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Economic Impact Analysis Medical Device Industry Cluster

Shelby County, TN

Prepared for:

Greater Memphis
Medical Device Council

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Economic Impact Analysis

Greater Memphis Medical Device Industry

Scope

The Greater Memphis Medical Device Council (GMMDC) engaged Younger Associates (YA) to conduct a study of the economic impact of the medical device industry cluster on the Shelby County economy. YA conducted a similar analysis for the GMMDC in 2015. The purpose of this study is to examine the current economic significance of this specialized industry cluster and compare the results to the previous study.

In this study, the economic impact of manufacturing, distribution, and research and development, as well as headquarter operations of medical device companies in the greater Memphis area is measured in terms of economic output, jobs, wages, and local tax revenues. This study also examines the consumer expenditures generated as a result of wages paid to direct and indirect jobs.

The list of companies identified for this study was compiled in collaboration with the GMMDC. Individual company data is not disclosed, and all results and projections are reported in aggregate.

Methodology

GMMDC identified a roster of 45 companies located in the Greater Memphis Area/Shelby County. Assisted by Younger Associates, GMMDC conducted a survey among these 45 companies to collect the data necessary to conduct the analysis. The data requested from participants included the number of people employed, annual average wages, operating budgets, and capital investments. For the companies that did not respond to the survey, employment and financial data was procured from Dun & Bradstreet and confirmed by phone interviews between GMMDC staff and representatives of the companies.

U.S. Bureau of Economic Analysis regional input-output multipliers (RIMS II) were used to calculate indirect employment and economic impact. The U.S. Bureau of Economic Analysis (BEA) developed the RIMS II system based on historical economic activity at the county level for 372 industry sectors. The RIMS II multipliers account for inter-industry relationships within regions comprised of one or more counties, in both the public and private sectors.

To effectively use RIMS II multipliers for economic impact analyses, detailed geographical and industrial information on the initial changes in output, earnings, or employment is utilized. The model also utilizes local wage rates, local tax rates, historical local tax collection ratios, local property values, and historical regional consumer spending patterns.

Younger Associates has used this impact calculation methodology in hundreds of projects across the United States over the past 30 years. The methodology is recognized by the International Economic Development Council and utilized in courses by the Economic Development Institute. The Younger Associates model for impact analyses is highly accurate, yet slightly conservative by design, in projecting tax revenue generation.

Additional data was collected by Younger Associates for this analysis from the Tennessee Department of Labor and Workforce Development, U.S. Bureau of Economic Analysis, U.S. Census Bureau, and U.S. Department of Labor - Bureau of Labor Statistics. In addition, proprietary licensed data from Nielsen Claritas, EMSI, and ESRI was utilized.

Impact Definitions

Economic Impact – the total dollar value of change in output from all industries, within the local economy, that results from \$1 of change in output created by the identified medical device industry operations.

Direct Jobs – the jobs employed by the Shelby County medical device industries.

Indirect Jobs – jobs in all other industries in the county economy that are supported by the operations of the new/expanded industry. This could include jobs (or hours of work, which comprise portions of a job) of vendors, business services, retail, personal services, transportation, and all other industry sectors supported by the spending of the individual businesses and their employees.

Local Indirect Taxes – projections of city and county taxes generated by the spending of wages paid to the direct and indirect jobs. These taxes include the local portion of sales tax, hotel/motel tax, business taxes, permits and registrations, and other city and county taxes. State and federal taxes that are collected and reapportioned to the city and county are not included in this analysis. Annual property taxes paid by medical device industries projections are also included in this report.

Summary of Economic Impact

Economic Impact

The total output or economic impact of the medical device industry cluster is currently projected to be \$4.06 billion annually. The following table summarizes the key economic impact measures for the current operations of the medical device companies included in this report.

Table I: Economic Impact Measures	
Jobs, Direct	7,895
Jobs, Indirect	10,867
Total Jobs	18,762
Total Wages	\$1,510,317,722
Taxes Generated by Wages (Indirect)	\$45,859,393
Direct Property Tax	\$3,823,139
Output	\$4,064,780,091

Jobs and Wages

The total number of jobs directly employed by industry operations is 7,895. Multipliers for the county economy project an additional 10,867 indirect and induced jobs are supported in the local economy as a result of ongoing industry operations.

The U.S. Bureau of Labor Statistics (BLS) reports there are currently 548,346 jobs in Shelby County in all industry sectors. This means that 3.4% of all jobs are directly or indirectly supported by the medical device industry.

Wages paid to direct employees is \$817.7 million annually, which represents an average annual wage of \$103,568 among jobs within the medical device cluster. This average annual wage is 39.7% higher than the Shelby County all-industry average of \$74,155 based on first quarter employment and wage data reported by the BLS.

