

# Nashville Health Sector Research

Industry Impact and Contribution

National Facilities

International Presence

The Research Center  
Nashville Area Chamber of Commerce  
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**THE RESEARCH CENTER**

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# Introduction: The Nashville Health Sector

The need for a comprehensive examination of the scope and reach of Nashville-based health industry activity across the U.S. presents an important opportunity for assessing its importance to the region and local economy. This analysis offers a critical understanding of the large and growing impact of this sector both directly and indirectly through the supporting and ancillary industries that include two distinct and significant components of the health management cluster. An examination of the economic impact of ancillary, supporting and associated health industry subsectors provides a means of evaluating the wide range of business ties and varied contributions to the Nashville region and its broader business community.

Nashville's worldwide reputation in health care management is unique, growing, and well-situated for continued analysis and understanding of the national scope of this key cluster. Additionally, the spatial composition of Nashville-based facility operations in the U.S. and nascent but important international presence offers a highly useful platform to inform, market and guide these activities. Together, this research provides data and insight to continue guiding area leadership and industry in fostering an exceptional environment for Nashville's health care landscape to flourish and expand.

With a dynamic and growing health care cluster at the core of Nashville's economy, the need to assess and inform the direction and opportunities for this industry set is critically important. Using combined sources of real-time data, proprietary databases, and expert insight and experience, this research provides a basis for key leaders to utilize information in practical ways to guide, shape and manage the opportunities associated with this industry's growth.

This research focuses on several major elements of interaction and opportunity within the health care industry environment. The components of this study comprise the following:

- **Overall economic revenue, impact and contribution** of the health care industry cluster, including publicly traded and privately held firms and key supporting, ancillary and associated subsectors related to the Nashville-based health care management industry cluster; and
- **Spatial analysis of U.S. and key international facilities and operations of Nashville-based health care management firms.**

Developing an understanding of an industry impact through its publicly traded and privately held components provides a useful opportunity to portray the vital role of the very large number of small and medium-size firms that make up a large and important segment of the overall industry cluster. Understanding the extent of this cluster's spatial and economic impact, incorporating the relationship with relevant ancillary industry subsectors, provides a useful metric for portraying the industry more completely. Further, the spatial display of this cluster's diffusion offers new opportunity for the industry in

areas of marketing, strategic development and policy activity. The national and international activity of Nashville-based health care firms represents an important aspect of the overall scope of the industry. Use of a systematic platform of data and information of facilities and operations of these firms and key ancillary sectors to health care provides a critical advance in assessing and understanding the global importance of Nashville as a nexus, now and in the future, for the industry.

The Nashville health care industry epitomizes a deep and unique industry cluster with a high concentration of ultimate parent and decision-making business presence. The growth of the industry has continued unabated for many decades, cumulatively creating one of the nation’s most dynamic industry clusters. Over the past 10 years, the health care sector has not only employed more workers in the Nashville region than any other but has also added the largest number of new jobs of any super-sector. Data shows a sustained annual average growth rate in the super-sector that includes core health care firms and activities. The health care cluster includes other smaller components of other super-sectors, such as administrative services and management of companies, which also continue to experience high levels of growth.

Table 1. Nashville MSA Current and Historical Employment, All Industries

<b>Industry</b>	<b>2018 Employment</b>	<b>Employment Change 2008–2018</b>	<b>Average Annual % Growth</b>
Total – All Industries	1,016,727	141,002	1.5%
Health Care and Social Assistance	137,672	35,666	3.0%
Retail Trade	104,783	8,715	0.9%
Accommodation and Food Services	100,011	25,440	3.0%
Manufacturing	85,292	151	0.0%
Administrative, Support, Remediation Services	78,972	16,914	2.4%
Educational Services	68,907	5,174	0.8%
Professional, Scientific and Technical Services	68,086	22,568	4.1%
Construction	53,201	-5,321	-0.9%
Transportation and Warehousing	48,723	12,935	3.1%
Other Services (except Public Administration)	48,490	7,485	1.7%
Public Administration	45,328	-16,225	-3.0%
Finance and Insurance	45,218	7,379	1.8%
Wholesale Trade	38,588	-438	-0.1%
Information	22,467	1,227	0.6%
Management of Companies and Enterprises	20,928	11,482	8.3%
Arts, Entertainment and Recreation	19,502	4,732	2.8%
Real Estate and Rental and Leasing	19,450	4,440	2.6%
Agriculture, Forestry, Fishing and Hunting	6,372	-1,276	-1.8%
Utilities	3,956	140	0.4%

Source: Chmura Economics

In addition to contributing very substantially to the Nashville region’s employment base and growth over the past decade, the health care cluster is poised to continue a trajectory of growth that is exceptionally strong. The projected number and rate of growth for the health care super-sector is higher than for any other industry set in the Nashville MSA through 2028.

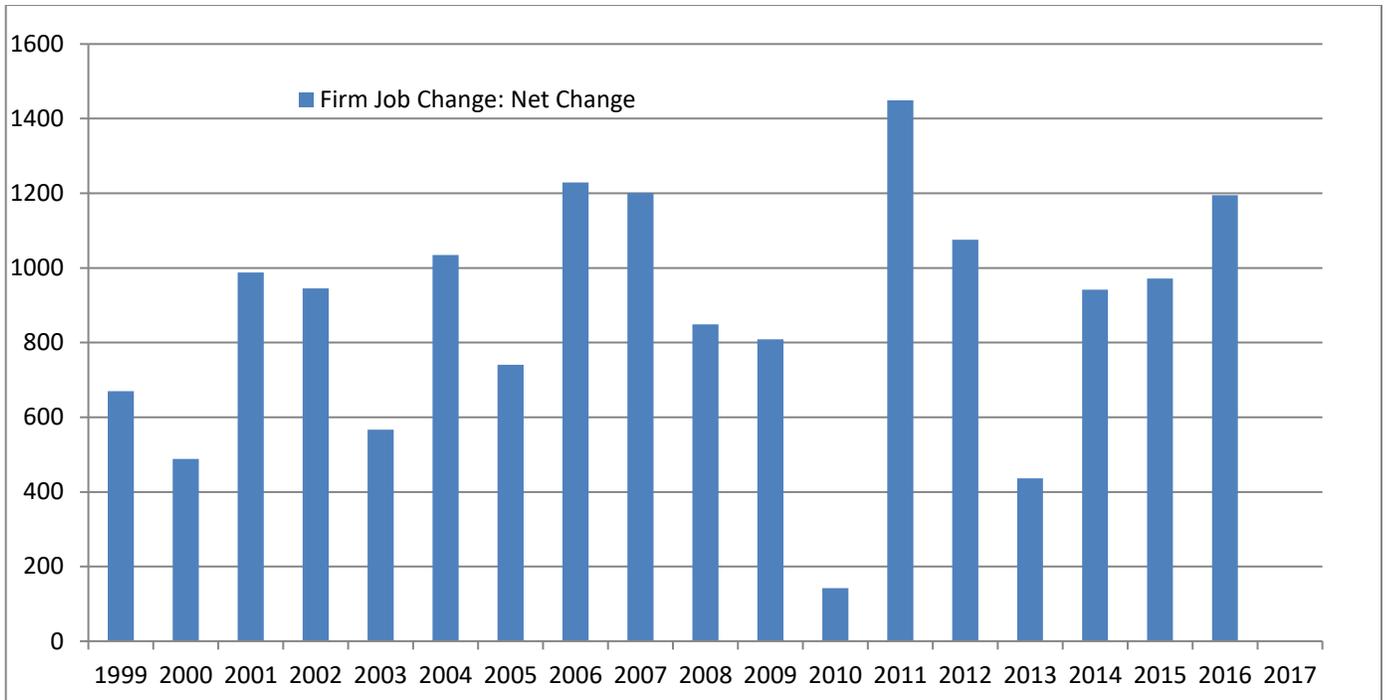
Table 2. Nashville MSA Current and Projected Employment, All Industries

Industry	2018 Employment	Total Employment Change: 2018–2028	Average Annual Growth Rate: 2018–2028
Total – All Industries	1,016,727	165,242	1.5%
Health Care and Social Assistance	137,672	34,779	2.3%
Retail Trade	104,783	12,163	1.1%
Accommodation and Food Services	100,011	15,920	1.5%
Manufacturing	85,292	3,550	0.4%
Administrative, Support, Remediation	78,972	15,988	1.9%
Educational Services	68,907	11,226	1.5%
Professional, Scientific, Technical Services	68,086	15,165	2.0%
Construction	53,201	10,930	1.9%
Transportation and Warehousing	48,723	7,927	1.5%
Other Services (except Public Admin)	48,490	7,089	1.4%
Public Administration	45,328	4,216	0.9%
Finance and Insurance	45,218	9,099	1.9%
Wholesale Trade	38,588	3,874	1.0%
Information	22,467	2,189	0.9%
Management of Companies	20,928	4,016	1.8%
Arts, Entertainment and Recreation	19,502	3,160	1.5%
Real Estate and Rental and Leasing	19,450	2,558	1.2%
Agriculture, Forestry, Fishing and Hunting	6,372	885	1.3%
Utilities	3,956	489	1.2%

Source: Chmura Economics

While publicly traded firms continue with a dominant presence in local industry, the area cluster has benefited from a continuous expansion of innovative and diverse firms’ rising from the entrepreneurial setting that Nashville fosters. Between 1999 and 2016, the number of employees in privately held core health care firms nearly doubled in the Nashville region, with net positive increases in every year over the past two decades. Growth has been especially strong since 2011, and this set of the health care industry in Nashville continued to add jobs during the downturn of the Great Recession. In many ways, this portion of Nashville’s anchor industry highlights the extremely important and unique role of the area as both a center for entrepreneurship and growth in this sector and as both a tangible and intangible contributor to the stability and resilience of the overall regional economy.

