

# ESSENTIAL:

## THE IMPACT OF THE HEALTHCARE AND LIFE SCIENCES SECTOR IN INDIANA'S NORTHEAST REGION

April 2022



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# Prologue

In Indiana, we see the benefits of having a strong healthcare and life sciences sector every day. It accounts for one in every ten jobs in the state, provides an annual economic impact of \$150 billion, and is present in the substantial assets spanning the corporate, university and philanthropic sectors. This sector did not grow up overnight and is not limited to the central part of the state where you will find national and global leaders in pharmaceuticals (Eli Lilly and Co), diagnostics (Roche Diagnostics), and agbioscience (Elanco and Corteva). Travel to the northern part of the state and you will find Warsaw, the Orthopedics Capital of the World® - a cluster representing 45% of the global orthopedic market for total joint replacements that traces its beginnings back to Revra DePuy in 1895, J. O. Zimmer in 1927 and Dane Miller's Biomet in 1977. To the south, entrepreneurial companies have turned into worldwide leaders in life sciences including Hill-Rom in Batesville, IN growing in 1929 when Bill Hillenbrand had the idea to bring the home into the hospital; the Cook Group in Bloomington, IN founded by Bill Cook in 1963 initially focused on tools for minimally invasive medical devices; and Mead Johnson which has operated a manufacturing plant for Enfamil infant nutrition formula in Evansville, IN for more than 100 years. Throughout the state, our hospital systems ensure access to high-quality healthcare while also contributing to overall economic vitality.

Healthcare and life sciences start with research, but do not end there. Hoosiers working in healthcare and life sciences may be found providing care in hospitals and your doctor's office; working in manufacturing facilities making orthopedic implants, stents, or producing life-saving medicines, such as insulin and cancer treatments; providing general business support as office workers in accounting, administration, or marketing; at construction sites building or refurbishing facilities; or in academic or corporate laboratories. From investments in facilities, equipment, research, talent, and connections through BioCrossroads, Indiana's healthcare and life sciences industry has a substantial collective impact on not just the economic vitality of Indiana, but also the health of its citizens.

In this series of reports, TEconomy Partners, LLC. looks at different parts of our state and details how these investments drive our economy and how they help provide benefits to Indiana's other sectors including manufacturing, technology, and retail. We look at the State of Indiana as well as a more focused look at key economic regions, including Northeast Indiana, South Bend-Elkhart, the Wabash Heartland, Metro Indianapolis, the Indiana Uplands, and Southwest Indiana.

This is an important and timely report. And certainly, it is appropriate here to thank those whose efforts have made it possible: Lilly Endowment Inc. and the Richard M. Fairbanks Foundation, through generous grants to the CICIP Foundation on behalf of BioCrossroads, provided the essential funding; the many members of the healthcare and life sciences community, including manufacturing, transportation, and logistics; leaders at our major research universities and government agencies; our consultants at TEconomy Partners, who know both Indiana and the innovation sector well and drew on their substantial expertise to provide a helpful and comprehensive study; as well as our professional teams at BioCrossroads and CICIP.

It is said that "What Indiana Makes, Makes Indiana." Hoosiers working in healthcare and life sciences are discovering, making, and delivering treatments and cures to improve the quality of life for those of us in Indiana - and people all over the world - all while driving Indiana's economy. Please join us on this journey to learn more about how the life sciences and healthcare sector make our communities.

Sincerely,



Patricia A. Martin  
President and CEO, BioCrossroads  
April 2022



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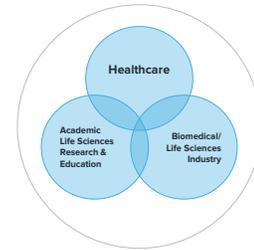
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Thanks to the Northeast Indiana Regional Partnership for providing photos for this report and for their support of Indiana's healthcare and life sciences sector. Learn more about their work at [www.neindiana.com](http://www.neindiana.com).

