

New Jersey's Advanced Manufacturing Cluster Winter 2012-2013

Prepared by:

Jason Timian

Labor Market Analyst

NEW JERSEY DEPARTMENT OF

LWD

LABOR AND WORKFORCE DEVELOPMENT

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The goal of this report is to get an “IDEA” of what advanced manufacturing means to New Jersey

Identify the types of industries and establishments that make up the advanced 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 advanced manufacturing cluster and provide an outlook for employment into the future

New Jersey Advanced Manufacturing Highlights

- The advanced manufacturing industry cluster contributed over \$17.2 billion to the Gross Domestic Product in 2010, or about 4.0 percent of all output
- In 2011, New Jersey employed 53,000 people in chemical manufacturing, the state's largest segment of advanced manufacturing, which ranks third among states behind only California and Texas
- Nearly half of all manufacturing industry employment remaining in the state is classified as advanced
- Average wages paid in many advanced manufacturing industries are well above the statewide average of \$56,900 in 2011
- Advanced manufacturing establishment employers paid nearly \$11.6 billion in total wages in 2011, or about 6.5 percent of all wages paid

Overview

There were over 3,200 establishments in New Jersey that employed more than 119,000 people in the advanced manufacturing cluster in 2011. 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.

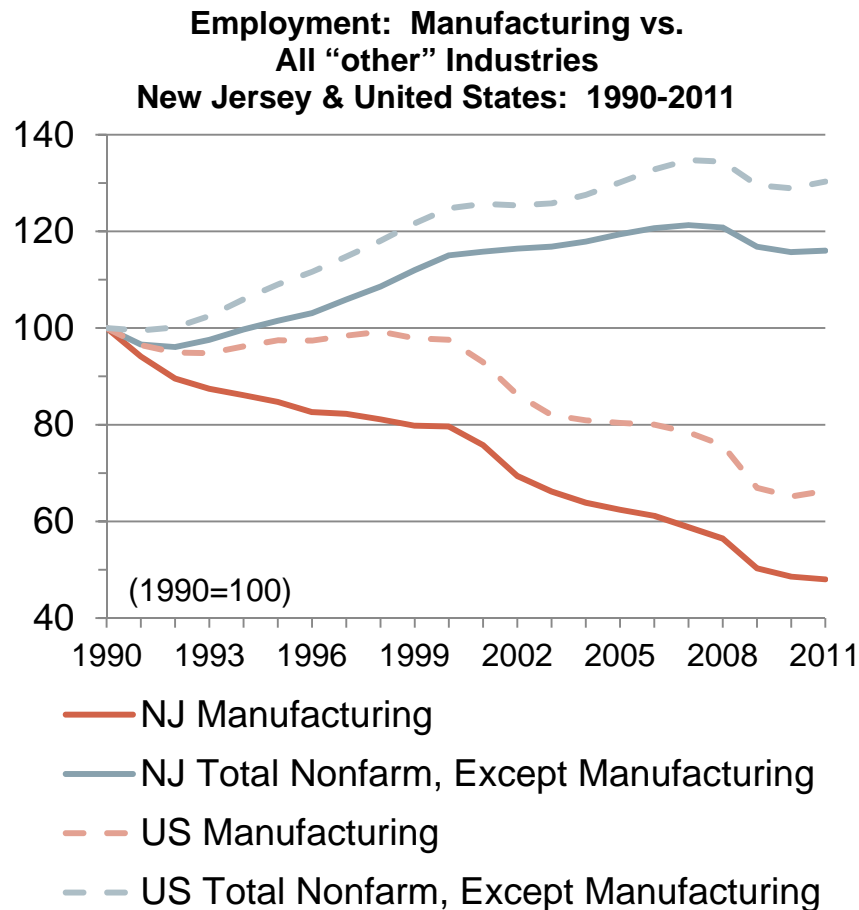
The occupational composition within advanced manufacturing industries is continuously changing as more technical skills are required to operate more advanced processes. The expectation of higher skills has resulted in many higher paying jobs, especially among chemical manufacturing firms.

According to the 2011 American Community Survey, the profile of the average worker is generally older than average and male. More than 50 percent of the workforce is aged 45. Racially, it is more diverse than average, especially among the Asian population. The workforce is highly educated, with nearly 48 percent having attained at least a bachelor's degree.

Advanced Manufacturing

Industry Analysis

New Jersey has followed a similar employment trend as the nation, but has fared worse over the last 21 years



Manufacturing has lost over 275,000 jobs in New Jersey since 1990, a 3.4% annual decline, while the nation has declined at a 1.9% annual rate, shedding over 5.9 million jobs

The "other" non-agricultural industries posted a net gain of 496,500 jobs in New Jersey, while the United States added about 27.8 million

Since 1990, the manufacturing sector in New Jersey has failed to experience a year over year gain. Its best year was a 0.2 decline from 1999-2000

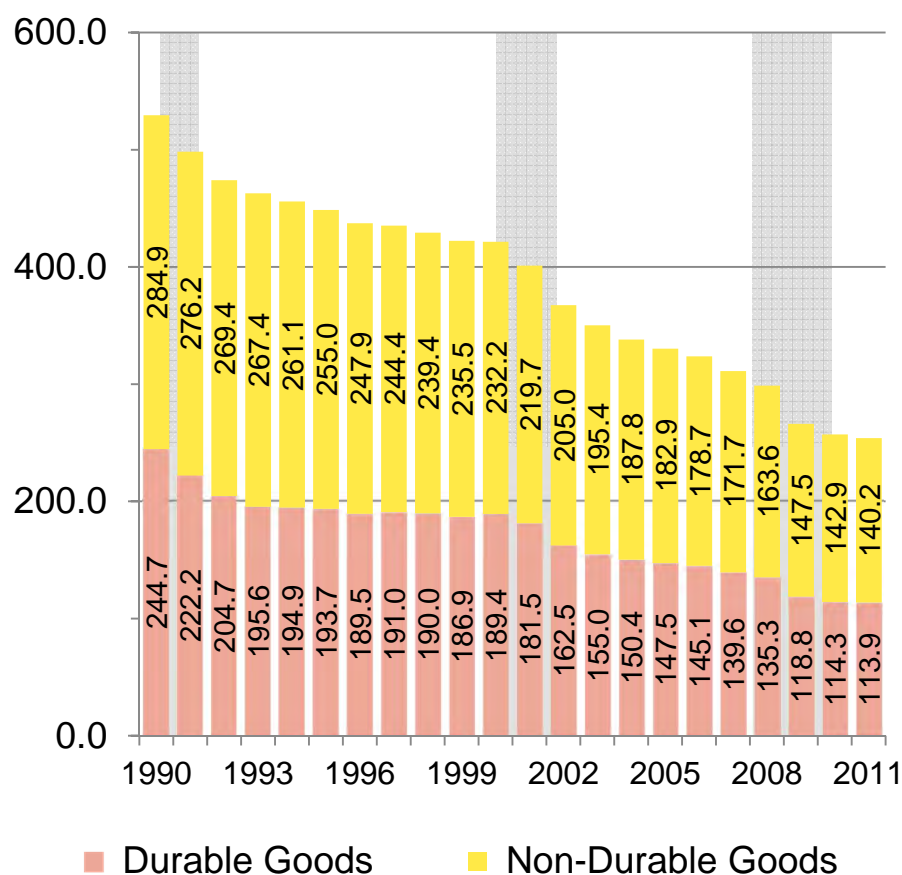
Manufacturing employment in New Jersey has declined from 14.6% of all jobs in 1990 to 6.6% in 2011

Nationally, manufacturing's share of total employment has declined from 16.2% in 1990 to 8.9% in 2011

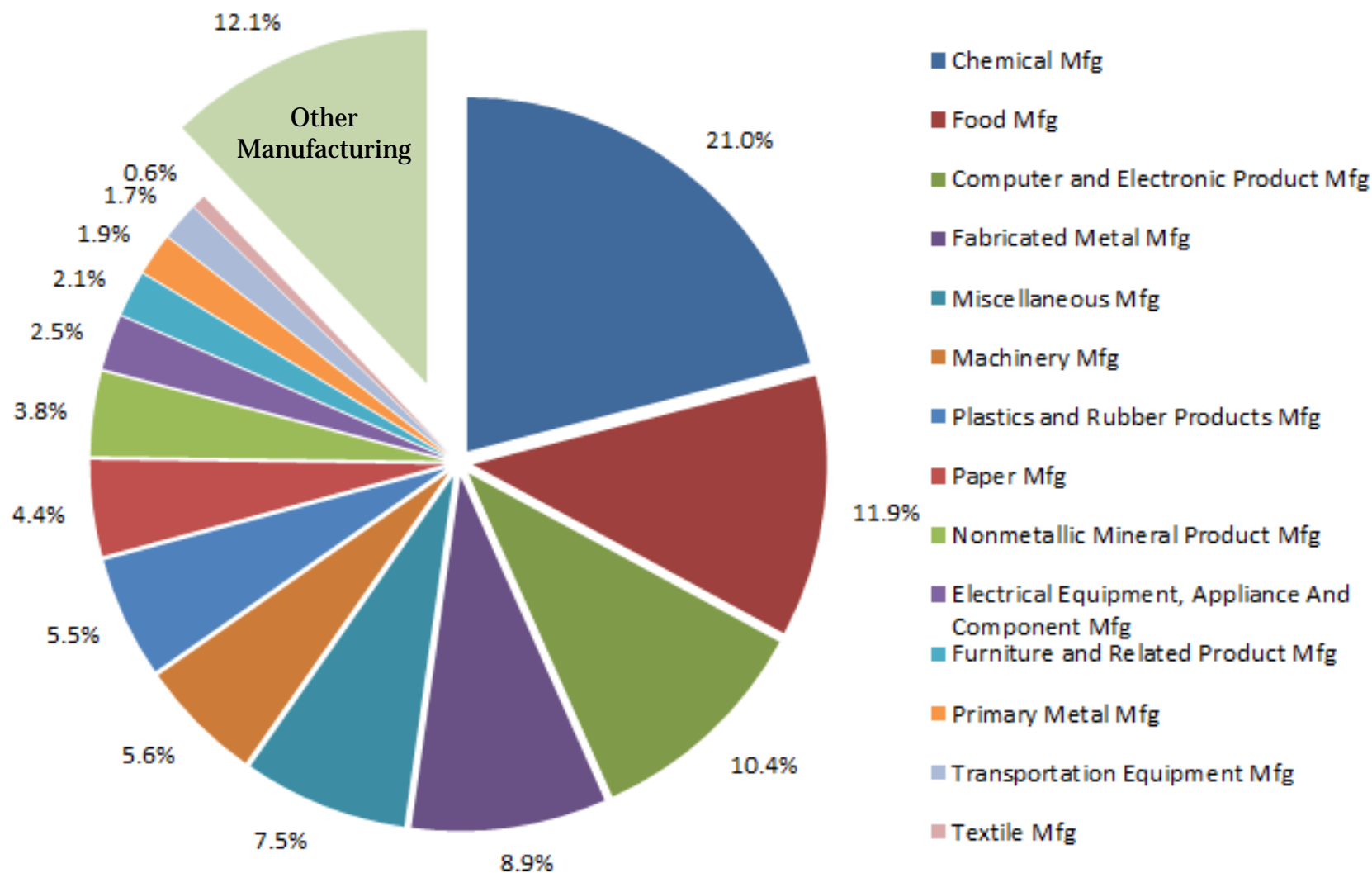
Widespread and consistent losses among industries that manufacture both durable and non-durable goods have resulted in closely distributed annual average losses of 3.6 and 3.3 percent, respectively

