

Report Prepared for Cone Health

The Economic Impact of Cone Health



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Executive Summary

- Cone Health was created through a trust established in 1911 by Bertha Lindau Cone. Today, it has grown to a not-for-profit health care institution with facilities serving persons living in nine counties of central North Carolina. This study undertaken for Cone Health explores the economic impact of Cone Health on the economy of central North Carolina. The intent is to quantify the impacts of Cone Health on business receipts, labor income, employment, and state and local tax revenues.
- Cone Health serves an area of central North Carolina defined by the combination of 47 contiguous zip codes. The area is approximately coterminous with the Greensboro/High Point MSA which is composed of Guilford, Randolph, and Rockingham counties. The population of the service area in 2000 was 739,952. By 2010, it is estimated to have grown to 837,932, an increase of 13.2 percent. By 2015, it is expected to grow an additional 6 percent to 888,202.
- Employment in the Greensboro/High Point MSA peaked in May 2007. Since then the region has lost 35,900 jobs, or 9.6 percent. While national employment has begun to turn up recently, employment in the GSO MSA through February 2011 has not rebounded. The rate of unemployment in the Greensboro/High Point MSA reached a cyclical low in November 2007 of 4.9 percent. In February 2010, the rate was 9.8 percent, compared to a national average of 8.9 percent.
- Health care has become an important engine of growth at the national level and in many local areas across the country, as the demand for health care has boomed with the nation's aging population and ever larger numbers of individuals have been drawn to work in the industry. A competitive health care sector is important as a way for communities to capture a share of overall national health care spending, instead of allowing funds to flow to communities elsewhere. Because health care is an important aspect of the overall quality of life in any community, it is often apparent as a factor in industrial recruitment and retention. In addition, a healthy health care sector positively affects area wage levels, thereby enhancing overall economic development.
- The health care sector is a very important component of the economy of the Cone Health service area and the Greensboro/High Point MSA. Among major employers in the Greensboro/High Point MSA in 2010, Moses Cone Memorial Hospital ranked 2nd, and the High Point Regional Health System ranked 7th. Health care in the Greensboro/High Point MSA accounted for 7.9 percent of gross domestic product (GDP) in 2009, up from 6.8 percent in 2003. From 2003 to 2009, health care was among the region's leading growth sectors, expanding 5.4 percent annually while the overall regional economy grew just 2.9 percent. In terms of employment, health care is the region's second largest sector providing 40,220 jobs, or 12.1 percent of the total.
- The analysis of economic impact reported here is conducted using the IMPLAN® (IMPact Analysis for PLANing) input-output model that divides the economy into sectors, defined by the good or service produced, where the outputs of one sector are inputs of another. IMPLAN analyzes a computer model that contains 440 sectors of the local economy and reflects the existing structure of the economy using data from the U.S. Department of Labor, Bureau of the Census, and the Bureau of Economic Analysis. The IMPLAN model is widely used by economic development specialists to assess the economic impact of new industrial and other development.
- Using the IMPLAN model, Cone Health is estimated to create directly and indirectly 18,198 jobs in the local area and labor income of \$896.5 million, or \$49,266 per job. Total employment in the Greensboro/High Point MSA in 2010 was 320,600. Accordingly, the number of jobs generated by Cone Health is equivalent to 5.7 percent of MSA employment.

- Gross domestic product (GDP), or value added, in the region is estimated to be higher by some \$1.2 billion as a result of Cone Health. The gross domestic product (GDP) of the Greensboro/High Point Metropolitan area was \$33.3 billion in 2010. Using this estimate, Cone Health accounts directly and indirectly for about 3.6 percent of regional economic activity. Its operations fostered some \$2.2 billion in additional revenue for local businesses in 2010.
- For every person employed directly by Cone Health, a total of 2.0 jobs are created in the economy of the region. For every dollar of wages paid by Cone Health, a total of \$1.7 dollars of labor income is created. Every dollar of revenue earned by Cone Health generates directly and indirectly a total of \$1.9 dollars of revenue for local businesses in the region.
- Because of the additional economic activity generated by Cone Health, state and local tax revenues are estimated to be higher by \$88.4 million, including \$27.3 million in additional sales tax revenues and \$20.8 million in extra property taxes.

The Economic Impact of Cone Health

Introduction

Cone Health was created through a trust established in 1911 by Bertha Lindau Cone. Today, it has grown to a not-for-profit health care institution with facilities primarily serving persons living in nine counties of central North Carolina: Alamance, Caswell, Chatham, Forsyth, Guilford, Moore, Randolph, Rockingham, and Stokes. In 2010, 98 percent of Cone Health facility admissions were from these nine counties. Ninety-two percent were from Guilford, Randolph, and Rockingham Counties, which comprise the Greensboro/High Point MSA.

Cone Health has always had a tradition of providing care for persons regardless of their ability to pay. In 2010, it provided uncompensated care for individuals valued at \$146 million.

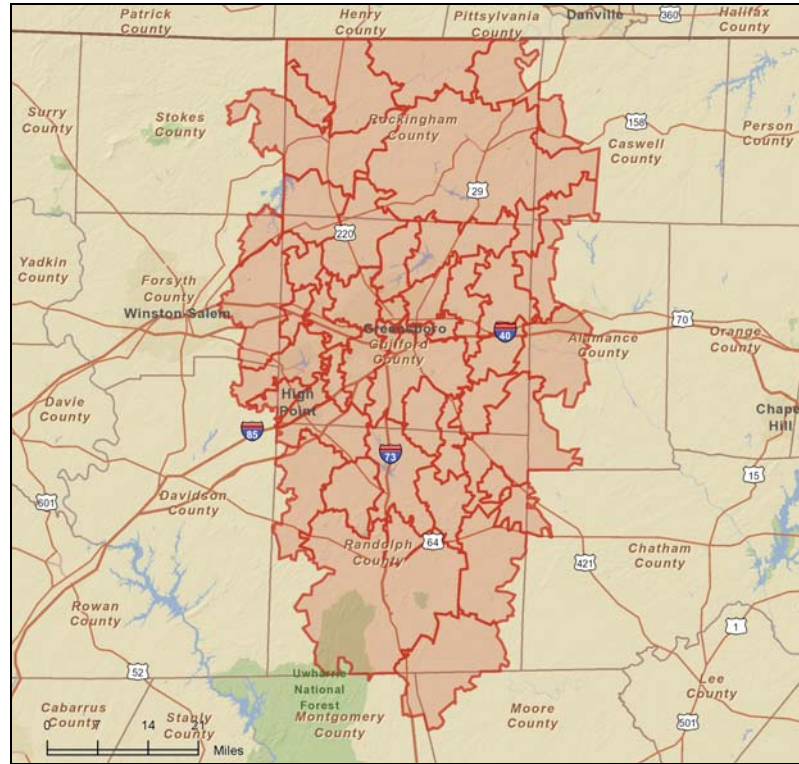
This study undertaken for Cone Health explores the economic impact of Cone Health on the economy of central North Carolina. The intent is to quantify the impacts of Cone Health on business receipts, labor income, employment, and state and local tax revenues.

