

**THE CENTER FOR
ECONOMIC RESEARCH
IN TENNESSEE (CERT)**



July 2024

HEALTH & LIFE SCIENCES

TN Department of
**Economic &
Community Development**

Center for Economic
Research in Tennessee



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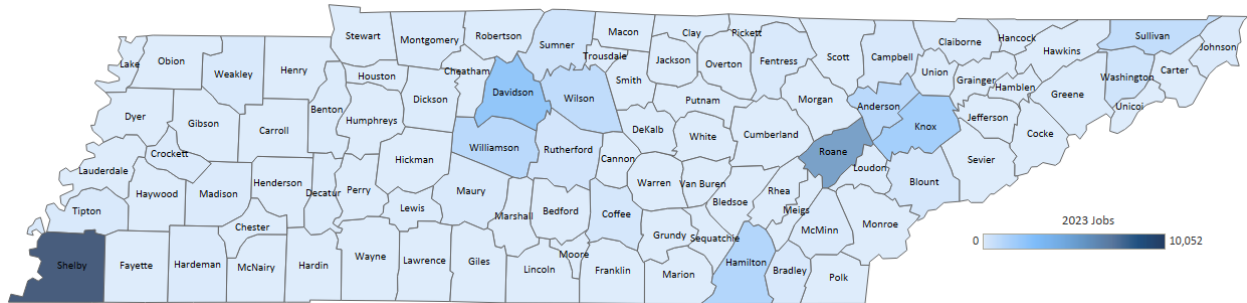


INTRODUCTION

The Healthcare and Life Sciences cluster plays a critical role in advancing medical innovation and supporting public health. The cluster has undergone a significant transformation, driven by rapid technological advancements as a result of the COVID-19 pandemic. These developments have reshaped its operational landscape in multiple aspects, including cost efficiency, accelerated discovery processes, and the emergence of cutting-edge tools such as artificial intelligence (AI) and machine learning (ML).¹

Prominent companies in this cluster include Medtronic, DeRoyal, Thermo Fisher, and Philips. The largest concentration of employment is located in Shelby, Roane, Davidson, Knox, Hamilton, and Williamson counties.

Exhibit 1: 2023 Health & Life Sciences Cluster Employment by County



Source: Lightcast (April 2024)



INDUSTRY OVERVIEW

Tennessee has a well-established Health and Life Sciences cluster, with businesses ranging from pharmaceutical manufacturers, medical device companies, managed care, and national insurance providers. Clustering optimizes logistics and supply chain management by reducing costs, fostering innovation, and supporting economies of scale. Overall, clustering improves operational efficiency and cost-effectiveness.

INDUSTRY CLUSTER

An industry cluster is a geographic concentration of interconnected businesses, suppliers, and service providers.

In 2023, the Health and Life Sciences cluster employed over 36,000 individuals across 2,600 establishments. Statewide employment for the cluster has increased by 17 percent over the last five years and is projected to grow by an additional 11 percent by 2028. Worker average earnings for the cluster were \$132,652 in 2023, which is 73 percent higher than the state average earnings for all industries (\$76,493).^A Tennessee ranked third in the Southeast for employment in this cluster. Major occupations include Biological Technicians, Chemists, Dental Laboratory Technicians, Industrial Engineers, and Miscellaneous Assemblers and Fabricators.^B In 2023, earnings for the cluster exceeded \$4.9 billion and contributed over \$8.1 billion to the Gross Regional Product (GRP).²

The Tennessee Department of Economic and Community Development (TNECD) partners with other state agencies and higher education institutions to ensure that the state can provide a skilled workforce to meet future demands of companies operating in Tennessee. The state’s higher education institutions have awarded over 94,600 healthcare and life sciences-related degrees and certificates since 2018. Graduates have received degrees in a variety of programs including Biological and Biomedical Sciences, Health Professionals and Related Clinical Services, and Physical Sciences.

^A See Appendix 1 for 2023 top occupations in the cluster.

^B See Appendix 2 for 2023 top occupations in the cluster.