# Introduction

This regional profile presents quantitative analysis of the current position, recent performance, economic impacts, and overall importance of the healthcare and life sciences sector in Northeast Indiana as an economic driver. The assessment spans the industry’s three core elements or pillars of healthcare, industrial life sciences, and academic life sciences R&D (Figure 1).

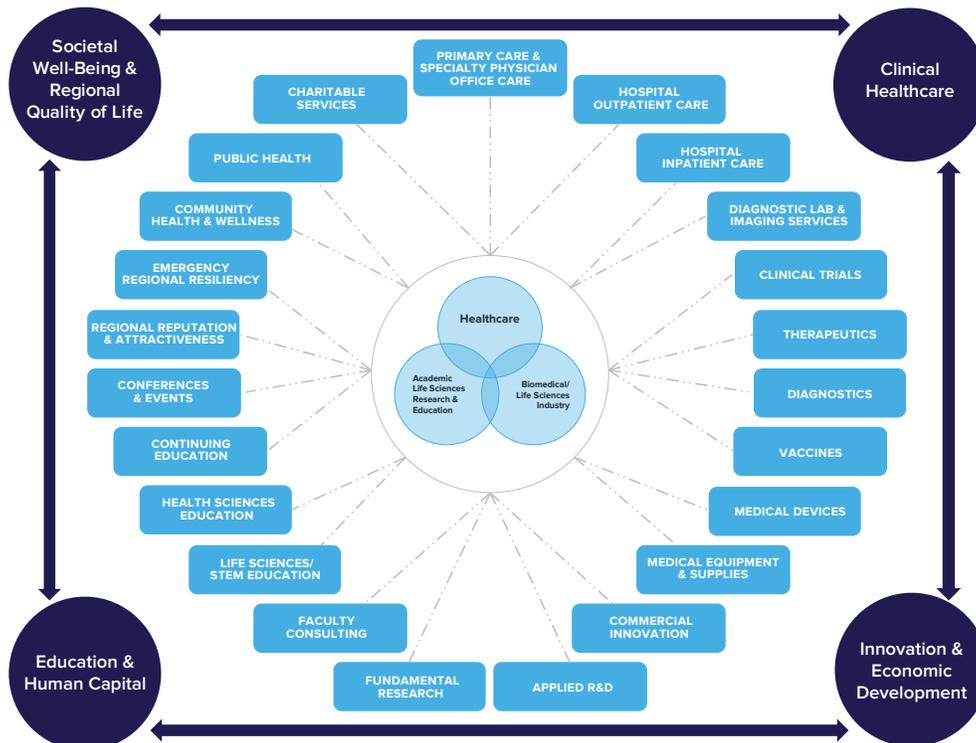
► **Figure 1: Three Core Elements of the Healthcare and Life Sciences Sector**



In addition to the economic impacts presented in this regional profile, it is critical to further consider the broader and truly extensive functional impacts—those that cannot easily or readily be measured in dollars and cents or jobs—generated by the healthcare and life sciences sector presented in Figure 2. In pursuing their missions to advance health and well-being, healthcare and life sciences organizations and the sector writ large, undertake a wide range of activities and thus generate a broad variety of functional impacts. Ultimately, they can be seen to converge around four primary functional benefit domains:

- **Provision of Clinical Healthcare** – Working to sustain the physical health of populations served.
- **Innovation and Economic Development** – Producing products and services needed and valued by society which in turn generate employment, economic output, exports, and public sector revenues.
- **Education and Human Capital Development** – Advancing basic and applied knowledge and building the know-how and skills necessary within the health and life sciences workforce.
- **Societal Well-being and Quality-of-life** – Securing public health and building equitable, diverse, and resilient communities with robust livability, quality-of-place, and quality-of-life.