The first section of the study examines the economy of the Cone Health service area (CHSA). Section two looks at recent trends in the regional economy. The third section examines the role of health care in overall regional economic development. Section four looks specifically at the health care industry in the economy of the Cone Health service area. The fifth section lays out the methodology of economic impact analysis. Section six describes the economic impact of Cone Health's health care operations. Section seven discusses the impact of Cone Health on the medical practices of non-Cone Health physicians who utilize the facilities of Cone Health to treat their patients. Section eight examines the economic impact of Cone Health construction spending on the regional economy. The final two sections summarize relevant findings.

The Economy of the Cone Health Service Area

Cone Health serves an area of central North Carolina defined by the combination of 47 contiguous zip codes (Figure 1).¹ The area is approximately coterminous with the Greensboro/High Point MSA which is composed of Guilford, Randolph, and Rockingham counties.

Figure 1: Cone Health Service Area (CHSA)



The population of the service area in 2000 was 739,952.² By 2010, it is estimated to have grown to 837,932, an increase of 13.2 percent. By 2015, it is expected to grow an additional 6 percent to 888,202. In 2010, there were an estimated 336,623 households with an average size of 2.43 persons living in the area. Most households (67.5%) owned their own home. Average household income of area residents was \$64,808 in 2010. Half of all households earned more than \$52,741, while 14.4 percent earned more than \$100,000.

In 2010, the average schooling level of the population 25 years and older was 13.3 years in the service area, slightly less than the national average of 13.4 years. Only 8.4 percent of the working age population had a graduate or professional degree versus 10.4 percent for the nation as a whole.

¹ The Cone Health service area is defined by the combination of the following 47 zip codes: 27009, 27025, 27027, 27048, 27203, 27205, 27214, 27215, 27233, 27235, 27244, 27248, 27249, 27260, 27262, 27263, 27265, 27282, 27283, 27284, 27288, 27298, 27301, 27310, 27313, 27316, 27317, 27320, 27326, 27341, 27350, 27355, 27357, 27358, 27370, 27377, 27401, 27403, 27405, 27406, 27407, 27408, 27409, 27410, 27411, 27413, and 27455.

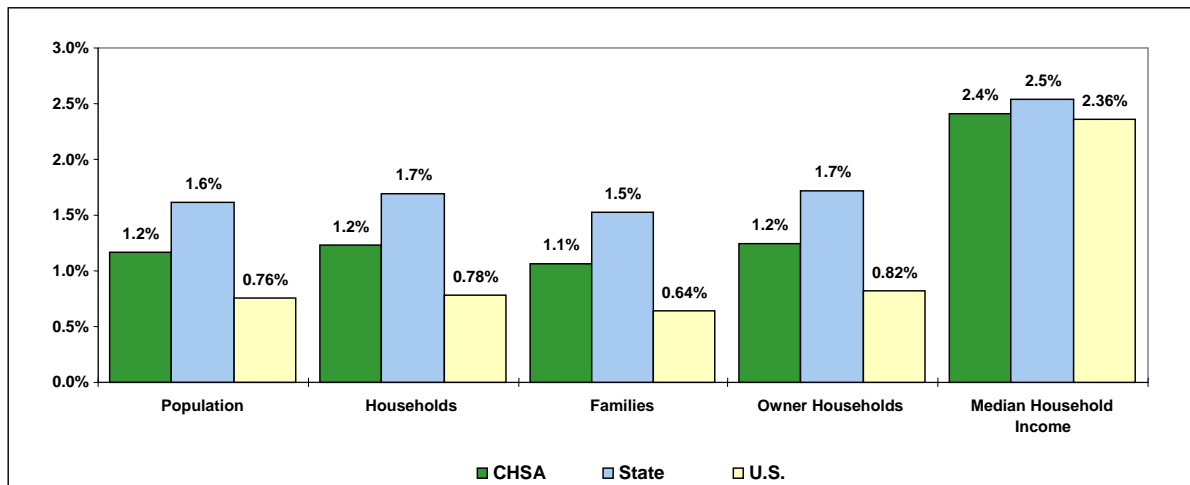
² Economic and demographic statistics reported in this section are from ESRI. See, <http://www.esri.com/software/bao/index.html>

Table 1: Cone Health Service Area (CHSA)

	2000	2010	2015	% Change 2000-15
Population	739,952	837,932	888,202	20.0%
Households	294,847	336,623	357,898	21.4%
Average Household Size	2.44	2.43	2.42	-0.8%
Owner-Occupied Housing Units	199,144	227,059	241,513	21.3%
Renter-Occupied Housing Units	95,701	109,564	116,385	21.6%
% Owner Occupied	67.5%	67.5%	67.5%	-0.1%
Median Age	35.8	38.3	38.8	8.4%
Median Household Income	\$41,139	\$52,741	\$59,419	44.4%
Average Household Income	\$53,513	\$64,809	\$72,234	35.0%
Per Capita Income	\$21,584	\$26,372	\$29,467	36.5%

Over the next 5 years, the Cone Health Service Area (CHSA) is projected to grow more rapidly than the nation but less rapidly than the rest of North Carolina (Figure 2).

Figure 2: Average Annual Projected Growth, 2010-2015



Average age of the service area population in 2010 is estimated at 38.3 years. It is expected to rise to 38.8 in 2015. Figure 3 illustrates the expected changes in the age distribution of the population through 2015. The percentage of those 55 and older is expected to rise from 23.3 percent in 2010 to 25.7 percent, while the percentage of young people (under 25) is expected to fall slightly from 32.8 percent to 32.4 percent.