RECENT GROWTH

The Health and Life Sciences cluster has had considerable growth in recent years. Since 2019, TNECD has facilitated 35 projects. These projects are projected to create approximately 6,380 new jobs and attract almost \$1.2 billion in capital investment.

Exhibit 2: Recent Major Health & Life Sciences Projects

Company	New Job Commitments	Capital Investment	County	Landed Date
Life Technologies Corporation	1,400	\$182,755,000	Wilson	9/7/2021
Puritan Medical Products LLC	632	\$220,000,000	Robertson	4/13/2021
Charles River Laboratories, Inc.	500	\$45,000,000	Shelby	1/31/2021
Formulated Solutions Cleveland, LLC	380	\$43,672,000	Bradley	3/7/2023
Ulab Systems	231	\$30,731,000	Shelby	10/31/2021
Moldex-Metric, Inc	220	\$25,250,000	Wilson	9/29/2020
Supply Wizard, LLC	147	\$3,090,000	Warren	4/30/2023
Sunrise Medical US LLC	113	\$9,645,520	Wilson	9/30/2023
August Bioservices, LLC	90	\$65,000,000	Davidson	9/30/2023

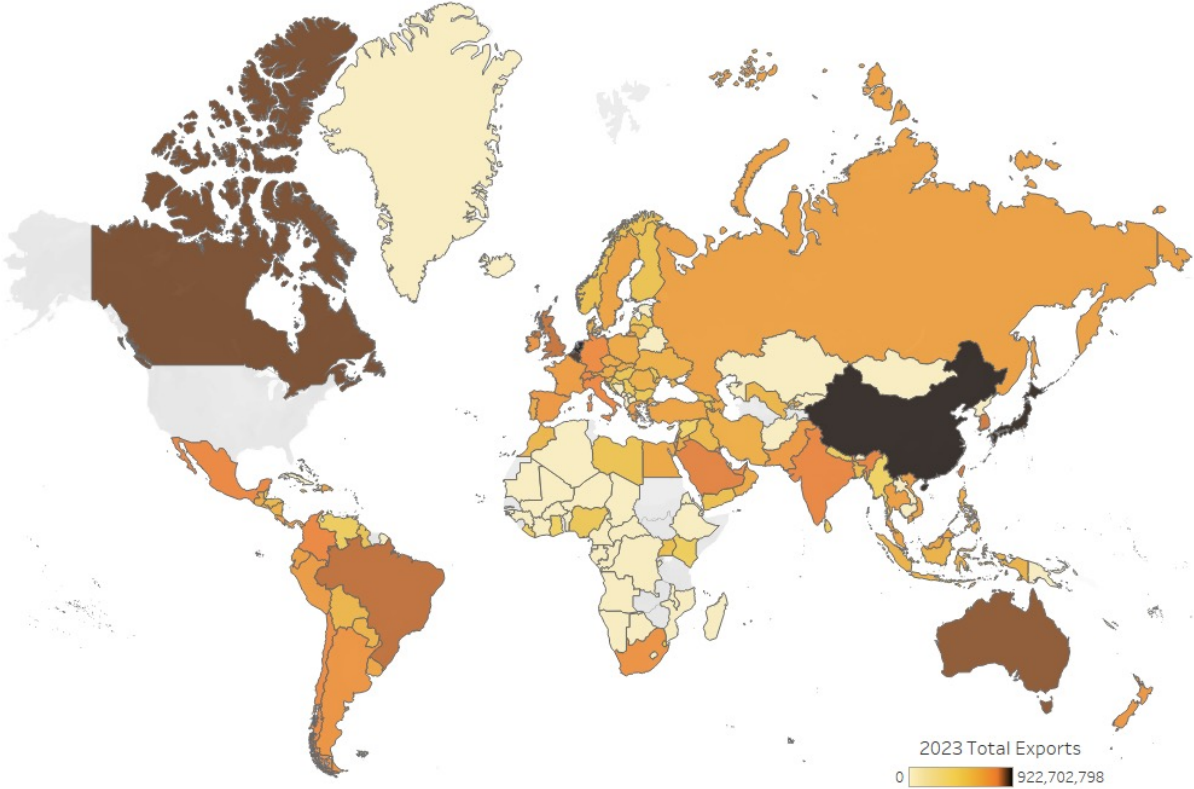
Source: Tennessee Department of Economic and Community Development (April 2024)