During the six worst years for manufacturing employment in New Jersey ('91-'92, '01-'02, '08-'09), more than 156,000 of the 275,400 total jobs losses occurred, an average rate of decline of more than 6% per year

**Employment breakdown
Durable vs. Non-durable Goods
New Jersey: 1990-2011**



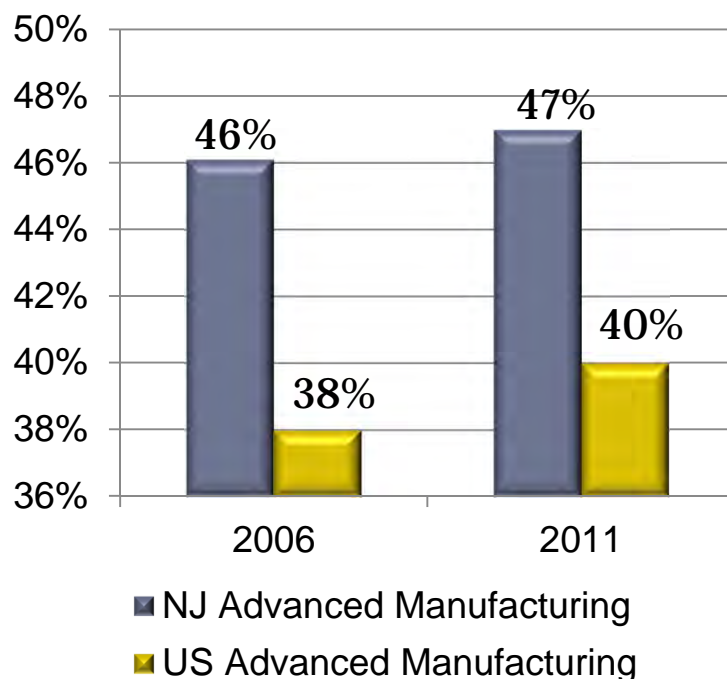
Manufacturing Industries as a Percentage of Total Manufacturing Sector in New Jersey: 2011



Source: NJLWD, Quarterly Census of Employment and Wages, Annual Average
Prepared by: New Jersey Department of Labor and Workforce Development
December 2012

The New Jersey Department of Labor and Workforce Development has classified 151 out of 473 NAICS-based manufacturing industries as advanced

**Percentage of Manufacturing Employment Classified as Advanced
New Jersey and United States:
2006 & 2011**



Employment in advanced manufacturing industries declined at a lesser rate in New Jersey and the nation from 2006 to 2011, 4.4 and 2.7 percent, respectively, than its non-advanced counterpart (5.2 & 4.4 percent, respectively)

In 2011, there were more than 119,000 people employed in industries classified as advanced manufacturing in New Jersey

Nearly 47 percent of all manufacturing employment in New Jersey occurred in advanced industries in 2011 versus only 40 percent nationwide

The advanced manufacturing sector and its components with some examples of industries classified within them

Chemical Manufacturing

- Basic chemical
- Pharmaceutical & medicine
- Cleaning compound and toiletry
- Paint, coating & adhesive

Computer and Electronic Product Manufacturing

- Computers and peripheral equipment
- Communications equipment
- Audio and visual equipment
- Semiconductors and other electronic components

Machinery Manufacturing

- Industrial machinery
- HVAC and commercial refrigeration equipment
- Commercial and service industry machinery
- Turbine and power transmission

The complete list of 151 detailed NAICS classified as advanced manufacturing

Chemical Manufacturing

325110 Petrochemical Mfg.	325314 Fertilizer (Mixing Only) Mfg.
325120 Industrial Gas Mfg.	325320 Agricultural Chemicals Exc. Fertilizer
325131 Inorganic Dye and Pigment Mfg.	325411 Medicinal and Botanical Mfg.
325132 Synthetic Dye and Pigment Mfg.	325412 Pharmaceutical Preparation Mfg.
325181 Alkalies and Chlorine Mfg.	325413 In-Vitro Diagnostic Substance Mfg.
325182 Carbon Black Mfg.	325414 Other Biological Product Mfg.
325188 All Other Basic Inorganic Chemicals	325510 Paint and Coating Mfg.
325191 Gum and Wood Chemical Mfg.	325520 Adhesive Mfg.
325192 Cyclic Crude and Intermediate Mfg.	325611 Soap and Other Detergent Mfg.
325193 Ethyl Alcohol Mfg.	325612 Polish and Sanitation Good Mfg.
325199 All Other Basic Organic Chemicals	325613 Surface Active Agent Mfg.
325211 Plastics Material & Resin Mfg.	325620 Toilet Preparation Mfg.
325212 Synthetic Rubber Mfg.	325910 Printing Ink Mfg.
325221 Cellulosic Organic Fiber Mfg.	325920 Explosives Mfg.
325222 Noncellulosic Organic Fiber Mfg.	325991 Custom Compounding of Purchased Resins
325311 Nitrogenous Fertilizer Mfg.	325992 Photographic Film and Chemicals
325312 Phosphatic Fertilizer Mfg.	325998 Other Miscellaneous Chemicals Mfg.

Machinery Manufacturing

333111 Farm Machinery & Equipment Mfg.	333513 Metal Forming Machine Tool Mfg.
333112 Lawn and Garden Equipment Mfg.	333514 Special Tools, Dies, Jigs, and Fixtures
333120 Construction Machinery Mfg.	333515 Machine Tool Cutters and Accessories
333131 Mining Machinery and Equipment Mfg.	333516 Rolling Mill Machinery and Equipment
333132 Oil and Gas Field Machinery & Equipment	333518 Other Metalworking Machinery Mfg.
333210 Sawmill and Woodworking Machinery	333611 Turbine Generator & Generator Set Units
333220 Plastics and Rubber Industry Machinery	333612 Speed Changer, Drive, and Gear Mfg.
333291 Paper Industry Machinery Mfg.	333613 Mechanical Power Transmission Equipment
333292 Textile Machinery Mfg.	333618 Other Engine Equipment Mfg.
333293 Printing Machinery and Equipment	333911 Pump and Pumping Equipment Mfg.
333294 Food Product Machinery Mfg.	333912 Air and Gas Compressor Mfg.
333295 Semiconductor Machinery Mfg.	333913 Measuring and Dispensing Pump Mfg.
333298 All Other Industrial Machinery Mfg.	333921 Elevator and Moving Stairway Mfg.
333311 Automatic Vending Machine Mfg.	333922 Conveyor and Conveying Equipment
333312 Commercial Laundry/Drycleaning Machinery	333923 Overhead Cranes, Hoists and Monorails
333313 Office Machinery Mfg.	333924 Industrial Truck, Trailers, and Stackers
333314 Optical Instrument & Lens Mfg.	333991 Power-Driven Handtool Mfg.
333315 Photographic and Photocopying Equipment	333992 Welding and Soldering Equipment Mfg.
333319 Other Commercial and Service Machinery	333993 Packaging Machinery Mfg.
333411 Air Purification Equipment Mfg.	333994 Industrial Process Furnace & Oven Mfg.
333412 Industrial & Commercial Fans & Blowers	333995 Fluid Power Cylinders and Actuators
333414 Heating Equipment, ex. Warm Air Furnaces	333996 Fluid Power Pump and Motor Mfg.
333415 AC, Refrigeration, & Forced Air Heating	333997 Scale & Balance Mfg.
333511 Industrial Mold Mfg.	333999 All Other Miscellaneous General Purpose Machinery
333512 Metal Cutting Machine Tool Mfg.	

Source: North American Industry Classification System (NAICS)
 Prepared by: New Jersey Department of Labor and Workforce Development
 December 2012

The complete list of 151 detailed NAICS classified as advanced manufacturing, continued

Computer and Electronic Product Manufacturing

334111 Electronic Computer Mfg.	334418 Printed Circuit Assemblies
334112 Computer Storage Device Mfg.	334419 Other Electronic Component Mfg.
334113 Computer Terminal Mfg.	334510 Electromedical Apparatus Mfg.
334119 Other Computer Peripheral Equipment	334511 Search, Detection & Navigation Instrumnt
334210 Telephone Apparatus Mfg.	334512 Automatic Environmental Control Mfg.
334220 Radio & TV Broadcast & Wireless Communication	334513 Industrial Process Variable Instruments
334290 Other Communications Equipment Mfg.	334514 Fluid Meters and Counting Devices
334310 Audio and Visual Equipment Mfg.	334515 Electricity & Signal Testing Instrument Mfg.
334411 Electron Tube Mfg.	334516 Analytical Laboratory Instruments
334412 Bare Printed Circuit Board Mfg.	334517 Irradiation Apparatus Mfg.
334413 Semiconductor and Related Devices	334518 Watch, Clock, and Part Mfg.
334414 Electronic Capacitor Mfg.	334519 Other Measuring and Controlling Devices
334415 Electronic Resistor Mfg.	334611 Software Reproducing
334416 Electronic Coils, Transformer & Inductor	334612 Audio and Video Media Reproduction
334417 Electronic Connector Mfg.	334613 Magnetic and Optical Media Mfg.

