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

**Analyze** 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 $54 billion to the Gross Domestic Product in 2020, or about 10.1 percent of all output

- In 2020, New Jersey employed 44,400 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 $74,000 in 2020

- Manufacturing employers paid greater than $20 billion in total wages in 2020, or about 8.6 percent of all wages paid
Overview

There were nearly 9,000 establishments in New Jersey that employed nearly 236,000 people in the manufacturing sector in 2020. 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.
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 one percent per year from 1997 to 2020, and now exceeds half of a trillion dollars.

Over the same period, the national GDP has increased at twice the NJ rate.

The Great Recession from 2007-2009 deeply affected the manufacturing sector at the state and national level.

Since hitting recent lows in 2013, New Jersey’s manufacturing sector has steadily rebounded, and in 2020 contributed more than $54 billion to the state’s GDP.

Source: United States Bureau of Economic Analysis, GDP in Chained 2012 Dollars
Prepared by: New Jersey Department of Labor and Workforce Development
December 2021

Gray area denotes U.S. economic recession as defined by the National Bureau of Economic Research (NBER)
Output produced from the chemical manufacturing sector dominates GDP output among manufacturing industries

Chemical manufacturing accounted for 51 percent of manufacturing GDP in 1997 ($28.7 billion), but only 34 percent in 2020 ($18.5 billion).

Computer and electronic products manufacturing has been the fastest growing industry among this group, increasing its GDP from $464 million in 1997 to $6.1 billion in 2020, and now contributes the third highest output of GDP in New Jersey.

Medical device manufacturing has nearly doubled its output since 1997 to nearly $4 billion in 2020.

Gray area denotes U.S. economic recession as defined by the National Bureau of Economic Research (NBER).
Nearly 2 of every 10 dollars of output generated by manufacturing in the United States occurs in these seven Northeastern states.

New Jersey ranks third among these states in the region with GDP from manufacturing exceeding $54 billion in 2020.

Chemical manufacturing is the primary contributor in the tri-state area (NJ, NY & PA) and combined accounts for nearly 15 percent ($49 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.

Source: United States Bureau of Economic Analysis, GDP in Chained 2012 Dollars
Prepared by: New Jersey Department of Labor and Workforce Development
December 2021
INDUSTRY ANALYSIS
Manufacturing employment remained steady in 2020 while the rest of the economy declined sharply

Manufacturing has lost 291,400 jobs in New Jersey since 1990, a 2.6 percent annual decline, while the nation has declined at a 1.2 percent annual rate, shedding roughly 5.5 million jobs.

The “other” non-agricultural industries grew by an annual average of 0.5 percent posting a net gain of 502,800 jobs in New Jersey, while the United States added over 38 million jobs, an average gain of 1.2 percent per year.

New Jersey had added manufacturing jobs for six consecutive years before a slight downturn in 2020, reversing a trend of consistent annual losses.

Source: NJLWD, Current Employment Statistics, Annual Averages
Prepared by: New Jersey Department of Labor and Workforce Development
December 2021
Manufacturing employment in New Jersey has declined from 14.6 percent of all jobs in 1990 to 6.2 percent in 2020

Nationally, manufacturing’s share of total employment has declined from 16.2 percent in 1990 to 8.6 percent in 2020

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 2.6 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)
The chart below shows the distribution of all manufacturing employment across its many different industries.

All Manufacturing Industries as a Percentage of Total Manufacturing in New Jersey: 2020

- Chemical mfg - 43,770
- Food mfg - 35,420
- Computer and Electronic Product mfg - 23,530
- Fabricated Metal Product mfg - 21,040
- Miscellaneous mfg - 16,520
- Plastics and Rubber Products mfg - 13,870
- Machinery mfg - 12,960
- Printing and Related Support Activities - 11,580
- Nonmetallic Mineral Product mfg - 10,130
- Paper mfg - 8,740
- Furniture and Related Product mfg - 6,500

Source: NJLWD, Quarterly Census of Employment and Wages, 2018 Annual Averages
Prepared by: New Jersey Department of Labor and Workforce Development
December 2021
These industries each employ a disproportionately high number of people in New Jersey and are among the manufacturing industries that define the state in 2020.

### New Jersey Employment as a Percentage of the nation: 2019

<table>
<thead>
<tr>
<th>Industry</th>
<th>Employment Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicinal and Botanical</td>
<td>14.9%</td>
</tr>
<tr>
<td>Toiletry Preparation</td>
<td>11.2%</td>
</tr>
<tr>
<td>Spice and Extract</td>
<td>10.4%</td>
</tr>
<tr>
<td>Pharmaceutical Preparation</td>
<td>8.1%</td>
</tr>
<tr>
<td>Glass Container</td>
<td>6.7%</td>
</tr>
<tr>
<td>Surgical Appliance and Supplies</td>
<td>6.5%</td>
</tr>
</tbody>
</table>

**Chemical manufacturing** in New Jersey, where three of the six industries on this list are classified, accounts for 5.2 percent of chemical manufacturing employment in the nation.

