

New Jersey's Biopharmaceutical Life Sciences Cluster

Prepared by John Ehret Labor Market Analyst Winter 2014 - 2015

New Jersey Department of Labor & Workforce Development

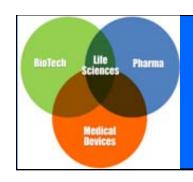






This presentation provides information about New Jersey's "Biopharmaceutical Life Sciences" Cluster. It includes:

- ☐ The overall impact to NJ's Economy
- □ An introduction & methodology
- ☐ Statewide employment, establishment, wage data & trend analysis
- □ Staffing patterns
- □ Regional employment, establishment, wage data, and occupation & skills in demand
- □ Regional economic developments
- New Jersey challenges and outlook
- □ Resources and fast facts

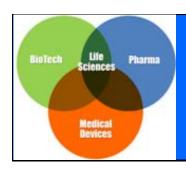




What does the

Biopharmaceutical Life Sciences Cluster

offer New Jersey?



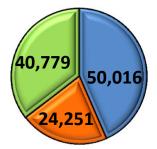
NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER Overall State Impact



The Biopharmaceutical Life Sciences Cluster has an enormous impact on providing high quality jobs and adding significant value to the State's economic activities. Recent New Jersey highlights included:

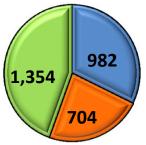
Employment

- Pharmaceuticals
- Medical Devices
- BioTech R&D



Establishments

- Pharmaceuticals
- Medical Devices
- ■BioTech R&D



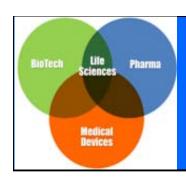
^{* (}SOURCE: New Jersey Department of Labor & Workforce Development, Quarterly Census of Employment and Wages, 2013

Employment total averaged over 115,000 (3.6%) of all private sector workers in the state for 2013. *Nationally,* the proportion was just 1.9 percent.*

■ Well-paying Jobs: Paid over \$15 billion in 2013 annual payroll; 7.9 percent of the state's total wages.*

Establishments totaled over 3,000 in 2013. Over the five year period (2008-2013) — even with numerous industry related reorganizations — New Jersey's drug & pharmaceutical component still grew (by +9.4%).*

- ☐ Investment Value: Nationally, NJ's Industry (\$13.9B) & Total R&D (\$17.9B) performance ranked 5th. (NSF, 2010/11)
- * Added to Export Opportunities: New Jersey's Bio-pharmaceutical Life Sciences exported nearly \$5.2 billion in manufactured goods worldwide in 2013. (U.S. Census, Foreign. Trade Div.)
- * Added to Growing the State's Economy: This cluster added \$33.54 billion towards the State's 2012 Gross Domestic Product. ("Life Sciences in New Jersey: Looking Beyond Biotech' 2013 Study, BioNJ)



NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER Major Industry Components



NJ's Biopharmaceutical Life Sciences employment in 2013 was identified within three primary components: pharmaceuticals (43.5%), biotechnology-R&D (35.4%) and medical device manufacturing (21.1%). The breakdown of the major segments are:

PHARMACEUTICALS

- Pharmaceutical & Medicine Mfg.
- Soap & Cleaning Compound & Toilet Preparation Mfg.
- Drugs & Druggists Sundries Wholesalers

Biotechnology (R&D) component: Consists of services related establishments primarily engaged in scientific research, development, analytic and/or diagnostics. In 2013, it averaged 1,354 establishments employing 40,779 workers.

MEDICAL DEVICES

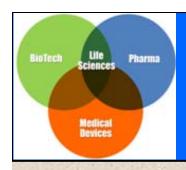
- Navigational, Measuring, Electromedical & Control Instruments Mfg.
- Medical Equipment & Supplies Mfg.

Pharmaceutical component: Establishments that are primarily engaged in manufacturing or distribution of drug related products. It accounted for 32.3 percent of New Jersey's establishments in this cluster in 2013. It also accounted for over 50,000 high-quality jobs throughout the State.

BIOTECHNOLOGY (R&D)

- Research & Development (R&D) in Physical, Engineering, Life Science & Social Science.
- Medical & Diagnostic Labs.