The direct effect employment multiplier for medical device manufacturers is among the highest for Shelby County with 2.3080 indirect jobs supported for each new direct job. Additionally, some of the companies within the medical device cluster have NAICS classifications of wholesale trade or research and development. Both of these industries also have higher than average multipliers with wholesale at 2.5889 and R&D at 2.6320. A high multiplier indicates a high degree of integration of the industry in the local economy with numerous support resources and businesses located within the county.

Indirect Local Tax Revenue Generated

Wages paid to employees (direct and indirect) turn over in the local economy as people spend their wages on taxable products and services. Based on local rates and spending patterns, the total indirect local tax revenue generated by the wages paid to new direct and indirect jobs is projected to be approximately \$45.8 million annually, which includes local sales tax, indirect property tax and other local taxes.

Direct Property Tax

In addition to the indirect local taxes generated from wages paid to jobs supported, the medical device companies also contribute to the Shelby County economy through payment of direct property taxes. The current annual property tax paid to Shelby County is \$1.8 million with approximately \$400,000 to be added to the tax rolls when PILOT incentives (payment in lieu of tax), currently enjoyed by some companies, expire.

Additionally, Memphis and other cities in Shelby County benefit from the property taxes paid by the companies located within their corporate limits. The current property taxes paid to Shelby County municipalities is \$1.3 million with an additional \$230,000 to be added to the respective city coffers as PILOT incentives expire, returning the full property values to the tax rolls.

Table II shows a breakdown of current estimated property tax.

Table II: Estimated Direct Property Tax

	Shelby County Projected Tax	City Taxes
Current Estimated Property Tax Generated	\$1,809,863	\$1,322,544
Estimated Property Tax Currently in PILOT	\$394,434	\$231,531
Estimated Totals for Properties in Shelby County when Current PILOTs Expire	\$2,204,297	\$1,554,075

Consumer Spending

This study also examined the consumer expenditures generated as a result of newly created economic activity. Wages paid to direct and indirect jobs supported by the operations of medical device companies will generate new consumer expenditures in Shelby County. This spending is estimated for all major retail and service categories. Assuming the current rate of expenditures follows the current consumer spending patterns, local businesses are expected to enjoy \$1.2 billion of spending annually.

Comparison to 2015 Data

In the 2015 study, GMMDC identified 50 companies in the medical device industry with 47 companies in Shelby County and three in DeSoto County, MS. In total, these companies employed 6,487 people. In the current study, the number of companies decreased to 45, but these companies employ 7,895 people directly, which represents a growth of 21.7% in employment in this industry cluster. Eight of the 45 companies are located outside of Shelby County but in the Memphis area.

In 2015, companies in the industry represented 3.5% of all employment, and their economic output accounted for 3.7% of the Shelby County gross domestic product (GDP). To compare, the 2022 projected \$4.06 billion in output must be indexed to 2020 dollars, as the most current annual GDP reported for Shelby County is the 2020 vintage. When indexed to 2020 dollars, the GDP of \$3.53 billion represents 5.5% of the 2020 GDP for Shelby County, which represents an increase from 2015.

The compared impact measures of the two studies are summarized in Table III below.

Table III: Comparison of 2015 to 2022 Study		
	2022	2015
Companies Included in the Study	45	50
Companies Outside of Shelby County	8	3
Jobs, Direct	7,895	6,487
Jobs, Indirect	10,867	10,336
Total Jobs	18,762	16,823
Total Wages	\$1,510,317,722	\$1,249,332,225
Taxes Generated by Wages (Indirect) & Direct Property Tax	\$49,682,532	\$46,054,313
Output/Economic Impact	\$4,064,780,091	\$2,665,185,084
Percentage of Shelby County GDP*	5.5%*	3.7%

**The 2022 output was indexed to 2020 dollars for this projection as 2020 is the most current GDP data available for Shelby County.*

To make a comparison of the growth in output among the medical device industries from 2015 to the 2022 projections, the \$2.67 billion total output in 2015 must be indexed to 2022 dollars. The result is \$3.26 billion, which represents a 24.5% growth when compared to the \$4.06 billion projection for 2022.



