New Jersey's Manufacturing Industry Cluster





State of New Jersey Department of Labor and Workforce Development





The goal of this report is to get an "IDEA" of what manufacturing means to New Jersey

Identify the types of industries and establishments that make up the manufacturing cluster based on a standard industry classification system

Describe any similarities and differences among its components with regard to such variables as employment, wage, occupation type, education, and demographic characteristics

Examine any present distinctions within the cluster and its components that give New Jersey a competitive advantage compared to neighboring states, regions or the nation, or show areas where New Jersey could improve to add to the state's economy

<u>Analyze</u> the current state of the manufacturing cluster and provide an outlook for employment into the future







New Jersey Manufacturing Highlights

- The manufacturing industry cluster contributed \$50.5 billion to the Gross Domestic Product in 2019, or about 9.1 percent of all output
- In 2019, New Jersey employed 45,000 people in chemical manufacturing, the state's largest segment of manufacturing, which ranks fifth among states behind only Texas, California, Illinois, and Ohio
- Average wages paid in many manufacturing industries are well above the statewide private sector average of \$67,000 in 2019
- Manufacturing employers paid greater than \$20 billion in total wages in 2019, or about 8.7 percent of all wages paid







Source: United States Bureau of Economic Analysis, GDP in Chained 2012 Dollars Quarterly Census of Employment and Wages, 2018 Annual Averages Current Employment Statistics, 2018 Annual Average Prepared by: New Jersey Department of Labor and Workforce Development December, 2019

Overview

There were nearly 9,000 establishments in New Jersey that employed nearly 250,000 people in the manufacturing sector in 2019. Employment is scattered throughout the state and found in places ranging from very large pharmaceutical firms to much smaller machine shops. These establishments are generally found in the Northeastern part of the state and also along the Interstate 95 corridor.

The occupational composition within manufacturing industries is continuously changing as more technical skills are required to operate more advanced processes. The expectation of higher skills has resulted in many higher paying jobs, especially among chemical manufacturing firms.

According to the U.S. Census Bureau's 2019 American Community Survey, the profile of the average New Jersey resident worker is generally older than average and male. Nearly 57 percent of the workforce is aged 45 and over. Racially, it is more diverse than average, especially among the Asian population. The workforce is highly educated, as greater than 44 percent having attained at least a bachelor's degree.







Source: Quarterly Census of Employment and Wages, 2018 Annual Averages Occupational Employment Statistics Survey, May 2019 Estimates American Community Survey, 2017 Estimates Prepared by: New Jersey Department of Labor and Workforce Development December, 2019 New Jersey hosts a wide range of manufacturing processes from food and printing to petroleum and pharmaceuticals









ECONOMIC IMPACT



GDP growth in New Jersey has averaged 1.2 percent per year from 1997 to 2019, and now exceeds half of a trillion dollars

Over the same period, the national GDP has 180 averaged 2.3 percent annual growth

The Great Recession from 2007-2009 deeply affected New Jersey's manufacturing sector as its GDP contribution was slashed by 30%

Since hitting recent lows in 2012, New Jersey's manufacturing sector has steadily rebounded, and in 2019 contributed more than \$50 billion to the state's GDP

Gray area denotes U.S. economic recession as defined by the National Bureau of Economic Research (NBER)









Source: United States Bureau of Economic Analysis, GDP in Chained 2012 Dollars Prepared by: New Jersey Department of Labor and Workforce Development December, 2019

Output produced from the chemical manufacturing sector dominates GDP output among manufacturing industries



Chemical manufacturing accounted for 51 percent of manufacturing GDP in 1997 (\$29 billion), but only 36 percent in 2019 (\$18 billion)

Computer and electronic products

manufacturing has been the best performing industry among this group, increasing its GDP from \$465 million in 1997 to \$5.4 billion in 2019, and now sits as the third highest component in terms of GDP in New Jersey

Medical devices manufacturing has doubled its output since 1997 to nearly \$4 billion in 2019

Gray area denotes U.S. economic recession as defined by the National Bureau of Economic Research (NBER)







Source: United States Bureau of Economic Analysis, GDP in Chained 2012 Dollars Prepared by: New Jersey Department of Labor and Workforce Development December, 2019

Nearly 2 of every 10 dollars of output generated by manufacturing in the United States occurs in these eight Northeastern states



Gross Domestic Product Generated from Manufacturing

Selected Northeast states, 2019

New Jersey ranks fourth among these states in the region with GDP from manufacturing exceeding \$50 billion in 2019

Chemical manufacturing is the primary contributor in the tri-state area (NJ, NY & PA) and combined accounts for nearly 15 percent (nearly \$46 billion) of all chemical manufacturing GDP in the US