All Other Advanced Manufacturing

324110 Petroleum Refineries	336350 Motor Vehicle Power Train Components
327211 Flat Glass Mfg.	336360 Motor Vehicle Seating and Interior Trim
327212 Other Pressed & Blown Glass/Glassware	336370 Motor Vehicle Metal Stamping
327213 Glass Container Mfg.	336391 Motor Vehicle Air-Conditioning Mfg.
327215 Purchased Glass Product Mfg.	336399 All Other Motor Vehicle Parts Mfg.
335110 Electric Lamp Bulb & Part Mfg.	336411 Aircraft Mfg.
335121 Residential Electric Lighting Fixtures	336412 Aircraft Engine and Engine Parts
335122 Nonresidential Electric Lighting Fixture	336413 Other Aircraft Parts and Equipment
335129 Other Lighting Equipment Mfg.	336414 Guided Missiles and Space Vehicles
335311 Electric Power & Specialty Transformers	336415 Space Vehicle Propulsion Units and Parts
335312 Motor and Generator Mfg.	336419 Other Guided Missile/Space Vehicle Parts
335313 Switchgear and Switchboard Apparatus	336611 Ship Building and Repairing
335314 Relay & Industrial Control Mfg.	336612 Boat Building
336311 Carburetors, Pistons, Rings, and Valves	339111 Laboratory Apparatus and Furniture
336312 Gasoline Engines and Engine Parts	339112 Surgical and Medical Instrument Mfg.
336321 Vehicular Lighting Equipment Mfg.	339113 Surgical Appliance and Supplies Mfg.
336322 Other Motor Vehicle Electrical Equipment	339114 Dental Equipment and Supplies Mfg.
336330 Motor Vehicle Steering/Suspension Parts	339115 Ophthalmic Goods Mfg.
336340 Motor Vehicle Brake System Mfg.	339116 Dental Laboratories

Source: North American Industry Classification System (NAICS)
 Prepared by: New Jersey Department of Labor and Workforce Development
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The three major components of advanced manufacturing account for nearly 80% of its workforce in New Jersey in 2011

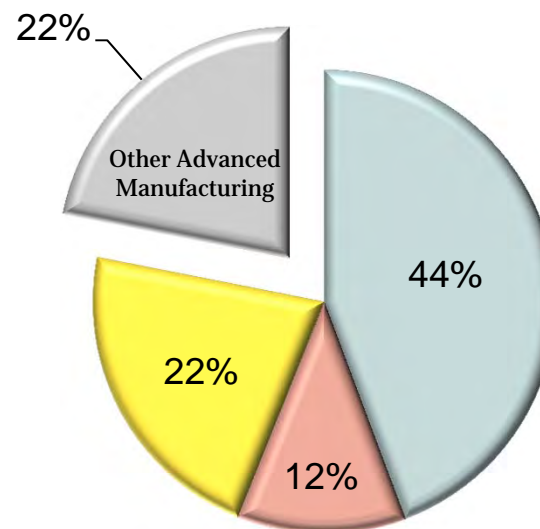
Chemical manufacturing, which includes pharmaceuticals and medicine, employed over 52,700 in 2011, which is nearly 21 percent of all manufacturing in the state

Computer and electronic product and machinery manufacturing together employed more than 40,200 in 2011

The remaining 22 percent of advanced manufacturing employment is comprised of a group of industries producing goods such as glass and glass products, electrical equipment, transportation equipment, and medical instruments and devices

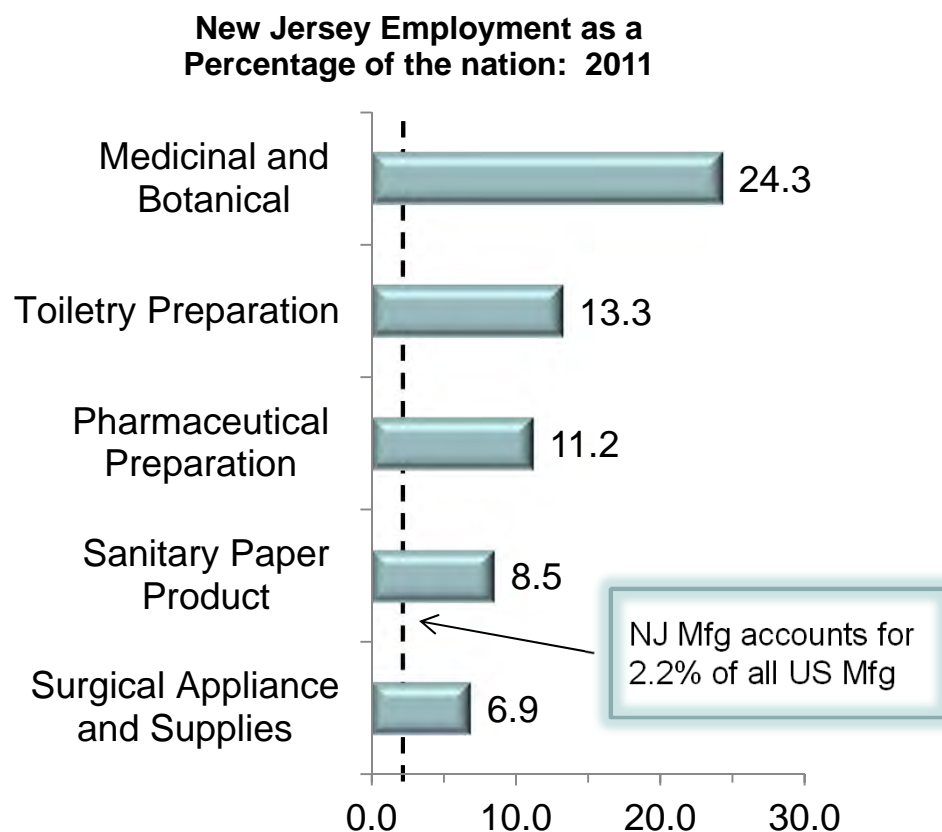
Source: NJLWD, Quarterly Census of Employment and Wages, Annual Average
Prepared by: New Jersey Department of Labor and Workforce Development
December 2012

**Employment Distribution of
Advanced Manufacturing
New Jersey: 2011**



- Chemical Manufacturing
- Machinery Manufacturing
- Computer and Electronic Product Manufacturing

These industries each employ a significant number of people in New Jersey and account for a large portion of industry employment in the nation in 2011



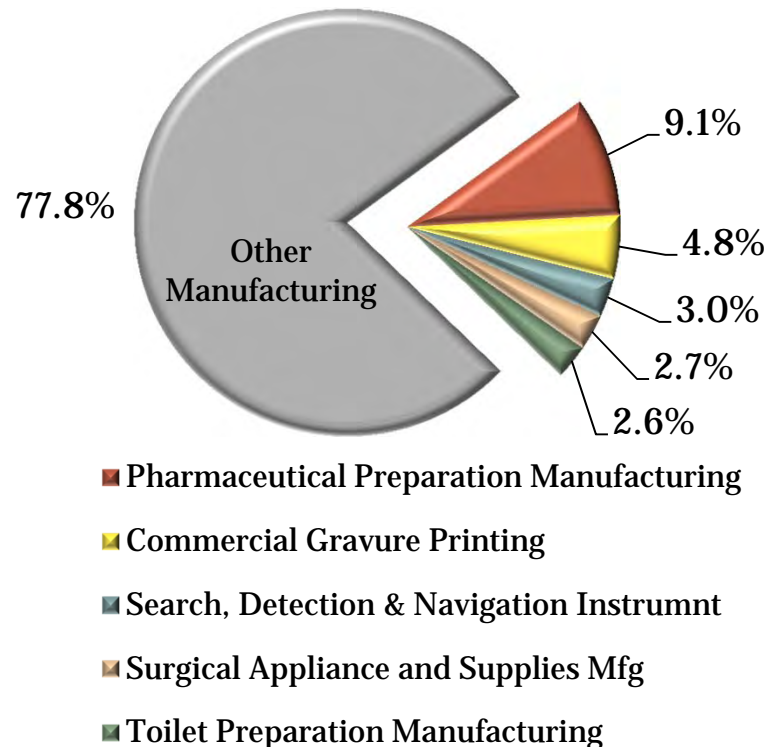
Chemical manufacturing in New Jersey, where the top three industries on this list are classified, accounts for 6.7 percent of chemical manufacturing employment in the nation

All but sanitary paper product manufacturing would be classified as advanced

Overall, New Jersey employed 2.6 percent of all advanced manufacturing in the nation

The five largest manufacturing industries make up over 22% of all manufacturing employment in the state in 2011

**Percentage of Industry's Employment
of All Manufacturing
New Jersey, 2011**



Pharmaceutical preparation accounts for one of every eleven manufacturing jobs in New Jersey, but less than 2 percent of all manufacturing jobs nationally

Among these five largest manufacturing industries, only commercial gravure printing is not considered to be advanced

Each of these industries earns a substantial average annual wage, ranging from \$56,800 for commercial gravure printing to \$139,600 for pharmaceutical preparation

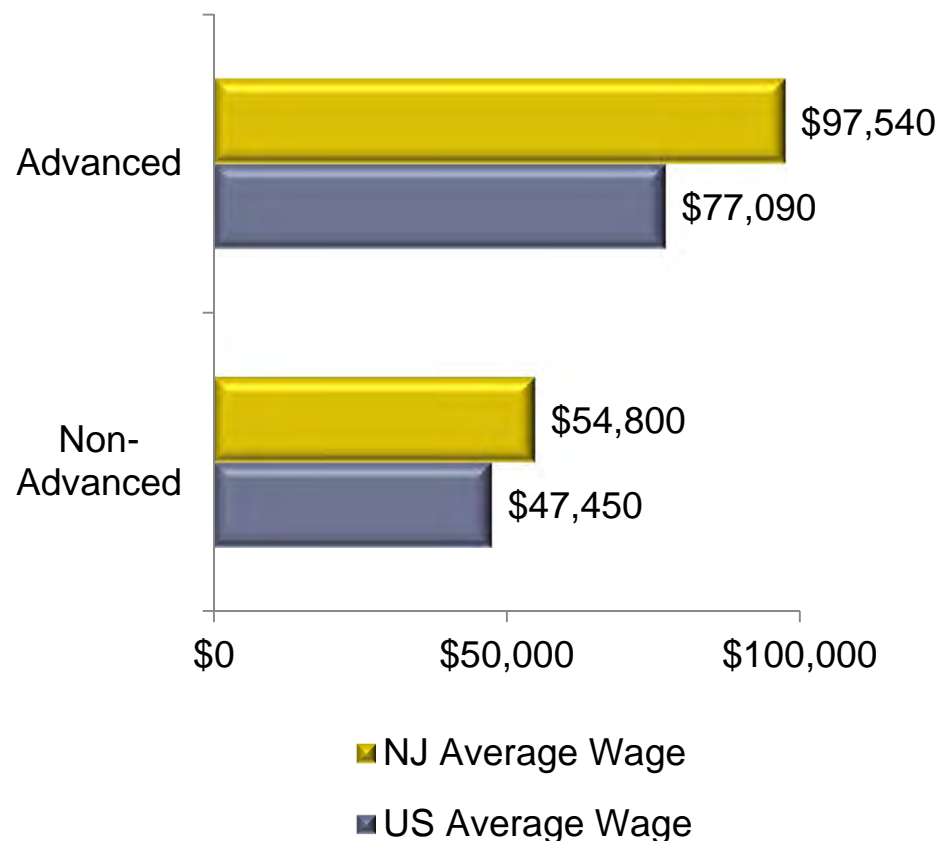
Average wages in New Jersey in 2011 among advanced manufacturing industries are about 78% more than those non-advanced manufacturing industries

