New Jersey's Advanced Manufacturing Cluster

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Bureau of Labor Market Information

Summer, 2012

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

nj.gov/labor

Overview

There nearly 3,400 establishments in New Jersey that employ more than 122,000 people in the advanced manufacturing cluster. 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.

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.

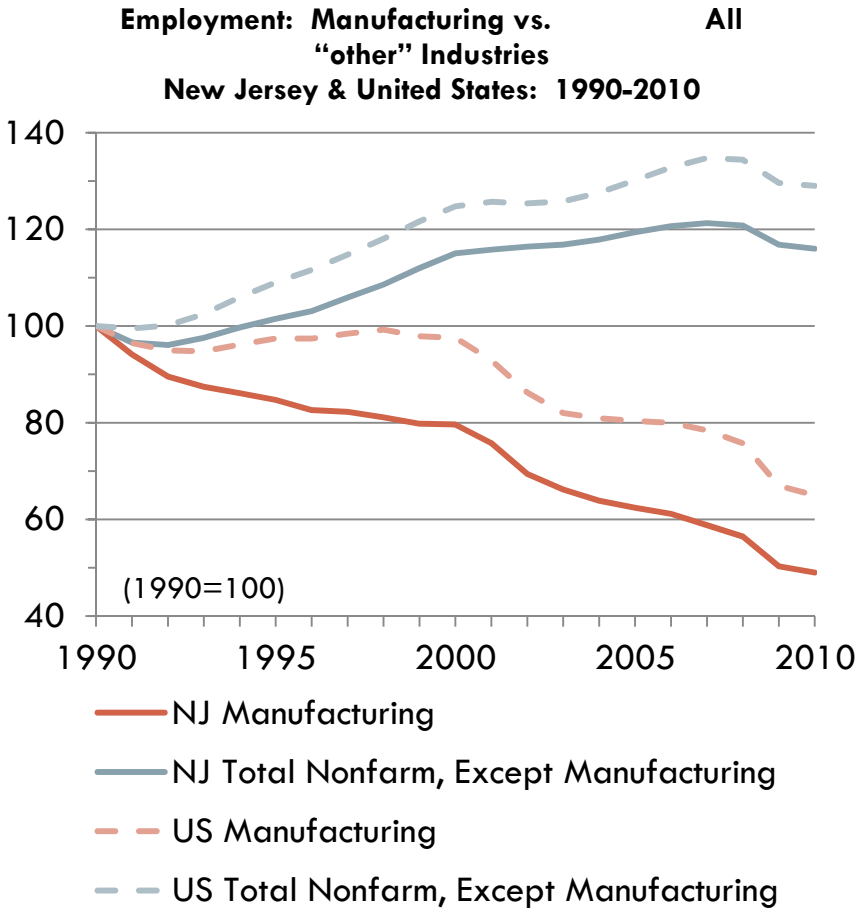
New Jersey Advanced Manufacturing Highlights

- The advanced manufacturing industry cluster contributed over $17 billion to the Gross Domestic Product in 2009, or about 3.6 percent of all output
- New Jersey employs the third most people in chemical manufacturing, the state's largest segment of advanced manufacturing, 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 $55,700
- Advanced manufacturing establishment employers paid nearly $11.8 billion in total wages in 2010, or about 6.8 percent of all wages paid

Advanced Manufacturing

Industry Analysis

New Jersey has followed a similar employment trend as the nation, but has fared worse over the last 20 years



Source: Current Employment Statistics
Prepared by: New Jersey Department of Labor and Workforce Development
December 2011

Manufacturing has lost nearly 272,000 jobs in New Jersey since 1990, a 3.5% annual decline, while the nation has declined at a 2.1 annual rate, shedding nearly 6.2 million jobs

The "other" non-agricultural industries posted a net gain of 491,200 jobs in New Jersey, while the United States added about 26.5 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

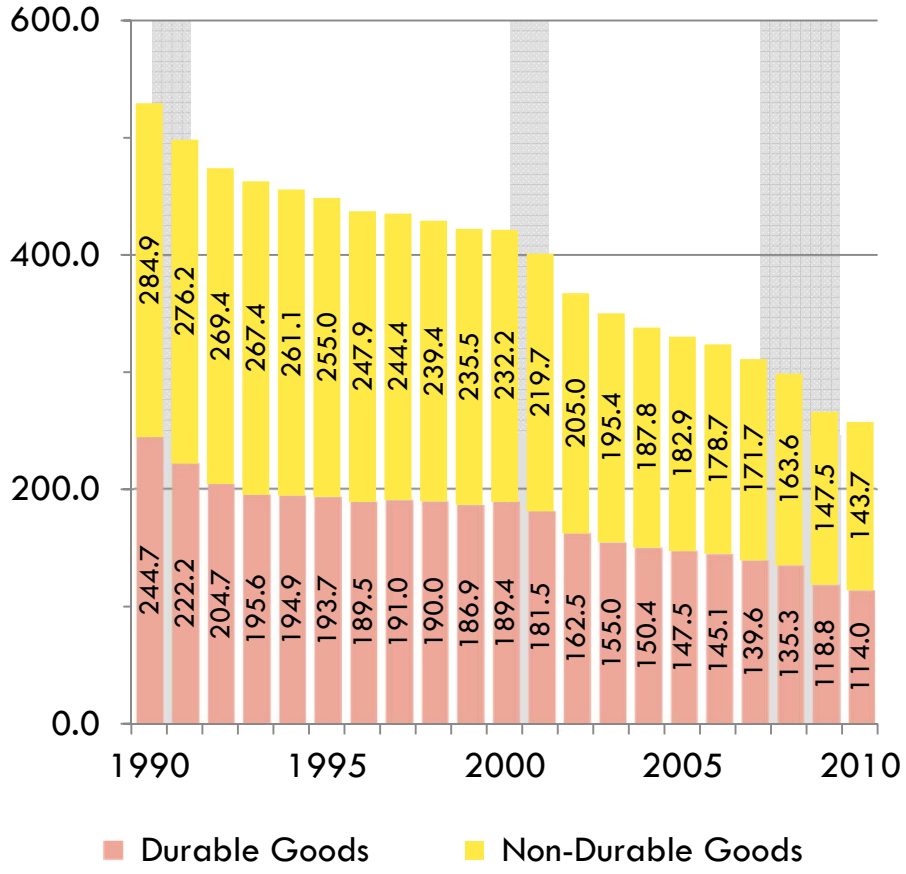
Manufacturing employment in New Jersey has declined from 14.6% of all jobs in 1990 to 6.7% in 2010

Nationally, manufacturing's share of total employment has declined from 16.2% in 1990 to 8.9% in 2010

Widespread and consistent losses among industries that manufacture both durable and non-durable goods have resulted in closely distributed annual average losses of 3.7 and 3.4 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 271,800 total jobs losses occurred, an average rate of decline of more than 6% per year

Employment breakdown
Durable vs. Non-durable Goods
New Jersey: 1990-2010



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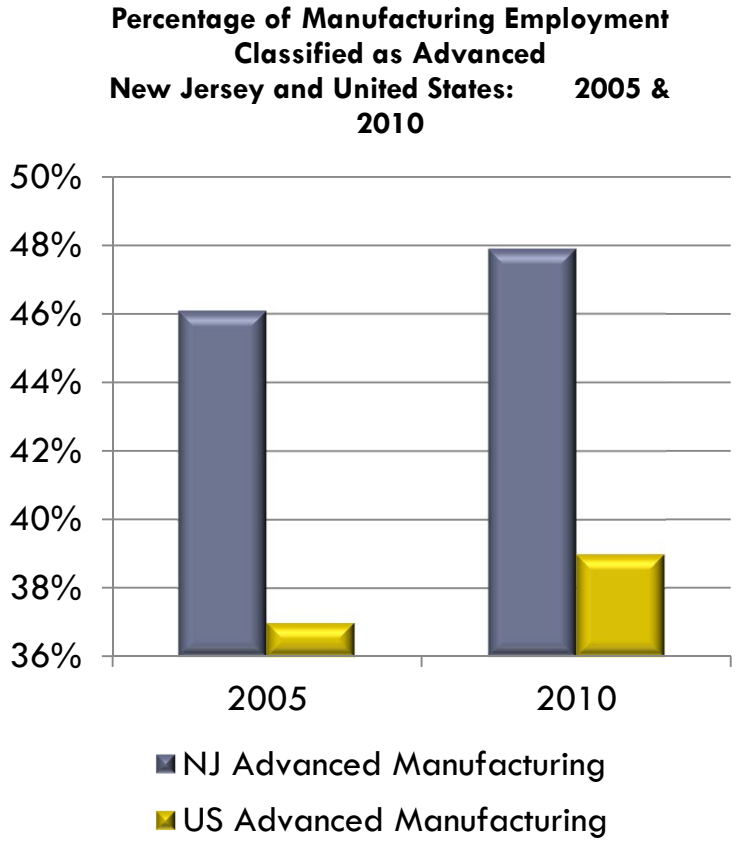
The New Jersey Department of Labor and Workforce Development has classified 151 out of 473 NAICS-based manufacturing industries as advanced



Source: Quarterly Census of Employment and Wages
Prepared by: New Jersey Department of Labor and Workforce Development
December 2011

Employment in advanced manufacturing industries declined at a lesser rate in New Jersey and the nation from 2005 to 2010, 3.8 and 3.2 percent, respectively, than its non-advanced counterpart (5.6 & 4.8 percent)

In 2010, there were more than 122,000 people employed in industries classified as advanced manufacturing in New Jersey

Nearly 48 percent of all manufacturing employment in New Jersey occurred in advanced industries in 2010 versus only 39 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

Source: North American Industry Classification System (NAICS)
Prepared by: New Jersey Department of Labor and Workforce Development
December 2011

