical Insurance Companies

1. **Direct Health and Medical Insurance Carriers (NAICS 524114):** Establishments primarily engaged in initially underwriting (i.e., assuming the risk and assigning premiums for) health and medical insurance policies.

Health Care Manufacturing and Wholesalers

1. **Optical Instrument and Lens Manufacturing (NAICS 333314):** Establishments primarily engaged in one or more of the following: (1) manufacturing optical instruments and lens, such as binoculars, microscopes (except electron or proton), telescopes, prisms, and lenses (except ophthalmic); (2) coating or polishing lenses (except ophthalmic); and (3) mounting lenses (except ophthalmic).
2. **Medical Equipment and Supplies Manufacturing (NAICS 3391):** Establishments primarily engaged in manufacturing medical equipment and supplies.
3. **Pharmaceutical and Medicine Manufacturing (NAICS 3254):** Establishments primarily engaged in one or more of the following: (1) manufacturing biological and medicinal products; (2) processing (i.e., grading, grinding, and milling) botanical drugs and herbs; (3) isolating active medicinal principals from botanical drugs and herbs; and (4) manufacturing pharmaceutical products intended for internal and external consumption in such forms as ampoules, tablets, capsules, vials, ointments, powders, solutions, and suspensions.
4. **Medical, Dental, and Hospital Equipment and Supplies Merchant Wholesalers (NAICS 42345):** Establishments primarily engaged in the merchant wholesale distribution of professional medical equipment, instruments, and supplies (except ophthalmic equipment and instruments and goods used by ophthalmologists, optometrists, and opticians).



5. **Ophthalmic Goods Merchant Wholesalers (NAICS 42346):** Establishments primarily engaged in the merchant wholesale distribution of professional equipment, instruments, and/or goods sold, prescribed, or used by ophthalmologists, optometrists, and opticians.
6. **Drugs and Druggists' Sundries Merchant Wholesalers (NAICS 4242):** Establishments primarily engaged in the merchant wholesale distribution of biological and medical products, botanical drugs and herbs, and pharmaceutical products intended for internal and external consumption in such forms as ampoules, tablets, capsules, vials, ointments, powders, solutions, and suspensions.

Pharmacies, Drug Stores, and Ophthalmic Goods

1. **Pharmacies and Drug Stores (NAICS 44611):** Establishments known as pharmacies and drug stores engaged in retailing prescription or nonprescription drugs and medicines.
 - a. **Optical Goods Stores (NAICS 44613):** Establishments primarily engaged in one or more of the following: (1) retailing and fitting prescription eyeglasses and contact lenses, (2) retailing prescription eyeglasses in combination with the grinding of lenses to order on the premises, and (3) selling nonprescription eyeglasses.



XI.5. Definitions and Ranking Procedure

Location Quotient (LQ)

The location quotient is the most commonly utilized method in regional economic analysis. The LQ is a measure of an industry's concentration in a local economy relative to the national average or any other reference unit.

$$LQ = \frac{\frac{E_{La}}{E_L}}{\frac{E_{Na}}{E_N}}$$

Where E_{La} = refers to industry "a's" employment in the local economy,
 E_L = refers to total employment in the local economy,
 E_{Na} = refers to industry "a's" employment in the national economy, and
 E_N = refers to total employment in the national economy.

Ranking Procedure

Health care indicators are classified into two categories: (1) health care business climate and (2) health care infrastructure indicators.

- (1) Health care business climate indicators: BERC identified 14 indicators that reflect the overall trend in the health care sector in a given economy. Choices of these indicators are based on the review of literature and availability of indicators.
- (2) Health care infrastructure indicators: BERC identified 21 indicators that measure the capacity of the local economy to lay the foundation for growth of the health care industry. In addition to direct health care related indicators, BERC included per capita personal income and unemployment rate in this category.

Standardization Procedure

In order to compare these MSAs using a diverse set of indicators, BERC converted each indicator into a unitless indicator. This procedure makes it possible to get a summary indicator for each category across MSAs. The method used to assign a relative score for each MSA for a given indicator is called cumulative normal distribution, which places each MSA for a given indicator between 0 and 1, depending on how that MSA's value is related to the average and standard deviation of a given series.