► **Figure 2: The Functional Impacts of the Healthcare and Life Sciences Sector**



Source: TEconomy Partners, LLC

# Regional Healthcare and Life Sciences Industry

## SIZE AND STRUCTURE OF THE INDUSTRY

Healthcare and life sciences firms combine to employ more than 48,000 in the 11-County Northeast Indiana region. The industrial life sciences segment accounts for just over 10,000 of these jobs, with a significant strength and highly specialized concentration in medical device manufacturing that reflects the region’s status as a leading global hub for orthopedics manufacturing. The region is home to major employers like DePuy Synthes, Zimmer Biomet, Medtronic Sofamor Danek, and others in this exciting innovation and production focus (see sidebar). These large employers and their smaller counterparts combine to make up an outsized and in fact highly “specialized” concentration of jobs in the region that is nearly three times the national average for the industrial life sciences (location quotient of 2.76).

Healthcare and life sciences act as major drivers of the regional economy and high-quality jobs. The sector has seen rapid 11% job growth since 2015, well outpacing overall private sector growth of 0.6%. Average wages in the industry exceed \$68,000 annually, well above those for their private sector counterparts.

► **Table 1:** Northeast Region Healthcare and Life Sciences Industry Employment by Subsector, 2020

Healthcare and Life Sciences Subsectors	Northeast Regional Employment
<b>Life Sciences</b>	<b>11,512</b>
Biomedical Manufacturing	10,002
<i>Pharmaceutical Manufacturing</i>	61
<i>Medical Instruments, Devices, and Supplies Manufacturing</i>	8,954
<i>Other Key Supporting Industries</i>	987
Biomedical Distribution	1,321
Biomedical Research & Development (Industry, NEC)	189
<b>Healthcare</b>	<b>36,633</b>
Hospitals	20,557
Physician and Other Health Practitioner Offices	10,035
Medical Testing	221
Ambulatory Healthcare Services	3,405
Outpatient Care Centers	2,416
<b>Total</b>	<b>48,145</b>

Source: TEconomy analysis of 2020 U.S. Bureau of Labor Statistics QCEW Data enhanced by Emsi.

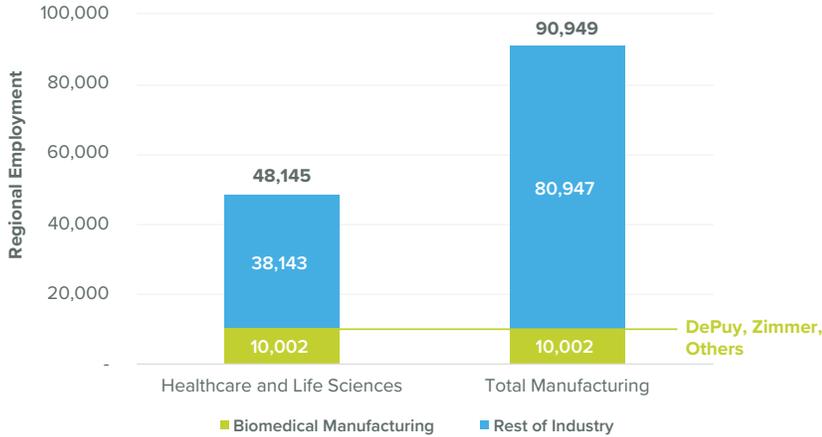
► **Table 2:** Northeast Region Healthcare and Life Sciences Industry, 2020

LS/HC Major Sector	Establishments, 2020	Employment, 2020	Location Quotient, 2020	Employment Change, 2015-2020	Average Wages, 2020
Healthcare	949	36,633	0.99	11.5%	\$62,909
Life Sciences	153	11,512	2.76	10.8%	\$85,251
HC/LS Total	1,102	48,145	1.17	11.4%	\$68,252
Total Regional Employment	18,759	463,055	1.00	0.6%	\$43,889

Source: TEconomy analysis of 2020 U.S. Bureau of Labor Statistics QCEW Data enhanced by Emsi.

In a production-intensive region, the 10,000 industrial life sciences jobs account for a sizable, one in ten regional manufacturing jobs (Figure 3).