The complete list of 151 detailed NAICS classified as advanced manufacturing

325110 Petrochemical Mfg.
325120 Industrial Gas Mfg.
325131 Inorganic Dye and Pigment Mfg.
325132 Synthetic Dye and Pigment Mfg.
325181 Alkalies and Chlorine Mfg.
325182 Carbon Black Mfg.
325188 All Other Basic Inorganic Chemicals
325191 Gum and Wood Chemical Mfg.
325192 Cyclic Crude and Intermediate Mfg.
325193 Ethyl Alcohol Mfg.
325199 All Other Basic Organic Chemicals
325211 Plastics Material & Resin Mfg.
325212 Synthetic Rubber Mfg.
325221 Cellulosic Organic Fiber Mfg.
325222 Noncellulosic Organic Fiber Mfg.
325311 Nitrogenous Fertilizer Mfg.
325312 Phosphatic Fertilizer Mfg.
325314 Fertilizer (Mixing Only) Mfg.
325320 Agricultural Chemicals Exc. Fertilizer
325411 Medicinal and Botanical Mfg.
325412 Pharmaceutical Preparation Mfg.
325413 In-Vitro Diagnostic Substance Mfg.
325414 Other Biological Product Mfg.
325510 Paint and Coating Mfg.
325520 Adhesive Mfg.
325611 Soap and Other Detergent Mfg.
325612 Polish and Sanitation Good Mfg.
325613 Surface Active Agent Mfg.
325620 Toilet Preparation Mfg.
325910 Printing Ink Mfg.
325920 Explosives Mfg.
325991 Custom Compounding of Purchased Resins
325992 Photographic Film and Chemicals
325998 Other Miscellaneous Chemicals Mfg.
333111 Farm Machinery & Equipment Mfg.
333112 Lawn and Garden Equipment Mfg.
333120 Construction Machinery Mfg.
333131 Mining Machinery and Equipment Mfg.
333132 Oil and Gas Field Machinery & Equipment
333210 Sawmill and Woodworking Machinery
333220 Plastics and Rubber Industry Machinery
333291 Paper Industry Machinery Mfg.
333292 Textile Machinery Mfg.
333293 Printing Machinery and Equipment
333294 Food Product Machinery Mfg.
333295 Semiconductor Machinery Mfg.
333298 All Other Industrial Machinery Mfg.
333311 Automatic Vending Machine Mfg.
333312 Commercial Laundry/Drycleaning Machinery
333313 Office Machinery Mfg.
333314 Optical Instrument & Lens Mfg.
333315 Photographic and Photocopying Equipment
333319 Other Commercial and Service Machinery
333411 Air Purification Equipment Mfg.
333412 Industrial & Commercial Fans & Blowers
333414 Heating Equipment, ex. Warm Air Furnaces
333415 AC, Refrigeration, & Forced Air Heating
333511 Industrial Mold Mfg.
333512 Metal Cutting Machine Tool Mfg.
333513 Metal Forming Machine Tool Mfg.
333514 Special Tools, Dies, Jigs, and Fixtures
333515 Machine Tool Cutters and Accessories
333516 Rolling Mill Machinery and Equipment
333518 Other Metalworking Machinery Mfg.
333611 Turbine Generator & Generator Set Units
333612 Speed Changer, Drive, and Gear Mfg.
333613 Mechanical Power Transmission Equipment
333618 Other Engine Equipment Mfg.
333911 Pump and Pumping Equipment Mfg.
333912 Air and Gas Compressor Mfg.
333913 Measuring and Dispensing Pump Mfg.
333921 Elevator and Moving Stairway Mfg.
333922 Conveyor and Conveying Equipment
333923 Overhead Cranes, Hoists and Monorails
333924 Industrial Truck, Trailers, and Stackers
333991 Power-Driven Handtool Mfg.
333992 Welding and Soldering Equipment Mfg.
333993 Packaging Machinery Mfg.
333994 Industrial Process Furnace & Oven Mfg.
333995 Fluid Power Cylinders and Actuators
333996 Fluid Power Pump and Motor Mfg.
333997 Scale & Balance Mfg.
333999 All Other Miscellaneous General Purpose Machinery
334111 Electronic Computer Mfg.
334112 Computer Storage Device Mfg.
334113 Computer Terminal Mfg.
334119 Other Computer Peripheral Equipment
334210 Telephone Apparatus Mfg.
334220 Radio & TV Broadcast & Wireless Communication
334290 Other Communications Equipment Mfg.
334310 Audio and Visual Equipment Mfg.
334411 Electron Tube Mfg.
334412 Bare Printed Circuit Board Mfg.
334413 Semiconductor and Related Devices
334414 Electronic Capacitor Mfg.
334415 Electronic Resistor Mfg.
334416 Electronic Coils, Transformer & Inductor
334417 Electronic Connector Mfg.
334418 Printed Circuit Assemblies
334419 Other Electronic Component Mfg.
334510 Electromedical Apparatus Mfg.
334511 Search, Detection & Navigation Instrumnt
334512 Automatic Environmental Control Mfg.
334513 Industrial Process Variable Instruments
334514 Fluid Meters and Counting Devices
334515 Electricity & Signal Testing Instrument Mfg.
334516 Analytical Laboratory Instruments
334517 Irradiation Apparatus Mfg.
334518 Watch, Clock, and Part Mfg.
334519 Other Measuring and Controlling Devices
334611 Software Reproducing
334612 Audio and Video Media Reproduction
334613 Magnetic and Optical Media Mfg.
324110 Petroleum Refineries
327211 Flat Glass Mfg.
327212 Other Pressed & Blown Glass/Glassware
327213 Glass Container Mfg.
327215 Purchased Glass Product Mfg.
335110 Electric Lamp Bulb & Part Mfg.
335121 Residential Electric Lighting Fixtures
335122 Nonresidential Electric Lighting Fixture
335129 Other Lighting Equipment Mfg.
335311 Electric Power & Specialty Transformers
335312 Motor and Generator Mfg.
335313 Switchgear and Switchboard Apparatus
335314 Relay & Industrial Control Mfg.
336311 Carburetors, Pistons, Rings, and Valves
336312 Gasoline Engines and Engine Parts
336321 Vehicular Lighting Equipment Mfg.
336322 Other Motor Vehicle Electrical Equipment
336330 Motor Vehicle Steering/Suspension Parts
336340 Motor Vehicle Brake System Mfg.
336350 Motor Vehicle Power Train Components
336360 Motor Vehicle Seating and Interior Trim
336370 Motor Vehicle Metal Stamping
336391 Motor Vehicle Air-Conditioning Mfg.
336399 All Other Motor Vehicle Parts Mfg.
336411 Aircraft Mfg.
336412 Aircraft Engine and Engine Parts
336413 Other Aircraft Parts and Equipment
336414 Guided Missiles and Space Vehicles
336415 Space Vehicle Propulsion Units and Parts
336419 Other Guided Missile/Space Vehicle Parts
336611 Ship Building and Repairing
336612 Boat Building
339111 Laboratory Apparatus and Furniture
339112 Surgical and Medical Instrument Mfg.
339113 Surgical Appliance and Supplies Mfg.
339114 Dental Equipment and Supplies Mfg.
339115 Ophthalmic Goods Mfg.
339116 Dental Laboratories

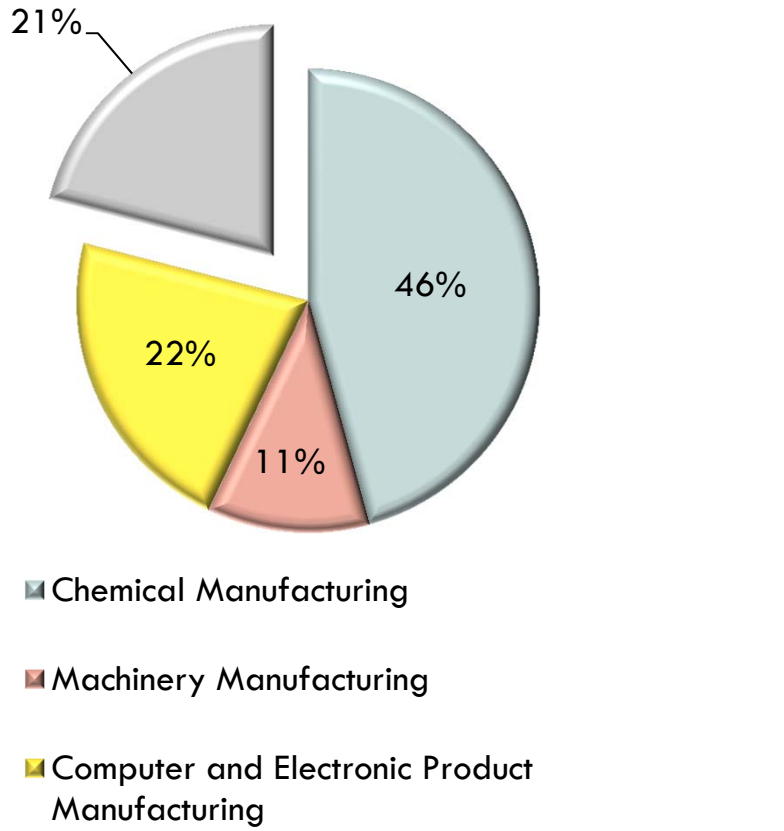
The three major components of advanced manufacturing account for nearly 80% of its workforce in New Jersey in 2010

Chemical manufacturing, which includes pharmaceuticals and medicine, employed over 56,000 in 2010, which is greater than 21 percent of all manufacturing in the state

Computer and electronic product and machinery manufacturing together employed nearly 41,700 in 2010

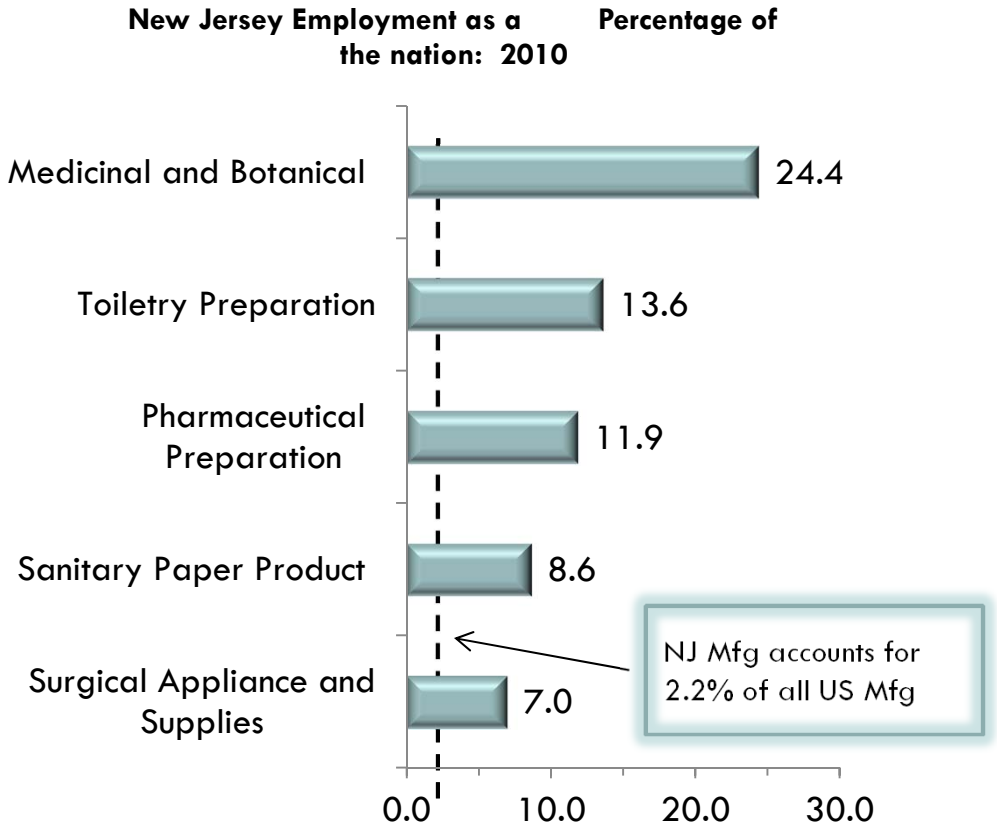
The remaining 21 percent of advanced manufacturing employment is comprised of a group of industries producing goods such as glass and glass products, electrical equipment, transportation equipment, and medical instruments and devices