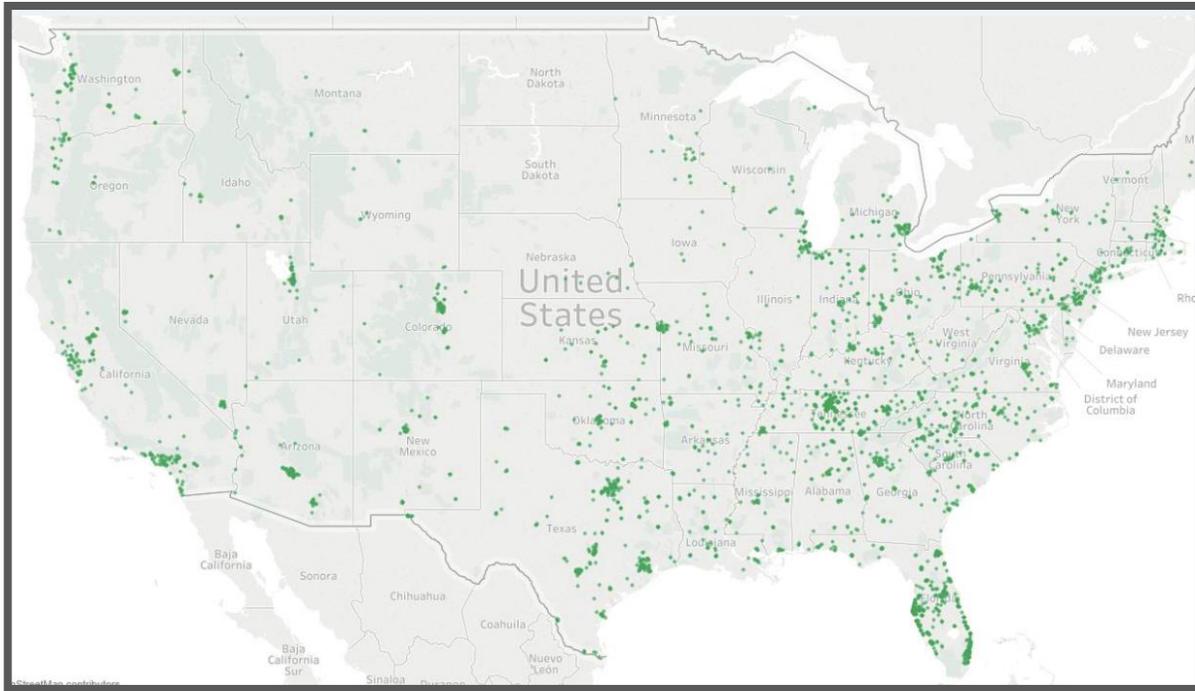
Figure 1. Employment Change in Privately Held Health Care Firms in Nashville MSA



Source: U.S. Census

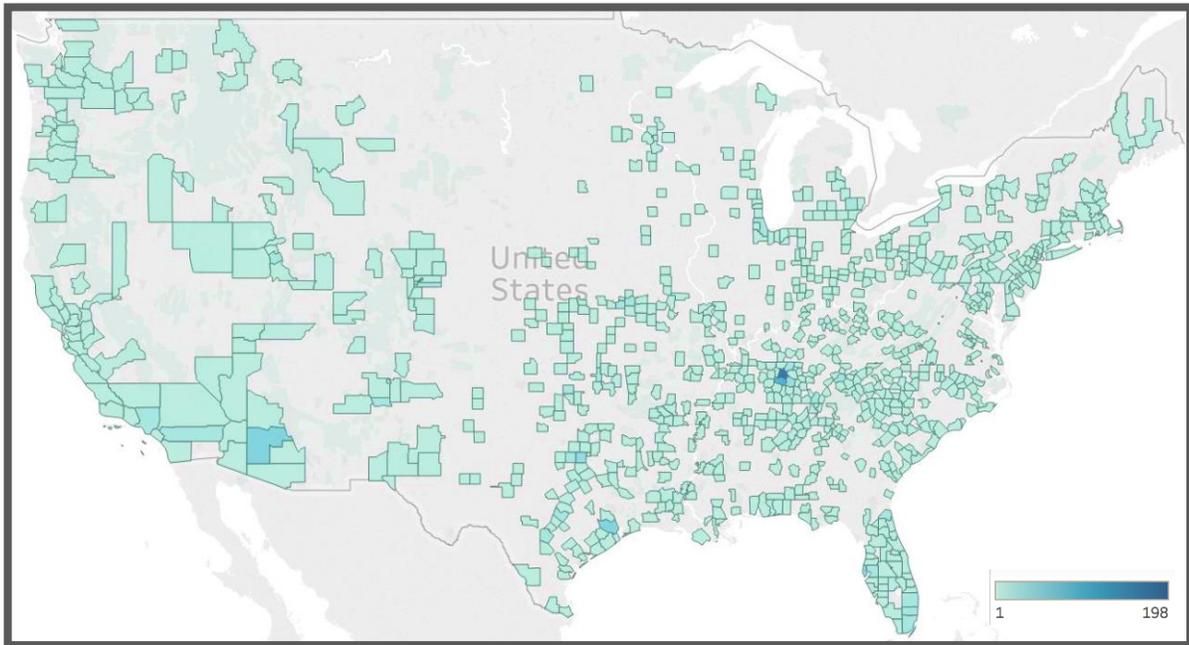
Nashville health care firms, both publicly traded and privately owned, hold a commanding lead over any other location in the nation in terms of coverage, range, and types of facilities and operation throughout the country. Nashville health care companies own and operate facilities at 3,453 individual locations across the United States. Over 220 parent firms in the Nashville region are responsible for a remarkably strong coverage of health care in the nation across numerous subsectors in the health industry. The correlation between presence of Nashville-based operations and population concentration across the U.S. is very high insofar as a very large share of health care services throughout the nation are affiliated or controlled, directly or indirectly, by firms based in the Nashville region.

Figure 2. Facilities Operated by Nashville-based Health Care Firms: Individual Locations



The diffusion of Nashville-based health care management and control reaches across the U.S. Facilities of Nashville firms are found in 688 counties across the United States. Davidson and Williamson counties in Tennessee lead this list with nearly 200 and over 100 locations, respectively. Other areas of high concentration in the U.S. include Florida, California, the Mountain West, Central South overall and the urban Northeast. In many ways, the representation of these locations by county correlates with areas of high population and population growth in the country.

Figure 3. Facilities Operated by Nashville-based Health Care Firms: By County



Yet another, and very important, representation of health care operations of Nashville firms highlights state-level activity. Tennessee, expectedly, leads with the most locations at 582, with Texas and Florida with second- and third-highest number of facilities, respectively. There are sites managed by Nashville firms operating in 49 of the 50 states.