EXPORTS

Medical Equipment and Supplies has historically been the largest source of export revenue in the state for this cluster. Industry exports totaled over \$4.4 billion in 2023, ranking second in the country only behind California. Over the last 17 years, the state has ranked in the top three in the country for exports in this cluster, currently accounting for over 10 percent of the country's total exports. In 2023, the largest export destinations included the Netherlands (\$922 million), China (\$748 million), Japan (\$641 million), Belgium (\$466 million), and Singapore (\$286 million).

Exhibit 4: 2023 Total Exports



Source: US Census Bureau, "USA Trade Online," (April 2024)
Note: A logarithmic transformation was applied to the employment data to enhance the visualization. The mathematical adjustment ensures a more uniform distribution of data, making variations across other countries more discernible.

FUTURE OUTLOOK

The Healthcare and Life Sciences cluster has experienced notable growth in recent years. This growth is highlighted by several key factors, including increased investment in research and development and the rapid integration of digital technologies.³ Tennessee has a robust healthcare ecosystem and is well-positioned to capitalize on these industry trends. The ongoing recruitment and expansion of major Healthcare and Life Sciences companies in the state underscores Tennessee’s commitment to supporting the industry. These companies include Sunrise Medical in Wilson County, DePre in Knox County, and Engineered Medical Systems in Shelby County.



APPENDICES

Appendix 1: 2023 Health & Life Sciences Industry Totals

Industry Category	NAICS	2023 Jobs	2023 Business Locations	Employment Growth Rate (2018-2023)	2023 GRP Earnings	Southeast Ranking	National Ranking
PHARMACEUTICALS							
Medicinal and Botanical Manufacturing	325411	597	27	113%	\$49,670,847	3	17
Pharmaceutical Preparation Manufacturing	325412	1,680	115	-6%	\$273,066,264	5	24
In-Vitro Diagnostic Substance Manufacturing	325413	5	5	Insf. Data	\$1,851,093	Insf. Data	Insf. Data
Biological Product (except Diagnostic) Manufacturing	325414	266	11	275%	\$40,888,086	4	29
MACHINERY MANUFACTURING							
Commercial and Service Industry Machinery Manufacturing	333310	1,559	77	-15%	\$128,541,051	3	21
MEDICAL APPARATUS MANUFACTURING							
Electromedical and Electrotherapeutic Apparatus Manufacturing	334510	1,133	94	60%	\$159,510,546	2	13
Analytical Laboratory Instrument Manufacturing	334516	125	18	-5%	\$9,732,360	5	34
Irradiation Apparatus Manufacturing	334517	81	11	-62%	\$9,584,069	4	17
MEDICAL EQUIPMENT AND SUPPLIES MANUFACTURING							
Surgical Appliance and Supplies Manufacturing	339113	7,133	118	1%	\$843,071,288	1	4
Surgical and Medical Instrument Manufacturing	339112	941	88	35%	\$132,097,200	7	27
Dental Equipment and Supplies Manufacturing	339114	163	9	-43%	\$16,097,509	3	20
Ophthalmic Goods Manufacturing	339115	164	15	-40%	\$19,515,774	4	22
EQUIPMENT AND SUPPLIES WHOLESALERS							
Medical, Dental, and Hospital Equipment and Supplies Merchant Wholesalers	423450	8,992	1,054	24%	\$1,260,925,220	4	12
Ophthalmic Goods Merchant Wholesalers	423460	213	57	-28%	\$33,482,111	5	22

Source: Lightcast (April 2024)

Appendix 1: 2023 Health & Life Sciences Industry Totals (Continued)