Employment Distribution of Advanced Manufacturing
New Jersey: 2010



Source: Quarterly Census of Employment and Wages
Prepared by: New Jersey Department of Labor and Workforce Development
December 2011

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



Chemical manufacturing in New Jersey, where the top three industries on this list are classified, accounts for over 7 percent chemical manufacturing employment in the nation

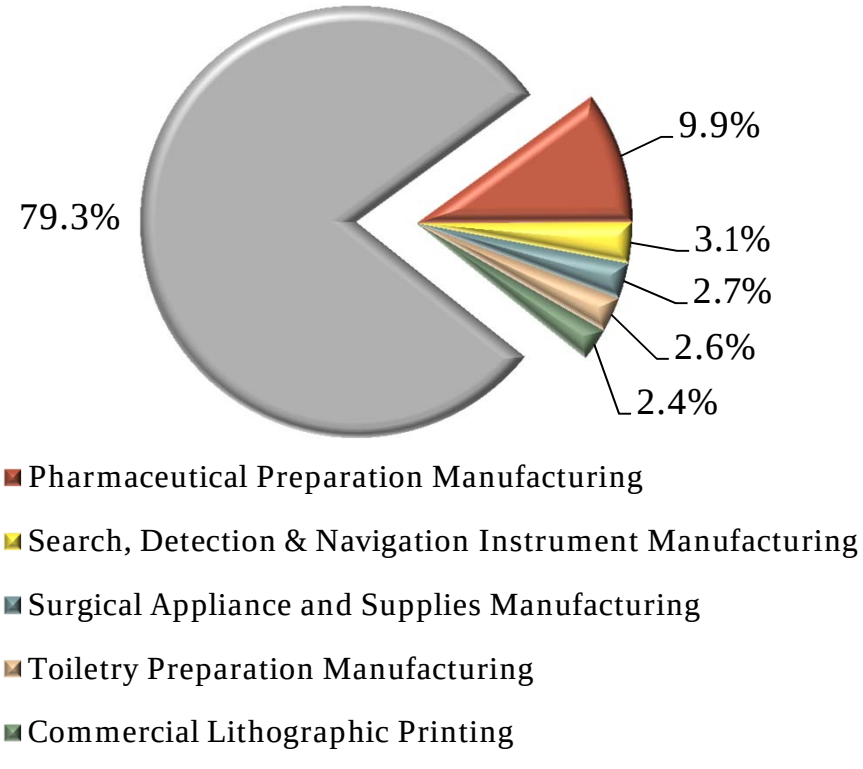
All but sanitary paper product manufacturing would be classified as advanced

Overall, New Jersey employed 2.7 percent of all advanced manufacturing in the nation

Source: Quarterly Census of Employment and Wages
Prepared by: New Jersey Department of Labor and Workforce Development
December 2011

The five largest manufacturing industries make up over 20% of all manufacturing employment in the state

Percentage of Industry's Employment of All Manufacturing New Jersey, 2009



Source: Quarterly Census of Employment and Wages
Prepared by: New Jersey Department of Labor and Workforce Development
December 2011

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

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

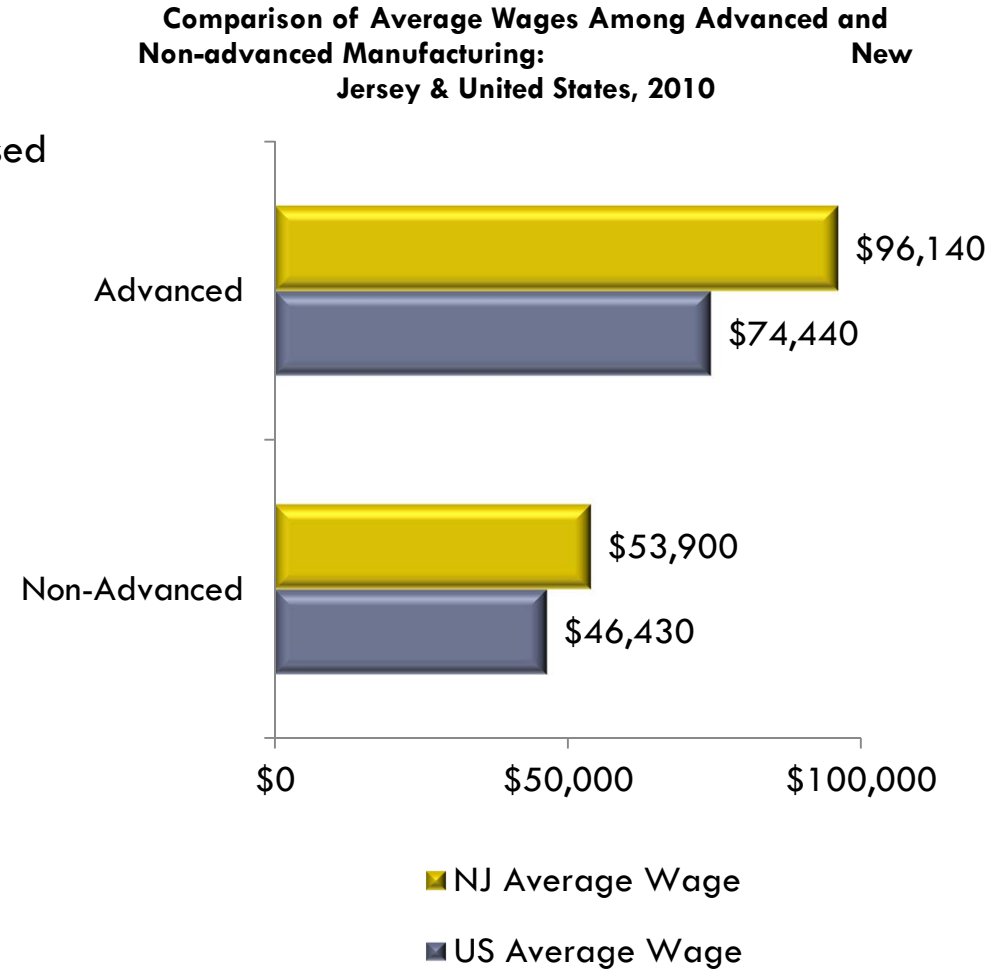
Each of these industries earns a substantial average annual wage, ranging from $56,530 for commercial lithographic printing to $140,000 for pharmaceutical preparation

Average wages in New Jersey in 2010 among advanced manufacturing industries are about 78% more than those non-advanced manufacturing industries

From 2005 to 2010, average wages in New Jersey in advanced manufacturing have increased 4.8 percent per year compared to only 2.3 percent per year for non-advanced

Average wages paid are 29 percent higher in New Jersey in 2010 than the nation among advanced manufacturing industries

One of the highest paying industries in New Jersey, the advanced manufacturing industry earns about 72 percent more than the state average of $55,740 in 2010



Source: Quarterly Census of Employment and Wages
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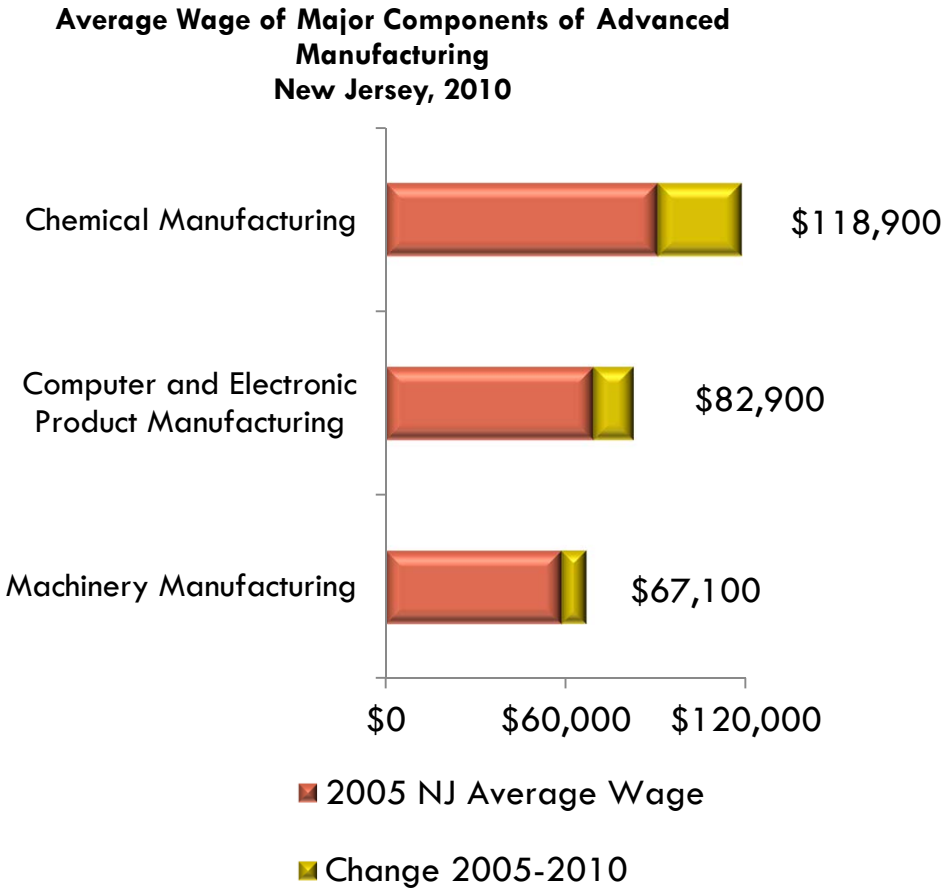
Average wages in New Jersey among the three main components of advanced manufacturing have averaged 4.7 annual growth from 2005 to 2010



Each component of advanced manufacturing earns more than the state average of $55,740 in 2010

The chemical manufacturing industry earns more than twice as much as the state average in 2010, and averaged annual increases of 5.5 percent from 2005 to 2010

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

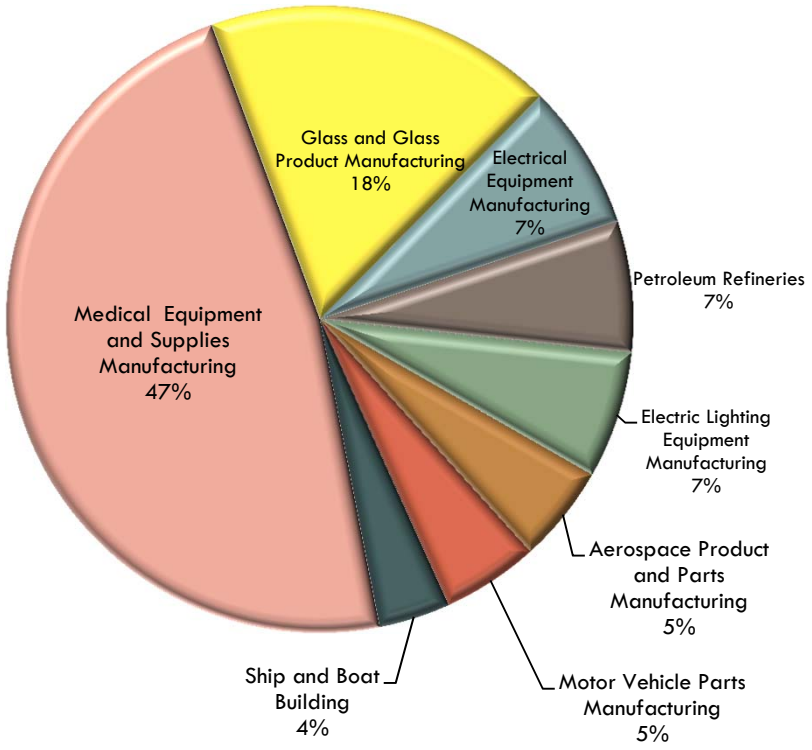
Source: Quarterly Census of Employment and Wages
Prepared by: New Jersey Department of Labor and Workforce Development
December 2011