Figure 3: Changing Age Distribution, 2010-2015

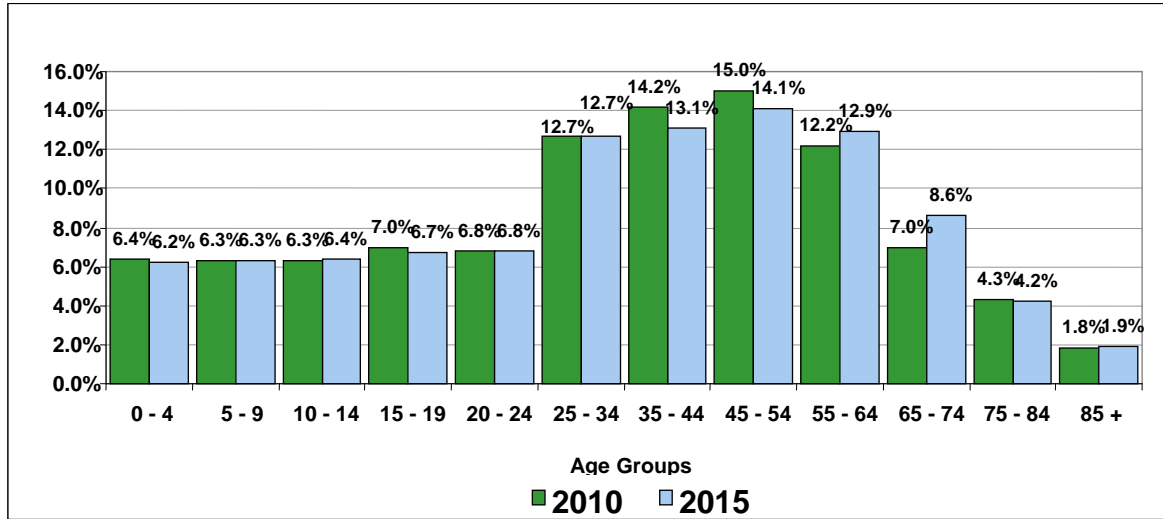


Table 2 shows the racial and ethnic distribution of the service area. Between 2010 and 2015 the non-white portion of the population is expected to rise from 31.2 percent to 32.9 percent. The most rapid growth is expected in the numbers of Hispanics and Asians.

Table 2: Racial and Ethnic Distribution of the Population

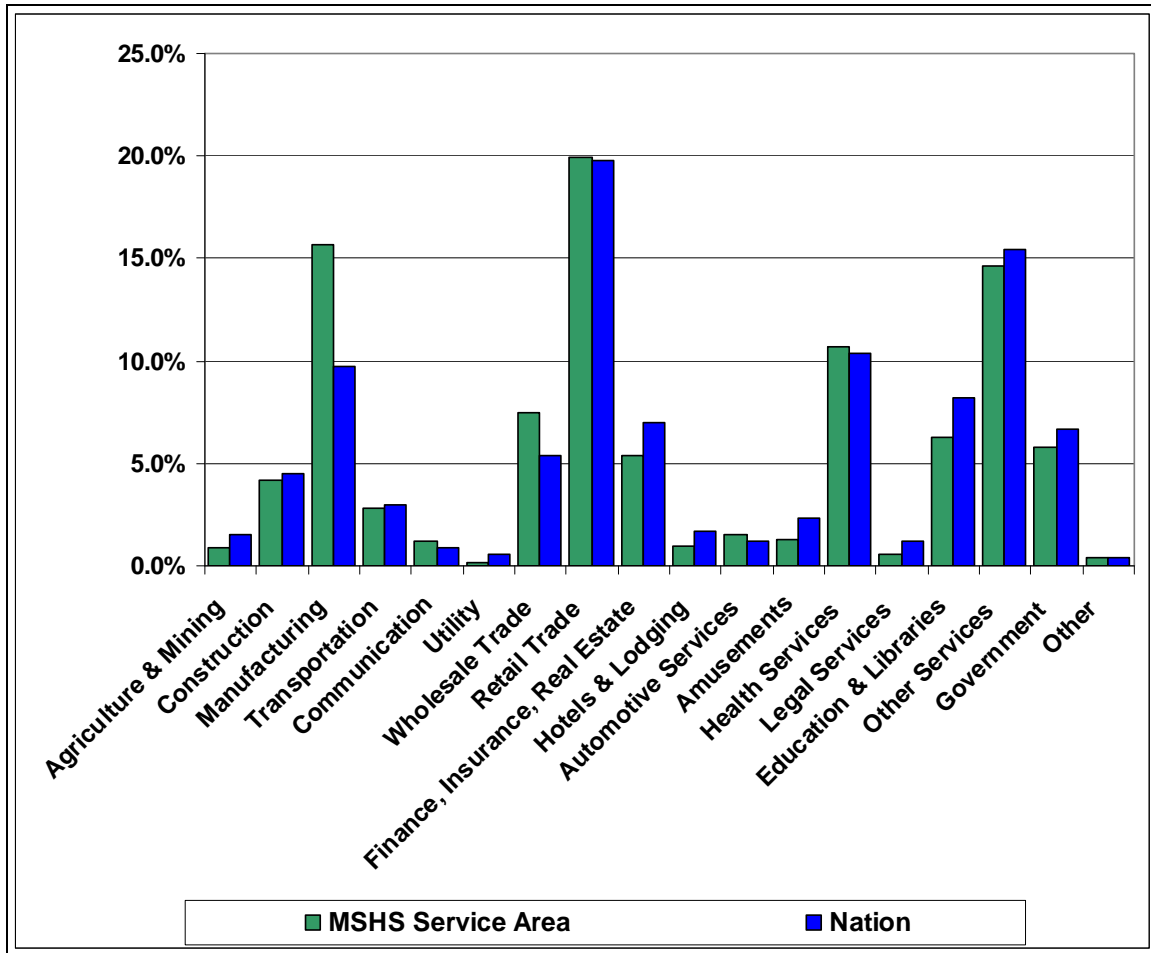
	2000		2010		2015	
	Number	%	Number	%	Number	%
White	541,018	73.1%	576,808	68.8%	596,125	67.1%
Black	158,729	21.5%	190,315	22.7%	207,619	23.4%
Asian	12,473	1.7%	19,510	2.3%	24,022	2.7%
Other	27,732	3.7%	51,299	6.2%	60,436	6.8%
Total	739,952	100.0%	837,932	100.0%	888,202	100.0%
Hispanic Origin (Any Race)	31,709	4.30%	66,866	8.00%	83,761	9.4%

In 2010, employment in the service area is estimated at 416,279 (Table 3). Employment in the region is overwhelming concentrated in manufacturing industries (Figure 4). In 2010, 15.7 percent of service area employment was in manufacturing compared to only 9.7 percent for the nation as a whole. The concentration of employment also is substantially above the national average in wholesale trade, communication, and automotive services. The region is substantially below the national average in the shares of employment it has in agriculture, utilities, finance, hotels and lodging, amusements, legal services, education, and government.