► **Figure 3: Northeast Region Life Sciences Manufacturing Employment Compared to Total Manufacturing, 2020**



## Warsaw Indiana, the “Orthopedic Capital of the World”

Long regarded as the “Orthopedic Capital of the World,” Warsaw Indiana is home to one of the largest and most concentrated medical device industry clusters globally. The sector’s roots in the region can be traced back more than a century to innovators with names such as DePuy and Zimmer establishing their companies in Warsaw. Reinforced over time by other startups and realizing the virtuous cycle a robust industry cluster can create and maintain, today’s orthopedic cluster in Warsaw represents billions in economic activity, employs thousands, and acts as a major economic driver for the city and the broader Northeast Indiana region.

Source: TEconomy analysis of 2020 U.S. Bureau of Labor Statistics QCEW Data enhanced by Emsi.

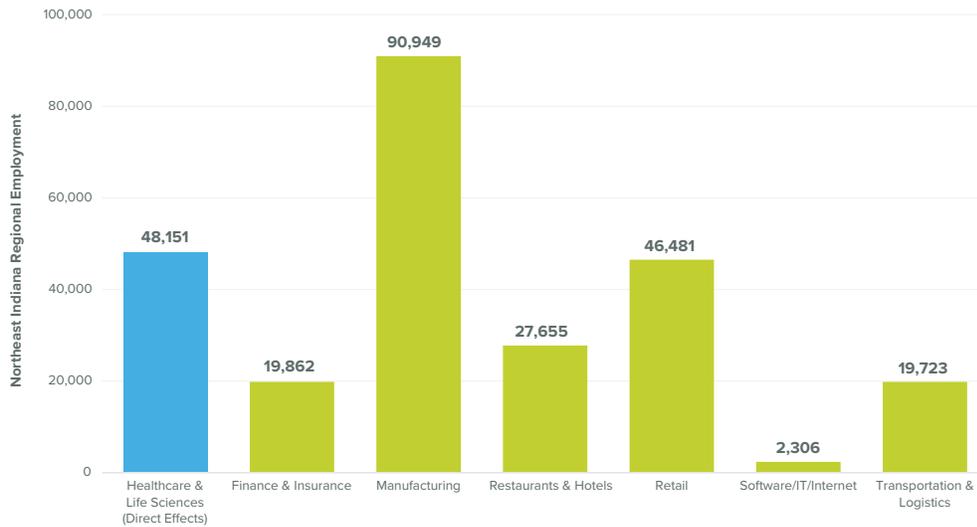


## COMPARATIVE IMPORTANCE OF THE INDUSTRY

Healthcare and life sciences represents a major employer in Northeast Indiana (Figure 4). When compared against other major industries, the sector is behind only manufacturing in terms of total regional jobs.

The strong value-adding nature of healthcare and life sciences, and its value to the region as an outsized economic driver is evident in the sector's contribution to regional GDP (Figure 5). As one of the world's most R&D- and innovation-intensive advanced industries, healthcare and life sciences punches well above its weight in its contributions to economic growth and state/regional wealth generation. In Northeast Indiana, the industry accounts for 9.9% of private sector jobs but contributes to 13.4% of regional GDP.

► **Figure 4: Northeast Region Healthcare and Life Sciences Employment Compared to Other Industries, 2020**



Source: TEconomy analysis of Northeast Indiana regional IMPLAN impact model and Emsi data.

► **Figure 5: Northeast Region Healthcare and Life Sciences Gross Regional Product Compared to Other Industries, 2020**



Source: TEconomy analysis of Northeast Indiana regional IMPLAN impact model and Emsi data.