Figure 4. Facilities Operated by Nashville-based Health Care Firms: By State

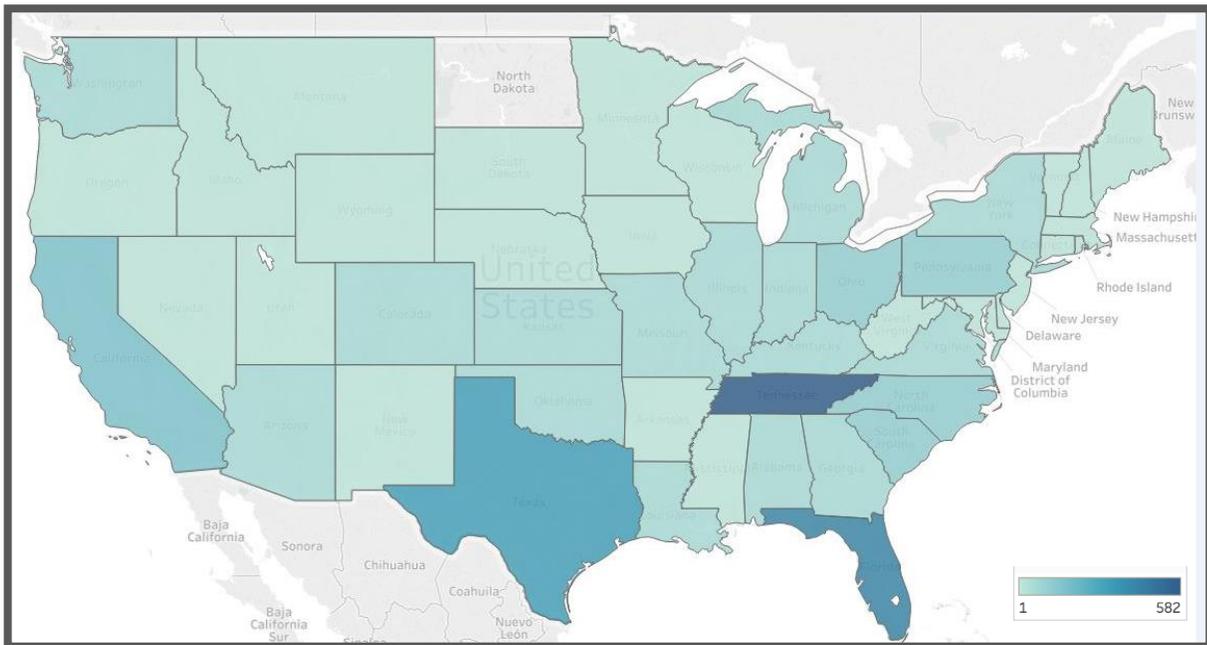


Figure 5: Facilities Operated by Nashville-based Health Care Firms: U.K.



Additionally, Nashville health care firms operate a variety of facilities internationally. Among both publicly traded and privately held firms, there are operations in several nations, including:

- United Kingdom
- Ireland
- Canada
- Australia
- New Zealand
- Israel
- The Philippines
- South Korea

The identification of international locations is derived from both database search and survey research. Survey instruments included questions on nature and types of any facilities outside the U.S. Also, in-person interviews incorporated discussion of international reach of Nashville-based firms where appropriate. Cross-referencing databases such as Avention with independent research on various key firms through their information portals yielded additional useful information. From these sources, a listing

of facilities resulted that enumerated international sites clustered primarily in Western Europe and East Asia.

The interaction of the Nashville health care community with the international health care industry is evidenced by many years of collaboration and exploration. A series of executive-level missions has provided participating delegates from Nashville firms the opportunities to gain firsthand knowledge of the health systems and develop business opportunities abroad; meet in small settings with U.S. Embassy leaders and government dignitaries; establish high-level contacts among global private industry leaders, financial services executives and entrepreneurs, professional service organizations and industry associations; and gain expertise from other U.S. companies already doing business internationally. Since 1999, leadership from the Nashville health care industry, under the auspices of the Nashville Health Care Council, have conducted trade missions to 18 cities in 16 countries, including:

- Germany and the U.K. (1999)
- France and Spain (2000)
- Belgium and Italy (2002)
- U.K. and the Netherlands (2003)
- Hungary and the Czech Republic (2004)
- Poland and Austria (2006)
- China (2007)
- Sweden and Germany (2008)
- India (virtual trade mission, 2009)
- China (2009)
- England and Scotland (2010)
- Chile and Argentina (2010)
- France (2013)
- Cuba (2015)
- U.K. (2017)

## Methodology

Any approach to study an industry set requires definition. The health care industry is a sector largely based in the health care and social services super-sector, accompanied by components in a variety of other super-sectors of the economy. This identification of the industry cluster, particularly of the magnitude found in Nashville, relies on an analysis of the functional interactions of subsectors using standard industry classifications. This study captures the breadth of the health care industry, both publicly traded and privately held, as it operates in the Nashville region through evaluation of quantitative and qualitative data. From these data and information assembled from widely recognized and accepted sources, assumptions about the dynamics of this sector are integrated into the economic analysis.

To achieve maximum precision and consistency in the analysis, the health care sector is made up of components in health care management, information technology, business and professional services, and other subsectors. This delineation provides for both clarity and continuity across key data sources employed as inputs for this research. Thus, the core of the health care sector in the Nashville area is regarded as those entities identified in the current North American Industrial Classification System (NAICS) in an array of nearly 3,000 business establishments. The standardized measurement classification of NAICS offers a singular grouping for industry that encompasses firm and industry activity as it occurs in the Nashville area. NAICS ultimately is a primary means of categorizing businesses into groups that rely on like and similar processes in production of goods and services.

The analysis examines a standard annual contribution and impact of Nashville firms and their operations in this sector based within the region apart from any capital investments of plant and equipment, as those are one-time occurrences and not typically used as the basis for assessing typical ongoing economic impact. There no doubt are many additional non-tangible contributions that result from such a large contingent of firms and establishments along with a large and growing employment base such as that found in this industry.

This impact and contribution study relies on an “input–output model.” These models are typically grounded in cross-sectional measures of trade relationships within a defined geography. These models illustrate how industries source their inputs and how they sell their outputs. Conceived by Nobel laureate Wassily Leontief, the input–output model at the national level is the standard approach used in performing regional economic impact analysis. The Leontief model recognizes that there are significant levels of intermediate transactions present in economies. These constitute a key part of transforming raw materials and services into “finished products” or “final products.” These relationships within transactions are used to link final demand to total output through the use of “multipliers” that reflect linkages within purchase in every industry that lead to production of output for final demand.

IMPLAN (Impact analysis for PLANning) input–output model data and software were used to model trade flows of the health care sector, along with the spending patterns of households associated with those industries to measure the total economic contribution within the state. IMPLAN employment, gross sales and employee compensation inputs were supplemented and informed with data from Economic Modeling Specialists Int’l (EMSI), Chmura Economics, and the U.S. Census Bureau’s Economic Census and related Census series. Adjustments to commodity production levels and trade flow assumptions ensured that health care industry activities were insulated from redundant transactions.

The overall list of Nashville-based health care firms originates with the Avention database. This source is an aggregator of business data and information that draws from the Dun & Bradstreet global database of over 300 million business records. These data include a robust set of information pertaining to all firms delineated in a variety of ways applicable to inputs for this research. Firms are identified by function (parent, subsidiary), ownership (public, private), industry classification (primary and secondary NAICS), employment levels, revenue activity and an array of other features that complement the data record. Firms identified as parent operations were deemed as the proxy for firm headquarters with ultimate decision-making authority. This inventory served to develop spatial display of operations by those

Nashville-based firms, both within the U.S. and internationally. The full data set also informed the IMPLAN input–output model employee counts.

Input–output analysis of economic activity is categorized into three types of expenditure effects: direct, indirect and induced. Direct effects take place only in the industry immediately affected. Indirect effects are changes in production purchases to related or backward-linked industries that reflect the input needs of the purchasing firms and sector. Basically, additional purchasing occurs in order to produce additional output. Induced effects are any household spending changes that result from change in household income generated from direct and indirect effects. There are many residual changes thus that occur from gains in local income. Overall, an economy is strengthened by direct and indirect effects in potentially powerful and far-reaching ways.

Assumptions about the level and type of interaction within the health care sector were established through a series of survey research and key informant interview processes. A survey was administered to 307 health care firms in the region between April 3 and May 29, 2018. Content from this survey elicited information about the relationship of core health care firms with ancillary and supporting sectors and firms that wholly or partially conduct business operations within the health care realm. A complete response from 56 firms employing nearly 67,000 persons in core health care operations indicated a large financial engagement with area firms in supporting and ancillary sectors.

A key part of economic impact modeling involves understanding and assumption about the nature of an industry’s trading relationship with other industries in a defined geography. This research relied on a variety of inputs for those assumptions, including data yielded from survey research of key firms in the core health care sector. Response for this data intake process was strong and provided useful information for further economic modeling of the industry. As an example, extrapolation of mean amounts of spending by local core privately held health care firms allowed the research to establish key benchmarks that aligned with other data available on the industry from public and proprietary sources. With over 2,000 firms in the core health care sector in Nashville, ranging in size from a few to thousands of employees, the mean spending on different facets of operating those non-traded firms in Nashville offered key information. Average levels of spending by privately held, core health care firms ranged from approximately \$2 million to \$10 million for essential operational functions and needs such as banking, accounting and legal services.