Table 3: Employment in the Cone Health Service Area (CHSA) and the Nation, 2010

	CHSA		Nation	
	Number	Percent	Number	Percent
Agriculture & Mining	3,548	0.9%	2,094,746	1.5%
Construction	17,366	4.2%	6,136,678	4.5%
Manufacturing	65,482	15.7%	13,160,677	9.7%
Transportation	11,577	2.8%	4,135,362	3.0%
Communication	5,149	1.2%	1,238,742	0.9%
Utility	935	0.2%	786,814	0.6%
Wholesale Trade	31,096	7.5%	7,287,366	5.4%
Retail Trade	82,931	19.9%	26,800,302	19.8%
Finance, Insurance, Real Estate	22,685	5.4%	9,446,488	7.0%
Hotels & Lodging	4,340	1.0%	2,321,251	1.7%
Automotive Services	6,122	1.5%	1,680,184	1.2%
Amusements	5,349	1.3%	3,113,778	2.3%
Health Services	44,603	10.7%	14,076,875	10.4%
Legal Services	2,483	0.6%	1,571,649	1.2%
Education Institutions & Libraries	26,054	6.3%	11,191,999	8.2%
Other Services	60,703	14.6%	20,899,884	15.4%
Government	24,029	5.8%	9,154,669	6.7%
Other	1,827	0.4%	572,732	0.4%
Totals	416,279	100.0%	135,670,196	100.0%

Figure 4: Employment in the CHSA and the Nation, 2010



Recent Economic Trends in the Cone Health Service Area

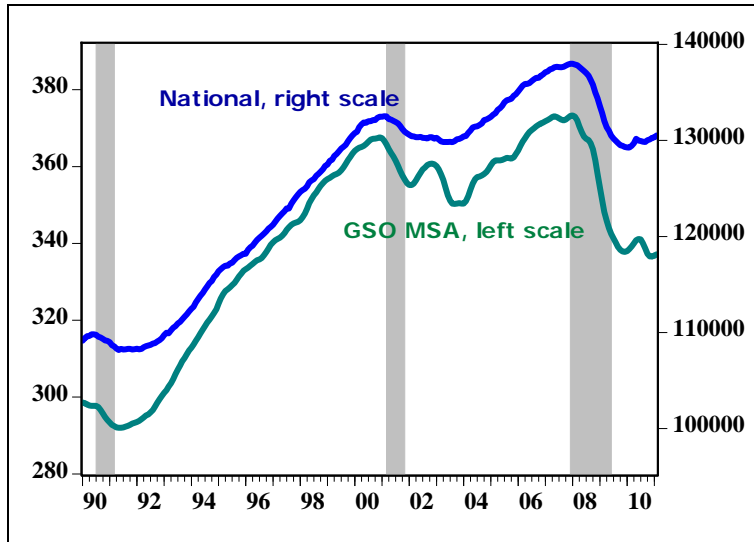
Consistent data on cyclical movements of employment and income are not available for the Cone Health service area, but such data are available for the Greensboro/High Point MSA (composed of Guilford, Randolph, and Rockingham Counties) which represents an area that is nearly coterminous with the service area. The MSA data suggests that the region has suffered substantially during the recent recession and economic activity in the region has not yet returned to its pre-recession peak.

Data from the Brookings Institution, Metropolitan Policy Program estimates that the region’s gross domestic product (GDP) reached a peak in 2006.³ Since then, GDP in the Greensboro/High Point (GSO) MSA has fallen 3.7 percent through 2010.³ This compares to an average decline of just 0.3 percent for the nation’s 100 largest MSAs and 1.0 percent for the nation as a whole. GDP in the Greensboro/High Point MSA rose a modest 0.7 percent in the 3rd quarter of 2010, equally the rise in GDP nationally.

Employment in the GSO MSA peaked in May 2007. Since then the region has lost 35,900 jobs, or 9.6 percent. While national employment has begun to turn up recently, employment in the GSO MSA through February 2011 has not rebounded (Figure 5).

³ <http://www.brookings.edu/metro/MetroMonitor/profiles.aspx>

Figure 5: Employment in the Greensboro/High Point MSA

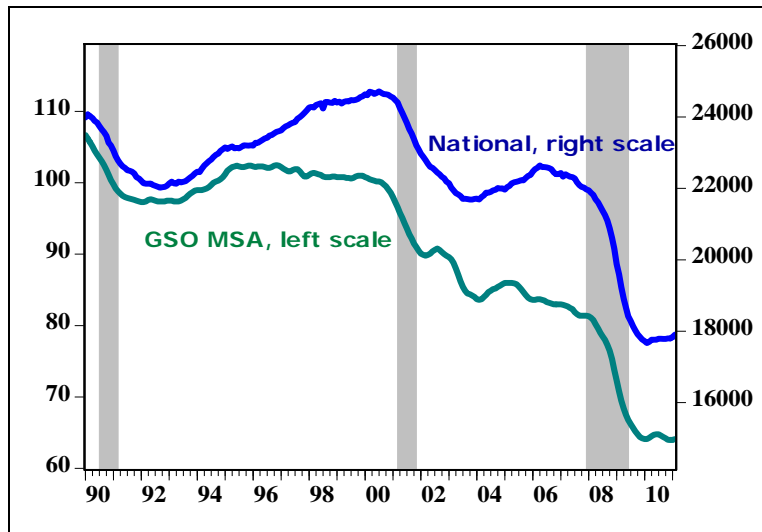


Source: <http://www.triadbizindex.com/>

The rate of unemployment in the Greensboro/High Point MSA reached a cyclical low in November 2007 of 4.9 percent. In February 2010, the rate was 9.8 percent, compared to a national average of 8.9 percent.

The region's concentration in manufacturing is a main reason for its slow economic recovery. Since the recession began, goods-producing employment (construction plus manufacturing) in the region has shed 17,400 jobs, a loss of 21.3 percent, compared to a decline in goods-producing employment nationally of 18.5 percent. Moreover, nationally goods-producing employment has been rising since early 2010, while it has stagnated in the Greensboro area (Figure 6).

Figure 6: Goods-Producing Employment in the Greensboro/High Point MSA



Source: <http://www.triadbizindex.com/>

Health Care and Economic Development

Health care has become an important engine of growth at the national level and in many local areas across the country, as the demand for health care has boomed with the nation's aging population and ever larger numbers of individuals have been drawn to work in the industry. Employment in the health care sector was 11.9 percent of the national total in 2009, up from 9.5 percent in 2000. From 2000 through 2009, health care employment nationally gained an average of 2.5 percent annually, while overall national employment declined an average of 0.1 percent a year. The U.S. Department of Labor anticipates that the demand for health care workers will grow 2.0 percent annually from 2008 through 2018.⁴

In 2009, the health care sector accounted for 7.5 percent of gross domestic product (GDP), up from 5.9 percent in 2000. From 2000-2009, the health care sector led the national economy, growing 6.7 percent annually while the overall national economy grew just 4.0 percent.

The quality, availability, and cost of health care are important aspects of the overall quality of life in any community, and as such, they are important determinants of a community's future economic development. The impact of the health care is often apparent as a factor in industrial recruitment and retention.⁵ Past studies have shown that health care ranks high among various quality of life indicators considered in business location and expansion decisions. Both firms and individuals gain by locating in areas where quality health care is easily available at low cost. Firms operating in such areas have lower wage costs than their competition which may be located elsewhere not only because their out-of-pocket expenditures for health care are lower but also because their workers are likely to be healthier and more productive. In addition, they are able to attract and retain productive talent most easily, a certain advantage in a world of global competition.