## Regional Healthcare and Life Sciences Ecosystem

Northeast Indiana contributes to the state's healthcare and life sciences innovation ecosystem. Highlights from the regional ecosystem assessment include:

- Twenty-one percent of regional postsecondary graduates were in a STEM-related field in 2020, contributing not only to healthcare and life sciences industry talent pipelines but also to broader advanced industry workforce and talent needs.
- In 2020, Purdue University Fort Wayne had more than \$900,000 in life sciences-related R&D expenditures.
- High-growth potential healthcare and life sciences companies are being funded in the region with nine companies receiving VC investments of nearly \$33 million in the latest 3-year period, and an additional three companies receiving federal SBIR/STTR awards that totaled \$1.7 million.
- The region acts as a key site for clinical trials with 576 active trials utilizing Northeast Indiana regional site locations since 2019.

### CASE STUDY:

#### The Northeast Indiana Colleges and Universities Network—Partnering with Regional Economic Development to Retain and Attract High-Wage Jobs

In Northeast Indiana, regional colleges and universities are partnering to ensure real-time responsiveness to business and economic development decision-makers regarding access to workforce and talent. The Northeast Indiana Colleges and Universities Network represents a consortium of 10 unaffiliated higher education institutions representing more than 40,000 students and over 240 degree and credential programs to follow up regarding key programs and graduates, customized training opportunities, site visits, and more. Since 2018, the Network has played an important role in retaining and attracting more than 400 high quality jobs in the region.

# Regional Healthcare and Life Sciences Impacts

To estimate the economic importance of the Northeast Indiana region healthcare and life sciences sector an IMPLAN economic impact model representing the 11-county region (including Fort Wayne and Warsaw) was developed and used for this analysis. The sector’s 48,145 healthcare and life science employees (direct effect) and the \$931,000 in related research at IUPU-Fort Wayne are used to drive the various sectors of the model to estimate additional direct, indirect, and induced effects and total impacts. The economic impact model (based upon input-output analysis) estimates the flow of goods and services between sectors and between inputs and final demand (indirect effects). Additionally, the spending of wages within the regional economy by the employees of these sectors are also captured (induced effects). This spending and re-spending of dollars within the economy is described as the “ripple effect” and when combined across all three types of effects provides an estimate of the total impacts. Impact effects are estimated for employment, labor income, value added, output, and tax revenues (federal and state/local estimated separately, see text box for the definitions of each of these).

The results of the full economic impact analysis, shown in Table 3, capture the 48,151 direct healthcare and life sciences jobs (including academic research jobs) within the Northeast Region, and how the spending of the sector’s institutions and actors ripple through the broader regional economy. The more than \$5.6 billion in value added to the regional economy, as discussed with Figure 5, appears as the direct effect in Table 3. Combined, the components and subsectors of the healthcare and life sciences sector are estimated to generate direct output of more than \$10.4 billion in 2020. Importantly, considering the number of public and non-profit institutions captured within, the sector generates more than \$177 million in state and local tax revenues annually (including taxes of all types).

## Economic Impact Measures

- **Employment** or the total number of jobs analyzed and estimated; includes the direct jobs captured as part of the healthcare and life sciences sector and indirect/induced jobs generated and supported through purchases and expenditures.
- **Labor Income**, also known as total compensation, is the total amount of income—including salaries, wages, and benefits (individual and company payments)—received by employees, proprietors, and other supplier and supported workers in the economy.
- **Value Added** captures the difference between an industry’s total output and the cost of its intermediate inputs; sometimes referred to as the industry or sector’s “contribution to GDP.”
- **Output**, also known as production, sales, or business volume, is the total value of goods and services produced by the healthcare and life sciences sector in the economy along with the value of goods and services produced throughout the regional economy due to the ripple effects of sector spending. For public/non-profit entities, such as universities and hospitals, expenditures, rather than revenue, are often the truest measure of this economic activity. The total output impacts are often referred to as the total economic impact.
- **State/Local and Federal Government Tax Revenues** includes the estimated revenues to federal and state/local governments from all sources as a result of the direct, indirect, and induced impacts estimated.