Table 3. Estimated Annual Spending by Privately Held Nashville Health Care Firms

	Mean Amount
Banking Services	\$2,237,016
Accounting Services	\$2,317,532
Consulting Services	\$10,443,752
Legal Services	\$10,592,523
Marketing, Communications and Advertising Services	\$1,714,332
Insurance and Brokerage Services	\$2,471,954

Source: The Research Center, Nashville Area Chamber of Commerce

Additionally, an important component of the research design relied on similar survey research to determine the extent to which local privately held health care firms conducted business needs with firms in the Nashville area. Here again, a very important and impressive set of findings pointed to levels between approximately 30 percent to over 40 percent of essential business operations in banking, accounting, insurance, marketing and other fields are currently conducted with firms that are based in the area. These findings not only highlight the robustness of the health care cluster in Nashville as one with high levels of specialization and capability for addressing unique needs and interests of the health care industry, but also provided valuable insight into appropriate assumptions in the economic modeling regarding local trading relationships between the unique Nashville health care industry and the wider regional economy.

Table 4. Share of Estimated Annual Spending by Privately Held Nashville Health Care Firms Going to Nashville-Area Firms

	Weighted Mean Share
Banking Services	41.3%
Accounting Services	40.8%
Consulting Services	29.4%
Legal Services	43.2%
Marketing, Communications and Advertising Services	32.8%
Insurance and Brokerage Services	36.9%

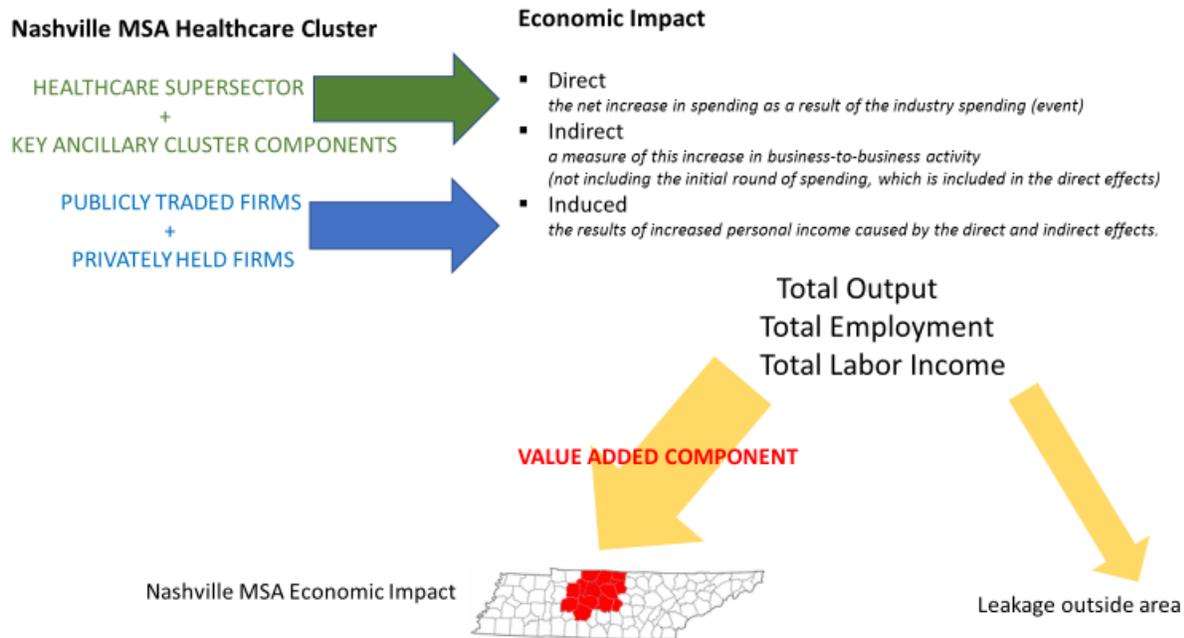
Source: The Research Center, Nashville Area Chamber of Commerce

The input from survey data and key informant interviews with firms involved in the ancillary and support sectors provided information that guided assumptions around the traded relationship between the core health care sector and related support industries. As is expected in a robust cluster like the Nashville health care industry, reliance on locally sourced expertise to sustain that industry is strong. From a representation sample of health care firms, it is possible to determine the relative rate at which those firms interact with a host of other Nashville-area sectors. Equally, as the Nashville health care industry continues to expand, it is reasonable to expect that the support sectors also will grow in number and diversity of roles and expertise, further expanding the level of traded relationships that is possible and likely.

## Economic Impact Findings

The total impact and contribution of an industry is a measure of how that sector interacts with the economy of that region. In this analysis, the impact of the health care industry on the Nashville area represents that full measure.

Figure 6. Conceptual Framework of Economic Impact of Privately Held Nashville Health Care Cluster



Source: The Research Center, Nashville Area Chamber of Commerce

Results from this study point to a very strong impact in several dimensions. Key findings of the analysis indicate that:

- **Total revenue of Nashville-based health care cluster totals over \$92 billion**, accruing from 176 parent health care firms in the region.
- The Nashville-based health care cluster **employs over 570,000 jobs worldwide**.
- On an annual basis, the health care industry in the Nashville region accounts for over **\$46.7 billion in total impact and contribution to the area economy**.
- The presence of the Nashville health care industry helps to **create and sustain more than 273,000 jobs within the Nashville region across many industry sectors**, including retail and wholesale trade, real estate and finance, and many other subsectors including the health care industry cluster.
- The Nashville health care sector comprises some **514 health care firms and 378 professional service firms wholly or largely connected with the cluster** within the Nashville MSA.
- The role of health care industry operations in the Nashville area **supports over \$26.9 billion in labor income annually**. This total represents over a quarter – or 27.5% – of all earnings and income in the Nashville MSA.
- The Nashville health care sector delivers further economic contributions to the regional economy with **further positive impacts through annual state and local tax revenue in excess of \$1.6 billion**, composed of significant levels of business taxes along with other taxes and fees.

- Health care cluster presence in the Nashville MSA adds stability to the economy through **employment levels that have increased in recent years and are projected to rise in the next decade ahead.**

Table 5. Economic Impact Summary

<b>2018 Impact Summary</b>				
	Employment	Labor Income	Total Value Added	Output
Direct Effect	121,027	\$17,955,490,867	\$16,948,786,088	\$23,032,137,884
Indirect Effect	38,413	\$2,361,381,155	\$3,916,090,385	\$6,319,136,257
Induced Effect	113,593	\$6,621,520,804	\$10,766,298,027	\$17,417,708,109
<b>Total Effect</b>	<b>273,033</b>	<b>\$26,938,392,825</b>	<b>\$31,631,174,500</b>	<b>\$46,768,982,251</b>

Source: The Research Center, Nashville Area Chamber of Commerce

Economies are measured in various ways. Output is one measure that captures overall economic activity and typically conforms to gross sales or revenue. The added value is the difference between those sales and the cost of goods sold. “Multipliers” are those measures that assess the level of interdependence between different sectors of an economy. As a rule of thumb, the higher a multiplier, the greater the interdependence among component parts of a sector in the economy. For example, an output multiplier of 1.5 would result in \$500 added to output in all sectors for every \$1,000 in spending by a core sector within a region.

The economic impacts in employment, labor income, value added to the economy and total output are experienced across many industries in the area. Because economic impacts ultimately derive from a sector’s trading relationships and purchasing within a defined geography, in this case the Nashville MSA, it is possible to distinguish those other industries that are the recipients and beneficiaries of the economic activity of an industry such as health care. Data show that several additional industries such as business and professional services, trade and transportation, and others each experience employment of hundreds of persons and other own economic gains due to the presence of the health care sector and its operation in the region.

This contribution analysis was developed from employee counts in First Quarter 2018 from the U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages and supplemented with data from Chmura Economics. These data inputs included:

- 52,998 employees within the aggregated “Hospitals” category (NAICS 62)
- 51,405 employees within the aggregated “Ambulatory Health Care Services” category (NAICS 61)
- 16,624 employees within the aggregated “Nursing and Residential Care Facilities” category (NAICS 63)

Altogether, data show some 121,027 persons employed in the Nashville MSA providing direct health care services. These do not include yet another large set of auxiliary services that is composed from sectors within real estate, insurance, social assistance services, general and office supplies, or pharmaceuticals.

This employment level in the region is projected by the U.S. Bureau of Labor Statistics to grow by over 67,000 between 2018 and 2023 as a result of net new job creation as well as retirements, employee leakages (moves, transfers, etc.) and new job creation.

As a key part of the Nashville health care cluster, privately held health care firms enhance the region economically in very significant ways. In addition to the 11 publicly traded health care firms, the array of other privately held firms make up a key part of Nashville's anchor industry cluster.