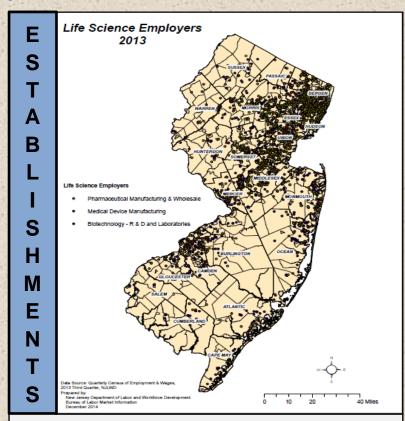
Medical device component: Establishments primarily engaged in manufacturing medical equipment and supplies. In 2013, this component consisted of an average 704 establishments in New Jersey employing 24,251 workers.



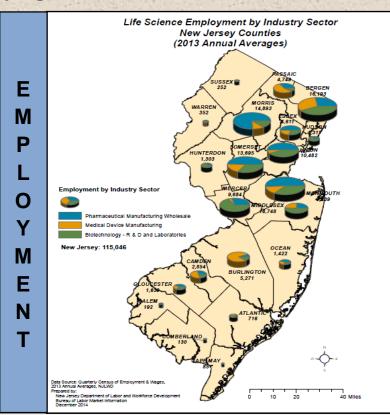
NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER Concentration



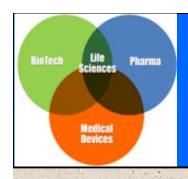
New Jersey had over 3,000 establishments directly engaged in it's highly concentrated Biopharmaceutical Life Sciences Cluster employing more than 115,000 workers in 2013.



This cluster accounted for 1.2 percent of the total share of all the private sector establishments in New Jersey.



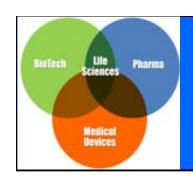
Employment in this cluster accounted for 3.6 percent of the State's workforce averaging 115,045 jobs.





Analysis of New Jersey's Biopharmaceutical Life Sciences Cluster

Most data sets analyzed for this presentation are available on <u>New Jersey Department of Labor & Workforce Development's website</u> located under <u>Labor Market Information</u>.



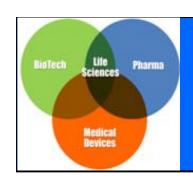
NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER Introduction



Over the past few years, New Jersey has been engaged in bringing together its pharmaceutical, medical device and biotechnology industries, along with related organizations, to develop and support the "New Jersey Biopharmaceutical Life Sciences Cluster." This "cluster" initiative provides a interconnected approach to draw upon each of the industry sector's strengths, while at the same time jointly confronting many of the same interrelated issues and challenges. The concept serves to empower each industry group as a whole, while developing like-minded strategies in a unified manner to help companies grow their core business, along with related jobs, in the State.

❖ New Jersey's Biopharmaceutical Life Sciences Cluster consists of three key industry components; pharmaceutical (drug manufacturers & wholesalers), medical devices (medical equipment and supplies manufacturers), and biotech (scientific research & development (R&D) services and medical & diagnostic laboratories).

This overall approach has been maximizing and strengthening these related industries by promoting collaboration of the group's combined ("cluster") energies to highlight and fortify points of related interest. Working together, the development of partnerships and alliances has helped in providing increased value to companies and organizations associated with this cluster. The results from this concept has been positive. It has helped to generate jobs, along with new employment opportunities, for New Jersey's workforce. The outcome has also contributed significantly towards growing New Jersey's economy!



NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER Methodology



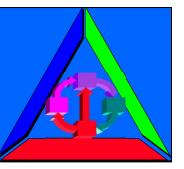
The information presented within this presentation was compiled primarily using various government data sets. *For consistency*, the data has been filtered using the North American Industrial Classification System (NAICS) for the purpose of analyzing this cluster and (when available and/or applicable) the sectors and industries.

New Jersey's Biopharmaceutical Life Sciences Cluster is structured using three (color highlighted) components: **pharmaceuticals**, **medical devices**, and **biotech**. Each component is comprised of industry *groups* (based upon 4-digits NAICS). The groups are each comprised of industry *sectors* (5-digits). Within each sector are industry *subsectors* (6-digit). (Due to disclosure issues, some drilled down data cannot be released nor discussed in detail.)