► **Table 3:** Economic Impact of the Northeast Indiana Region Healthcare and Life Sciences Industry, 2020

Impact Type	Employment	Labor Income (\$M)	Value Added (\$M)	Output (\$M)	State & Local Tax Revenues (\$M)	Federal Tax Revenues (\$M)
Direct Effect	48,151	\$4,229.21	\$5,634.23	\$10,429.70	\$177.20	\$798.96
Indirect Effect	18,548	\$858.66	\$1,387.89	\$2,845.78	\$108.68	\$175.91
Induced Effect	19,042	\$667.17	\$1,426.54	\$2,620.46	\$176.61	\$156.94
<b>Total Impact</b>	<b>85,741</b>	<b>\$5,755.04</b>	<b>\$8,448.67</b>	<b>\$15,895.95</b>	<b>\$462.49</b>	<b>\$1,131.81</b>
<i>Multiplier</i>	1.78	1.36	1.50	1.52		

Source: TEconomy analysis of Northeast Indiana regional IMPLAN impact model.



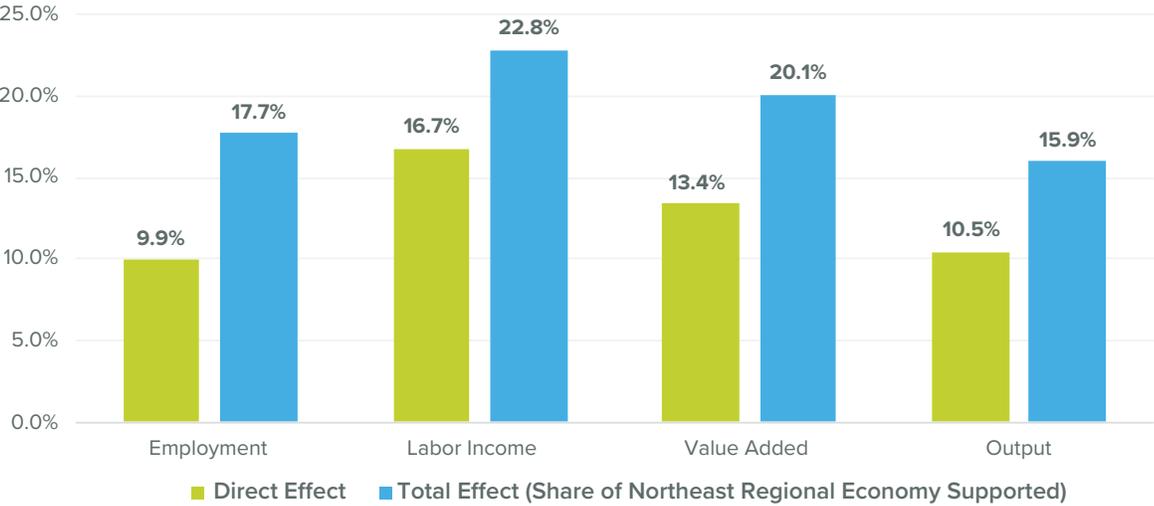
**Fort Wayne Metals:  
Innovative Materials for  
the Regional Orthopedics,  
Medical Device Sector**

Fort Wayne Metals provides an excellent example of the important contributions and interconnections of innovative regional manufacturers in supplying the Northeast region's orthopedics manufacturers. For more than 50 years, Fort Wayne Metals has been developing high-quality materials for device manufacturing as well as other industries including wires, cables, composites, and assemblies. Just some examples of products incorporating Fort Wayne Metals components include vascular therapies utilizing specialty alloys for stents and catheters; orthopedic products such as spinal devices, bone screws, and suture wire; endoscopy solutions for performing biopsies and treating GERD; and neurostimulation products including deep brain stimulation for treating Parkinson's disease and cochlear implants.