- Privately health Nashville health care firms **employ 77,579 workers directly, and 167,514 through extended (indirect and induced) effects, for a combined \$15.6 billion generated annually in labor income** for the Nashville region.
- The non-traded portion of the Nashville health care cluster alone **contributes nearly two-thirds (59.8%) of the \$31.6 billion addition to the Nashville Gross Metropolitan Product each year**. This contribution is identified as value added to the region's economy, composed of non-duplicated earnings, income and taxes, and operating surpluses generated by the health care sectors.
- The presence of non-publicly traded health care firms in Nashville is responsible for 167,000, or **61 percent, of the 273,000 jobs that are created and sustained across many area industries**, both directly within health care as well as in the other sectors that health care's role interacts with and supports in the region.
- The non-traded health care sector also delivers further economic contributions to the regional economy with positive impacts through **annual state and local tax revenue in excess of \$799 million**, composed of significant levels of business taxes along with other taxes and fees.

## Indirect Effects

Indirect effects are those resulting from business-to-business activity by the health care firms in the Nashville MSA. They represent a 'supply chain' of activity that involves trade by the health care sector with other sectors of the area economy. These indirect effects account for over \$6 billion or 13 percent of the total contribution of the health sector in the region. Indirect effects can further be disaggregated into employment levels for those industries and their activities; labor income generated for salaries, wages and proprietor income; and total value added.

Table 6. Top 15 Industries by Indirect Employment Due to Nashville-Based Health Care Sector

Industry	Indirect Employment	Employee Compensation	Proprietor Income
Employment services	7,323	185,555,638	5,546,697
Real estate	9,344	60,674,318	64,043,862
Management consulting services	3,107	157,571,487	42,522,572
Full-service restaurants	8,029	47,179,594	4,220,210
Wholesale trade	4,245	109,704,364	12,401,724
Management of companies	2,292	161,571,173	-45,065,431
Insurance agencies and brokerages	2,766	93,054,210	10,343,508
Other financial investment activities	3,274	41,183,065	1,731,236
Insurance carriers	2,335	121,692,200	10,343,508
Office administrative services	1,378	81,672,985	12,588,958
Services to buildings	2,467	14,665,328	22,445,944
Other ambulatory health care services	3,141	40,372,548	39,779,688
Legal services	1,671	44,574,396	15,344,194
Accounting, tax prep, bookkeeping, payroll services	1,247	82,704,402	7,669,621
Business support services	1,188	33,283,993	5,160,046

Source: IMPLAN

## Induced Effects

Induced effects are those resulting from employee compensation spending in the market. They represent consumer spending of those directly employed by the Nashville health care sector and the spending of those workers within the supply chain. Induced effects account for more than \$17 billion of the total contribution of the health sector in the region.

Table 7: Top 15 Industries by Induced Employment Due to Nashville-Based Health Care Sector

Industry	Induced Employment	Employee Compensation	Proprietor Income
Limited-service restaurants	6,157	111,253,028	23,720,295
Full-service restaurants	6,118	151,037,413	13,510,280
Real estate	5,344	81,071,110	85,573,388
Hospitals	4,367	357,779,829	545,475,589
Retail - General merchandise stores	3,530	102,428,325	14,337,829
Retail - Food and beverage stores	3,141	88,321,642	35,208,546.38
Offices of physicians	3,068	285,298,453	110,322,212.47
Wholesale trade	2,909	238,806,076	26,996,256.59
Colleges, universities, professional schools	2,853	148,009,815	317,141.32
All other food and drinking places	2,775	67,170,114	25,680,540.97
Employment services	2,143	76,755,174	2,294,393.86
Individual and family services	2,099	52,407,273	9,157,850.12
Personal care services	2,069	24,824,114	43,950,373.77
Other educational services	2,058	42,152,554	5,199,021.57
Retail - Nonstore retailers	2,009	27,782,750	24,648,624

Source: IMPLAN

## Aggregate Effects on Area Industries

Among the most important contributions of the Nashville health care industry cluster is the combined effect on employment in the region. The health care sector employs over 121,000 persons directly, and another 152,000 jobs are sustained in the area because of the health care industry located in the Nashville area. Employment impacts are felt in many industries, both health-related and non-health-related.

Table 8. Top 25 Largest Employment Impacts on Nashville-Area Industries by Nashville-Based Health Care Sector

Description	Direct	Indirect	Induced	Total
<b>Total</b>	<b>121,027</b>	<b>38,413</b>	<b>113,594</b>	<b>273,034</b>
Hospitals	52,998	56	4,367	<b>57,421</b>
Offices of physicians	20,561	0	3,068	<b>23,629</b>
Nursing and community care facilities	12,512	0	1,750	<b>14,262</b>
Real estate	0	4,000	5,344	<b>9,344</b>
Offices of other health practitioners	7,686	0	893	<b>8,579</b>
Full-service restaurants	0	1,911	6,118	<b>8,029</b>
Employment services	0	5,180	2,143	<b>7,323</b>
Outpatient care centers	6,174	0	1,125	<b>7,299</b>
Limited-service restaurants	0	663	6,157	<b>6,820</b>
Offices of dentists	5,603	0	1,124	<b>6,727</b>
Home health care services	5,237	0	922	<b>6,159</b>
Medical and diagnostic laboratories	4,042	481	326	<b>4,850</b>
Residential mental health, substance abuse and other facilities	4,112	0	718	<b>4,830</b>
Wholesale trade	0	1,336	2,909	<b>4,245</b>
Retail - General merchandise stores	0	23	3,530	<b>3,554</b>
Other financial investment activities	0	1,296	1,978	<b>3,274</b>
All other food and drinking places	0	410	2,775	<b>3,184</b>
Retail - Food and beverage stores	0	6	3,141	<b>3,147</b>
Other ambulatory health care services	2,102	747	292	<b>3,141</b>
Management consulting services	0	2,303	805	<b>3,107</b>
Colleges, universities, and professional schools	0	13	2,853	<b>2,866</b>
Insurance agencies, brokerages	0	1,332	1,434	<b>2,766</b>
Services to buildings	0	959	1,508	<b>2,467</b>
Insurance carriers	0	1,164	1,171	<b>2,335</b>
Management of companies and enterprises	0	1,336	956	<b>2,292</b>

Source: IMPLAN

Along with impacts to employment are significant gains in the region's industries associated with the presence of the region's health care cluster. A total of approximately \$26.9 billion in labor income is generated that flows into a large array of Nashville-area industries. In fact, 17 industries in Nashville produce over \$200 million each in labor income for an employment base that is supported by the presence of the Nashville non-traded health care sector. Seven of these industries are outside the immediate health care core set.

Table 9. Largest Labor Income Impacts on Nashville-Area Industries by Nashville-Based Health Care Sector

<b>Description</b>	<b>Direct</b>	<b>Indirect</b>	<b>Induced</b>	<b>Total</b>
Total	17,955,490,867	2,361,381,155	6,621,520,804	<b>26,938,392,826</b>
Hospitals	10,960,963,872	11,524,642	903,255,418	<b>11,875,743,932</b>
Offices of physicians	2,651,274,021	0	395,620,666	<b>3,046,894,686</b>
Offices of other health practitioners	1,064,234,172	0	123,683,316	<b>1,187,917,488</b>
Home health care services	725,634,458	0	127,751,438	<b>853,385,895</b>
Nursing and community care facilities	668,687,529	0	93,538,179	<b>762,225,708</b>
Outpatient care centers	577,069,405	0	105,171,011	<b>682,240,416</b>
Offices of dentists	527,101,693	0	105,698,562	<b>632,800,255</b>
Medical and diagnostic laboratories	371,469,951	44,243,603	29,969,874	<b>445,683,428</b>
Wholesale trade	0	122,106,088	265,802,332	<b>387,908,420</b>
Other ambulatory health care services	225,613,813	80,152,236	31,346,293	<b>337,112,342</b>
Real estate	0	124,718,180	166,644,498	<b>291,362,679</b>
Employment services	0	191,102,336	79,049,567	<b>270,151,903</b>
Management consulting services	0	200,094,059	69,924,037	<b>270,018,096</b>
Insurance carriers	0	121,911,268	122,665,114	<b>244,576,382</b>
Full-service restaurants	0	51,399,804	164,547,694	<b>215,947,498</b>
Residential mental health, substance abuse and other facilities	183,441,953	0	32,035,372	<b>215,477,325</b>
Insurance agencies, brokerages, and related activities	0	103,397,718	111,260,857	<b>214,658,575</b>
Management of companies and enterprises	0	116,505,742	83,379,292	<b>199,885,034</b>
Monetary authorities and depository credit intermediation	0	37,658,042	126,924,608	<b>164,582,650</b>
Accounting, tax prep, bookkeeping, and payroll services	0	90,374,023	71,949,074	<b>162,323,097</b>
Limited-service restaurants	0	14,545,285	134,973,323	<b>149,518,607</b>
Colleges, universities, and professional schools	0	701,835	148,326,956	<b>149,028,791</b>
Legal services	0	59,918,590	83,683,201	<b>143,601,791</b>
Automotive repair and maintenance, except	0	22,159,632	108,302,866	<b>130,462,498</b>
Nondepository credit intermediation and related activities	0	31,243,637	95,951,552	<b>127,195,189</b>
Retail - Food and beverage stores	0	238,173	123,530,188	<b>123,768,361</b>
Office administrative services	0	94,261,943	28,871,176	<b>123,133,119</b>

Source: IMPLAN

A key component in assessing economic impact includes identification of the value added to a local economy, or otherwise stated as a contribution to the Gross Metropolitan Product of the area. In the case of Nashville’s health care sector, there is an aggregate value added of approximately \$31.6 billion to the Nashville MSA. The leading non-core health care sectors experiencing highest value-added gains include real estate, owner-occupied dwellings, wholesale trade and insurance, which together receive nearly \$4.4 billion in value. In total, 18 industry sectors gain over \$250 million in value, with nine of these in non-health-care-related subsectors.