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Annual Impact of Operations	
Number of Companies Identified in the Shelby County Medical Device Industry Cluster Included in this Study	45
Direct Employment	7,895
Projected Wages Paid to Direct Jobs	\$ 817,666,009
Indirect Jobs Supported	10,867
Jobs Supported from Operations (Direct & Indirect)	18,762
Shelby County Annual Average Wage ¹	\$ 63,739
Wages, Indirect	\$ 692,651,713
Total Wages (Direct & Indirect)	\$ 1,510,317,722
Local Indirect Sales Tax Revenue from Wages ²	\$ 20,891,470
Other Local Indirect Tax Revenue from Wages ³	\$ 3,823,139
Indirect Residential/Commercial Property Tax Revenue ⁴	\$ 21,144,784
Total Local Tax Revenue (Direct & Indirect)	\$ 45,859,393
Projected Current Direct Property Tax⁵	\$ 3,823,139
Projected Annual Economic Impact/Output	
Projected Output from Operations	\$ 4,064,780,091
Projected Output from Medical Device Industries Indexed to 2020*	\$ 3,536,446,810
2020 Shelby County GDP	\$ 64,274,523,000
Projected Current Output as a Percentage of Total 2020 GDP	5.5%

**Indexed to 2020 dollars for comparison to 2020 GDP for Shelby County using the BLS CPI Inflation*



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Companies Included in the 2022 Economic Impact Analysis

Active Implants	Medegen Medical Products
AlphaTec Spine	Medical Machining Specialist- ARCH Mississippi
ARCH Medical Solutions Memphis	Medtronic Spine & Biologics
Arvato (Contract Distributor for S&N)	MicroPort Orthopedics Inc.
Big River Engineering & Manufacturing	Millstone Medical Outsourcing
Bioventus LLC	MLM Medical Labs
Cagenix Inc.	NuVasive
CrossRoads Extremity Systems	Odyssey Medical Technologies LLC
DirectSpec Machining	Olympus Surgical Technologies of America
Elite Medical Inc.	Orchid Orthopedics
Elos Medtech	OsteoRemedies LLC
Engineered Medical Systems Inc.	ProMed Concepts LLC
Extremity Innovations Incorporated	Smith & Nephew Inc. (Manufacturing)
Finishing Innovations	Smith & Nephew Inc. (R&D - HQ)
GQSI	SOMAVAC Medical Solutions
Grace Medical	Stryker Corporation (HQ)
GYN Disposables Inc.	Stryker Corporation (R&D)
Hemostatix Medical Technologies LLC	Stryker Corporation (Sales)
In2Bones Global Inc.	SweetBio Inc.
iScreen Vision Inc.	Tegra Medical LLC
J&B Precision Inc.	Teleflex
Kenad SG Medical Inc.	Y&W Technologies
Lincotek Medical	Zimmer Biomet
MB Innovations	Zimmer Spine Surgical Inc. (ZimVie)

Notes for Greater Memphis Medical Device Impact Analysis:

1. Based upon data from the Tennessee Department of Labor and Workforce Development Annual Average Wage for Shelby County, 2020 for all industry sectors with a 1.5% inflation factor applied for 2021 and 2022.
2. U.S. Department of Labor, “Consumer Expenditure Survey, Southern US” 2020; factor applied to determine the rate of indirect or “downstream” expenditures on sales taxable goods and services at local Shelby County option tax rate of 2.75%.
3. Based upon July 2020 - June 2021 collections of business, alcohol, motor vehicle and other local taxes compared to sales tax for Shelby County.
4. Indirect property tax is based on the direct jobs supported by the companies included in this study. For this calculation, it is assumed that 80% of the direct jobs reside in Shelby County and represent one household per job. The 2022 median home value is utilized as a proxy for residential property value, to determine property tax generated per job. The residential assessment rate of 25% is utilized for all residences, including those in multifamily buildings assessed at 40%, and a Shelby County tax rate of \$3.45 per \$100 of assessed value is used to project the annual tax per job. The property tax from new or expanded commercial property that is generated indirectly from economic activity associated with the jobs supported by the companies is not projected.
5. Estimated municipal and Shelby County taxes on real property based upon the current appraised and assessed values from the Shelby County Tax Assessors office with tax projection calculated utilizing the current taxes rates for Shelby County and cities in which the companies included in this study are located.
6. U.S. Bureau of Economic Analysis, RIMS II direct effect employment multiplier for the specified industry for Shelby County, TN. This multiplier represents the number of indirect jobs supported per direct job by the specified industry.
7. U.S. Bureau of Economic Analysis, RIMS II, final demand earnings multiplier for Shelby County, TN for the specified industry. This multiplier represents the total dollar change in earnings of households employed by all industries for each additional dollar of output delivered by the specified industry.
8. Bureau of Economic Analysis, RIMS II direct effect earnings multiplier for Shelby County, TN for the specified industry. This multiplier represents the total dollar change in earnings for each additional dollar of earning paid directly to households employed in the specified industry sector.

-The 2012/2020 vintage of RIMS II Multipliers are used in this study

-- Constant 2022 dollars. No tax rate changes (increases or decreases) are assumed.