Data shows that Massachusetts and New Jersey are also leaders in the region in medical device manufacturing

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Source: United States Bureau of Economic Analysis, GDP in Chained 2012 Dollars Prepared by: New Jersey Department of Labor and Workforce Development December, 2019

INDUSTRY ANALYSIS



New Jersey has followed a similar employment trend as the nation, but has fared worse over the last 29 years

Employment: Manufacturing vs. All "other" Industries New Jersey & United States: 1990-2019



Manufacturing has lost 277,600 jobs in New Jersey since 1990, a 2.5 percent annual decline, while the nation has declined at a 1.1 percent annual rate, shedding roughly 4.8 million jobs

The "other" non-agricultural industries grew by an annual average of 0.8 percent posting a net gain of 837,300 jobs in New Jersey, while the United States added over 46 million jobs, an average gain of 1.4 percent per year

New Jersey has added manufacturing jobs for four consecutive years, reversing a trend of annual declines that spanned decades

– US Total Nonfarm, Except Manufacturing







Source: NJLWD, Current Employment Statistics, Annual Averages Prepared by: New Jersey Department of Labor and Workforce Development December, 2019

Manufacturing employment in New Jersey has declined from 14.6 percent of all jobs in 1990 to 6 percent in 2019

Nationally, manufacturing's share of total employment has declined from 16.2 percent in 1990 to 8.5 percent in 2019

Widespread and consistent losses among industries that manufacture both durable and non-durable goods have resulted in each declining by an average annual rate of 2.5 percent

During the six worst years for manufacturing employment in New Jersey ('91-'92, '01-'03, '09), more than 163,000 of the 277,600 total jobs losses occurred, an average rate of decline of more than 6 percent per year

Gray area denotes U.S. economic recession as defined by the National Bureau of Economic Research (NBER)









Source: NJLWD, Current Employment Statistics, Annual Averages Prepared by: New Jersey Department of Labor and Workforce Development December, 2019

The chart below shows the distribution of all manufacturing employment across its many different industries









These industries each employ a disproportionately high number of people in New Jersey and are among the manufacturing industries that define the state in 2019



Chemical manufacturing in New Jersey, where three of the six industries on this list are classified, accounts for 5.3 percent of chemical manufacturing employment in the nation

Glass container manufacturing still remains a prevalent industry in the Southern counties of the state

New Jersey is one of the world leaders in surgical appliances and supplies manufacturers







Annual average wages in New Jersey in the manufacturing sector have increased by nearly \$1,600 over the past five years

Annual Average Wage of Major Components of Manufacturing New Jersey, 2019



Although relatively small in terms of employment, the petroleum and coal products industry earned more than any other manufacturing industry

The higher annual average wages paid in both medical device and computer and electronic manufacturing are reflective of the greater composition of jobs requiring higher educational levels

Each of these industries experienced wage increases of at least \$7,500 over the past five years







Employment in manufacturing is highly concentrated in New Jersey's most populous counties and along the Interstate 95 corridor...

New Jersey offers unique business advantages including:

-geographic proximity to roughly 40 percent of the US population, or around 100 million potential consumers

-highly educated and very diverse workforce

-extensive transportation network in place to carry goods by land, air, and sea









...however, manufacturing in many of New Jersey's more sparsely populated counties make up a larger percentage of total private sector employment

Cumberland County has the largest share of manufacturing of total employment, exceeding 18 percent

Bergen, Morris, Middlesex, and Somerset Counties have a large a diverse mix of manufacturing industries

In the four coastal counties of Monmouth, Ocean, Atlantic, and Cape May, less than 4 percent of private sector employment is classified as manufacturing











OCCUPATIONAL ANALYSIS



Nearly 80 percent of all manufacturing jobs are classified into these five groups

Breakdown of Major Occupational Groups within Manufacturing Industry: New Jersey, 2019



Nearly half of all manufacturing workers are directly involved with production

Roughly 11 percent of workers are classified in STEM occupations

The "other" 23 percent of manufacturing occupations primarily consists of business, sales and other profession and service occupations



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Source: NJLWD, Occupational Employment Statistics Survey, May 2019 Prepared by: New Jersey Department of Labor and Workforce Development December, 2019

Eleven of the top occupations found in the manufacturing sector are classified as production workers