Eight detailed industries make up the roughly 25,700 workers employed in the "other" advanced manufacturing component

Nearly half of these "other" workers are employed in the medical equipment and supplies manufacturing industry, and tend to have very high 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 and their optimal geological attributes

Breakdown of Employment of "Other" Advanced Manufacturing New Jersey, 2010



Source: Quarterly Census of Employment and Wages
Prepared by: New Jersey Department of Labor and Workforce Development
December 2011

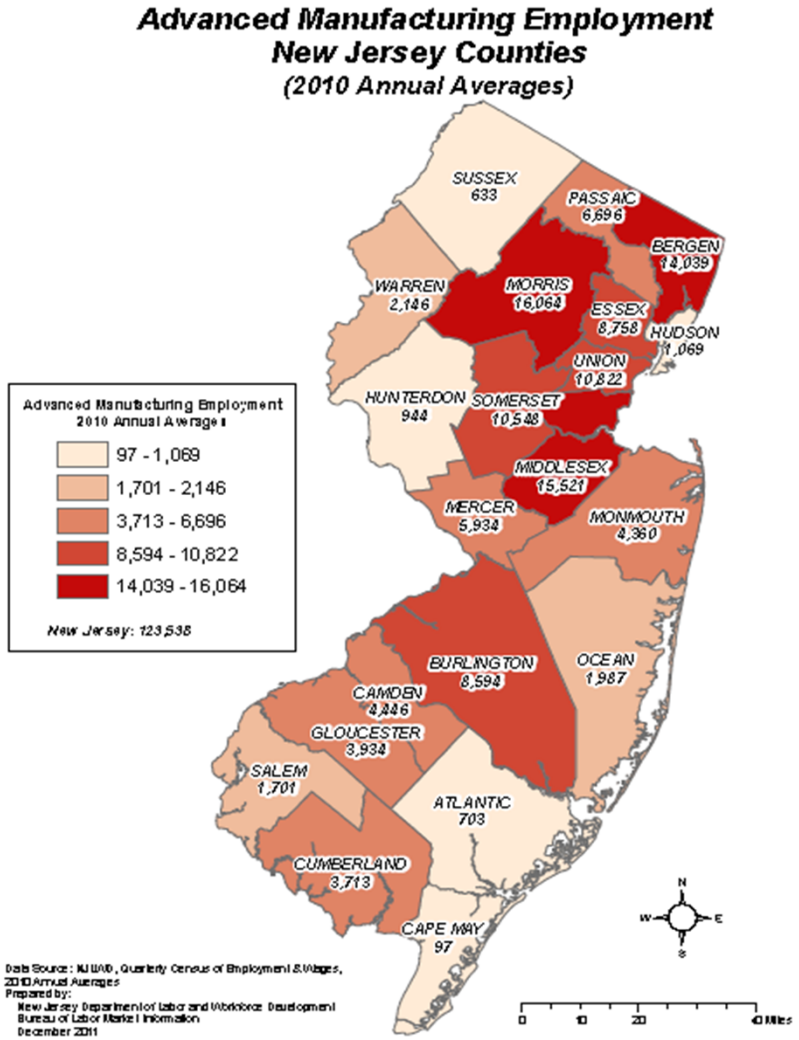
Employment in advanced manufacturing is highly concentrated in New Jersey's most populous counties and along the Interstate 95 corridor

New Jersey offers unique business advantages including:

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

-highly educated and very diverse workforce

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



Source: Quarterly Census of Employment and Wages
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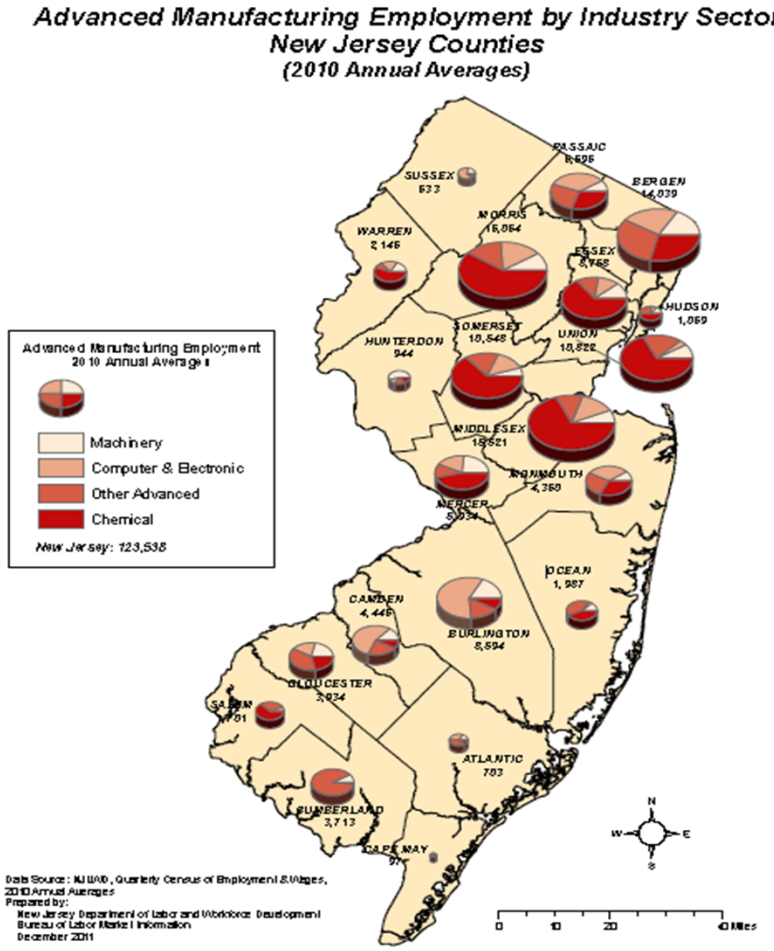
Industry components tend to group among one another within the advanced manufacturing cluster



Source: Quarterly Census of Employment and Wages
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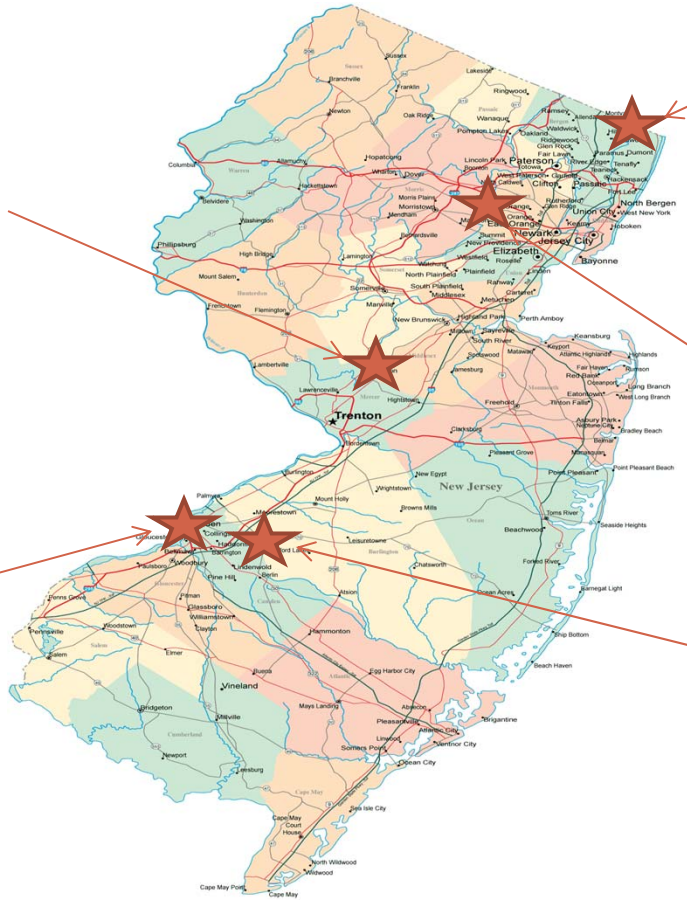
Nearly 80 percent of all chemical manufacturing employment is found in these six counties in northeastern region of New Jersey:

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

Nearly a third of all computer and electronic product manufacturing employment is found in 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

Many of New Jersey's most well known manufacturing companies are classified as advanced



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

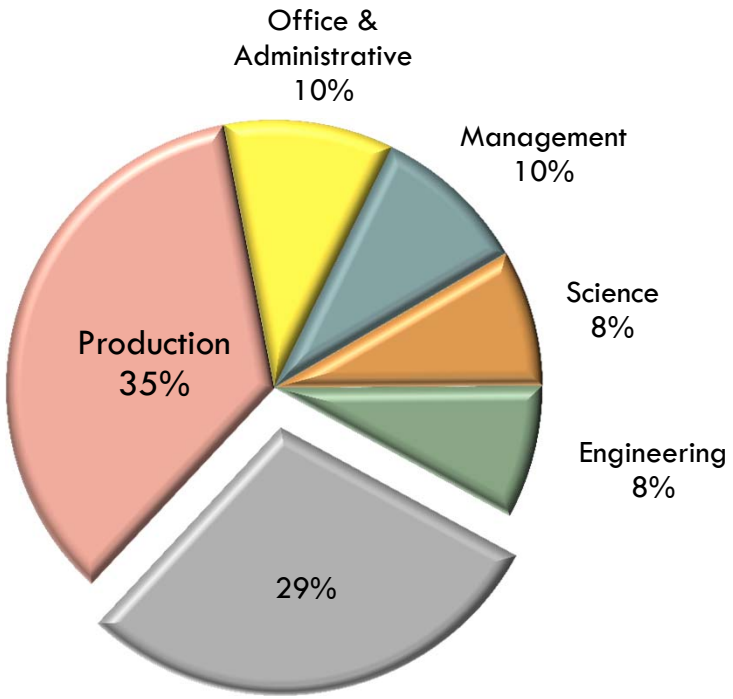
Lockheed Martin
Moorestown, NJ
Navigational, measuring, electromedical and control instruments manufacturing