From 2006 to 2011, annual average wages in New Jersey in advanced manufacturing have increased 3.4 percent per year compared to only 1.8 percent per year for non-advanced

Annual Average wages paid are 27 percent higher in New Jersey in 2011 than the nation among advanced manufacturing industries

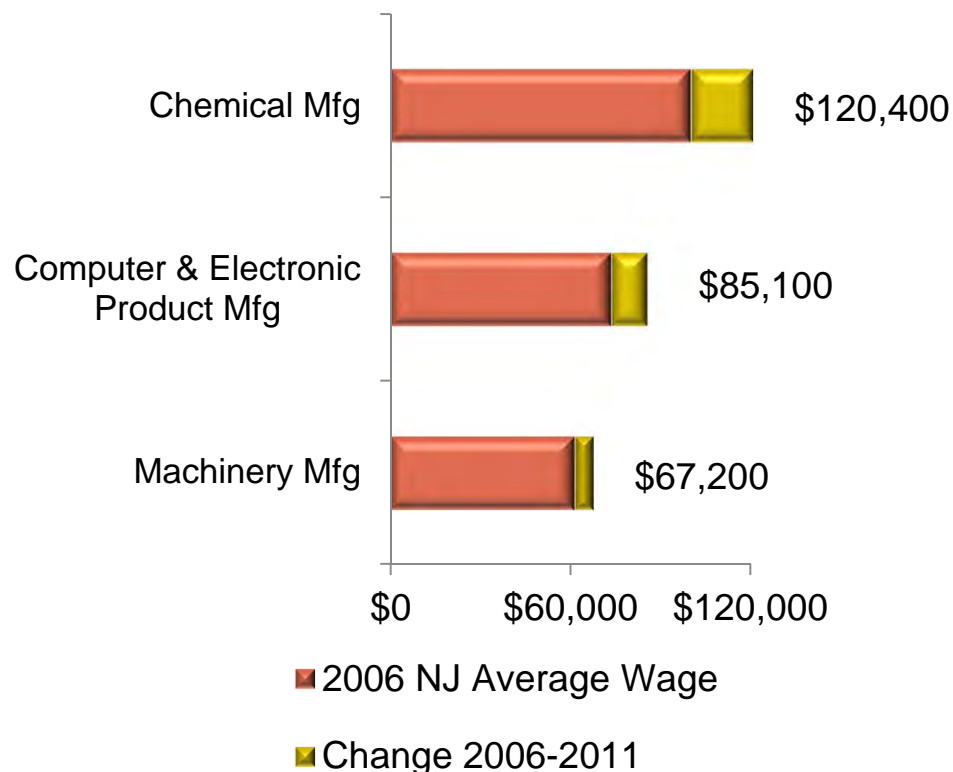
One of the highest paying industries in New Jersey, the advanced manufacturing industry earns about 71 percent more than the state average of \$56,900 in 2011

**Comparison of Annual Average Wages Among
Advanced and Non-advanced Manufacturing:
New Jersey & United States, 2011**



Average wages in New Jersey among the three main components of advanced manufacturing have averaged 3.3 annual growth from 2006 to 2011

**Average Wage of Major Components of
Advanced Manufacturing
New Jersey, 2011**



Each component of advanced manufacturing earns more than the state average of \$56,900 in 2011

The chemical manufacturing industry earned more than twice as much as the state average in 2011, and averaged annual increases of 3.8 percent from 2006 to 2011

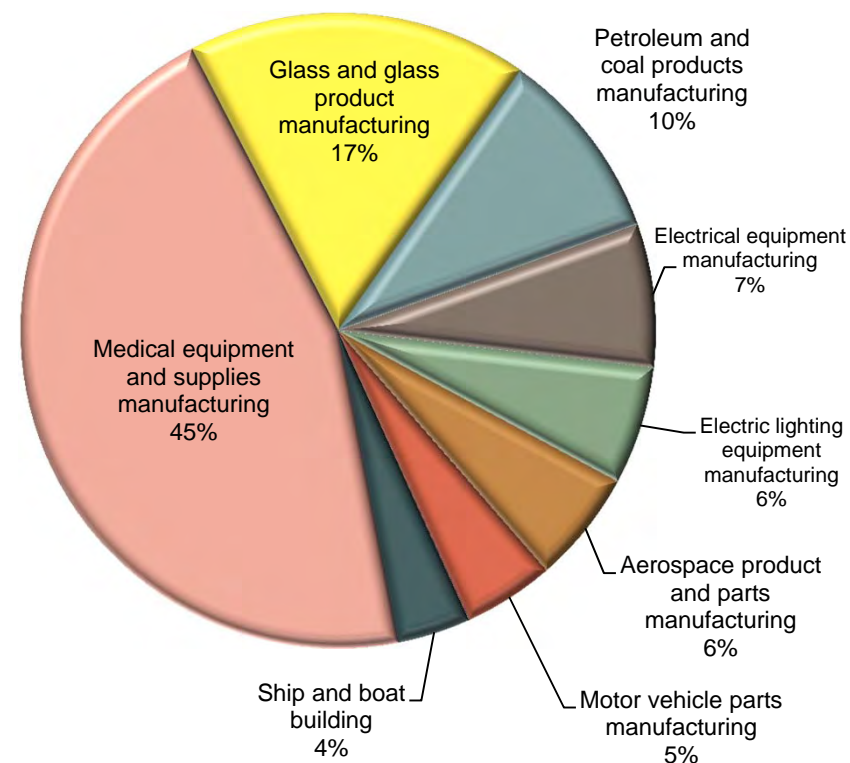
The higher annual average wages paid in both chemical and computer and electronic product manufacturing are reflective of the greater composition of jobs requiring higher educational levels

Eight detailed industries make up the roughly 27,100 workers employed in the “other” advanced manufacturing component

Nearly half of these “other” workers are employed in the medical equipment and supplies manufacturing industry, which tends to have very high annual average wages and are primarily located in northeast New Jersey

Glass and glass product manufacturing is a vital industry in New Jersey unique mainly to its southern counties

**Breakdown of Employment of “Other”
Advanced Manufacturing
New Jersey, 2011**



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

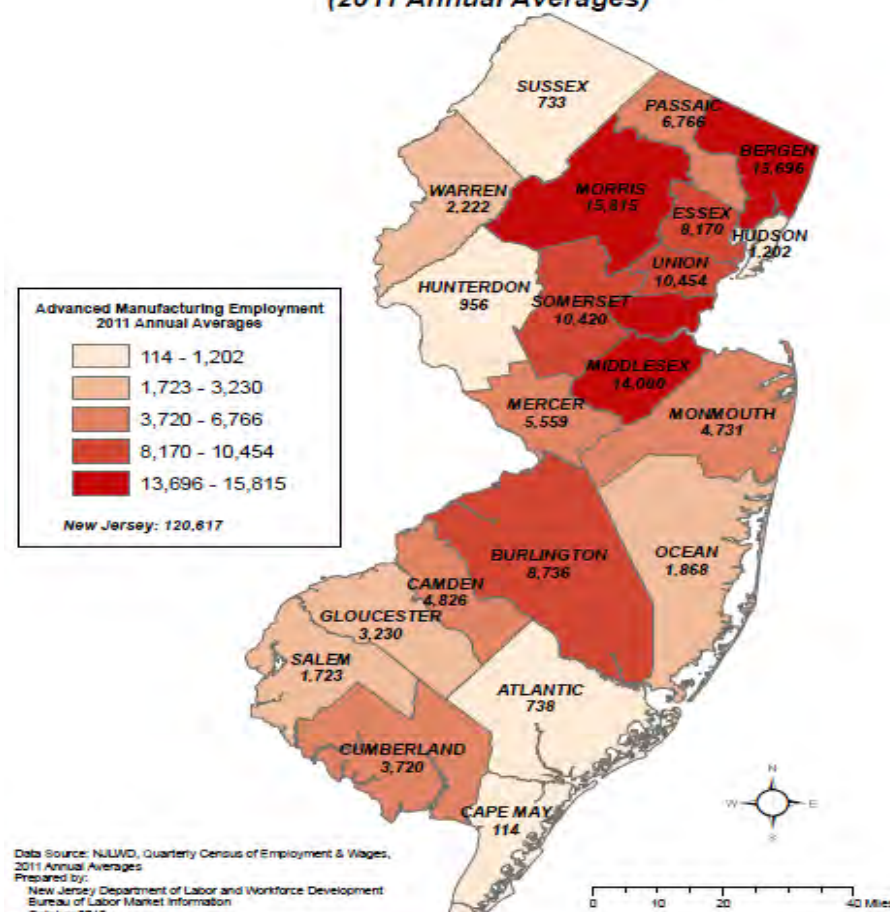
New Jersey offers unique business advantages including:

- 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

**Advanced Manufacturing Employment
New Jersey Counties
(2011 Annual Averages)**



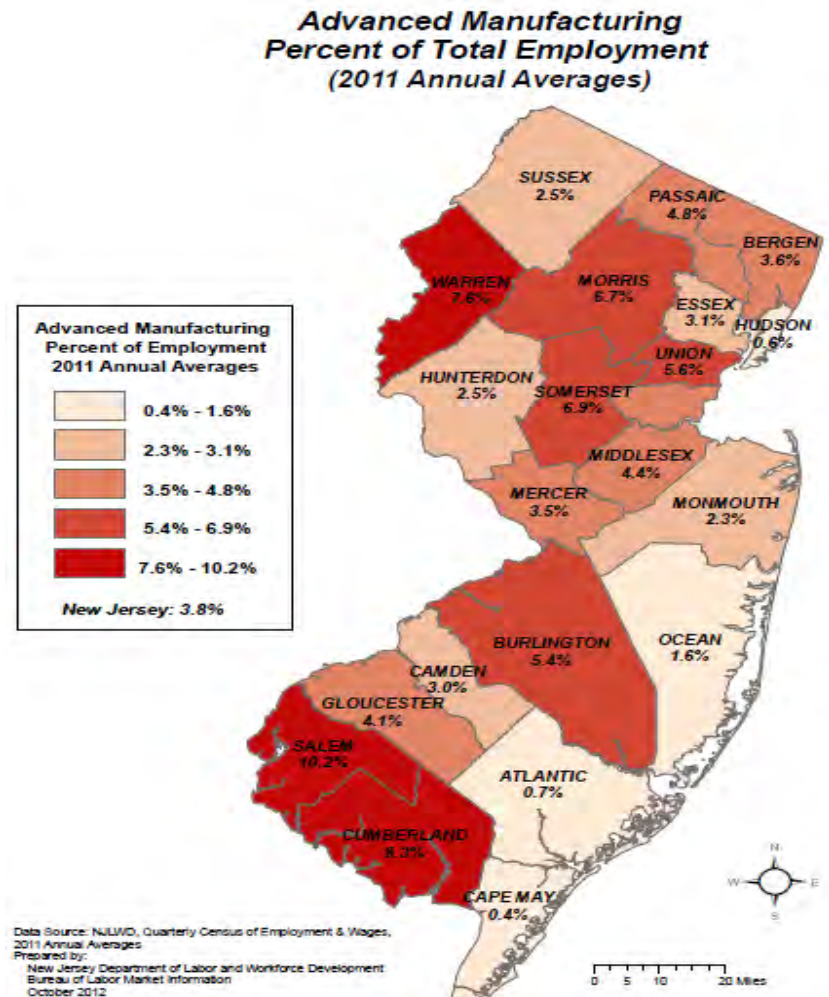
...however, advanced manufacturing in New Jersey's more sparsely populated counties make up a larger percentage of total private sector employment

Cumberland, Salem, and Warren counties have the largest shares of advanced manufacturing of total employment

Morris, Somerset, and Union counties are at the center of the chemical manufacturing employment base in New Jersey

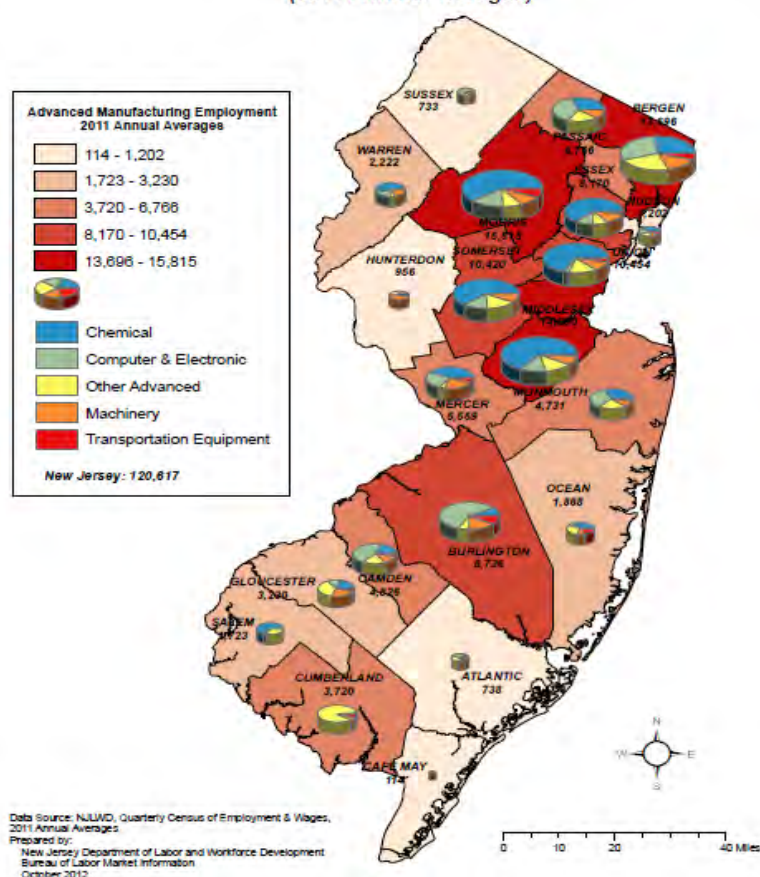
In the coastal counties of Ocean, Atlantic, and Cape May, less than 2 percent of employment is classified as advanced manufacturing

Source: NJLW, Quarterly Census of Employment and Wages, Annual Average
Prepared by: New Jersey Department of Labor and Workforce Development
December 2012



Industry components tend to group among one another within the advanced manufacturing cluster

**Advanced Manufacturing Employment by Industry Sector
New Jersey Counties
(2011 Annual Averages)**



Nearly 80 percent of all chemical manufacturing employment is found in these six counties in the northeastern region of New Jersey:

- Bergen
- Essex
- Somerset
- Union
- Morris
- Middlesex

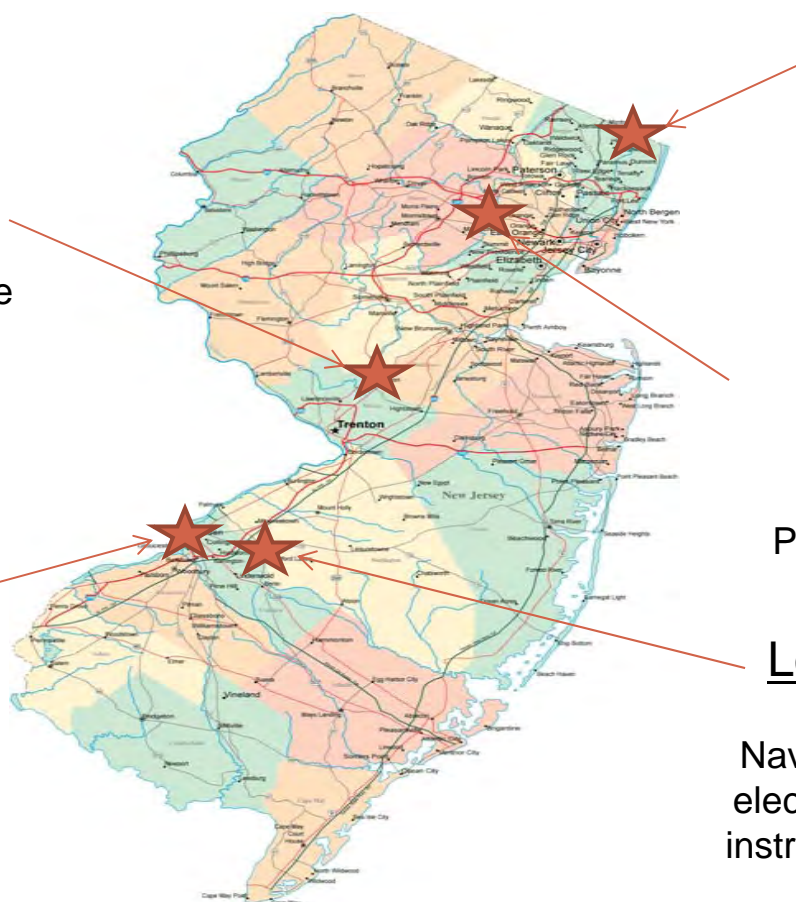
Nearly a third of all computer and electronic product manufacturing employment is found in the southern counties of Camden and Burlington

Cumberland county is the glass center of New Jersey, employing two-thirds of all glass product manufacturing workers in the state

Some examples of New Jersey's most well known advanced manufacturing companies

Bristol-Myers Squibb
Princeton, NJ
Pharmaceutical and medicine
manufacturing

L-3 Communications
Camden, NJ
Radio and television
broadcasting and wireless
communications equipment
manufacturing



**Crestron
Electronics**
Rockleigh, NJ
Semiconductor and
electronic component
manufacturing

**Novartis
Pharmaceuticals**
East Hanover, NJ
Pharmaceutical and medicine
manufacturing

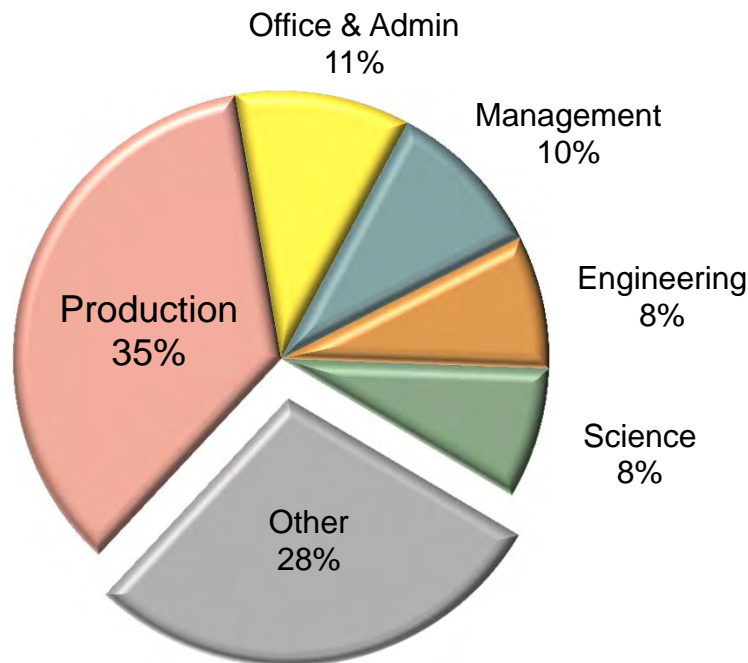
Lockheed Martin
Moorestown, NJ
Navigational, measuring,
electromedical and control
instruments manufacturing

Advanced Manufacturing

Occupational Analysis

More than 70% of all advanced manufacturing jobs are classified into these five groups

Breakdown of Major Occupational Groups within Advanced Manufacturing Industry: New Jersey, 2011



Greater than one-third of advanced manufacturing workers are directly involved with production

Roughly one out of six workers contributes to research and development as part of the engineering and science groups

The “other” 28 percent of advanced manufacturing occupations primarily consists of business, computer, material moving, and sales occupations