Health care can be important for communities that want to attract and retain retirees as a way of fostering service-sector spending generated by retirees. Several studies have found that health care is an important determinant of retiree location decisions and is among the critical "must haves" for a community to be considered as a retiree destination.⁶

A competitive health care sector also is important as a way for communities to capture a share of overall national health care spending, instead of allowing funds to flow to communities elsewhere. The importance of health care funds to the economy of local communities is apparent by looking at the personal income statistics for the Greensboro/High Point MSA. In 2008, total personal income in the area was \$25 billion, of which receipts from Medicare, Medicaid, and military medical benefits totaled \$1.8 billion or 7 percent of the total. The share of regional personal income accounted for by federal and state medical benefits is up from just 3.0 percent in 1990. If these dollars are not captured by local health care providers, the jobs and income they represent will be lost, and the local community will be poorer. Health care employers and employees are important purchasers of goods and services supporting local businesses. Health care professionals, such as nurses, physicians, dentists, and pharmacists, provide income for other members of the community who may work in housing construction, retail establishments, restaurants and other local services. Hospitals and other health care facilities also are important purchasers of local inputs, like, for example, laundry and waste management services.

A 1998 study of health care in 9 Oklahoma counties provides an example of the total impact of health care spending in local communities.⁷ The study reported that an average of 9 percent

⁴ T. Alan Lacey and Benjamin Wright, "Occupational Employment Projections to 2018," *Monthly Labor Review*, November 2009, pp. 82-115.

⁵ Eric Scorson, *Health Care Services: Three Critical Roles in Rural Economic Development* (Lexington, KY: Kentucky Cooperative Extension Service, College of Agriculture, University of Kentucky, October 2001).

⁶ Gerald A. Doeksen, Tom Johnson, Diane Biard-Holmes, and Val Schott, "A Healthy Health Sector is Crucial for Community Economic Development," *The Journal of Rural Health* (1998) 14:1, pp. 66-72.

⁷ *Ibid.*

of all employment in the 9 counties was directly related to health care. It further estimated that because of the additional spending by health care workers in their local communities, the total impact of employment in the health care sector was multiplied, so that in total the local health care sector was responsible directly and indirectly for about 14 percent of total area employment. A similar study conducted in 2005 by the Association of American Medical Colleges (AAMC) reported that the combined economic impact of AAMC member institutions on their local communities totaled some \$451 billion and generated directly and indirectly more than 3 million jobs.⁸

In addition, a healthy health care sector positively affects area wage levels, thereby enhancing overall economic development. A recent study by the Brookings Institute found that the health care sector pays higher than average wages even after standardizing for worker education and training. As a result, the study concluded that an expanding health care sector is likely to raise area wage levels by encouraging firms in other industries throughout the area to raise their wage levels also.⁹

Health Care and the Economy of the Cone Health Service Area

The health care sector is a very important component of the economy of the Cone Health service area and the Greensboro/High Point MSA. Among major employers in the Greensboro/High Point MSA in 2010, Moses Cone Memorial Hospital ranked 2nd, and the High Point Regional Health System ranked 7th. Health care in the Greensboro/High Point MSA accounted for 7.9 percent of gross domestic product in 2009, up from 6.8 percent in 2003. From 2003 to 2009, health care was among the region's leading growth sectors, expanding 5.4 percent annually while the overall regional economy grew just 2.9 percent.

Table 4 shows employment and wages in the Greensboro/High Point MSA by sector from 2000 to 2009. In terms of employment, health care is the second largest sector with 12.1 percent of the total, or 40,220 jobs. Manufacturing is the region's largest employment sector with 15.8 percent of all employees.

From 2000 through 2009, health care was the region's most rapidly growing employment sector. The number of jobs in health care grew an average of 3.2 percent annually, while total employment in the region declined on average 1.0 percent per year. A recent study of employment trends in the Greensboro/High Point MSA estimates that the demand for health care practitioners (doctors, dentists, nurses, etc.) will increase by 27 percent from 2009 through 2018.¹⁰ And the demand for workers in health care support occupations (nursing aides, medical assistants, etc.) will grow by 35 percent.

The total wages paid by all health care employers rose 5.5 percent annually from 2000 through 2009, while the total paid by all industries increased just 1.3 percent. The total wage bill in the health care sector amounted to \$1.6 billion in 2009, or 12.8 percent of the regional total.

In addition to their rapid growth, jobs in the health care sector pay above average wages. In 2009, the average health care worker earned \$40,071, compared to a region-wide average for all workers of \$38,012. From 2000 through 2009, the rate of wage growth in the health care sector was slightly below the regional average. Average wages in the health care sector rose 2.3 percent annually during this period, while the average for all industries gained 2.4 percent each year.

⁸ Association of American Medical Colleges, *The Economic Impact of AAMC-Member Medical Schools and Teaching Hospitals* (Washington, DC: Association of American Medical Colleges, 2007).

⁹ Timothy J. Bartik and George Erickcek, *Impact of "Eds & Meds": How Policies to Expand Universities and Hospitals Affect Metropolitan Economics*, (Washington, DC: Brookings Institution, December 2008)

¹⁰ G. Donald Jud, *Occupational Projections and Educational Program Opportunities in the Greensboro/High Point MSA, 2009-2018* (Greensboro, NC: Center for Business & Economic Research, UNCG, 2011).