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, 2010



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" 29 percent of advanced manufacturing occupations primarily consists of business, computer, material moving, and sales occupations

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

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

Occupation	2010 Employment	Share of Industry	2010 Average Salary	Education/Training Requirements
Total, All Occupations	128,762	100.0%	$60,080	
Top 20 Occupations	52,389	40.7%	$49,120	
Packaging and Filling Machine Operators and Tenders	5,623	4.4%	$26,650	Short-term on-the-job training
Supervisors of Production and Operating Workers	4,385	3.4%	$60,970	Work experience in a related occupation
Mixing and Blending Machine Setters, Operators, and Tenders	4,324	3.4%	$34,850	Moderate-term on-the-job training
Inspectors, Testers, Sorters, Samplers, and Weighers	3,675	2.9%	$35,950	Moderate-term on-the-job training
Electrical and Electronic Equipment Assemblers	3,435	2.7%	$31,090	Short-term on-the-job training
Chemists	3,272	2.5%	$76,190	Bachelor's degree
Team Assemblers	3,099	2.4%	$25,960	Moderate-term on-the-job training
Electromechanical Equipment Assemblers	2,318	1.8%	$32,800	Short-term on-the-job training
Wholesale Sales Representatives	2,171	1.7%	$71,480	Work experience in a related occupation
Industrial Machinery Mechanics	2,050	1.6%	$50,510	Long-term on-the-job training
Industrial Production Managers	2,025	1.6%	$118,500	Work experience in a related occupation
Chemical Technicians	1,958	1.5%	$44,840	Associate degree
Chemical Equipment Operators and Tenders	1,951	1.5%	$44,690	Moderate-term on-the-job training
Packers and Packagers, Hand	1,940	1.5%	$21,520	Short-term on-the-job training
Shipping, Receiving, and Traffic Clerks	1,863	1.4%	$32,210	Short-term on-the-job training
Computer Software Engineers, Systems Software	1,776	1.4%	$101,570	Bachelor's degree
Machinists	1,721	1.3%	$44,750	Long-term on-the-job training
Industrial Engineers	1,657	1.3%	$84,080	Bachelor's degree
Customer Service Representatives	1,587	1.2%	$35,550	Moderate-term on-the-job training
Mechanical Engineers	1,558	1.2%	$84,740	Bachelor's degree

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

Production occupations

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

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

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

Source: O*NET www.onetonline.org
Prepared by: New Jersey Department of Labor and Workforce Development
December 2011

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/Training Requirement New Jersey, 2010

Education/Training Requirement	2010 Employment	% of Total
00-0000 Total, All Occupations	128,762	100.0%
Total High Requirements	**39,912**	**31.0%**
First professional degree	124	0.1%
Doctoral degree	3,967	3.1%
Master's degree	519	0.4%
Bachelor's or higher degree, plus work experience	8,906	6.9%
Bachelor's degree	21,105	16.4%
Associate degree	5,291	4.1%
Total Moderate Requirements	**26,028**	**20.2%**
Postsecondary vocational training	2,466	1.9%
Work experience in a related occupation	15,059	11.7%
Long-term on-the-job training	8,504	6.6%
Total Low Requirements	**54,154**	**42.1%**
Moderate-term on-the-job training	30,080	23.4%
Short-term on-the-job training	24,075	18.7%
Unavailable Data	8,667	6.7%

Source: Occupational Employment Statistics Survey
Prepared by: New Jersey Department of Labor and Workforce Development
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Scientists and engineers primarily account for the nearly one-third of the occupations found in advanced manufacturing that require at least an associate's degree for entry

Among the roughly 20% that have moderate requirements are many of the craftsmen, supervisors, and sales people

The remaining 42% of the workforce are employed mostly in production occupations that may have lower requirements for entry, but often require a great deal experience and skill

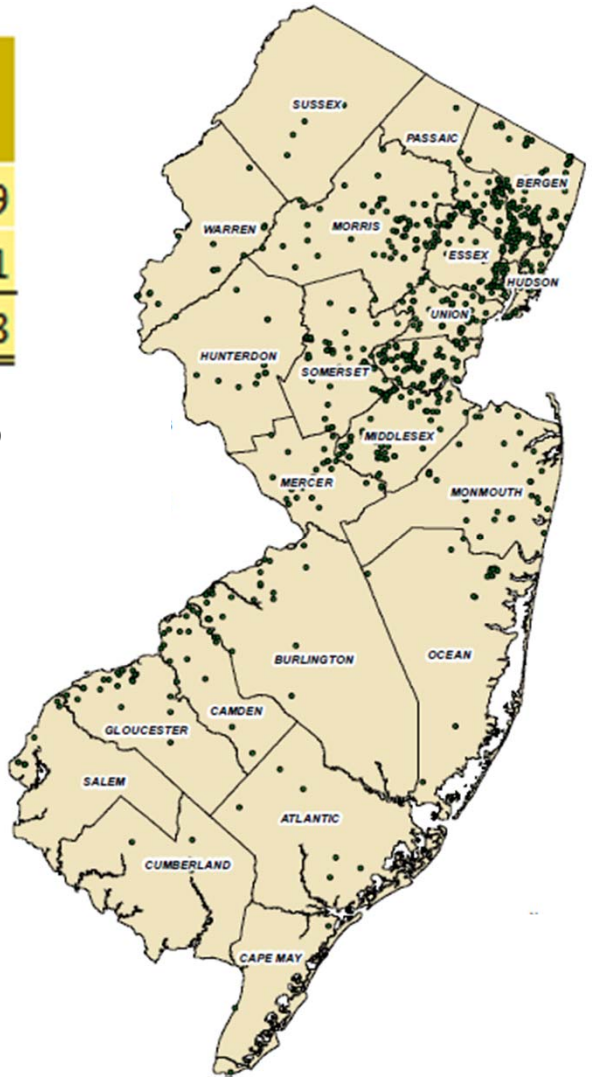
Advanced Manufacturing

Closer Look at Components

Chemical Manufacturing

	Establishments	Employment	Employment Per Establishment
2005	888	70,135	79
2010	913	56,022	61
Change	25	-14,113	-18

While employment has declined by an average of 4.4% per year, the number of establishments has actually increased by over 0.6% per year



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: Quarterly Census of Employment and Wages
Prepared by: New Jersey Department of Labor and Workforce Development
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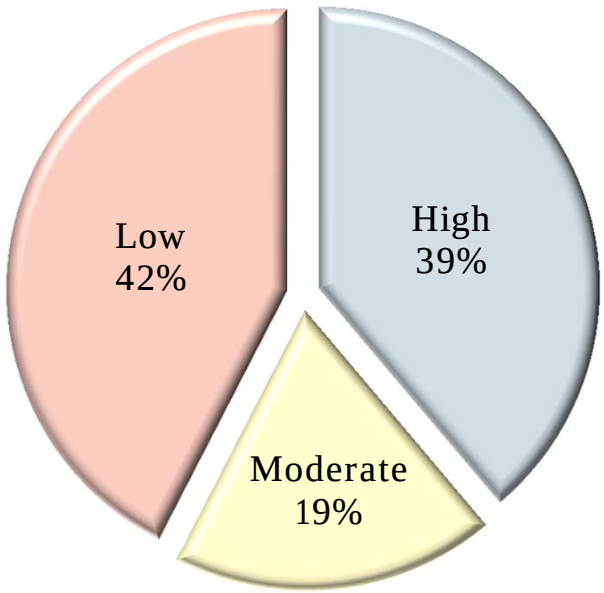
Occupations requiring **high levels of education** for entry make up 39% of chemical manufacturing. Nearly 18% require a bachelor's degree and almost 7% of the workforce requires at doctorate degree.

Nearly 19% have **moderate education and training** requirements. Work experience in a related field is the most common among this group.

The remaining 42% of the workforce require only **moderate- or short-term** on-the-job training

Minimum Educational Requirements



Top Ten Occupations in Chemical Manufacturing

Occupation	Employment	Education/Training Requirement	2010 Average Wage
Packaging and Filling Machine Operators and Tenders	5,510	Short-term on-the-job training	$ 26,650
Mixing and Blending Machine Setters, Operators, and Tenders	3,995	Moderate-term on-the-job training	$ 34,850
Chemists	3,206	Bachelor's degree	$ 76,190
Chemical Equipment Operators and Tenders	1,948	Moderate-term on-the-job training	$ 44,690
Chemical Technicians	1,864	Associate degree	$ 44,840
Supervisors of Production and Operating Workers	1,743	Work experience in a related occupation	$ 60,970
Biochemists and Biophysicists	1,517	Doctoral degree	$ 91,450
Medical Scientists	1,373	Doctoral degree	$ 115,390
Inspectors, Testers, Sorters, Samplers, and Weighers	1,287	Moderate-term on-the-job training	$ 35,950
Industrial Machinery Mechanics	1,141	Long-term on-the-job training	$ 50,510

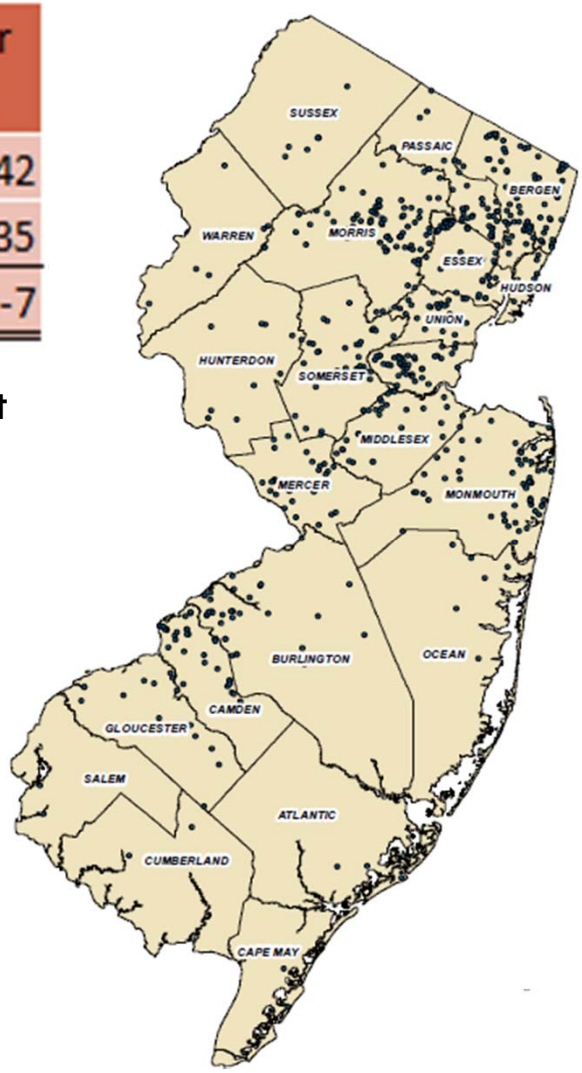
Source: Occupational Employment Statistics Survey
Prepared by: New Jersey Department of Labor and Workforce Development
December 2011

Nearly 60% of all chemists and over 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
2005	733	30,884	42
2010	771	26,806	35
Change	38	-4,078	-7

Among the three components, employment has declined at the slowest rate (-2.8% per year) and the number of establishments has grown the fastest (1.0% per year)



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

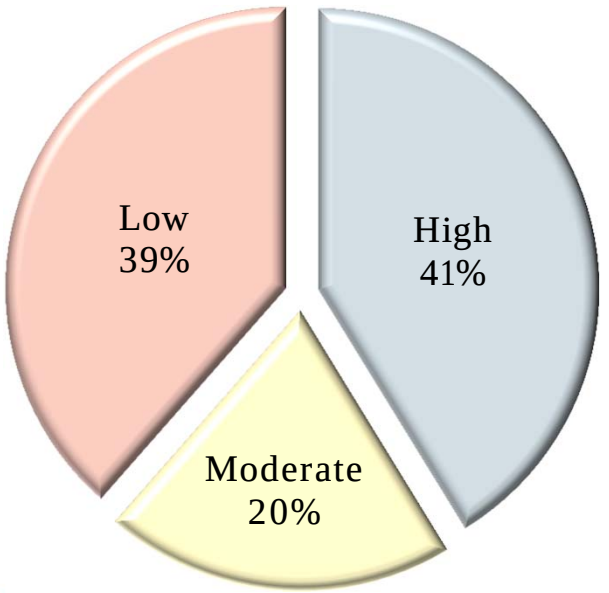
Source: Quarterly Census of Employment and Wages
Prepared by: New Jersey Department of Labor and Workforce Development
December 2011

Occupations requiring **high levels of education** for entry make up 41% of computer and electronic product manufacturing. Nearly 35% require at least bachelor's degree.