This list shows the top 20 occupations by employment in advanced manufacturing

Occupation	2011 Employment	Share of Industry	2011 Average Salary	Minimum Education Requirements
Total, All Occupations	120,690	100.0%	\$51,540	
Top 20 Occupations	48,656	40.3%	\$56,120	
Packaging and Filling Machine Operators	5,247	4.3%	\$27,250	High school diploma or equivalent
Supervisors of Production and Operating Workers	4,187	3.5%	\$62,400	Postsecondary non-degree award
Mixing and Blending Machine Setters	4,007	3.3%	\$37,220	High school diploma or equivalent
Electrical and Electronic Equipment Assemblers	3,561	3.0%	\$32,130	High school diploma or equivalent
Inspectors, Testers, Sorters, Samplers, and Weighers	3,289	2.7%	\$36,870	High school diploma or equivalent
Chemists	3,059	2.5%	\$78,640	Bachelor's degree
Team Assemblers	2,688	2.2%	\$26,430	High school diploma or equivalent
Wholesale Sales Representatives	2,160	1.8%	\$75,310	High school diploma or equivalent
Industrial Production Managers	2,123	1.8%	\$118,650	Bachelor's degree
Chemical Equipment Operators	1,826	1.5%	\$45,730	High school diploma or equivalent
Machinists	1,823	1.5%	\$44,680	High school diploma or equivalent
Shipping, Receiving, and Traffic Clerks	1,804	1.5%	\$32,500	High school diploma or equivalent
Chemical Technicians	1,799	1.5%	\$47,120	Associate's degree
Software Developers, Systems Software	1,742	1.4%	\$106,420	Bachelor's degree
Industrial Machinery Mechanics	1,729	1.4%	\$52,650	High school diploma or equivalent
Industrial Engineers	1,674	1.4%	\$81,400	Bachelor's degree
Electromechanical Equipment Assemblers	1,631	1.4%	\$34,010	High school diploma or equivalent
Mechanical Engineers	1,533	1.3%	\$88,260	Bachelor's degree
Biochemists and Biophysicists	1,419	1.2%	\$112,670	Doctoral or professional degree
Medical Scientists	1,355	1.1%	\$105,950	Doctoral or professional degree

Source: NJLWD, Occupational Employment Statistics Survey, May 2011
 Prepared by: New Jersey Department of Labor and Workforce Development
 December 2012



Production occupations

Skills, Knowledge and Abilities most important to the top 20 occupations found in advanced manufacturing

Skills	Knowledge	Abilities
Active listening Critical thinking Speaking Reading comprehension Monitoring Judgment and decision making Complex problem solving Time management Coordination Writing	Production and processing Mathematics English language Mechanical Customer and personal service Administration and management Education and training Computers and electronics Engineering and technology Clerical	Oral comprehension Oral expression Problem sensitivity Near vision Written comprehension Information ordering Deductive reasoning Speech clarity Speech recognition Inductive reasoning

****In addition to industry specific SKAs, effective communication is key****

Many of the occupations found in advanced manufacturing have moderate to high education/training requirements for entry

Total Number of Employment in Advanced Manufacturing by Minimum Education Requirement New Jersey, 2011

Education Requirement	2011 Employment	% of Total
00-0000 Total, All Occupations	120,690	100.0%
Total High Requirements	40,401	33.5%
Doctoral or professional degree	3,138	2.6%
Master's degree	184	0.2%
Bachelor's degree	30,184	25.0%
Associate's degree	6,895	5.7%
Total Moderate Requirements	5,050	4.2%
Postsecondary non-degree award	4,661	3.9%
Some college, no degree	389	0.3%
Total Low Requirements	67,599	56.0%
High school diploma or equivalent	60,929	50.5%
Less than high school	6,670	5.5%
Unavailable	7,640	6.3%

Scientists and engineers primarily account for the roughly one-third of the occupations found in advanced manufacturing that require at least an associate's degree for entry

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

Advanced Manufacturing

Closer Look at Components

Chemical Manufacturing

	Establishments	Employment	Employment Per Establishment
2006	915	70,408	77
2011	871	52,735	61
Change	-44	-17,673	-16

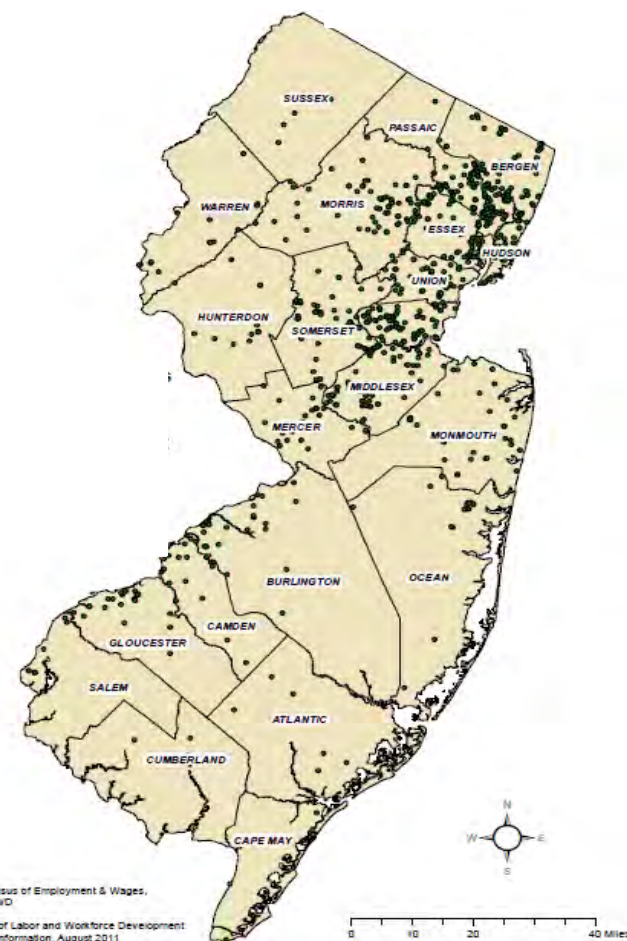
Chemical manufacturing declined from 2006-2011 both in the absolute number of establishments and also in the average employment per unit

Some well-known employers vital to New Jersey's economy include:

- Johnson & Johnson
- Bristol-Myers Squibb
- Hoffman-La Roche
- Colgate Palmolive
- Smith Kline Beecham
- Sanofi-Aventis
- Novartis
- L'Oreal
- Merck
- Pfizer

Source: NJLWD, Quarterly Census of Employment and Wages, Annual Average
Prepared by: New Jersey Department of Labor and Workforce Development
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Chemical Manufacturing Employers - 2011

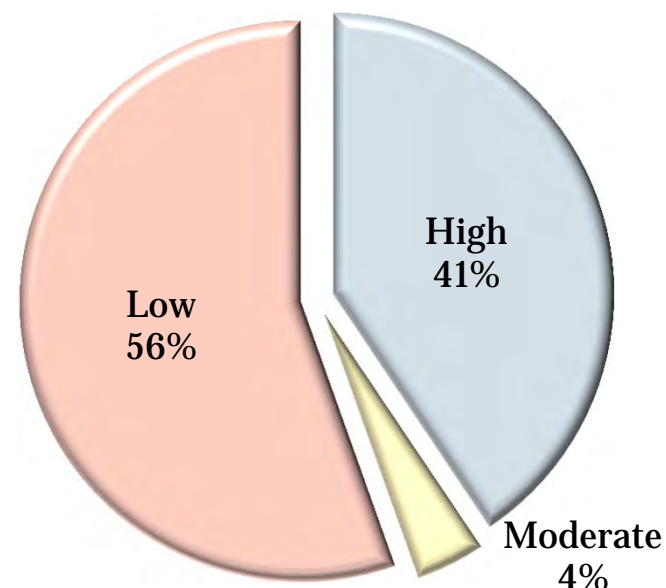


Occupations requiring **high levels of education** for entry make up 41% of chemical manufacturing. Nearly 30% require a bachelor's degree and almost 6% of the workforce requires at doctorate degree.

Nearly 4% have **moderate education** requirements. Production supervisors primarily make up this group.

The remaining 56% of the workforce require only **high school education or less**

Minimum Educational Requirements



Top Ten Occupations in Chemical Manufacturing

Occupation	Employment	Education Requirement	2011 Average Wage
Packaging and Filling Machine Operators	5,155	High school diploma or equivalent	\$ 27,250
Mixing and Blending Machine Setters	3,737	High school diploma or equivalent	\$ 37,220
Chemists	3,000	Bachelor's degree	\$ 78,640
Chemical Equipment Operators	1,823	High school diploma or equivalent	\$ 45,730
Chemical Technicians	1,744	Associate's degree	\$ 47,120
Supervisors of Production and Operating Workers	1,631	Postsecondary non-degree award	\$ 62,400
Biochemists and Biophysicists	1,419	Doctoral or professional degree	\$ 112,670
Medical Scientists	1,285	Doctoral or professional degree	\$ 105,950
Inspectors, Testers, Sorters, Samplers, and Weighers	1,204	High school diploma or equivalent	\$ 36,870
Industrial Machinery Mechanics	1,067	High school diploma or equivalent	\$ 52,650

Nearly 60% of all chemists and almost 50% of all biochemists and biophysicists in the state work for companies classified in chemical manufacturing

Computer and Electronic Manufacturing

	Establishments	Employment	Employment Per Establishment
2006	772	31,578	41
2011	745	26,185	35
Change	-27	-5,393	-6

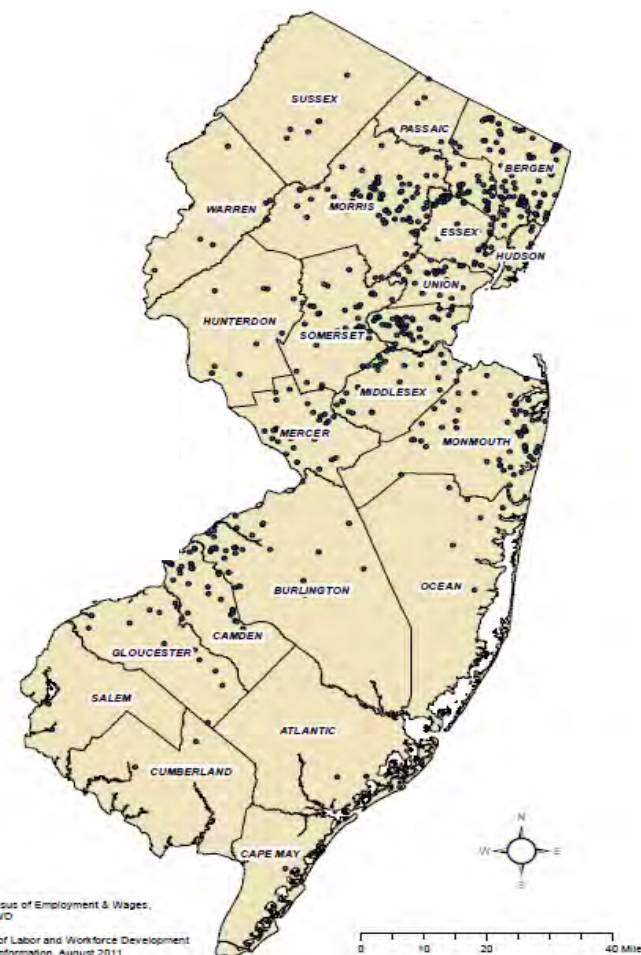
Computer and Electronic Manufacturing Employers - 2011