Glass container manufacturing 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.

Source: NJLWD, Quarterly Census of Employment and Wages, 2018 Annual Averages
Prepared by: New Jersey Department of Labor and Workforce Development
December 2021
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

Source: NJLWD, Quarterly Census of Employment and Wages, 2018 Annual Averages
Prepared by: New Jersey Department of Labor and Workforce Development
December 2021
...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 at nearly 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.

Source: NJLWD, Quarterly Census of Employment and Wages, 2018 Annual Averages
Prepared by: New Jersey Department of Labor and Workforce Development
December 2021
OCCUPATIONAL ANALYSIS
Nearly 80 percent of all manufacturing jobs are classified into these five groups:

- **Production**: 44%
- **Transportation and Material Moving**: 10%
- **Office and Administrative Support**: 10%
- **Management**: 7%
- **Architecture and Engineering**: 6%
- **Other**: 23%

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.

Prepared by: New Jersey Department of Labor and Workforce Development
December 2021
Ten of the top occupations found in the manufacturing sector are classified as **production workers**

<table>
<thead>
<tr>
<th>Occupation</th>
<th>2020 Employment</th>
<th>Share of Industry</th>
<th>2020 Average Salary</th>
<th>Minimum Educational Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total, All Manufacturing Occupations</td>
<td>233,120</td>
<td>100.0%</td>
<td>$62,870</td>
<td></td>
</tr>
<tr>
<td><strong>Top 20 Occupations</strong></td>
<td>96,370</td>
<td>41.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assemblers and Fabricators</td>
<td>8,830</td>
<td>3.8%</td>
<td>$34,810</td>
<td>High school diploma or equivalent</td>
</tr>
<tr>
<td>Supervisors of Production Workers</td>
<td>8,170</td>
<td>3.5%</td>
<td>$73,570</td>
<td>High school diploma or equivalent</td>
</tr>
<tr>
<td>Packaging and Filling Machine Operators</td>
<td>8,040</td>
<td>3.4%</td>
<td>$35,750</td>
<td>High school diploma or equivalent</td>
</tr>
<tr>
<td>Inspectors, Testers, Sorters, Samplers, and Weighers</td>
<td>6,710</td>
<td>2.9%</td>
<td>$43,880</td>
<td>High school diploma or equivalent</td>
</tr>
<tr>
<td>Laborers of Freight and Stock</td>
<td>6,320</td>
<td>2.7%</td>
<td>$35,790</td>
<td>No formal educational credential</td>
</tr>
<tr>
<td>Wholesale Sales Representatives</td>
<td>5,690</td>
<td>2.4%</td>
<td>$97,850</td>
<td>High school diploma or equivalent</td>
</tr>
<tr>
<td>Packers and Packagers, Hand</td>
<td>5,060</td>
<td>2.2%</td>
<td>$29,680</td>
<td>No formal educational credential</td>
</tr>
<tr>
<td>Industrial Machinery Mechanics</td>
<td>4,780</td>
<td>2.1%</td>
<td>$61,720</td>
<td>High school diploma or equivalent</td>
</tr>
<tr>
<td>Chemical Equipment Operators</td>
<td>4,360</td>
<td>1.9%</td>
<td>$55,640</td>
<td>High school diploma or equivalent</td>
</tr>
<tr>
<td>Electromechanical assemblers</td>
<td>4,320</td>
<td>1.9%</td>
<td>$38,070</td>
<td>High school diploma or equivalent</td>
</tr>
<tr>
<td>Shipping, Receiving, and Inventory Clerks</td>
<td>4,030</td>
<td>1.7%</td>
<td>$40,100</td>
<td>High school diploma or equivalent</td>
</tr>
<tr>
<td>Customer Service Representatives</td>
<td>3,790</td>
<td>1.6%</td>
<td>$47,550</td>
<td>High school diploma or equivalent</td>
</tr>
<tr>
<td>Industrial Truck and Tractor Operators</td>
<td>3,720</td>
<td>1.6%</td>
<td>$38,100</td>
<td>No formal educational credential</td>
</tr>
<tr>
<td>Machinists</td>
<td>3,560</td>
<td>1.5%</td>
<td>$98,790</td>
<td>Bachelor's degree</td>
</tr>
<tr>
<td>Industrial Engineers</td>
<td>3,460</td>
<td>1.5%</td>
<td>$139,960</td>
<td>Bachelor's degree</td>
</tr>
<tr>
<td>General and Operations Managers</td>
<td>3,380</td>
<td>1.4%</td>
<td>$198,060</td>
<td>Bachelor's degree</td>
</tr>
<tr>
<td>Paper Goods Machine Operators</td>
<td>3,120</td>
<td>1.3%</td>
<td>$35,020</td>
<td>High school diploma or equivalent</td>
</tr>
<tr>
<td>Cutting, Punching, and Press Machine Operators</td>
<td>3,010</td>
<td>1.3%</td>
<td>$35,820</td>
<td>High school diploma or equivalent</td>
</tr>
<tr>
<td>Mixing and Blending Machine Operators</td>
<td>2,720</td>
<td>1.2%</td>
<td>$45,290</td>
<td>High school diploma or equivalent</td>
</tr>
</tbody>
</table>