Occupation	2019 Employment	Share of Industry	2019 Average Salary	Minimum Educational Requirements
Total, All Manufacturing Occupations	240,350	100.0%	\$56,990	
Top 20 Occupations	88,030	36.6%	\$50,190	
Assemblers and Fabricators	8,770	3.6%	\$33,090 I	High school diploma or equivalent
Supervisors of Production Workers	8,560	3.5%	\$71,040 I	High school diploma or equivalent
Packaging and Filling Machine Operators	8,490	3.4%	\$31,950 I	High school diploma or equivalent
Inspectors, Testers, Sorters, Samplers, and Weighers	6,940	2.8%	\$42,910 I	High school diploma or equivalent
Laborers of Freight and Stock	6,650	2.7%	\$33,2501	No formal educational credential
Wholesale Sales Representatives	6,350	2.6%	\$92,570 H	High school diploma or equivalent
Packers and Packagers, Hand	5,140	2.1%	\$27,400	No formal educational credential
Industrial Machinery Mechanics	4,660	1.9%	\$59,300 H	High school diploma or equivalent
Electrical and Electromechanical Assemblers	4,300	1.7%	\$37,470 H	High school diploma or equivalent
Shipping, Receiving, and Inventory Clerks	4,100	1.7%	\$39,400 H	High school diploma or equivalent
Customer Service Representatives	3,840	1.6%	\$47,180 H	High school diploma or equivalent
Chemists	3,830	1.6%	\$96,510 F	Bachelor's degree
Chemical Equipment Operators	3,720	1.5%	\$49,550 H	High school diploma or equivalent
Machinists	3,480	1.4%	\$50,570 H	High school diploma or equivalent
Industrial Engineers	3,440	1.4%	\$95,430 B	Bachelor's degree
Industrial Truck and Tractor Operators	3,430	1.4%	\$36,7001	No formal educational credential
Extruding, Pressing, and Compacting Machine Operators	3,400	1.4%	\$38,360 H	High school diploma or equivalent
Cutting, Punching, and Press Machine Setters Operators	3,170	1.3%	\$34,670 H	High school diploma or equivalent
Mixing and Blending Machine Operators	2,960	1.2%	\$43,760 H	High school diploma or equivalent
Food Batchmakers	2,950	1.2%	\$35,930 H	High school diploma or equivalent







Source: NJLWD, Occupational Employment Statistics Survey, May 2019 Prepared by: New Jersey Department of Labor and Workforce Development December, 2019

Greater than one-quarter of the occupations in the manufacturing sector have moderate to high educational requirements for entry

Total Number of Employment in Manufacturing by Minimum Education Requirement New Jersey, 2019

Minimum Education Requirement	2019 Employment	% of Total
Total, All Manufacturing	246,740	100.0%
Total High Requirements	51,560	20.9%
Doctoral or professional degree	1,750	0.7%
Master's degree	210	0.1%
Bachelor's degree	49,600	20.1%
Total Moderate Requirements	14,480	5.9%
Associate's degree	5,470	2.2%
Postsecondary nondegree award	5,000	2.0%
Some college, no degree	4,010	1.6%
Total Low Requirements	176,510	71.5%
High school diploma or equivalent	145,290	58.9%
No formal educational credential	31,220	12.7%

Nearly one-third of the employment that requires at least a Bachelor's degree are classified as scientists and engineers

Although the majority of employment in manufacturing may not require postsecondary education for entry, the tradesmen and production workers that comprise this group often have many years of experience, and may have completed an apprenticeship or extensive on-the-job training program







Source: NJLWD, Occupational Employment Statistics Survey, May 2019 Prepared by: New Jersey Department of Labor and Workforce Development December, 2019

SUBSECTOR DETAILS



Food Manufacturing

	Establishments	Employment	Employment Per Establishment
2014	1,063	30,609	29
2019	1,251	36,982	30
Change	+188	+6,373	+1

The food manufacturing industry has more than 6,000 jobs over the past five years, and has large concentrations in Bergen and Camden Counties

Key Occupations include:

- Food Batchmakers
- Bakers
- Packaging and Filling Machine Operators
- Industrial Machinery Mechanics

- Forklift Operators
- Inspectors, Testers, Sorters and Samplers
- Food Scientists and Technologists
- Whole Sales Representative:





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Chemical Manufacturing

	Establishments	Employment	Employment Per Establishment
2014	808	48,678	60
2019	855	44,560	52
Change	+47	-4,118	-8

The chemical manufacturing industry has strong concentrations along the Route 1 corridor, particularly in Middlesex, Somerset, and Union Counties

Key Occupations include:

- Chemists
- Chemical Equipment
 Operators
- Mixing and Blending Machine
 Operators
- Chemical Technicians

- Industrial Machinery Mechanics
- Industrial Engineers
- Compliance Officers
- Whole Sales Representative









Computer and Electronic Product Manufacturing

	Establishments	Employment	Employment Per Establishment
2014	684	23,022	34
2019	695	24,353	35
Change	+11	+1,331	+1