Table 4: Employment and Wages in the Greensboro/High Point MSA, 2000-09

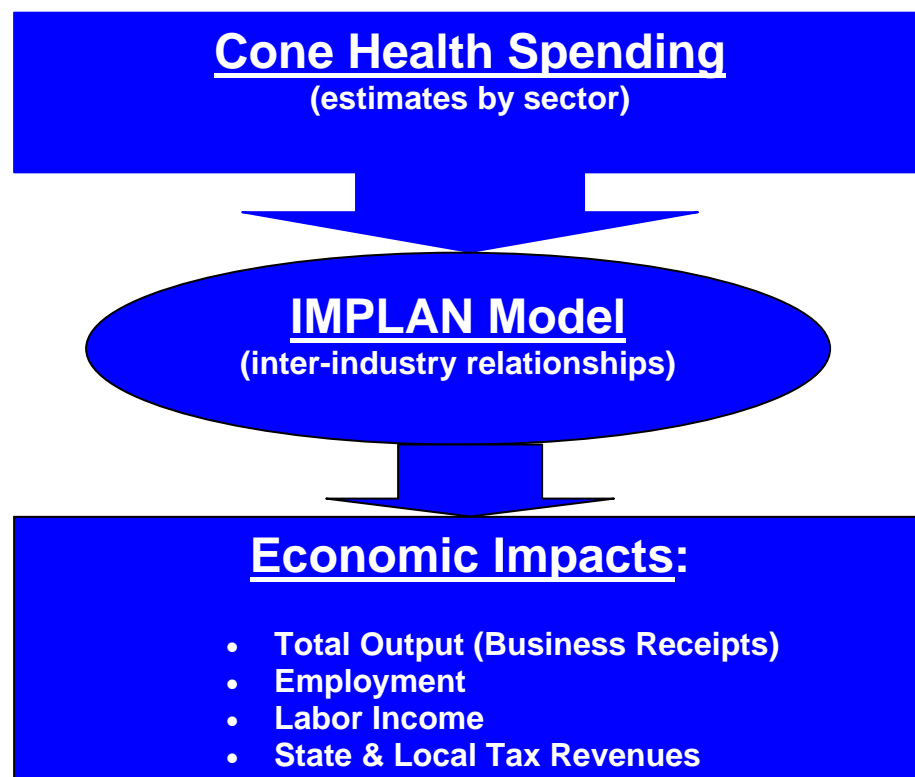
Industry	Employment			Avg. Ann. % Chg.	Total Wages			Avg. Ann. % Chg.	Avg. Wages		
	2000	2009	% Chg.		2000	2009	% Chg.		2000	2009	% Chg.
Total All Industries	364,479	331,708	-1.0%	\$11,206,997,839	\$12,609,054,150	1.3%	\$30,732	\$38,012	2.4%		
Agriculture	586	597	0.2%	\$14,620,207	\$16,750,857	1.5%	\$24,949	\$28,058	1.3%		
Mining	359	229	-4.9%	\$14,276,866	\$11,324,296	-2.5%	\$39,768	\$49,451	2.5%		
Utilities	1,033	711	-4.1%	\$51,941,418	\$45,068,191	-1.6%	\$50,282	\$63,387	2.6%		
Construction	18,994	14,559	-2.9%	\$628,420,826	\$575,921,474	-1.0%	\$33,085	\$39,558	2.0%		
Manufacturing	83,806	52,348	-5.1%	\$2,900,184,045	\$2,380,508,674	-2.2%	\$34,606	\$45,475	3.1%		
Wholesale Trade	19,468	18,403	-0.6%	\$803,790,481	\$888,403,071	1.1%	\$41,288	\$48,275	1.8%		
Retail Trade	39,950	36,067	-1.1%	\$834,268,498	\$903,843,639	0.9%	\$20,883	\$25,060	2.0%		
Transportation and Warehousing	23,194	17,653	-3.0%	\$776,103,042	\$748,945,445	-0.4%	\$33,461	\$42,426	2.7%		
Information	8,262	5,674	-4.1%	\$335,554,438	\$291,505,767	-1.6%	\$40,614	\$51,376	2.6%		
Finance and Insurance	14,093	16,653	1.9%	\$606,180,622	\$872,336,601	4.1%	\$43,013	\$52,383	2.2%		
Real Estate and Rental and Leasing	4,698	3,947	-1.9%	\$133,587,537	\$149,483,946	1.3%	\$28,435	\$37,873	3.2%		
Professional and Tech. Services	12,729	11,785	-0.9%	\$550,621,895	\$640,776,380	1.7%	\$43,257	\$54,372	2.6%		
Management of Companies	8,274	6,805	-2.1%	\$419,516,800	\$509,742,138	2.2%	\$50,703	\$74,907	4.4%		
Administrative and Waste Services	25,064	24,012	-0.5%	\$469,692,247	\$567,026,796	2.1%	\$18,740	\$23,614	2.6%		
Educational Services	22,516	28,176	2.5%	\$672,695,286	\$1,103,599,312	5.7%	\$29,876	\$39,168	3.1%		
Health Care and Social Assistance	30,252	40,220	3.2%	\$991,294,314	\$1,611,662,986	5.5%	\$32,768	\$40,071	2.3%		
Arts Entertainment and Recreation	3,207	3,534	1.1%	\$53,137,022	\$61,298,939	1.6%	\$16,569	\$17,345	0.5%		
Accommodation and Food Services	23,165	27,142	1.8%	\$276,614,645	\$375,880,899	3.5%	\$11,941	\$13,849	1.7%		
Other Services Ex. Public Admin	9,457	8,452	-1.2%	\$212,874,454	\$236,047,394	1.2%	\$22,510	\$27,928	2.4%		
Public Administration	15,378	14,744	-0.5%	\$461,623,196	\$618,927,345	3.3%	\$30,018	\$41,978	3.8%		

Source: NC Employment Security Commission, <http://www.ncesc1.com/lmi/industry/industryMain-NEW.asp>

The Methodology of Economic Impact Analysis

This section explores the methodology of economic impact analysis. Figure 7 depicts the basic conceptual scheme. The analysis is conducted using the IMPLAN® (IMpact Analysis for PLANing) input-output model that divides the economy into sectors, defined by the good or service produced, where the outputs of one sector are inputs of another. IMPLAN analyzes a computer model that contains 440 sectors of the local economy and reflects the existing structure of the economy using data from the U.S. Department of Labor, Bureau of the Census, and the Bureau of Economic Analysis. IMPLAN was originally developed by the U.S. Forest Service and the University of Minnesota and is now available from the Minnesota IMPLAN Group, Incorporated. The IMPLAN model is widely used by economic development specialists to assess the economic impact of new industrial and other development.

Figure 7: Assessing the Economic Impact of Cone Health



The basic inputs into the IMPLAN model are the estimates of spending generated by Cone Health in the region.

The spending of Cone Health affects the economy through multiplier effects on total output, income, and employment. Each dollar spent generates additional dollars of output and income through successive rounds of re-spending within the economy. The effects of this re-spending are termed multiplier effects. The multiplier effects of Cone Health spending generate additional employment, income, and taxes.

The IMPLAN model separates the multiplier effects into 1) *indirect* effects and 2) *induced* effects. Indirect effects arise as the direct spending leads to additional rounds of spending in supplier industries. The indirect purchases (or indirect effects) continue until leakages (imports) from the regional economy stop the re-spending cycle. The re-spending by various supplier industries also induces higher income and spending in the household sector as employment and payroll in the supplier industries increase. The induced effects reflect the

changes in spending by households as household income increases as a result of the increased production in supplier industries.

Economic impact is measured in terms of 1) the total output (business receipts) of all industries in the region, 2) total number of new jobs created, 3) the total amount of additional labor income, and 4) state and local tax revenues.

The Economic Impact of Cone Health's Operations

The net revenue (business receipts) of Cone Health totaled \$883,170,000 in 2010. The division of net revenues is shown in Table 5.

Table 5: Net Revenues of Cone Health, 2010
(in millions)

Operation	Amount
Hospitals	\$692.31
Home health-care services	\$5.88
Physicians' practices	\$79.52
Ambulatory health-care services	\$98.50
Nursing-care facilities	\$6.96
Total	\$883.17

To generate this level of revenue, Cone Health spent money on employee wages and salaries, utilities, and a wide array of various other inputs necessary for the provision of services for its patients.

The economic impact created by the spending necessary for the operation of Cone Health is shown in Table 6.