Prepared by: New Jersey Department of Labor and Workforce Development
December 2021
Greater than one-quarter of the occupations in the manufacturing sector have moderate to high educational requirements for entry.

<table>
<thead>
<tr>
<th>Minimum Education Requirement</th>
<th>2020 Employment</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total, All Manufacturing</td>
<td>233,120</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total High Requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master's or higher degree</td>
<td>1,000</td>
<td>0.4%</td>
</tr>
<tr>
<td>Bachelor's degree</td>
<td>47,640</td>
<td>20.4%</td>
</tr>
<tr>
<td>Total Moderate Requirements</td>
<td>11,920</td>
<td>5.1%</td>
</tr>
<tr>
<td>Associate's degree</td>
<td>5,550</td>
<td>2.4%</td>
</tr>
<tr>
<td>Postsecondary nondegree award</td>
<td>3,170</td>
<td>1.4%</td>
</tr>
<tr>
<td>Some college, no degree</td>
<td>3,200</td>
<td>1.4%</td>
</tr>
<tr>
<td>Total Low Requirements</td>
<td>166,140</td>
<td>71.3%</td>
</tr>
<tr>
<td>High school diploma or equivalent</td>
<td>129,620</td>
<td>55.6%</td>
</tr>
<tr>
<td>No formal educational credential</td>
<td>36,520</td>
<td>15.7%</td>
</tr>
</tbody>
</table>

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 tradespeople 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.

Prepared by: New Jersey Department of Labor and Workforce Development
December 2021
SUBSECTOR DETAILS
The food manufacturing industry has added nearly 4,000 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 Representatives
Chemical Manufacturing

<table>
<thead>
<tr>
<th>Establishments</th>
<th>Employment</th>
<th>Employment Per Establishment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>809</td>
<td>43,173</td>
</tr>
<tr>
<td>2020</td>
<td>874</td>
<td>43,774</td>
</tr>
<tr>
<td>Change</td>
<td>+65</td>
<td>+601</td>
</tr>
</tbody>
</table>

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 Representatives

Source: NJLWD, Quarterly Census of Employment and Wages, Annual Average
Prepared by: New Jersey Department of Labor and Workforce Development
December 2021
Computer and Electronic Product Manufacturing

<table>
<thead>
<tr>
<th></th>
<th>Establishments</th>
<th>Employment</th>
<th>Employment Per Establishment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>689</td>
<td>22,978</td>
<td>33</td>
</tr>
<tr>
<td>2020</td>
<td>703</td>
<td>23,531</td>
<td>33</td>
</tr>
<tr>
<td>Change</td>
<td>+14</td>
<td>+553</td>
<td>-</td>
</tr>
</tbody>
</table>

The computer and electronic product manufacturing industry has maintained steady employment, and is prevalent in Bergen, Camden, and Morris 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
The fabricated metal product manufacturing industry has added 1,000 jobs since 2015, 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

The medical device manufacturing industry employed 11,000 people in 2020, 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
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 2000 to 2020.

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: 2000-2020

Source: United States Census Bureau, Quarterly Workforce Indicators
Prepared by: New Jersey Department of Labor and Workforce Development
December 2021
Gender, racial, and ethnic profile of New Jersey residents working in manufacturing industries

The manufacturing workforce is predominantly male.

- Male: 63%
- Female: 37%

The Asian population makes up a larger portion of the manufacturing workforce than the overall economy.

- Manufacturing: 14%
- All Industries: 10%

The Hispanic population is slightly less among manufacturing industries.

- Manufacturing: 21%
- All Industries: 25%

Source: United States Census Bureau, 2017 American Community Survey
Prepared by: New Jersey Department of Labor and Workforce Development
December 2021
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

**Education Level**

- Doctoral degree: 4.3%
- Master's/Professional degree: 12.5%
- Bachelor's degree: 27.6%
- Some college/Associate degree: 20.8%
- High School or less: 34.8%

**Average Wage**

- Less than $25,000: 16.6%
- $25,000-$50,000: 24.2%
- $50,000-$75,000: 18.4%
- $75,000-$150,000: 27.1%
- $150,000 & more: 13.8%

Source: United States Census Bureau, 2017 American Community Survey
Prepared by: New Jersey Department of Labor and Workforce Development
December 2021