X.6. Nashville Health Care Council Member Organizations

2 nd Generation Capital	Deutsche Bank	KPMG	Regions Bank Morgan
Accelecare Wound Centers	Devenney Group Architects	Kraft Healthcare Consulting	Keegan Shattuck
Accuray	Dream Systems	Kraft Search Associates	Hammond
Adams and Reese	e+CancerCare	Lattimore Black Morgan &	Renal Advantage
Advocat	Earl Swensson Associates	Cain	Robert W. Baird & Company
Aegis Sciences Corporation	eDoc4u Conduit Corporation	Lellyett & Rogers Company	Robins & Morton
Ambulatory Services of	Emdeon	LetterLogic	Saint Thomas Health Services
America	Ernst & Young	LifePoint Hospitals	Santé Ventures
American HomePatient	Essent Healthcare	Lipscomb University	Sarah Cannon Research
AMERIGROUP	Fifth Third Bank	The Little Clinic	Institute
AmiCare Behavioral Centers	First Tennessee Bank First	M.J. Harris	Sheridan Healthcare
AmMed Direct	Horizon Bank	Marsh Mercer Kroll	Sherrard & Roe
AmSurg	FirstBank	Marwood Group	Simplex Healthcare
Anesthesia Medical Group	Ford & Harrison	McKesson	Skanska USA Building
Aon Risk Services	FTI Healthcare	McNeely Pigott & Fox	SMS Holdings
Apollo Health Street	Gallagher Benefit Services	MedeAnalytics	Southwind Health Partners
Aquinas College	Gallagher Healthcare	MedSolutions	Specialty Care Services
Ardent Health Services	GE Healthcare	Meharry Medical College	Group
Avondale Partners	Gordian Health Solutions	Metro Nashville Hospital	Spheris
Baker, Donelson, Bearman,	Gould Turner Group	Authority	The SSI Group
Caldwell & Berkowitz	Gresham, Smith & Partners	Microsoft Corporation	STAT Solutions
Bank of America Merrill Lynch	Guardian Home Care	Middle Tennessee State	Stephens
Bass, Berry & Sims	Holdings	University	Stites & Harbison
BDO Seidman	Harbert Management	Modern Healthcare	SunTrust Banks SunTrust
Behavioral Centers of America	Corporation	Nashville Area Chamber of	Robinson
Belmont University	Harpeth Companies	Commerce	Humphrey
BH1	Harwell Howard Hyne	National HealthCare	Symbion
BioMimetic Therapeutics	Gabbert & Manner	Corporation	Take Care Health Systems
BlueCross BlueShield of	HCA	New Mountain Capital	TeamHealth
Tennessee	HCCA International	Noro-Moseley Partners	Tension Ultrasound
Bradley Arant Boulton Cummings	HCP	North Highland Company	TherEX
Brentwood Capital Advisors	Health Care REIT	nTelagent	Trauger & Tuke
Brim Healthcare	Healthcare Management	Oman-Gibson Associates	UBS Financial Services
Brookdale Senior Living	Systems	Owen Graduate School of	Vanderbilt University Medical
The Buffkin Group	Healthcare Performance	Management	Center
C3 Consulting	Strategies	Passport Health	Vanguard Health Systems
Capella Healthcare	HealthSpring	Communications	Vestar Capital Partners
Catalyst Healthcare Research	HealthStream	Payment America	The Viability Company
CCMP Capital Advisors	HealthTeacher	Healthcare Portfolio	Victor Results Advertising
Centerre Healthcare	Healthways	Solutions	W Squared
The CFP Group	Heritage Group	Petra Capital Partners	Waller Lansden Dortch &
Citigroup	Houlihan Lokey	PharmMD	Davis
Cogent Healthcare	Hospice Compassus	PICA Group	Willis HRH
Community Health Systems	The Human Capital Group	PivotHealth	Zycron
Council Ventures	Humana	Ponder & Company	November 20, 2009
Covenant Surgical Partners	IASIS Healthcare	Press Ganey	
CredenceHealth	IBM	PricewaterhouseCoopers	
Cressey & Company	IMI Health	ProjX	
Cross Country Education	Intel Corporation	Psychiatric Solutions	
Crowe Horwath	Interior Design Services	QHR	
Cumberland Consulting Group	Jarrard Phillips Cate &	Raymond James & Associates	
Cumberland Pharmaceuticals	Hancock	- Health Care Investment	
DaVita	Jefferies & Company	Banking	
Dell Perot Systems	Katcher Vaughn & Bailey	RBC Capital Markets	
Deloitte	Public Relations		