Table 10. Largest Value-Added Impacts on Nashville-Area Industries by Nashville-Based Health Care Sector

<b>Description</b>	<b>Direct</b>	<b>Indirect</b>	<b>Induced</b>	<b>Total</b>
Total	16,948,786,089	3,916,090,385	10,766,298,027	<b>31,631,174,501</b>
Hospitals	9,759,540,604	10,261,434	804,250,251	<b>10,574,052,290</b>
Offices of physicians	2,597,433,496	0	387,586,632	<b>2,985,020,127</b>
Real estate	0	734,159,728	980,961,071	<b>1,715,120,799</b>
Owner-occupied dwellings	0	0	1,288,544,620	<b>1,288,544,620</b>
Offices of other health practitioners	1,125,211,087	0	130,769,939	<b>1,255,981,026</b>
Nursing and community care facilities	734,353,598	0	102,723,762	<b>837,077,360</b>
Outpatient care centers	697,968,243	0	127,204,847	<b>825,173,090</b>
Home health care services	677,743,766	0	119,320,051	<b>797,063,818</b>
Wholesale trade	0	244,443,315	532,107,810	<b>776,551,125</b>
Offices of dentists	615,731,435	0	123,471,293	<b>739,202,729</b>
Insurance carriers	0	327,786,864	329,813,754	<b>657,600,618</b>
Medical and diagnostic laboratories	375,159,106	44,682,997	30,267,512	<b>450,109,615</b>
Employment services	0	293,133,180	121,254,672	<b>414,387,852</b>
Other ambulatory health care services	231,201,645	82,137,385	32,122,655	<b>345,461,685</b>
Limited-service restaurants	0	31,177,881	289,315,899	<b>320,493,779</b>
Insurance agencies, brokerages	0	147,972,169	159,225,084	<b>307,197,253</b>
Management of companies and enterprises	0	174,824,989	125,116,441	<b>299,941,431</b>
Management consulting services	0	194,786,999	68,069,454	<b>262,856,454</b>
Monetary authorities and depository credit intermediation	0	56,432,222	190,202,072	<b>246,634,294</b>
Full-service restaurants	0	56,117,072	179,649,221	<b>235,766,293</b>
Legal services	0	97,191,414	135,738,986	<b>232,930,400</b>
Accounting, tax prep, bookkeeping, and payroll services	0	115,115,927	91,646,737	<b>206,762,663</b>
Retail - General merchandise stores	0	1,181,170	179,214,865	<b>180,396,035</b>
Retail - Food and beverage stores	0	330,480	171,406,037	<b>171,736,517</b>
Automotive repair and maintenance	0	27,696,003	135,361,294	<b>163,057,296</b>
Colleges, universities, and professional schools	0	761,097	160,851,348	<b>161,612,444</b>
Retail - Motor vehicle and parts dealers	0	1,274,663	158,417,088	<b>159,691,750</b>

Source: IMPLAN

The full array of economic impact is captured in the total output analysis. Nashville-based health care firms as a group are responsible for over \$46.7 billion in total output impact. Here also, real estate, owner-occupied dwellings, wholesale trade and insurance lead those sectors positively impacted, followed by restaurants, employment services and banking services, in order of impact. Seventeen separate subsectors receive more than a half billion dollars in annual total output impact in the Nashville MSA stemming from the presence of all health care operations based in the area.

Table 11. Largest Total Output Impacts on Nashville Area Industries by Nashville-Based Health Care Sector

<b>Description</b>	<b>Direct</b>	<b>Indirect</b>	<b>Induced</b>	<b>Total</b>
Total	23,032,137,884.18	6,319,136,257.37	17,417,708,109.53	<b>46,768,982,251.07</b>
Hospitals	13,275,738,548.65	13,958,455.80	1,094,008,050.77	<b>14,383,705,055.22</b>
Offices of physicians	3,576,384,095.77	0.00	533,664,740.72	<b>4,110,048,836.49</b>
Real estate	0.00	971,463,014.83	1,298,038,236.84	<b>2,269,501,251.68</b>
Owner-occupied dwellings	0.00	0.00	1,986,434,595.81	<b>1,986,434,595.81</b>
Offices of other health practitioners	1,336,518,138.36	0.00	155,327,652.22	<b>1,491,845,790.58</b>
Outpatient care centers	1,154,745,469.13	0.00	210,452,587.34	<b>1,365,198,056.47</b>
Nursing and community care facilities	1,051,674,047.17	0.00	147,111,574.42	<b>1,198,785,621.58</b>
Insurance carriers	0.00	571,751,057.16	575,286,514.22	<b>1,147,037,571.37</b>
Wholesale trade	0.00	352,021,172.48	766,284,876.36	<b>1,118,306,048.85</b>
Offices of dentists	841,991,025.61	0.00	168,842,640.03	<b>1,010,833,665.64</b>
Home health care services	743,087,212.52	0.00	130,824,081.39	<b>873,911,293.91</b>
Medical and diagnostic laboratories	544,945,442.29	64,905,250.52	43,965,726.86	<b>653,816,419.67</b>
Limited-service restaurants	0.00	55,483,242.97	514,858,097.19	<b>570,341,340.16</b>
Insurance agencies, brokerages, and related activities	0.00	272,657,268.17	293,392,175.18	<b>566,049,443.35</b>
Employment services	0.00	394,246,630.16	163,080,296.40	<b>557,326,926.56</b>
Other financial investment activities	0.00	218,594,883.23	333,641,804.54	<b>552,236,687.77</b>
Management of companies and enterprises	0.00	302,847,964.63	216,738,234.25	<b>519,586,198.87</b>
Other ambulatory health care services	318,843,015.23	113,273,118.81	44,299,356.03	<b>476,415,490.07</b>
Full-service restaurants	0.00	101,663,228.92	325,457,462.79	<b>427,120,691.71</b>
Management consulting services	0.00	303,981,788.94	106,228,211.00	<b>410,209,999.94</b>
Monetary authorities and depository credit intermediation	0.00	91,796,785.09	309,396,618.04	<b>401,193,403.14</b>
Wireless telecommunications carriers (except satellite)	0.00	82,832,301.18	304,177,464.77	<b>387,009,765.95</b>
Wired telecommunications carriers	0.00	90,236,185.43	275,023,199.15	<b>365,259,384.58</b>
Legal services	0.00	128,789,381.65	179,869,180.33	<b>308,658,561.98</b>
Other local government enterprises	0.00	49,269,153.98	240,909,035.81	<b>290,178,189.79</b>
Retail - General merchandise stores	0.00	1,764,620.21	267,739,815.97	<b>269,504,436.19</b>
Junior colleges, colleges, universities, and professional schools	0.00	1,235,620.83	261,138,047.61	<b>262,373,668.44</b>

Source: IMPLAN

Along with other aspects of impact flows to many other industries in the Nashville region, health care firms are responsible for wages as a part of labor income in excess of \$15.4 billion annually. Wholesale trade, employment services, insurance and the restaurant industry are just a few of the leading subsectors that benefit very highly from the operations of the privately held health care sector in the area.