Roughly 20% have **moderate education and training** requirements. Work experience in a related field is the most common among this group.

The remaining 39% of the workforce require only **moderate- or short-term** on-the-job training

Minimum Educational Requirements



Top Ten Occupations in Computer and Electric Product Manufacturing

Occupation	Employment	Education/Training Requirement	2010 Average Wage
Electrical and Electronic Equipment Assemblers	2,321	Short-term on-the-job training	$ 31,090
Computer Software Engineers, Systems Software	1,764	Bachelor's degree	$ 85,570
Electromechanical Equipment Assemblers	1,178	Short-term on-the-job training	$ 32,800
Inspectors, Testers, Sorters, Samplers, and Weighers	1,138	Moderate-term on-the-job training	$ 35,950
Electronics Engineers, Except Computer	841	Bachelor's degree	$ 109,740
Electrical and Electronic Engineering Technicians	807	Associate degree	$ 57,030
Electrical Engineers	799	Bachelor's degree	$ 86,300
Supervisors of Production and Operating Workers	717	Work experience in a related occupation	$ 60,970
Mechanical Engineers	708	Bachelor's degree	$ 84,740
Team Assemblers	707	Moderate-term on-the-job training	$ 25,960

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

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

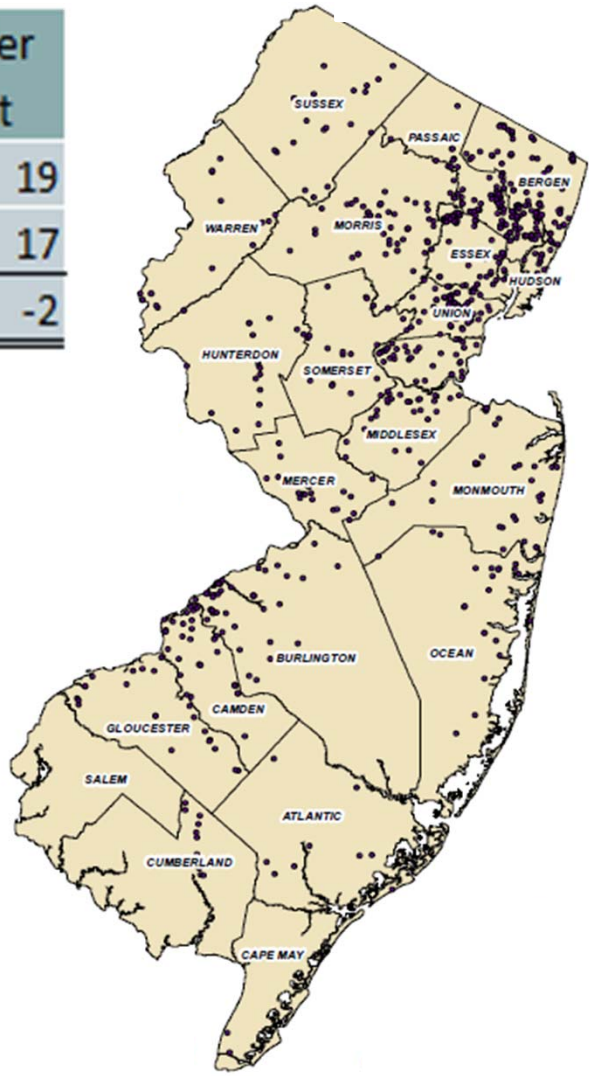
Machinery Manufacturing

	Establishments	Employment	Employment Per Establishment
2005	881	16,891	19
2010	826	13,889	17
Change	-55	-3,002	-2

Machinery manufacturing is the only component to lose establishments from 2005- 2010

Employment also declined an average of 3.8% 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



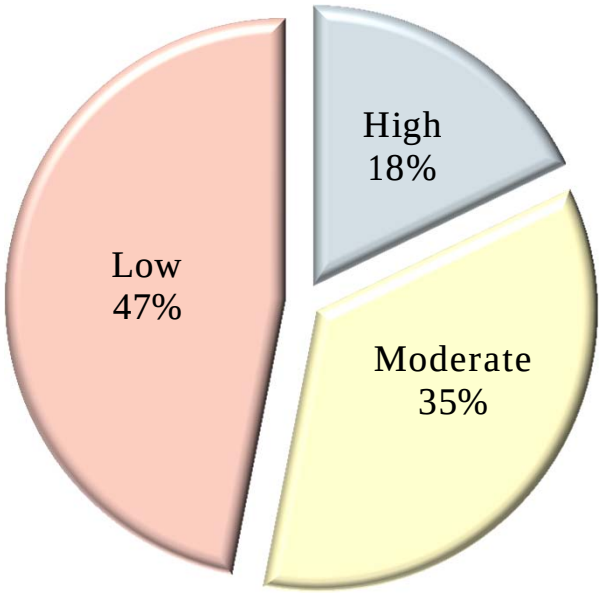
Source: Quarterly Census of Employment and Wages
Prepared by: New Jersey Department of Labor and Workforce Development
December 2011

Occupations requiring **high levels of education** for entry make up 18% of machinery manufacturing. Most of this group are classified as either engineering or computer occupations.

Nearly 35% have **moderate education and training** requirements. Work experience in a related field is the most common among this group.

The remaining 46% of the workforce require only **moderate- or short-term** on-the-job training

Minimum Educational Requirements



Top Ten Occupations in Machinery Manufacturing

Occupation	Employment	Education/Training Requirement	2010 Average Wage
Machinists	1,181	Long-term on-the-job training	$ 44,750
Supervisors of Production and Operating Workers	810	Work experience in a related occupation	$ 60,970
Wholesale Sales Representatives	578	Work experience in a related occupation	$ 71,480
Team Assemblers	577	Moderate-term on-the-job training	$ 25,960
Electrical and Electronic Equipment Assemblers	462	Short-term on-the-job training	$ 31,090
Computer-Controlled Machine Tool Operators	414	Moderate-term on-the-job training	$ 42,830
Engine and Other Machine Assemblers	403	Short-term on-the-job training	$ 35,330
Welders, Cutters, Solderers, and Brazers	399	Postsecondary vocational training	$ 41,450
Electromechanical Equipment Assemblers	396	Short-term on-the-job training	$ 32,800
Mechanical Engineers	351	Bachelor's degree	$ 84,740

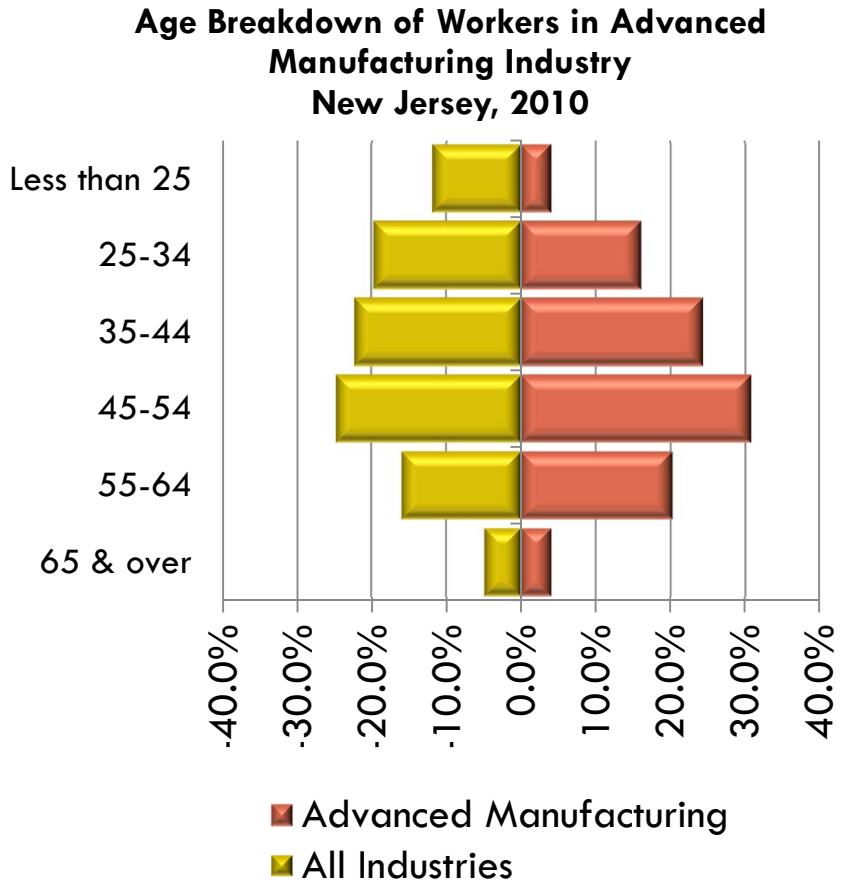
Source: Occupational Employment Statistics Survey
Prepared by: New Jersey Department of Labor and Workforce Development
December 2011

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 people working in the advanced manufacturing industries differs significantly from the overall economy