Note: **Life science** is not an industry, rather, it is a term used to capture companies that are focused on "life-processes." Traditionally, these companies could have been categorized within one of the aforementioned components, however, many are changing their focus to adjust to the evolving business environment. As a result, companies are crossing the typical industry boundaries, making it increasingly unclear as to which component they belong too. Therefore, to ensure continuity, as well as exclude assumptions, company data used was based upon its establishment's primary NAICS Code. And therefore, the term "life-science" will not be explicitly emphasized.

Additional information about the North American Industrial Classification System (NAICS) is available at: http://www.census.gov/eos/www/naics/



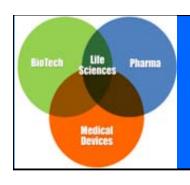


New Jersey's unique and vast concentration of biotechnology, medical device, and pharmaceutical companies, along with its highly-educated and talented labor force, contributes immensely towards positioning the Garden State as a leader in the Biopharmaceutical Life Sciences Cluster. The synergy of each adds enormous value:

BIOTECHNOLOGY: New Jersey has a long tradition of advanced scientific research and developments, along with countless innovative breakthroughs and discoveries. This has been achieved largely because New Jersey has had, and continue to have, some of the greatest scientist including: Albert Einstein, Thomas Edison, Lloyd H. Conover, Sol J. Barer, Ph.D. and Julie J. Brown, Ph.D. As a result of the Garden State's well-educated and highly-skilled workforce, the State's biotechnology industry continues to rank among the best in the nation. This sector has contributed towards earning New Jersey the distinct honor of being known as "The Innovation State" and "Einstein's Alley."

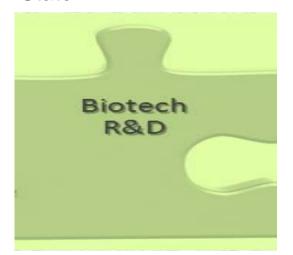
MEDICAL DEVICE: Part of the State's Life Sciences group, this segment contributes towards New Jersey being "home to more pharmaceutical and medical device companies than any other state in the country, or any other country in the world." Its no wonder the Biotechnology Industry Organization (BIO) refers to the state as "the epicenter of the global pharmaceutical and medical technology industry."

PHARMACEUTICAL: New Jersey's highly revered drug industry, with an exceptionally highly-educated and well-developed workforce, has earned the State the distant honor of being globally known as the "Medicine Chest of the Nation."





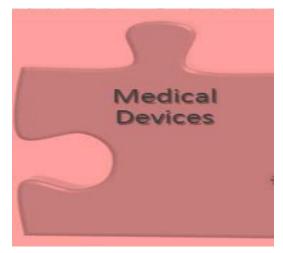
Over the years, as New Jersey's pharmaceutical, biotechnology and medical device industry groups have each established an outstanding reputation for the State...



"The Innovation State" and "Einstein's Alley"

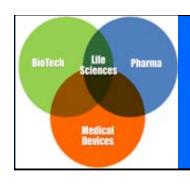


"Medicine Chest of the Nation"



"The epicenter of the global pharmaceutical & medical technology industry"

... New Jersey has traditionally supported the growth of these industries as standalone groups!

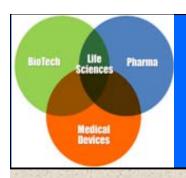




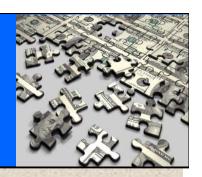
...But now a more effective method has been implemented!!!

New Jersey is linking the analogous relationships and attributes of the related industry groups through a cluster initiative. It is building upon the strength and fortitude of each of the three components. Combined, it strengthens the sectors by setting a stronger foundation to build upon. This, in turn, is helping to create and expand business opportunities. The ripple effect is generating tremendous opportunities for New Jersey's workforce, as well as the State's economy.





NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER Major New Jersey Employers



Some of New Jersey's well-known employers in this cluster include:

New Jersey: Home of Pharmaceutical Industry

- Pharmaceutical & Medicine Mfg.
- Soap & Cleaning Compound & Toilet Preparation Manufacturing.
- Drugs & Druggists Sundries Wholesalers.