Table 12. Largest Employment Compensation Impacts on Nashville-Area Industries by Nashville-Based Health Care Sector

<b>Description</b>	<b>Direct</b>	<b>Indirect</b>	<b>Induced</b>	<b>Total</b>
Total	8,623,748,296	1,974,592,020	4,834,806,477	<b>15,433,146,793</b>
Hospitals	4,341,642,181	4,564,915	357,779,829	<b>4,703,986,926</b>
Offices of physicians	1,911,943,530	0	285,298,453	<b>2,197,241,983</b>
Nursing and community care facilities	530,869,107	0	74,259,691	<b>605,128,798</b>
Outpatient care centers	469,712,131	0	85,605,126	<b>555,317,257</b>
Offices of dentists	310,301,009	0	62,223,990	<b>372,524,999</b>
Medical and diagnostic laboratories	297,088,648	35,384,483	23,968,855	<b>356,441,986</b>
Offices of other health practitioners	313,433,218	0	36,426,625	<b>349,859,843</b>
Wholesale trade	0	109,704,364	238,806,076	<b>348,510,439</b>
Management of companies and enterprises	0	161,571,173	115,631,125	<b>277,202,298</b>
Employment services	0	185,555,638	76,755,174	<b>262,310,812</b>
Insurance carriers	0	121,692,200	122,444,691	<b>244,136,892</b>
Home health care services	200,559,891	0	35,309,535	<b>235,869,426</b>
Management consulting services	0	157,571,487	55,064,276	<b>212,635,763</b>
Full-service restaurants	0	47,179,594	151,037,413	<b>198,217,008</b>
Insurance agencies, brokerages	0	93,054,210	100,130,751	<b>193,184,961</b>
Other ambulatory health care services	113,641,303	40,372,548	15,789,076	<b>169,802,926</b>
Monetary authorities and depository credit intermediation	0	37,641,485	126,868,804	<b>164,510,289</b>
Residential mental health, substance abuse and other facilities	134,557,278	0	23,498,400	<b>158,055,678</b>
Colleges, universities, and professional schools	0	700,335	148,009,815	<b>148,710,149</b>
Accounting, tax prep, bookkeeping, and payroll services	0	82,704,402	65,843,092	<b>148,547,494</b>
Real estate	0	60,674,318	81,071,110	<b>141,745,429</b>
Nondepository credit intermediation and related activities	0	30,796,562	94,578,551	<b>125,375,113</b>
Limited-service restaurants	0	11,989,087	111,253,028	<b>123,242,115</b>
Religious organizations	0	0	113,524,823	<b>113,524,823</b>
Legal services	0	44,574,396	62,253,270	<b>106,827,666</b>
Office administrative services	0	81,672,985	25,015,346	<b>106,688,331</b>
Other financial investment activities	0	41,183,065	62,857,793	<b>104,040,858</b>

Source: IMPLAN

Another portion of labor income, after employee wages and salaries, is proprietor income. In the Nashville region, over \$11.5 billion is generated annually in proprietor income due to the activity of non-traded health care firms in the area. Here, real estate, consulting services, building services, professional and technical services, and personal care services lead the list of non-health care industries that benefit most significantly from the health care presence.

Table 13. Largest Proprietor Income Impacts on Nashville-Area Industries by Nashville-Based Health Care Sector

<b>Description</b>	<b>Direct</b>	<b>Indirect</b>	<b>Induced</b>	<b>Total</b>
Total	9,331,742,572	386,789,134	1,786,714,327	<b>11,505,246,033</b>
Hospitals	6,619,321,691	6,959,727	545,475,589	<b>7,171,757,006</b>
Offices of physicians	739,330,491	0	110,322,212	<b>849,652,704</b>
Offices of other health practitioners	750,800,954	0	87,256,691	<b>838,057,645</b>
Home health care services	525,074,566	0	92,441,903	<b>617,516,469</b>
Offices of dentists	216,800,684	0	43,474,573	<b>260,275,257</b>
Other ambulatory health care services	111,972,511	39,779,688	15,557,218	<b>167,309,416</b>
Nursing and community care facilities	137,818,423	0	19,278,488	<b>157,096,910</b>
Real estate	0	64,043,862	85,573,388	<b>149,617,250</b>
Outpatient care centers	107,357,274	0	19,565,884	<b>126,923,158</b>
Medical and diagnostic laboratories	74,381,303	8,859,120	6,001,019	<b>89,241,442</b>
Services to buildings	0	22,445,944	35,297,056	<b>57,743,000</b>
Residential mental health, substance abuse and other facilities	48,884,675	0	8,536,972	<b>57,421,647</b>
Management consulting services	0	42,522,572	14,859,761	<b>57,382,333</b>
Marketing research and all other scientific, and technical services	0	29,800,382	22,645,504	<b>52,445,885</b>
Personal care services	0	0	43,950,374	<b>43,950,374</b>
Wholesale trade	0	12,401,724	26,996,257	<b>39,397,981</b>
Automotive repair and maintenance	0	6,389,353	31,227,288	<b>37,616,641</b>
Legal services	0	15,344,194	21,429,931	<b>36,774,125</b>
Other personal services	0	1,264,107	35,499,219	<b>36,763,326</b>
Retail - Food and beverage stores	0	67,884	35,208,546	<b>35,276,430</b>
Personal and household goods repair and maintenance	0	14,154,182	20,180,352	<b>34,334,534</b>
Maintenance and repair of nonresidential structures	0	12,979,771	20,390,029	<b>33,369,800</b>
Independent artists, writers, and performers	0	11,374,394	21,561,683	<b>32,936,078</b>
All other food and drinking places	0	3,791,567	25,680,541	<b>29,472,108</b>
Retail - Gasoline stores	0	473,441	28,007,530	<b>28,480,972</b>
Limited-service restaurants	0	2,556,197	23,720,295	<b>26,276,492</b>
Landscape and horticultural services	0	8,536,002	17,179,945	<b>25,715,947</b>

Source: IMPLAN

In addition to the many direct, indirect and induced positive impacts of the privately held health care industry in the region, analysis shows that contributions by the sector to the tax base are delivered in several ways, altogether totaling over \$1.6 billion annually in the Nashville region. Business taxes, in particular, provide a major tax revenue source that yields opportunities for the local area to provide vital infrastructure and services to residents and business alike.

Table 14. Total State and Local Tax Impact of Nashville-Based Health Care Sector

<b>Tax Category</b>	
Dividends <sup>1</sup>	\$1,375,978
Indirect Business <sup>2</sup>	\$1,428,269,172
Corporate and Business <sup>3</sup>	\$51,887,412

Personal and Other <sup>4</sup>	\$140,946,551
Total State and Local Tax	\$1,622,479,113

Source: IMPLAN

<sup>1</sup>Includes dividend payments to government by corporations from investments.

<sup>2</sup>Includes sales taxes, property taxes, motor vehicle taxes, taxes imposed on extraction of natural resources, other business taxes such as licensing or documentation, and non-tax payments including fines.

<sup>3</sup>Includes corporate profits taxes paid to state and local governments.

<sup>4</sup>Includes property taxes, motor vehicle taxes, income taxes, fines and fees, and other miscellaneous taxes.

## Conclusions

The continued growth of the health care industry in the Nashville area is accompanied by a large and important impact to the region's economy. Growth of this sector has led to notable and far-reaching economic benefits in each of the areas of the state. This analysis points to the key ways that the overall health care cluster engages with the entire nation in facility and operations presence and to the major impact that all firms, including those that are privately held, in the health care cluster have on the economy of the Nashville region. This business sector is a significant contributor throughout the Nashville MSA in job creation and retention, income generated, tax base enhanced, and a host of critical and tangible returns. Key elements of this sector's contribution to the area's economic vitality include:

- **Total revenue of Nashville-based health care cluster totals over \$92 billion**, accruing from 176 parent health care firms in the region.
- The Nashville-based health care cluster **employs over 570,000 jobs worldwide**.
- On an annual basis, the health care industry in the Nashville region accounts for over **\$46.7 billion in total impact and contribution to the area economy**.
- The presence of the Nashville health care industry helps to **create and sustain more than 273,000 jobs within the Nashville region across many industry sectors**, including retail and wholesale trade, real estate and finance, and many other subsectors, including the health care industry cluster.
- The Nashville health care sector comprises some **514 health care firms and 378 professional service firms wholly or largely connected with the cluster** within the Nashville MSA.
- The role of health care industry operations in the Nashville area **supports over \$26.9 billion in labor income annually**. This total represents over a quarter – or 27.5 percent – of all earnings and income in the Nashville MSA.
- The Nashville health care sector delivers further economic contributions to the regional economy with **further positive impacts through annual state and local tax revenue in excess of \$1.6 billion**, composed of significant levels of business taxes along with other taxes and fees.
- Health care cluster presence in the Nashville MSA adds stability to the economy through **employment levels that have increased in recent years and are projected to rise in the next decade ahead**.

In key respects, the pre-eminent position of the Nashville health care sector continues to expand and strengthen. The contribution to the area economy is unmatched in size and type in numerous ways. Further, the aggregate of all firms, large and small, within Nashville's health care cluster stands as a significant contributor to economic vitality in the region's economy, both directly and indirectly. With growth patterns of recent years and the demonstrated return to the Nashville MSA, this industry demonstrates impressive, sustained and consistent enhancement to the economy as a creator of jobs, a contributor to the tax base and an anchor industry that supports success of numerous other sectors.