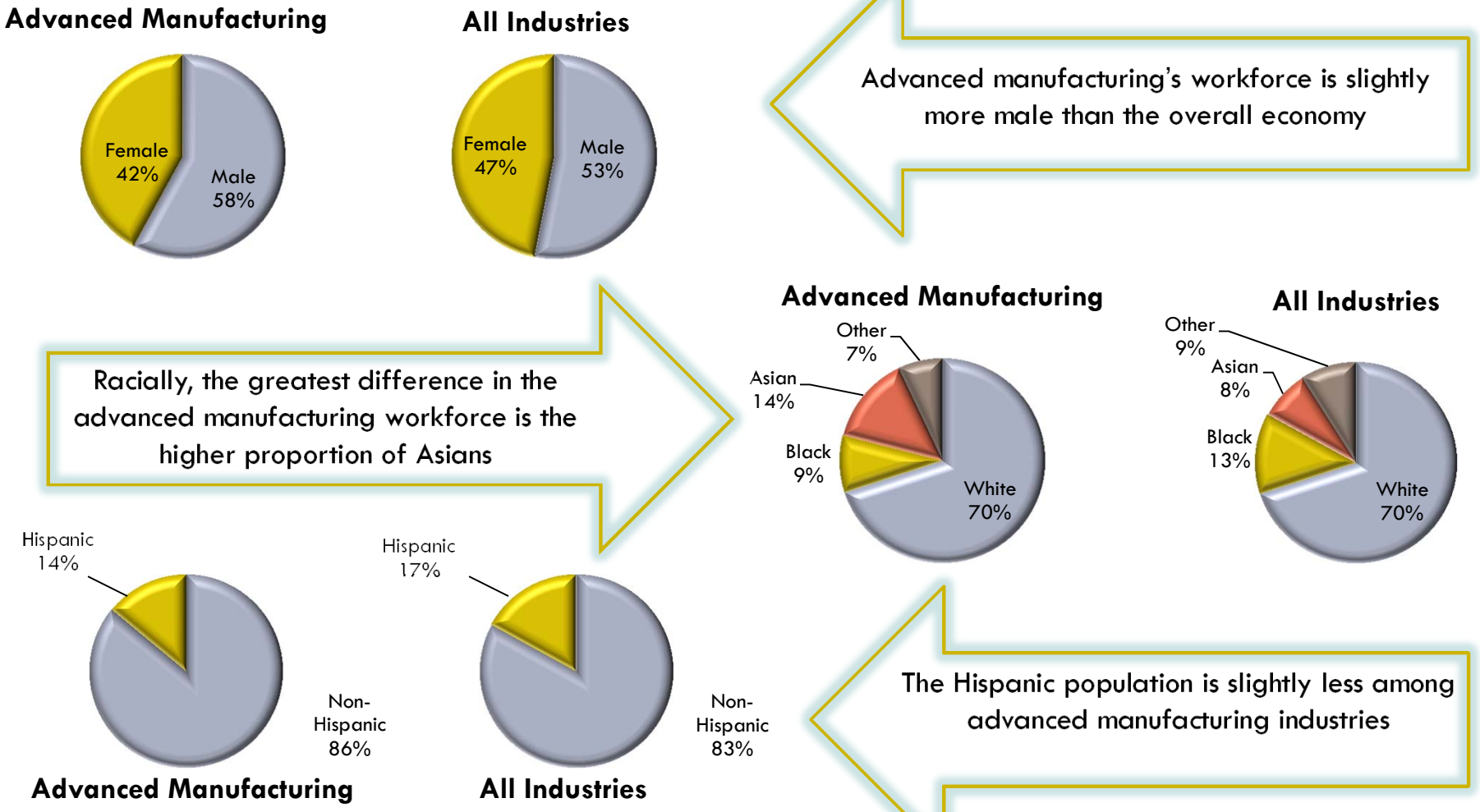
Only 4 percent of the workforce is under 25 years of age compared to over 12 percent overall

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, 24 and 21 percent, respectively

Source: American Community Survey
Prepared by: New Jersey Department of Labor and Workforce Development
December 2011

Gender, racial, and ethnic profile of New Jersey's health care work force

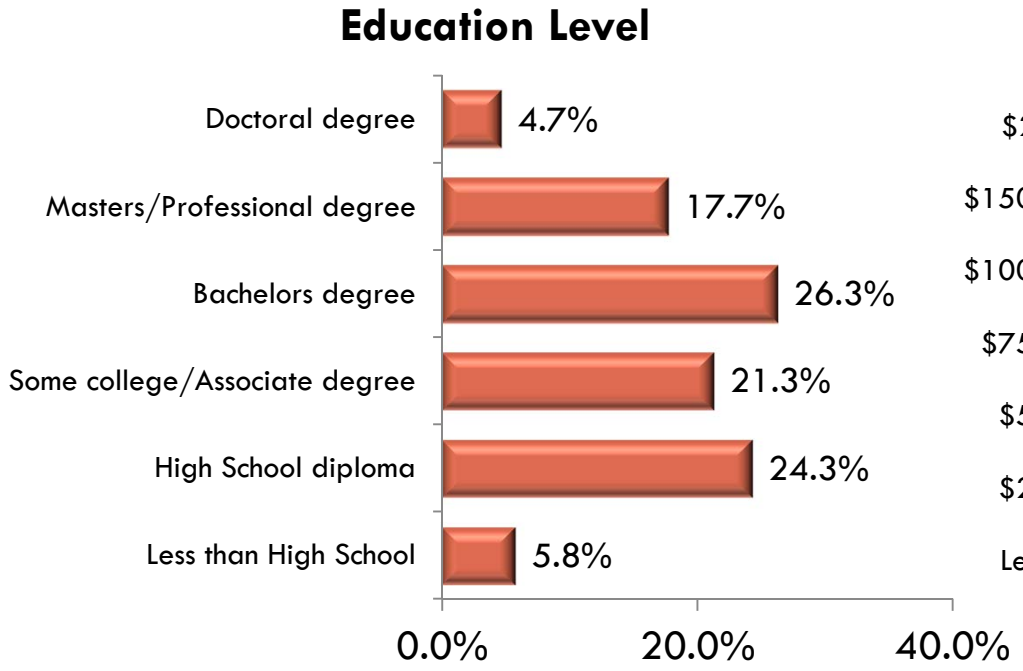


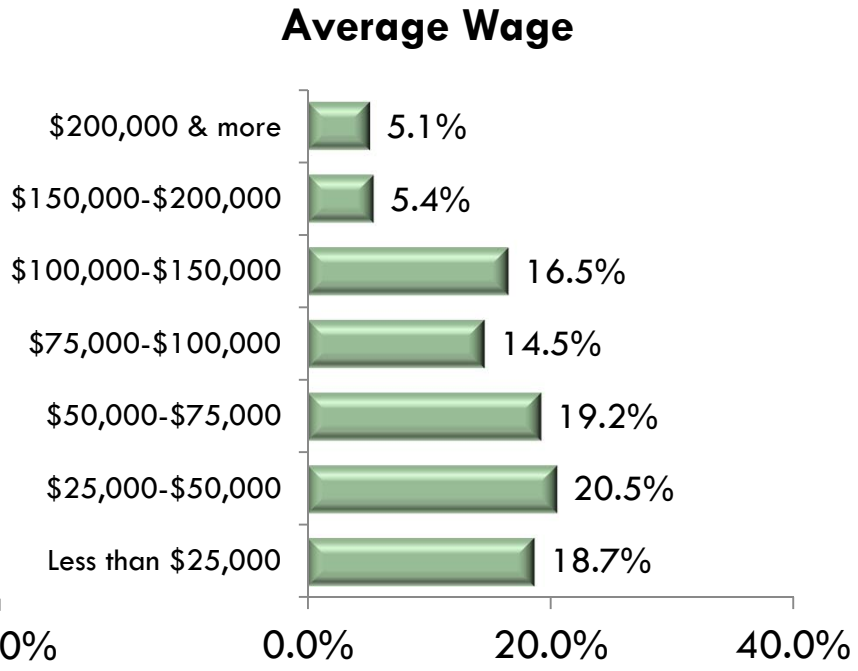
Source: American Community Survey
Prepared by: New Jersey Department of Labor and Workforce Development
December 2011

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

Nearly 50% 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 the state average of about $50,000





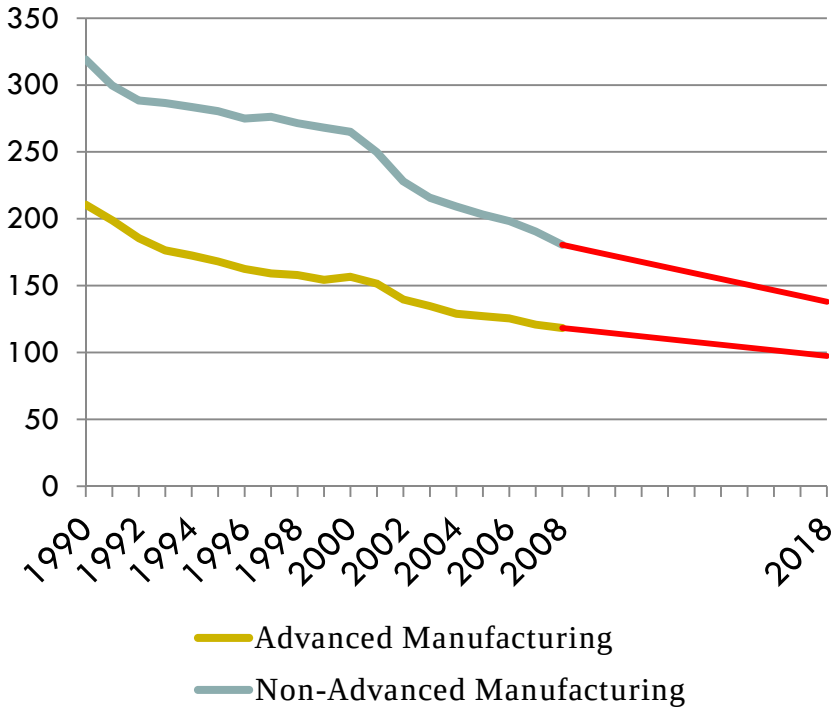
Source: American Community Survey
Prepared by: New Jersey Department of Labor and Workforce Development
December 2011

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, 1990-2018



Source: Current Employment Statistics United States Bureau and Economic Analysis
Prepared by: New Jersey Department of Labor and Workforce Development
December 2011