Industry Category	NAICS	2023 Jobs	2023 Business Locations	Employment Growth Rate (2018-2023)	2023 GRP Earnings	Southeast Ranking	National Ranking
PROFESSIONAL, SCIENTIFIC, AND TECHNICAL SERVICES							
Testing Laboratories	541380	2,049	181	-4%	\$166,338,467	6	25
Research and Development in Nanotechnology	541713	188	28	1,243%	\$41,133,581	7	25
Research and Development in Biotechnology (except Nanobiotechnology)	541714	1,235	384	84%	\$292,405,723	4	26
Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology)	541715	9,775	363	36%	\$1,445,675,323	3	17

Source: Lightcast (April 2024)

Appendix 2: 2023 Health & Life Sciences Industry Top Occupations

SOC	Occupation	2023 Employment	Median Hourly Wage	Typical Entry Level Required
MANAGEMENT OCCUPATIONS				
11-1021	General and Operations Managers	60,606	\$50.48	Bachelor's degree
11-3021	Computer and Information Systems Managers	9,356	\$61.88	Bachelor's degree
11-9041	Architectural and Engineering Managers	3,032	\$63.00	Bachelor's degree
11-9121	Natural Sciences Managers	580	\$63.55	Bachelor's degree
11-9199	Managers, All Other	14,676	\$37.05	Bachelor's degree
BUSINESS AND FINANCIAL OPERATIONS OCCUPATIONS				
13-1082	Project Management Specialists	12,257	\$35.04	Bachelor's degree
13-1199	Business Operations Specialists, All Other	16,089	\$29.95	Bachelor's degree
13-2011	Accountants and Auditors	25,421	\$30.87	Bachelor's degree
COMPUTER AND MATHEMATICAL OCCUPATIONS				
15-1252	Software Developers	19,140	\$49.65	Bachelor's degree
ARCHITECTURE AND ENGINEERING OCCUPATIONS				
17-2112	Industrial Engineers	7,017	\$40.70	Bachelor's degree
17-2141	Mechanical Engineers	3,029	\$45.02	Bachelor's degree
LIFE, PHYSICAL, AND SOCIAL SCIENCE OCCUPATIONS				
19-1021	Biochemists and Biophysicists	474	\$39.21	Doctoral or professional degree
19-1042	Medical Scientists, Except Epidemiologists	1,437	\$41.51	Doctoral or professional degree
19-2031	Chemists	1,170	\$32.82	Bachelor's degree
19-4021	Biological Technicians	1,898	\$23.76	Bachelor's degree
19-4031	Chemical Technicians	1,320	\$24.09	Associate degree
SALES AND RELATED OCCUPATIONS				
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	14,594	\$36.47	Bachelor's degree
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	15,803	\$27.45	High school diploma or equivalent

Source: "Lightcast," (April 2024)

Appendix 2: 2023 Health & Life Sciences Industry Top Occupations

SOC	Occupation	2023 Employment	Median Hourly Wage	Typical Entry Level Required
OFFICE AND ADMINISTRATIVE SUPPORT OCCUPATIONS				
43-4051	Customer Service Representatives	72,344	\$17.61	High school diploma or equivalent
43-5071	Shipping, Receiving, and Inventory Clerks	20,256	\$17.92	High school diploma or equivalent
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	36,105	\$18.47	High school diploma or equivalent
43-9061	Office Clerks, General	53,640	\$15.69	High school diploma or equivalent
PRODUCTION OCCUPATIONS				
51-1011	First-Line Supervisors of Production and Operating Workers	18,074	\$29.66	High school diploma or equivalent
51-2028	Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers	4,605	\$18.50	High school diploma or equivalent
51-2098	Miscellaneous Assemblers and Fabricators	55,323	\$18.26	High school diploma or equivalent
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	19,584	\$18.22	High school diploma or equivalent
51-9081	Dental Laboratory Technicians	786	\$18.04	High school diploma or equivalent
TRANSPORTATION AND MATERIAL MOVING OCCUPATIONS				
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	91,498	\$17.29	No formal educational credential

Source: Lightcast (April 2024)

REFERENCES

- ¹ Deloitte, "2023 Global Life Sciences Outlook," (2023)
- ² Lightcast (April 2024)
- ³ Deloitte, "2023 Global Life Sciences Outlook," (2023)