Among the three components, the number of establishments declined at the slowest rate in this industry

Some well-known employers vital to New Jersey's economy include:

- L-3 Communications
- Lockheed Martin
- Creston Electronics
- ITT Industries
- Smiths Detection
- Datascope
- BAE Systems
- Honeywell
- Anadigics
- Oticon

Source: NJLWD, Quarterly Census of Employment and Wages, Annual Average
Prepared by: New Jersey Department of Labor and Workforce Development
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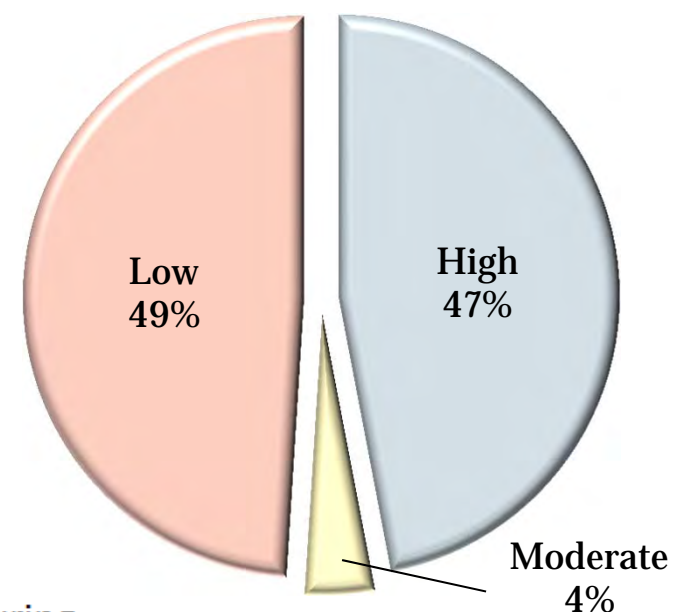
Data Source: Quarterly Census of Employment & Wages,
2010 Second Quarter, NJLWD
Prepared by:
New Jersey Department of Labor and Workforce Development
Bureau of Labor Market Information, August 2011

Occupations requiring **high levels of education** for entry make up 47% of computer and electronic product manufacturing. More than 35% require at least a bachelor's degree.

Roughly 4% have **moderate education** requirements. Production supervisors and maintenance and repair work primarily make up this group.

The remaining 49% of the workforce require only **a high school education or less**.

Minimum Educational Requirements



Top Ten Occupations in Computer and Electric Product Manufacturing

Occupation	Employment	Education Requirement	2011 Average Wage
Electrical and Electronic Equipment Assemblers	2,277	High school diploma or equivalent	\$ 32,130
Software Developers, Systems Software	1,731	Bachelor's degree	\$ 106,420
Electromechanical Equipment Assemblers	1,155	High school diploma or equivalent	\$ 34,010
Inspectors, Testers, Sorters, Samplers, and Weighers	1,116	High school diploma or equivalent	\$ 36,870
Electronics Engineers	825	Bachelor's degree	\$ 106,020
Electrical and Electronic Engineering Technicians	792	Associate's degree	\$ 59,650
Electrical Engineers	784	Bachelor's degree	\$ 88,460
Supervisors of Production and Operating Workers	704	Postsecondary non-degree award	\$ 62,400
Team Assemblers	695	High school diploma or equivalent	\$ 26,430
Mechanical Engineers	695	Bachelor's degree	\$ 88,260

Engineering and production occupations account for more than half of all employment in this industry.

Machinery Manufacturing

	Establishments	Employment	Employment Per Establishment
2006	866	16,979	20
2011	783	14,038	18
Change	-83	-2,941	-2

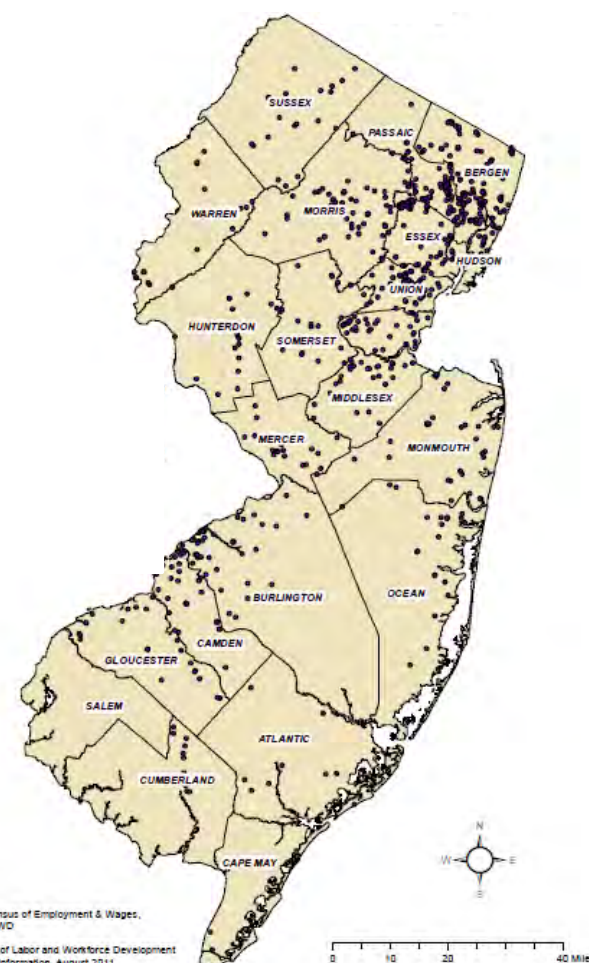
Machinery manufacturing lost the most establishments from 2006-2011

Employment also declined an average of 3.7% per year

As a result, many of the establishments in this component are relatively small and dispersed throughout the state, have less popularity or name recognition, and more commonly serve their locality instead of a broader market

Source: NJLWD, Quarterly Census of Employment and Wages, Annual Average
Prepared by: New Jersey Department of Labor and Workforce Development
December 2012

Machinery Manufacturing Employers - 2011

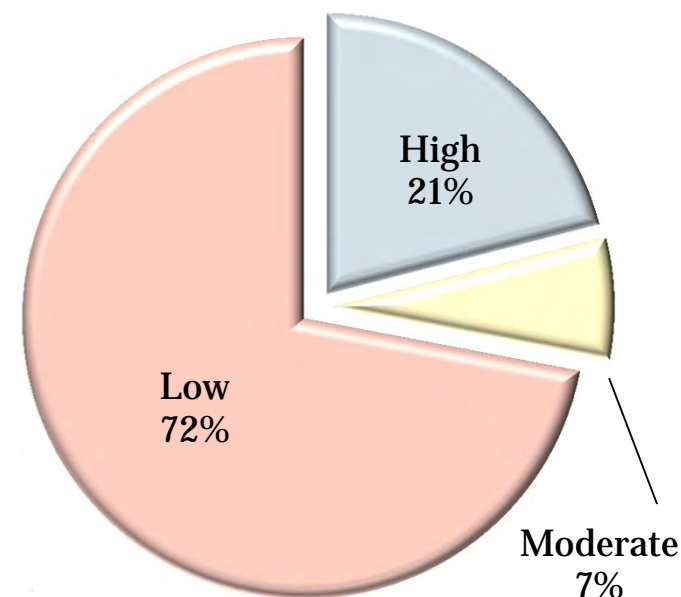


Occupations requiring **high levels of education** for entry make up 21% of machinery manufacturing. Most of this group are classified as either engineering or computer occupations.

Nearly 7% have **moderate education** requirements. Production supervisors primarily make up this group.

The remaining 72% of the workforce require only **a high school education or less**.

Minimum Educational Requirements



Top Ten Occupations in Machinery Manufacturing

Occupation	Employment	Education Requirement	2011 Average Wage
Machinists	1,213	High school diploma or equivalent	\$ 44,680
Supervisors of Production and Operating Workers	832	Postsecondary non-degree award	\$ 62,400
Team Assemblers	594	High school diploma or equivalent	\$ 26,430
Wholesale Sales Representatives	592	High school diploma or equivalent	\$ 75,310
Electrical and Electronic Equipment Assemblers	474	High school diploma or equivalent	\$ 32,130
Computer-Controlled Machine Tool Operators	425	High school diploma or equivalent	\$ 45,510
Engine and Other Machine Assemblers	413	High school diploma or equivalent	\$ 34,960
Welders, Cutters, Solderers, and Brazers	409	High school diploma or equivalent	\$ 41,670
Electromechanical Equipment Assemblers	406	High school diploma or equivalent	\$ 34,010
Mechanical Engineers	359	Bachelor's degree	\$ 88,260

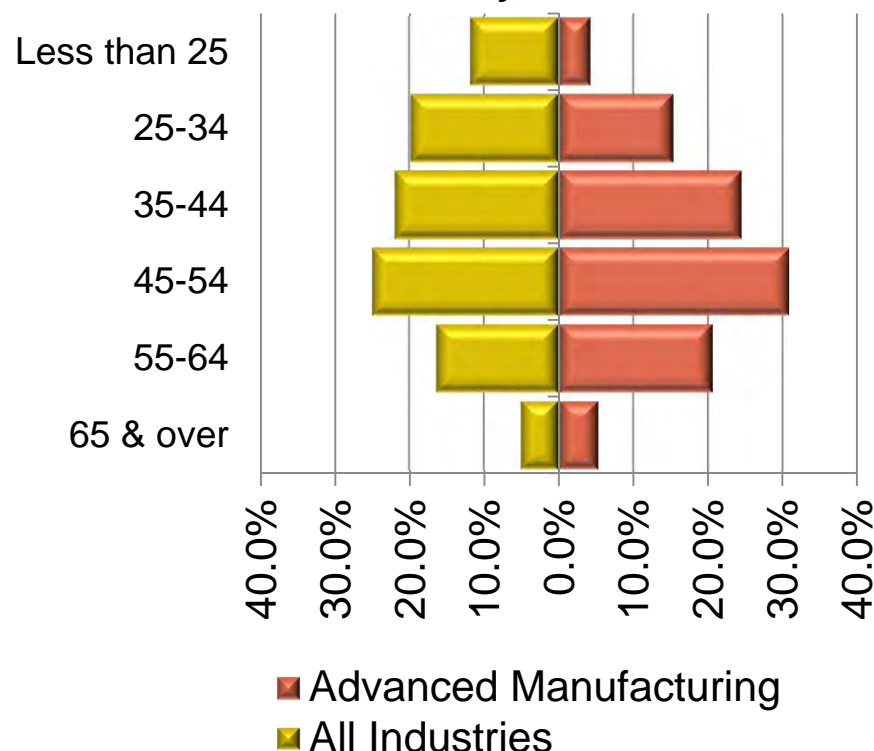
Many of the occupations on this list have low *minimum* educational and training requirements for entry, but are filled by workers with vast levels of experience