Table 6: Economic Impact of Cone Health Operations, 2010

Impact Type	Employment	Labor Income	Value Added	Output
Direct Effect	6,827	\$387,722,030	\$422,402,096	\$883,170,000
Indirect Effect	3,283	\$119,716,864	\$232,813,607	\$368,525,697
Induced Effect	3,717	\$136,331,817	\$247,825,165	\$407,134,224
Total Effect	13,827	\$643,770,712	\$903,040,868	\$1,658,829,921
Multipliers	2.0	1.7	2.1	1.9

The total economic impact of Cone Health in 2010 is estimated at \$1.66 billion. The System generated employment for some 13,800 people and labor income totaling \$644 million, or an average of \$46,558 per employed person, well above the average wage of \$38,012 for the metro area shown in Table 4.

Table 6 documents the importance of Cone Health as a generator of region income, employment, and output (or business revenues). For every person employed directly by Cone Health, a total of 2.0 jobs are created in the economy of the region, and for every dollar of wages paid by Cone Health, a total of \$1.7 dollars of labor income is created. For the overall economy of the region, every dollar of revenue earned by Cone Health generates directly and indirectly a total of \$1.9 dollars of revenue for local businesses in the region.

The additional income fostered by Cone Health operations creates extra tax revenues at the state and local levels. It is estimated that state and local tax revenues are \$66.2 million higher because of the direct and indirect effects of Cone Health, including additional sales tax revenues of \$20.7 million and \$15.8 million in extra property tax revenues.

The Physician Practices of Non-Cone Health Physicians

Cone Health has an important impact on the revenues earned by physicians who utilize the facilities of Cone Health as part of their medical practices. The revenues earned by those physicians whose practices are fully or partially owned by Cone Health are included in the previous section. This section examines the impact of Cone Health on non-Cone Health physicians.

In 2010, 571 non-Cone Health physicians in various medical specialties utilized the facilities of Cone Health. These doctors used Cone Health facilities to examine and treat their patients, enabling them to generate revenues which they might not otherwise have been able to obtain. For example, an anesthesiologist might have little or no income but for the ability to treat surgery patients at a local hospital. Indeed, some anesthesiologists and other physicians who utilize Cone Health facilities very intensively have their offices at a Cone Hospital.

Drawing on national survey data and information provided by Cone Health staff, it is estimated that the 571 independent physicians who utilize the facilities of Cone Health generated approximately \$685 million in net revenues in 2010, or about \$1.2 million per physician.¹¹ An analysis by Cone Health staff revealed the share of the non-Cone Health physician revenue total that could be classified as hospital-based and the share of the hospital-based revenue total that were attributable to Cone Health.¹² Estimates of non-Cone Health physician revenues attributable to Cone Health are shown in Table 7. In 2010, it is estimated that a total of \$267 million of the revenues earned by independent physicians practicing in the region are attributable to Cone Health.

Table 7: Net Revenues of Non-Cone Health Physicians Attributable to Cone Health, 2010

Medical Specialty Group	Estimated Net Revenue	Amount Attributable to Cone Health
Primary Care	\$113,080,781	\$27,930,953
Medicine	\$305,514,737	\$124,802,770
Surgery	\$217,090,220	\$68,057,784
Hospital Based	\$49,080,100	\$46,626,095
Total	\$684,765,836	\$267,417,601

The economic impacts arising from the \$267 million of independent physician revenues on the regional economy are shown in Table 8.

¹¹ Revenues by medical specialty were estimated using national median revenue estimates from the American Medical Group Association 2010 Medical Group Compensation and Financial Survey. See, American Medical Group Association, *2010 Medical Group Compensation and Financial Survey* (Alexandria, VA: American Medical Group Association, 2010), pp. 24-25.

¹² For an exposition of the estimates, see Andrew Brod, *The Economic Impact of the Moses Cone Health System* (Greensboro, NC: Office of Business and Economic Research, Bryan School of Business and Economics, University of North Carolina at Greensboro, March 2005).

Table 8: Economic Impact of Cone Health on Non-Cone Health Physician Practice

Impact Type	Employment	Labor Income	Value Added	Output
Direct Effect	1,860	\$157,115,140	\$167,551,930	\$267,417,601
Indirect Effect	700	\$27,719,908	\$47,870,621	\$78,400,203
Induced Effect	1,367	\$50,109,728	\$91,130,167	\$149,682,659
Total Effect	3,927	\$234,944,777	\$306,552,718	\$495,500,463

Through its impact on the revenues generated by non-Cone Health physicians, Cone Health is estimated to increase total business receipts in the region by \$495.5 million and the number of jobs by 3,927.

Because of the additional economic activity created by non-Cone Health physicians, state and local tax revenues are higher by some \$20.5 million, including \$6.0 million in additional sales taxes and \$4.6 million in extra property taxes.

The Economic Impact of Cone Health's Construction Expenditures

In addition to the spending associated with its normal operations, Cone Health spent \$13.14 million on new construction projects and \$14.66 million on renovations and improvements in 2010. The economic impact of this construction spending is shown in Table 9.

Table 9: Economic Impact of Cone Health Construction Spending, 2010

Impact Type	Employment	Labor Income	Value Added	Output
Direct Effect	273	\$10,977,066	\$12,696,996	\$27,800,000
Indirect Effect	65	\$3,011,087	\$4,526,867	\$7,665,110
Induced Effect	105	\$3,836,386	\$6,980,805	\$11,463,306
Total Effect	444	\$17,824,540	\$24,204,667	\$46,928,415

It is estimated that Cone Health construction spending in 2010 generated directly and indirectly 444 jobs and \$17.8 million in labor income, or \$40,182 per job, and it fostered a total of \$46.9 million in additional revenue for local businesses.

In addition, Cone Health spending on various construction projects generated a total of \$1.7 million in state and local tax revenues, including \$538,000 in extra sales tax revenues and \$411,000 in additional property taxes.

MCCHS spending on new construction is slated to rise substantially in 2011-12 because of expenditures on the Moses Cone campus for the North Tower plus the expansion of the cancer center. New construction spending is projected to average \$87.9 million annually during 2011-12. The higher spending in 2011-12 will greatly expand the impact numbers shown in Table 9. The total employment impact will jump from 444 to 1,580 net new jobs, an increase of 256 percent, and the total output effect (the impact on business revenues) will grow by 266 percent, to \$171.8 million.

Summary of the Overall Economic Impact of Cone Health

Table 10 summarizes the overall impact of Cone Health.¹³ Cone Health is estimated to create 18,198 jobs in the local area and additional labor income of \$896.5 million, or \$49,266 per job. Total employment in the Greensboro/High Point MSA in 2010 is reported by the North Carolina Employment Security Commission at 320,600. The employment impacts shown in Table 10 indicate that Cone Health generated directly and indirectly jobs equivalent in number to 5.7 percent of MSA employment.