From a total impact perspective, **the Northeast Indiana region healthcare and life sciences sector generates and supports nearly \$15.9 billion—every \$1 of direct output generates an additional \$0.52 within the regional economy.** This economic impact also generates and supports additional employment in the region. A total of nearly 86,000 Northeast Indiana jobs are supported by the sector with the non-direct additional employment almost equally split between indirect (supplier) and induced jobs. Every job within the Northeast healthcare and life sciences industry supports 0.78 additional jobs in the regional economy.

While these numbers seem impressive at face value, the importance of the Northeast region's healthcare and life sciences sector to the broader regional economy is more fully appreciated through the metrics in Figure 6. As shown in the figure, the sector supports at least 17% of the regional economy across the four major impact metrics.

**▶ Figure 6: Northeast Region Healthcare and Life Sciences Impacts Share of Regional Economy, 2020**



Source: TEconomy analysis of Northeast Indiana regional IMPLAN impact model.



## Major Capital Projects: Investments and Impacts

Maintaining and operating a world class health and life sciences ecosystem requires building, maintaining, expanding, and upgrading a large base of physical infrastructure and capital equipment. In reviewing major investments made in recent years within the Northeast Region it is readily evident that industry, healthcare systems, and universities have been making a significant commitment to enhancing and expanding operations. Recent major projects announced and underway by the end of 2020 are shown below.

These projects comprise more than 300,000 square feet of construction with a total investment of nearly \$170 million. These investments add to the health and life sciences capacities and capabilities in the Northeast Indiana region, while also generating significant regional economic impacts through the development and construction activities. These investments supported more than 700 job in 2020.

### Major Northeast Indiana region Healthcare and Life Science-Related Capital Projects

Organization/Project	\$ Investment	Completion Year
Lutheran Health Network, Lutheran Downtown (Fort Wayne) Hospital	\$118 million	2021
IU Health, multiple Fort Wayne expansions	\$46 million	2021 and 2022
Parkview Health System, new/remodeled facilities in Fort Wayne and Warsaw		2023
<b>TOTALS FOR ABOVE PROJECT EXAMPLES</b>	\$164+ million	

Source: TEconomy Partners analysis of data developed and provided by BioCrossroads and additional web research.

# Conclusion

This regional profile readily demonstrates that healthcare and life sciences represent a significant economic engine for Northeast Indiana region; moreover, they also play a central role in providing economic and social resilience for the region on an ongoing basis and during public health emergencies. The Northeast Indiana region benefits greatly from the long-term investments that have been made by key private sector corporations such as Zimmer Biomet, DePuy Synthes, Fort Wayne Metals, and others and public sector organizations such as IU Health, Lutheran Health, and Parkview Health creating a complete healthcare and life sciences ecosystem – an ecosystem that spans a complete range of activity from basic and translational research, through each step in the value added development and production of products, technologies, and services onwards into distribution and their use in the marketplace.

The operations of this value-chain in the Northeast Indiana region are well supported by talent development programs and higher education programs that supply the well-educated and skilled talent needed to fill demands across the sector. Similarly, the region is attracting the capital resources needed to develop, scale, and grow healthcare and life sciences enterprises—though like most regions of the country continued growth in resources are necessary.

The sector is expected to continue to grow, however, this growth could be dependent on how the ecosystem responds to forces of change and the opportunities presented for growth in healthcare products and services rooted in new technologies in genomics, gene editing, regenerative medicine, synthetic biology, advanced health data analytics, personalized medicine, and other emerging fields of opportunity. Ongoing investment will be needed, and attention paid to sustaining and optimizing the regional ecosystem conditions to continue to allow the sector to thrive.

Information presented within the report leads to the following key conclusions:

- Healthcare and life sciences represent an important advanced industry for the Northeast Indiana regional economy.
- The sector directly employs 48,151 the region and supports a further 37,590 regional jobs through its indirect and induced expenditure impacts.
- The direct jobs supported demonstrate high average wages of more than \$68,000 (nearly \$25,000 higher than the Northeast Indiana region’s average job), and total compensation levels (wages and benefits) per job of more than \$87,800.
- These impacts are generated by a sector in the Northeast Indiana region with significant industry presence in medical devices and equipment including key supporting industries, biomedical distribution, and clinical healthcare.
- The sector is providing wide ranging functional impacts that collectively provide access to high quality clinical healthcare, an innovation and entrepreneurial pipeline leading to economic development, opportunities for individual advancement through STEM education and high-quality jobs and sustaining a high regional quality of life.