- Bayer HealthCare Pharmaceutical L'Oreal, USA, Inc.
- Bristol-Myers Squibb Co.
- Daiichi Sankyo
- Ethicon, Inc.
- Johnson & Johnson

- Merck & Co. Inc.
- Novartis Pharmaceuticals
- Pfizer, Inc.
- Sanofi, U.S.

New Jersey: Home of Biotech (R&D) Industry

- Research & Development (R&D) in Physical, Engineering, Life Science & Social Science.
- Medical & Diagnostic Laboratories.
- Bio-Reference Laboratories
- CRI Lifetree
- Celgene
- Chugai Pharma, USA
- Collagen Matrix Inc.

- ImClone System
- NPS Pharmaceuticals, Inc.
- PTC Therapeutics Inc.
- Progenitor Cell Therapy
- Quest Diagnostics

New Jersey: Home of Medical Device Industry

- Navigational, Measuring,
 Electromedical & Control Instrument
 Manufacturing.
- Medical Equipment & Surgical Supplies Manufacturing.

- Becton Dickinson & Co.
- C. R. Bard, Inc.
- Integra Life Sciences
- Micro Corp.
- Novo Nordisk, Inc.

- Ortho McNeil Pharma
- Oticon, Inc.
- Roche Molecular Systems
- Siemens Hearing Instruments
- Stryker Orthopaedics

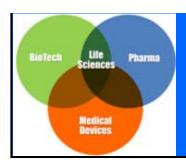
(Source: 2014 InfoUSA)



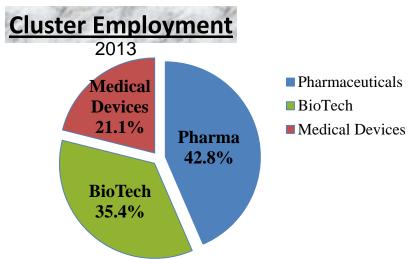


Analysis: Industry Details

New Jersey's
Biopharmaceutical
Life Sciences
Cluster

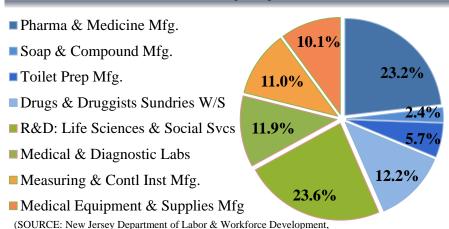






(SOURCE: New Jersey Department of Labor & Workforce Development, Quarterly Census of Employment and Wages, 2013 Annual Averages: 4-digits NAICS)

Sector Employment



Quarterly Census of Employment and Wages, 2013 Annual Averages: 5-digits NAICS)

In 2013, there was an average of 115,046 jobs in New Jersey's Life Sciences cluster. The concentration was as follows:

Pharmaceuticals: Two sectors accounted for most of the (81.4%) employment within this component: pharmaceutical preparation manufacturing (53.4%) and drugs & druggists sundries wholesales (28.0%).

BioTech: R&D bio-life sciences related employment accounted for an average of 26,336 of the nearly 40,779 jobs within this component. R&D in physical, engineering & life science led the sector's employment (64.6%) followed by jobs in medical & diagnostic labs (33.4%).

Medical Devices: Employment was closely divided in this component between navigational, measuring, electromedical & controlling instruments manufacturing (52.0%) and medical equipment & supplies manufacturing (48.0%).

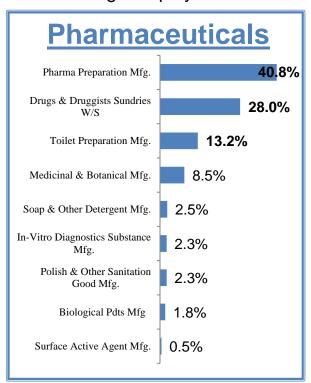


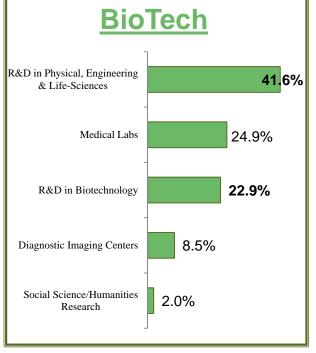
NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER Sub-sector Employment



In 2013, the 115,046 jobs within this New Jersey cluster were concentrated in:

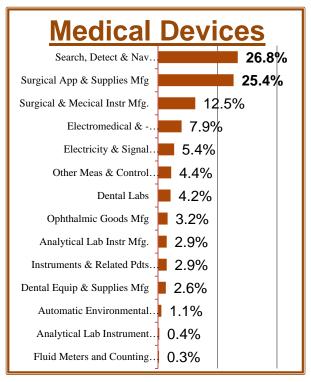
Pharmaceuticals: There was an average of 50,016 jobs in this component. The top three subsectors accounted for 81.9 percent of its average employment.