Because of Cone Health, gross domestic product (GDP), or value added, is estimated to be higher by some \$1.2 billion. The Brookings Metropolitan Policy Program estimates that the gross domestic product (GDP) of the Greensboro/High Point Metropolitan area was \$33.3 billion in 2010.¹⁴ Using this estimate, Cone Health accounts directly and indirectly for about 3.6 percent of regional economic activity.¹⁵ In total, it fostered some \$2.2 billion in extra revenue for local businesses in 2010.¹⁶

Table 10: Summary of the Overall Economic Impact of Cone Health, 2010

Impact Type	Employment	Labor Income	Value Added	Output
Operating Expenditures	13,827	\$643,770,712	\$903,040,868	\$1,658,829,921
Non-Cone Health Physician Practice	3,927	\$234,944,777	\$306,552,718	\$495,500,463
Construction Expenditures	444	\$17,824,540	\$24,204,667	\$46,928,415
Total	18,198	\$896,540,029	\$1,233,798,253	\$2,201,258,799

Because of the additional economic activity generated by Cone Health, state and local tax revenues are estimated to be higher by \$88.4 million, including \$27.3 million in additional sales tax revenues and \$20.8 million in extra property taxes.

¹³The numbers shown in Table 10 are a conservative estimate of the total economic impact of Cone Health because new construction spending in 2010 was substantially below trend. The level of planned spending on new construction in 2011-12 is slated to grow 569 percent, to \$87.9 million. The increased construction spending will raise the impact numbers shown in Table 10 substantially. The total employment impact will jump from 18,198 to 19,334 net new jobs, an increase of 6.2 percent, and the total output effect (the impact on business revenues) will grow by 5.9 percent, to \$2.33 billion.

¹⁴See, http://www.brookings.edu/~media/Files/Programs/Metro/metro_monitor/metro_profiles/greensboro_nc_metro_profile.pdf

¹⁵ Private economic activity in the region (excluding government) is approximately 90.8% of the total; therefore, Cone Health accounts for about 4% of all private economic activity in the region.

¹⁶Comparison of the impact numbers shown in Table 10 with the 2003 study by Brod (op. cit., p. 14) reveals that the economic impact of Cone Health has grown substantially since 2003:

The Growing Economic Impact of Cone Health, 2003-10

	Employment	Labor Income	Value Added	Output
2003 Study	16,322	n.a.	\$763,660,000	\$1,478,060,000
2010 Study	18,198	\$896,540,029	\$1,233,798,253	\$2,201,258,799
% Chg.	11.5%	n.a.	61.6%	48.9%

Impact of Cone Health on Business Revenues and Industry Employment

As the spending associated with the activities of Cone Health ripples through the local economy, money for wages, salaries, materials, and other necessary inputs are re-spent by firms and individuals across the local economy. Because spending patterns differ, the effects of the re-spending vary from industry to industry. Table 11 shows the 10 non-medical-related industries whose sales, or revenues, are most affected by Cone Health spending. The top three are real estate firms, owner-occupied housing, and insurance carriers.

Table 11: Cone Health Effects on Industry Revenues, 2010

IMPLAN			
Rank	Sector	Industry	Revenues
1	360	Real estate firms	\$146,464,176
2	361	Imputed rental activity for owner-occupied dwellings	\$67,586,450
3	357	Insurance carriers	\$63,211,851
4	319	Wholesale trade businesses	\$54,817,820
5	413	Food services and drinking places	\$42,310,381
6	354	Monetary and depository credit intermediation activities	\$32,828,263
7	355	Non-depository credit intermediation & related activities	\$31,360,817
8	381	Management of companies and enterprises	\$30,463,090
9	351	Telecommunications	\$29,769,306
10	382	Employment services	\$26,198,139

Table 12 shows the 10 non-medical-related industries whose employment levels are most positively affected by Cone Health spending. The top three are real estate firms, food services, and employment services. Cone Health spending is responsible, for example, for 1,192 jobs in the real estate companies and 750 jobs in food services.

Table 12: Cone Health Effects on Industry Employment, 2010

Rank	IMPLAN Sector	Industry	Employment
1	360	Real estate firms	1,192
2	413	Food services and drinking places	750
3	382	Employment services	718
4	319	Wholesale trade businesses	346
5	388	Services to buildings and dwellings	256
6	357	Insurance carriers	210
7	356	Securities and investments	203
8	39	Maintenance & repair of nonresidential structures	201
9	329	Retail Stores - General merchandise	185
10	374	Management, scientific, and technical services	177

Background of the Principal Investigator

G. Donald Jud is Professor Emeritus of Finance in the Bryan School of Business and Economics at the University of North Carolina at Greensboro and interim director of Center for Business & Economic Research in the Bryan School at UNCG. He has taught courses in economics, finance, and real estate. Dr. Jud received his Ph.D. from the University of Iowa and MBA and BA degrees from the University of Texas. He is author of over 80 academic articles and three books.

Dr. Jud is a NAIOP Distinguished Fellow and a past president of the American Real Estate Society (ARES). He is a fellow of the Homer Hoyt Advanced Studies Institute and the American Real Estate Society. In 2003, he was named a Burns Fellow at the University of Denver.

Dr. Jud has served on the editorial boards of the *Journal of Real Estate Finance and Economics* and the *Journal of Real Estate Literature* and is a member of the *Appraisal Journal's* academic review panel. He is a past editor of the *Journal of Real Estate Research* and continues to serve as a member of its editorial board. Dr. Jud's research has appeared in numerous academic and professional journals including the *Appraisal Journal*, *American Real Estate and Urban Economics Association Journal*, *Journal of Real Estate Finance and Economics*, *Journal of Real Estate Research*, *Journal of Housing Economics*, *Journal of Financial Education*, *Journal of Real Estate Portfolio Management*, *Journal of Real Estate Practice and Education*, *Real Estate Issues*, *Journal of Property Research*, *Journal of Financial Economics*, *Land Economics*, and *Urban Studies*. A recent article entitled "The Internationalization of Real Estate Research," by Kam C. Chan, William G. Hardin III, Kartono Liano, and Zhenf Yu. (*Journal of Real Estate Research*, vol. 30, no. 1 (2008), pp. 91-124) ranks Dr. Jud 7th in a global ranking of real estate researchers publishing in top-tier academic real estate journals.

Dr. Jud has been a research consultant to Wachovia Bank, NC Department of Commerce, the Piedmont-Triad Partnership, the National Association of Realtors®, the NC Association of Realtors®, the Greensboro Chamber of Commerce, Downtown Greensboro, Inc., the Greensboro Regional Realtors® Association, the City of High Point, the Town of Boone, the North Carolina Association of Electrical Cooperatives, CME Merchant Energy, Home Builders Assn. of Burlington-Alamance County, Triad Real Estate and Building Industry Coalition (TREBIC), the Triad MLS, the Carroll Companies, the Homebuilders Association of Fayetteville, The Reynolds Companies, Wood Partners, Cone Mills, and RMIC Corporation.