**It is clear that past and future Investments in the infrastructure and talent that advance Indiana’s and the Northeast region’s life sciences and healthcare capacity represent a fundamental good—enhancing the quality of life for Hoosiers, boosting the Northeast regional economy, and providing a proactive means of response in the face of public health emergencies.**

# THE IMPACT OF THE HEALTHCARE AND LIFE SCIENCES SECTOR IN INDIANA'S NORTHEAST REGION

**\$15.9 B** total economic impact generated by the Northeast region's healthcare and life sciences sector

## THE HEALTHCARE AND LIFE SCIENCES SECTOR IN INDIANA'S NORTHEAST REGION IS:



### A powerful economic engine for the region

Diverse in its employment opportunities, creating demand for work across R&D, manufacturing, warehousing, distribution, and all business functions that support the value chain.



### Growing

The combined healthcare and life sciences sector grew by 11.4% from 2015 to 2020.



### Well-rounded and connected

Because of its highly collaborative nature, it assured resiliency during the pandemic.

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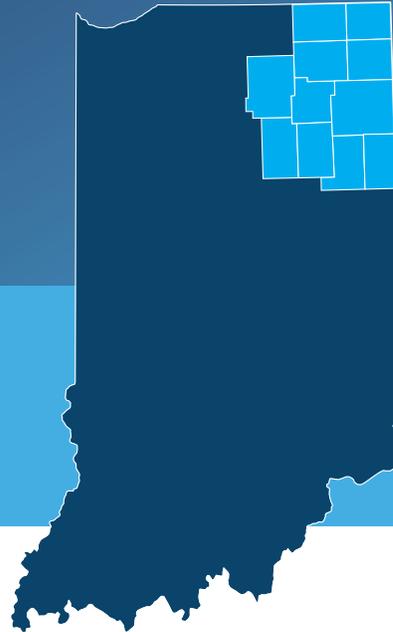
The functional impacts of the healthcare and life sciences sector on the Northeast Indiana region are those that are a positive impact generated for an economy, society or for individuals through the mission-focused activities of an organization, institution, industry, or specific project including:

- Working to sustain the physical health of populations served.
- Producing products and services needed and valued by society which, in turn, generate employment, economic output, exports, and public sector revenues.
- Advancing basic and applied knowledge and building the know-how and skills necessary within the healthcare and life sciences workforce.
- Securing public health and building equitable, diverse, and resilient communities with robust livability, quality-of-place and quality-of-life.

# HEALTHCARE AND LIFE SCIENCES REGION

## 11 Counties

Adams, Allen, De Kalb, Huntington, Kosciusko, Lagrange, Noble, Steuben, Wabash, Wells, Whitley



	 <b>Employment</b>	 <b>Output</b>	 <b>Gross Regional Product</b>
<b>EFFECT</b>			
<b>DIRECT</b>	48,151	\$10.4B	\$5.6B
<b>INDIRECT &amp; INDUCED</b>	37,590	\$5.5B	\$3.8B
<b>TOTAL SUPPORTED IMPACT SHARE OF REGIONAL ECONOMY</b>	17.7%	15.9%	20.1%

Compared to the next largest direct GRP sectors:  
**\$14.7B** Manufacturing  
**\$2.7B** Finance & Insurance



## \$1 = +52¢

Every \$1 of all goods and services produced by the healthcare and life sciences sector, generates an additional \$0.52 within the Northeast Indiana regional economy.



## \$462.5M

Amount of state and local tax revenue generated and supported by the healthcare and life sciences sector in the Northeast region.