## Appendices

### Appendix A

For the purpose of collecting a total count of all of the direct and auxiliary health care firms in the Nashville MSA, North American Industry Classification System (NAICS) codes were utilized. NAICS codes are structured hierarchically, with the first two digits' representing general categories of economic activity. Included in total counts of auxiliary services were some subsets of the following general category codes:

- 32: Manufacturing
- 42: Wholesale Trade
- 51: Information
- 52: Finance and Insurance
- 53: Real Estate and Rental and Leasing
- 54: Professional, Scientific and Technical Services
- 56: Administrative and Support and Waste Management and Remediation Services
- 81: Other Services (except Public Administration)

NAICS codes are further subdivided into sectors, industry groups and NAICS industries. For designating all auxiliary and supplementary firms in the local health sector, we focus on NAICS classifications at the four- and five-digit levels that were used. Narrowing our search to industry impacts to this level provides a more holistic and granular approach to capturing the nature of auxiliary health care firms in the Nashville MSA.

- ❖ **3254: Pharmaceutical and Medicine Manufacturing**
  - **32541: Pharmaceutical and Medicine Manufacturing**
    - This industry comprises 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.

- ❖ **4234: Professional and Commercial Equipment and Supplies Merchant Wholesalers**
  - **42345: Medical, Dental and Hospital Equipment and Supplies Merchant Wholesalers**
    - This industry comprises 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).
  - **42346: Ophthalmic Goods Merchant Wholesalers**
    - This industry comprises establishments primarily engaged in the merchant wholesale distribution of professional equipment, instruments and/or goods sold, prescribed or used by ophthalmologists, optometrists and opticians
  
- ❖ **4242: Drugs and Druggists' Sundries Merchant Wholesalers**
  - **42421: Drugs and Druggists' Sundries Merchant Wholesalers**
    - This industry comprises establishments primarily engaged in the merchant wholesale distribution of biological and medical products; botanical drugs and herbs; and pharmaceutical products intended for internal and/or external consumption in such forms as ampoules, tablets, capsules, vials, ointments, powders, solutions and suspensions.
  
- ❖ **5112: Software Publishers**
  - **51121: Software Publishers**
    - This industry comprises establishments primarily engaged in computer software publishing or publishing and reproduction. Establishments in this industry carry out operations necessary for producing and distributing computer software, such as designing, providing documentation, assisting in installation, and providing support services to software purchasers. These establishments may design, develop and publish, or publish only. These establishments may publish and distribute software remotely through subscriptions and downloads.
  
- ❖ **5241: Insurance Carriers and Related Activities**
  - **52411: Direct Life, Health and Medical Insurance Carriers**
    - This industry comprises establishments primarily engaged in initially underwriting (i.e., assuming the risk and assigning premiums) annuities and life insurance policies, disability income insurance policies, accidental death and dismemberment insurance policies, and health and medical insurance policies.
  
- ❖ **5242: Agencies, Brokerages and Other Insurance Related Activities**
- ❖ This industry group comprises establishments primarily engaged in (1) acting as agents (i.e., brokers) in selling annuities and insurance policies or (2) providing other employee benefits and insurance related services, such as claims adjustment and third-party administration.
  
- ❖ **5311: Lessors of Real Estate**

- ❖ This industry group comprises establishments primarily engaged in acting as lessors of (1) residential buildings and dwellings, (2) nonresidential buildings (except mini-warehouses), (3) mini-warehouses and self-storage units, and (4) other real estate property.
- ❖ **54111: Offices of Lawyers**
  - **541110: Offices of Lawyers**
    - This industry comprises offices of legal practitioners known as lawyers or attorneys (i.e., counselors-at-law) primarily engaged in the practice of law. Establishments in this industry may provide expertise in a range or in specific areas of law, such as criminal law, corporate law, family and estate law, patent law, real estate law, or tax law.
  - **54119: Other Legal Services**
    - This industry comprises establishments of legal practitioners (except lawyers and attorneys) primarily engaged in providing specialized legal or paralegal services.
- ❖ **5412: Accounting, Tax Preparation, Bookkeeping and Payroll Services**
  - **54121: Accounting, Tax Preparation, Bookkeeping, and Payroll Services**
    - This industry comprises establishments primarily engaged in providing services such as auditing of accounting records, designing accounting systems, preparing financial statements, developing budgets, preparing tax returns, processing payrolls, bookkeeping and billing.
- ❖ **5415: Computer Systems Design and Related Services**
  - **54151: Computer Systems Design and Related Services**
    - This industry comprises 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) on-site management and operation of clients' computer systems and/or data processing facilities; and (4) other professional and technical computer related advice and services.
- ❖ **5416: Management, Scientific and Technical Consulting Services**
  - **54161: Management Consulting Services**
    - This industry comprises establishments primarily engaged in providing advice and assistance to businesses and other organizations on management issues, such as strategic and organizational planning; financial planning and budgeting; marketing objectives and policies; human resource policies, practices and planning; production scheduling; and control planning.
- ❖ **5417: Scientific Research and Development Services**
  - This industry group comprises establishments engaged in conducting original investigation undertaken on a systematic basis to gain new knowledge (research) and/or the application of research findings or other scientific knowledge for the creation of new or significantly improved products or processes (experimental development). Techniques may include modeling and

simulation. The industries within this industry group are defined on the basis of the domain of research; that is, on the scientific expertise of the establishment.

❖ **5611: Office Administrative Services**

➤ **561110: Office Administrative Services**

- This industry comprises establishments primarily engaged in providing a range of day-to-day office administrative services, such as financial planning; billing and recordkeeping; personnel; and physical distribution and logistics, for others on a contract or fee basis. These establishments do not provide operating staff to carry out the complete operations of a business

❖ **5613: Employment Services**

- This industry group comprises establishments primarily engaged in one of the following: (1) listing employment vacancies and referring or placing applicants for employment; (2) providing executive search, recruitment and placement services; (3) supplying workers to clients' businesses for limited periods of time to supplement the working force of the client; or (4) providing human resources and human resource management services to client businesses and households.

❖ **81391: Business Associations**

➤ **813910: Business Associations**

- This industry comprises establishments primarily engaged in promoting the business interests of their members. These establishments may conduct research on new products and services; develop market statistics; sponsor quality and certification standards; lobby public officials; or publish newsletters, books or periodicals for distribution to their members.

❖ **81392: Professional Organizations**

➤ **813920: Professional Organizations**

- This industry comprises establishments primarily engaged in promoting the professional interests of their members and the profession as a whole. These establishments may conduct research; develop statistics; sponsor quality and certification standards; lobby public officials; or publish newsletters, books or periodicals for distribution to their members.

## Appendix B

### About The Research Center

#### Dr. Garrett Harper

Dr. Harper serves as vice president of Research and Information for The Research Center, a position he has held since 1990. He has also served as research director for the Nashville Convention and Visitors Bureau and for Heartland Alliance in Chicago, Ill. Dr. Harper is past president of the American Chamber of

Commerce Researchers Association and he is a Certified Community Researcher. He serves on the National Steering Committee of the U.S. Census American Community Survey Data Group and is active in a variety of academic and practitioner organizations relating to demographics, business research, regional science, quality-of-life studies, market research, geography, and economic and international development. Dr. Harper's work has been featured in numerous national outlets, including The Atlantic Cities, NPR, The New York Times, The Carnegie Reporter and others. Dr. Harper serves as adjunct professor at Lipscomb University, Trevecca Nazarene University, Cumberland University, Columbia State Community College and Volunteer State Community College. Dr. Harper holds the following degrees: B.A. Geography (Middle Tennessee State University); MBA, Healthcare Marketing (Kennesaw State University); MPH, Health Planning and Administration (University of Tennessee–Knoxville); J.D., Law (Nashville School of Law); Ph.D., International Economic Development (University of Southern Mississippi); MTS, Theology (Lipscomb University); GIS Cert, Geographic Information Systems (Penn State University); and MSANR, Agriculture and Natural Resources (current, University of Tennessee– Martin). Dr. Harper is proficient with EMSI, REMI, IMPLAN, ArcGIS, SPSS, and a wide variety of data sources and tools.

### **René Dillard**

René Dillard serves as coordinator of Applied Research for The Research Center of the Nashville Area Chamber of Commerce. She previously served as the Education Report Card intern at the Chamber for the duration of the 2017 report. Prior to her role at the Chamber, she served in various freelance researcher roles, including at Centerstone Research Institute, Vanderbilt University Department of Special Education, and the Envision Edgehill Community Project in conjunction with the Metropolitan Department of Housing Agency. She is also a certified teacher in the state of Texas, having taught second grade in a Title 1 Public School. Ms. Dillard is proficient with STATA, ArcGIS, EMSI, IMPLAN, and a wide variety of data sources and tools. Ms. Dillard currently holds the following: MPP, Education Policy (Vanderbilt); and B.A. Anthropology (University of Chicago).