The computer and electronic product manufacturing industry has maintained steady employment, and is prevalent in Camden, Burlington, and Bergen Counties

Key Occupations include:

- Electrical and Electronic Assemblers
- Electrical Engineers
- Software Developers
- Industrial Machinery Mechanics

- Mechanical Engineers
- Buyers and Purchasing Agents
- Aerospace Engineers
- Whole Sales Representatives









Fabricated Metal Product Manufacturing

	Establishments	Employment	Employment Per Establishment
2014	1,164	19,952	17
2019	1,146	22,332	19
Change	-18	+2,380	+2

The fabricated metal product manufacturing industry has maintain employment levels, and has concentrations nearest Philadelphia and New York City

Key Occupations include:

- Machinists
- Welders, Cutters, Solderers, and Brazers
- Assemblers and Fabricators
- Industrial Machinery
 Mechanics

- Forklift Operators
- Inspectors, Testers, Sorters and Samplers
- Cutting, Punching, and Press Machine Operators
- Sheet Metal Workers









Medical Device Manufacturing

	Establishments	Employment	Employment Per Establishment
2014	379	11,484	30
2019	359	11,710	33
Change	-20	+226	+3

The medical device manufacturing industry employed nearly 12,000 jobs from in 2019, and nearly one-third of its employment is found in Bergen County

Key Occupations include:

- Medical Appliance Technicians
- Bioengineers and Biomedical Engineers
- Inspectors, Testers, Sorters and Samplers
- Industrial Engineers

- Dental Laboratory Technicians
- Computer-Controlled (CNC) Machine Tool Operators
- Production, Planning, and Expediting Clerks
- Whole Sales Representatives









DEMOGRAPHIC PROFILE



Data shows a steady and gradual change toward an older workforce in nearly every age cohort

The workforce aged 65 and older has nearly tripled its share of total employment from 3 percent to almost 9 percent from 1999 to 2019

Over the past 20 years, the fastest growing age cohort has been 55-64 years old while the group aged 35-44 has declined the most

The share of the manufacturing workforce under the age of 35 has decreased over the last 20 years from 27 percent to 23 percent

Breakdown of Workforce by Age New Jersey: 1999-2019









Source: United States Census Bureau, Quarterly Workforce Indicators Prepared by: New Jersey Department of Labor and Workforce Development December, 2019

Gender, racial, and ethnic profile of New Jersey residents working in manufacturing industries



Self-reported educational attainment and average wage of NJ residents in the manufacturing workforce

Nearly 45 percent of the workforce reported that they have earned at least a bachelor's degree, and... ...nearly 60 percent of the workforce claimed to have earned wages above \$50,000

Doctoral degree 4.3% \$150,000 & more 13.8% 12.5% Master's/Professional degree \$75,000-\$150,000 27.1% 27.6% Bachelor's degree \$50,000-\$75,000 18.4% Some college/Associate degree 20.8% \$25,000-\$50,000 24.2% High School or less 34.8% Less than \$25,000 16.6% 0.0% 20.0% 40.0% 0.0% 20.0% 40.0%

Education Level

Average Wage







Source: United States Census Bureau, 2017 American Community Survey Prepared by: New Jersey Department of Labor and Workforce Development December, 2019 THIS WORKFORCE PRODUCT WAS FUNDED BY A GRANT AWARDED BY THE U.S. DEPARTMENT OF LABOR'S EMPLOYMENT AND TRAINING ADMINISTRATION. THE PRODUCT WAS CREATED BY THE RECIPIENT AND DOES NOT NECESSARILY REFLECT THE OFFICIAL POSITION OF THE U.S. DEPARTMENT OF LABOR. THE DEPARTMENT OF LABOR MAKES NO GUARANTEES, WARRANTIES, OR ASSURANCES OF ANY KIND, EXPRESS OR IMPLIED, WITH RESPECT TO SUCH INFORMATION, INCLUDING ANY INFORMATION ON LINKED SITES AND INCLUDING, BUT NOT LIMITED TO, ACCURACY OF THE INFORMATION OR ITS COMPLETENESS, TIMELINESS, USEFULNESS, ADEQUACY, CONTINUED AVAILABILITY, OR OWNERSHIP. THIS PRODUCT IS COPYRIGHTED BY THE INSTITUTION THAT CREATED IT. INTERNAL USE BY AN ORGANIZATION AND/OR PERSONAL USE BY AN INDIVIDUAL FOR NON-COMMERCIAL PURPOSES IS PERMISSIBLE. ALL OTHER USES REQUIRE THE PRIOR AUTHORIZATION OF THE COPYRIGHT OWNER.