Advanced Manufacturing

Demographic profile

The age breakdown of NJ residents working in the advanced manufacturing industries differs significantly from the overall economy

**Age Breakdown of Workers in
Advanced Manufacturing Industry
New Jersey, 2011**



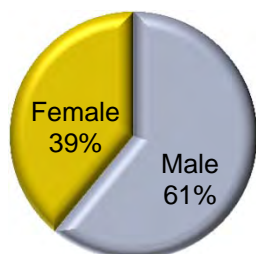
Only 4 percent of the workforce is under 25 years of age compared to almost 12 percent overall

Advanced manufacturing's workforce is very middle-aged heavy, with nearly 55 percent of all workers compared to about 47 percent overall

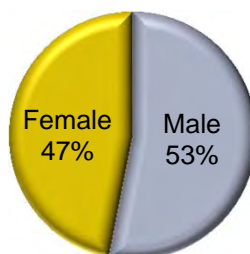
There is a greater proportion of the workforce aged 55 and older in advanced manufacturing compared to the overall economy, 25 and 21 percent, respectively

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

Advanced Manufacturing



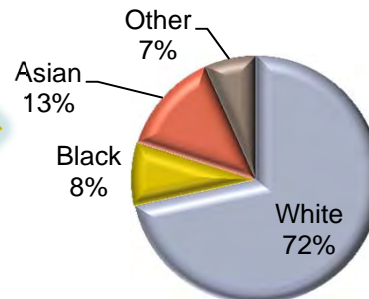
All Industries



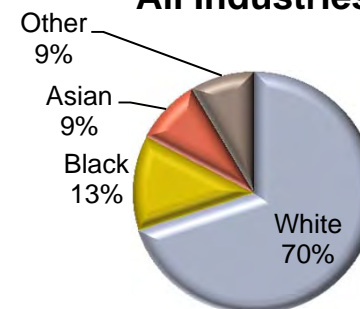
There are nearly two males for every female working in advanced manufacturing industries

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

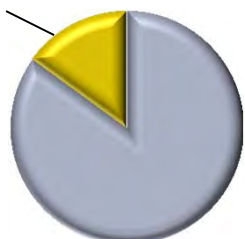
Advanced Manufacturing



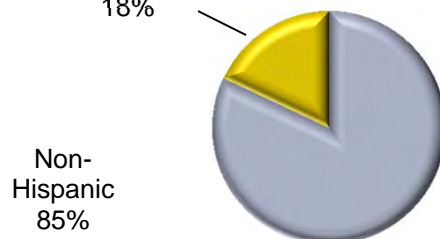
All Industries



Hispanic 15%



Hispanic 18%



Advanced Manufacturing

All Industries

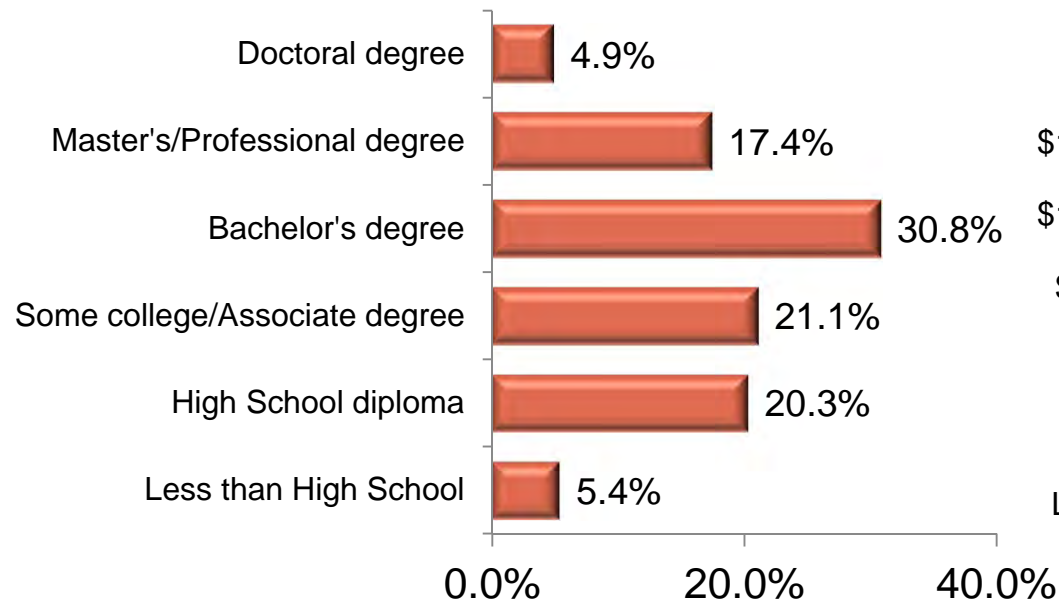
The Hispanic population is slightly less among advanced manufacturing industries

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

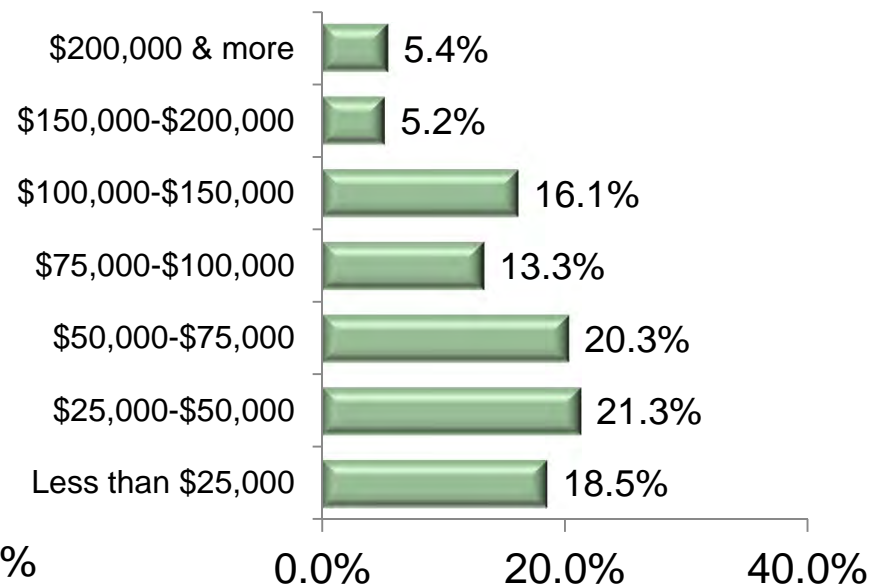
More than 53% of the workforce reported that they have earned at least a bachelor's degree, while...

...more than 60% of the workforce claimed to have earned wages above \$50,000

Education Level



Average Wage

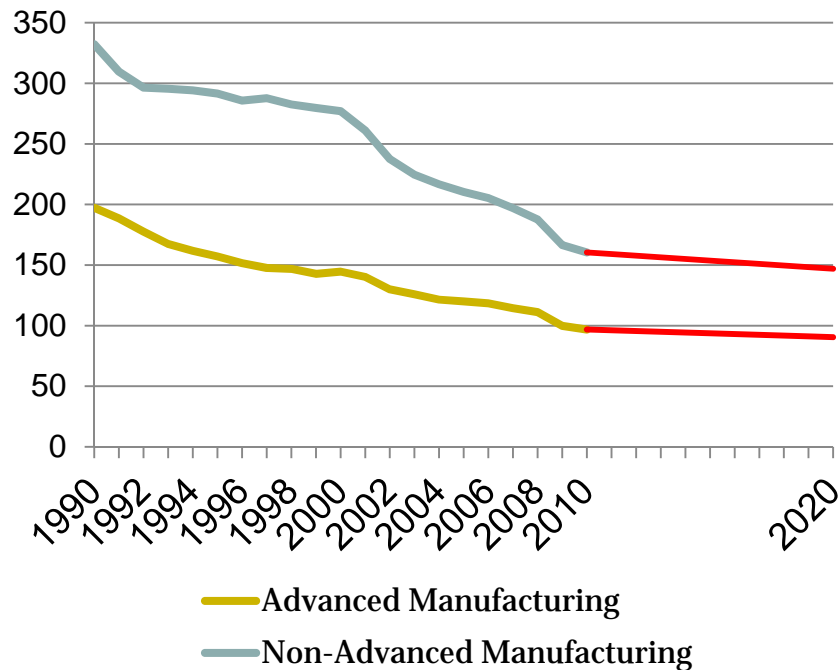


Advanced Manufacturing

Outlook

Manufacturing employment in New Jersey has been declining for decades, but the losses are projected to slow

**Actual and Projected Employment in
Advanced and Non-Advanced
Manufacturing (thousands):
New Jersey, 1990-2020**



Manufacturing has shed over 275,000 jobs in New Jersey from 1990-2011, a 3.4% annual decline

From 2010 through 2020, declines are projected to slow in advanced and non-advanced manufacturing industries to -0.7 and -0.9 percent per year, respectively

Despite these consistent employment declines, output, by Gross Domestic Product, had remained steady from 1997 to 2007 before succumbing to recessionary pressures

The recession that began in late 2007 had strong effects on advanced manufacturing, particularly the chemical manufacturing sub-sector, and GDP dropped nearly 25% over those two years

Contact Information

New Jersey Department of
Labor and Workforce Development

<http://lwd.dol.state.nj.us>

Jason Timian
Labor Market Analyst
Tel: 609-633-0553
E-mail: jason.timian@dol.state.nj.us