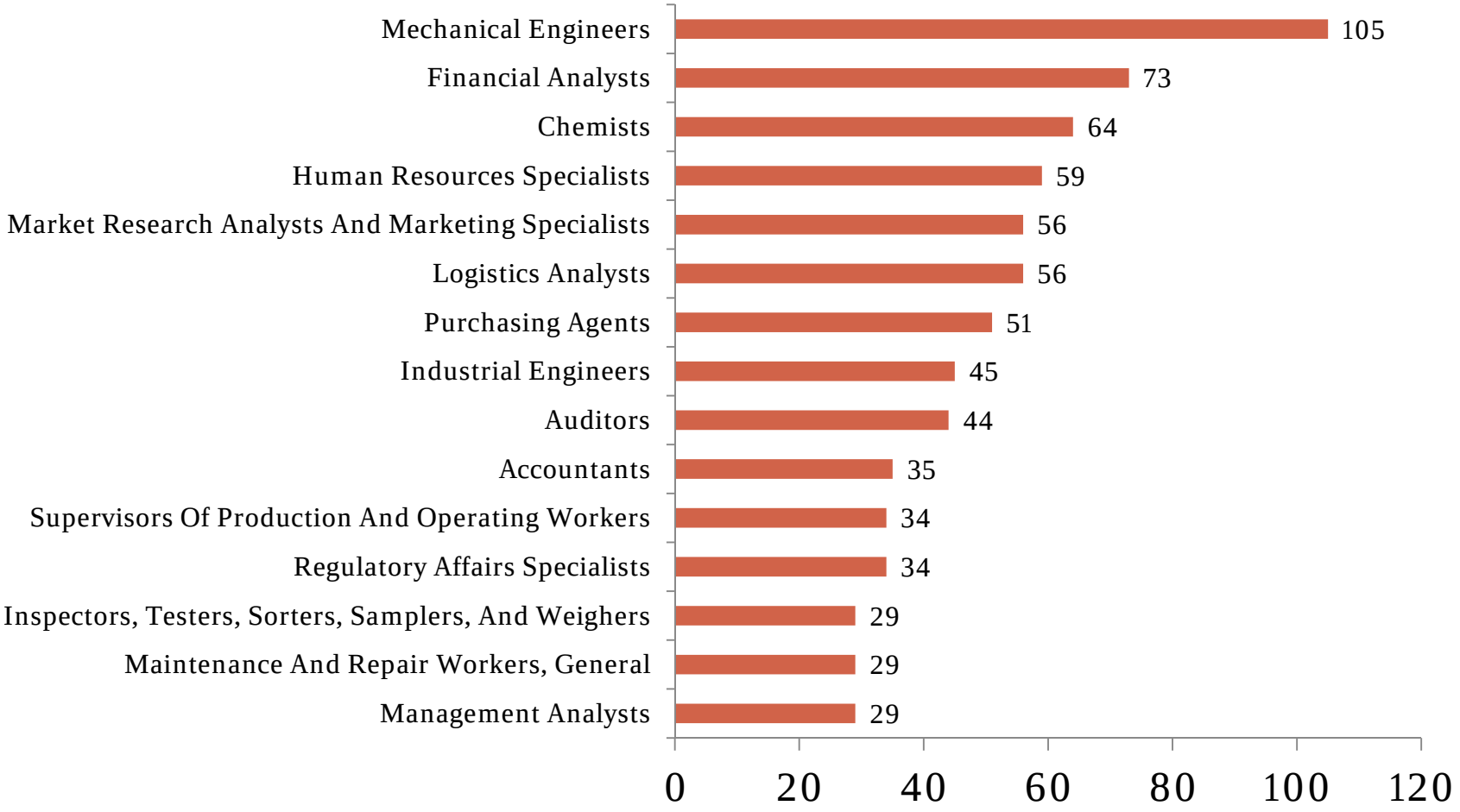
Manufacturing has shed nearly 272,000 jobs in New Jersey from 1990-2010, a 3.5% annual decline

From 2008 through 2018, declines are projected to slow in advanced and non-advanced manufacturing industries to -1.9 and -2.6 percent per year, respectively

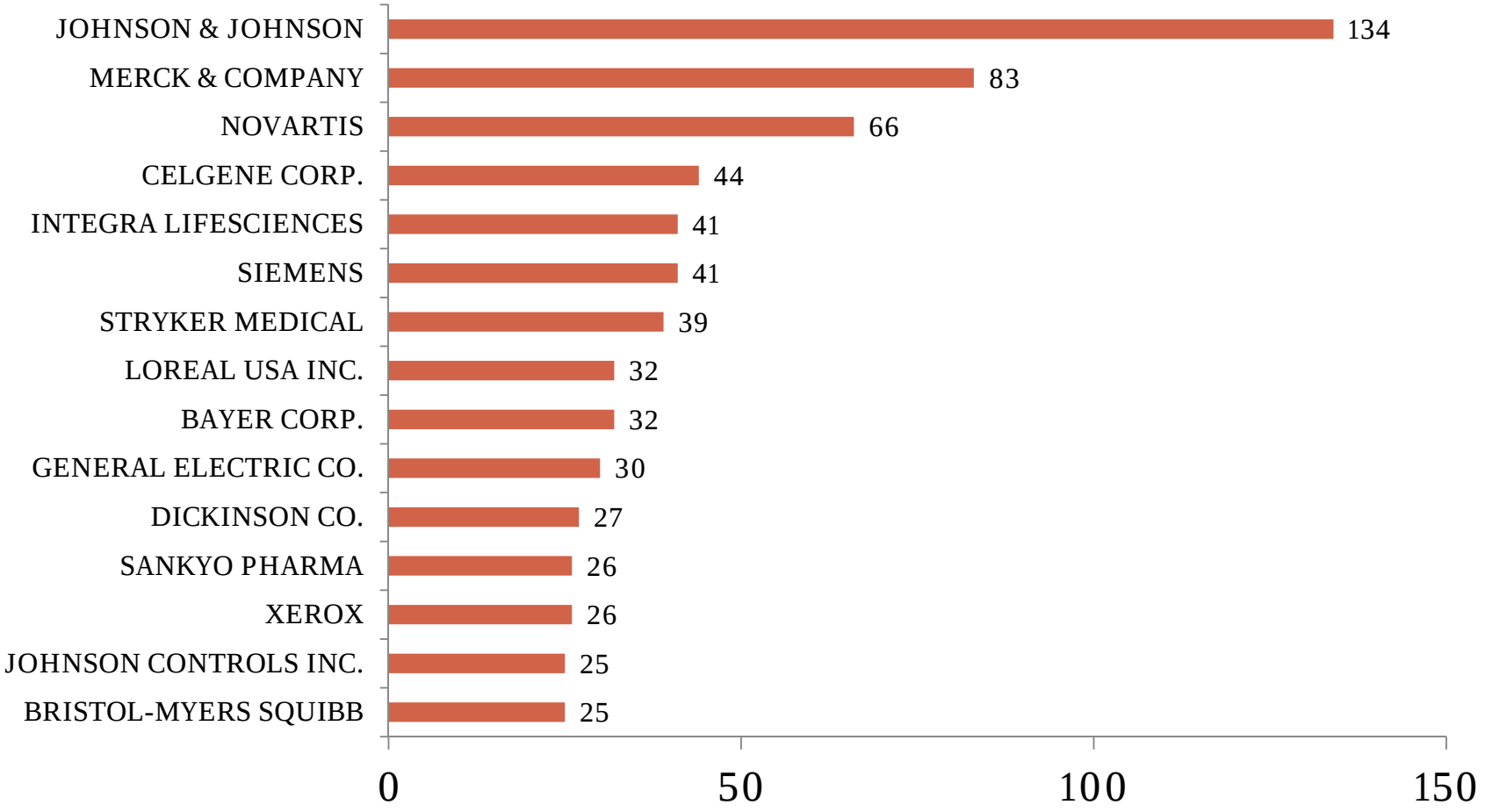
Despite these consistent employment declines, output (by GDP) had remained steady from 1997 to 2007

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

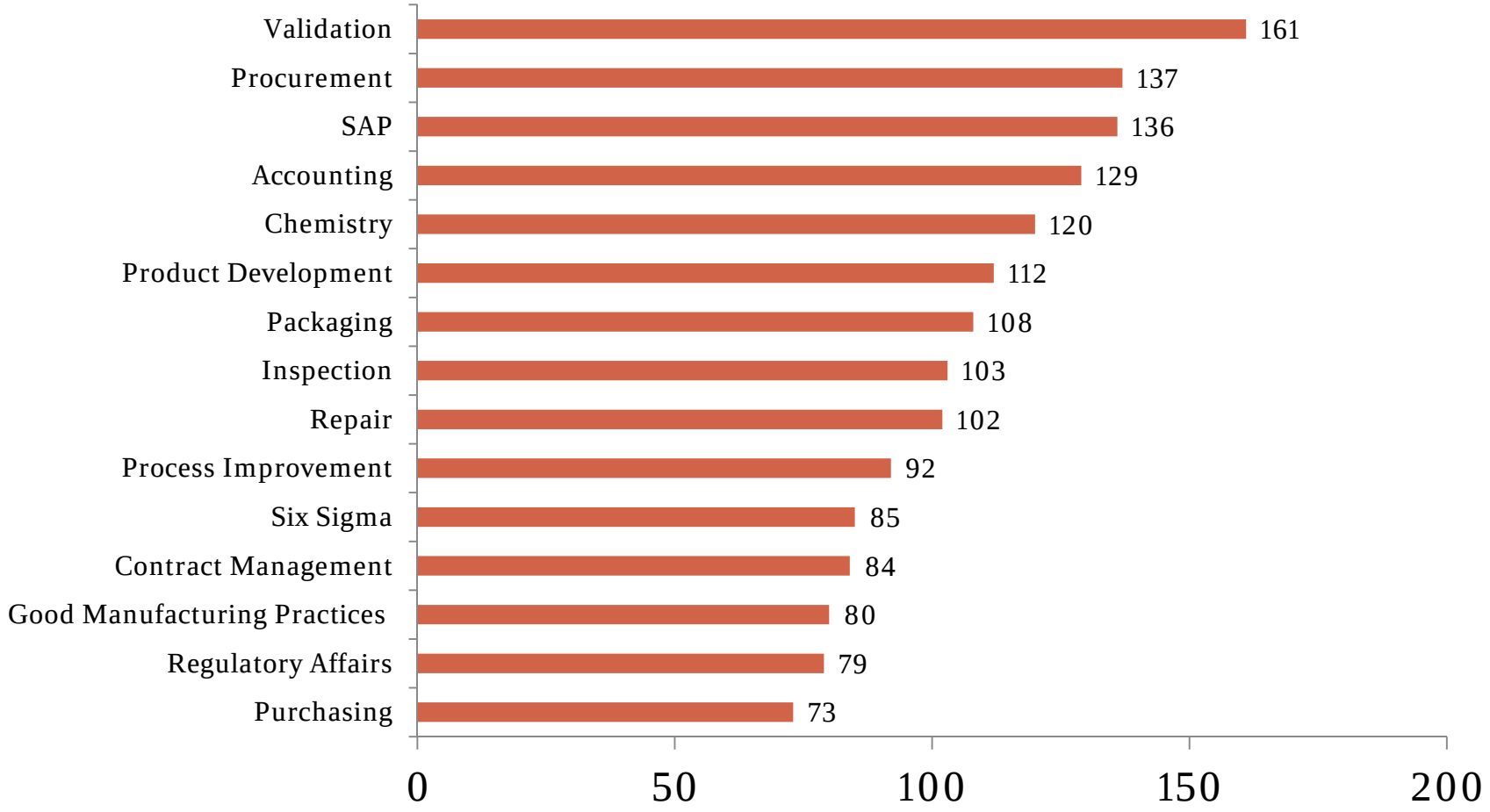
Most online job postings by occupation over last 60 days ending June 19, 2012



Most online job postings by employer over last 60 days ending June 19, 2012



Most online job postings by skill over last 60 days ending June 19, 2012



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