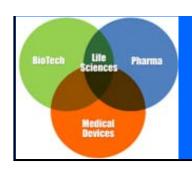




BioTech: New Jersey's R&D in bio-life sciences related subsector employment accounted for over 26,300 (64.6%) of the nearly 40,800 jobs within this component.

Medical Devices: Of the average 24,251 jobs in this component, top two sub-sectors accounted for over half (52.2%) of the employment.

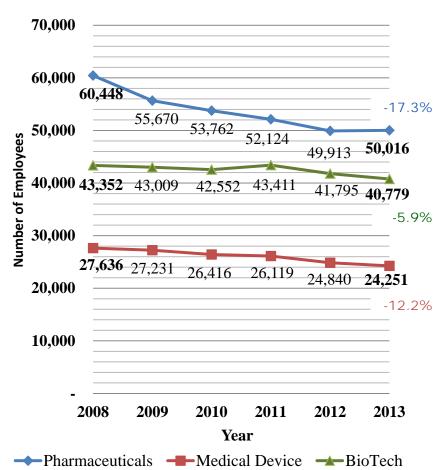




NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER 5-Year Employment Trend



Five-Year Employment Trend 2008 – 2013



(SOURCE: New Jersey Department of Labor & Workforce Development, Quarterly Census of Employment and Wages, 2008-13 Annual Averages: 5-digits NAICS)

With an average of 115,046 workers employed in this NJ cluster in 2013, the employment over the five-year period experienced a declined of 12.5 percent.

Pharmaceutical component in 2013 accounted for about 43.5 percent of this cluster's employment, down from 46.0 percent in 2008. Net loss of jobs were experienced in the pharmaceutical & medicine manufacturing (-29.6%), toilet preparation manufacturing (-14.1%), and soap & cleaning compound manufacturing (-7.6%) sectors. Drugs & druggists sundries wholesalers employment continued to realize a net gain (+17.8%)

BioTech component, which accounted for 35.4 percent of the cluster's employment in 2013, was up from 33.0 percent in 2008. Employment declined (-12.5%) in the R&D industry sectors while medical and diagnostic laboratories grew (+10.7%) over this same period.

Medical Device component accounted for 21.1 percent of this cluster's jobs in 2013, up from 21.0 in 2008. **Employment** declined navigation, measuring. in electromedical & control instrument manufacturing (-19.5%)medical equipment supplies and manufacturing (-3.6%) over the 2008-2013 period.

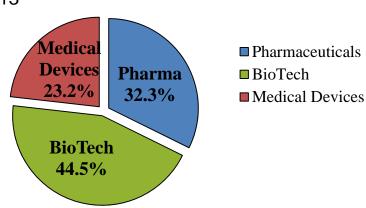


NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER Establishments



Cluster Establishment

2013

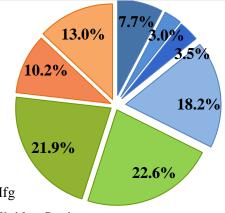


(SOURCE: New Jersey Department of Labor & Workforce Development, Quarterly Census of Employment and Wages, 2013 Annual Averages: 4-digits NAICS)

Sector Establishments



- Soap Compounds Mfg.
- Toilet Prep Mfg.
- Drugs & Druggists Sundries W/S
- Scientific R&D Servcies
- Medical & Diagnostic Labs
- Measuring & Contl Inst Mfg.
- Medical Equipment & Supplies Mfg



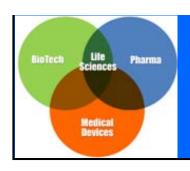
(SOURCE: New Jersey Department of Labor & Workforce Development, Quarterly Census of Employment and Wages, 2013 Annual Averages: 5-digits NAICS)

New Jersey's 3,040 biopharmaceutical life sciences establishments in 2013 were primarily involved in:

Pharmaceuticals: This component, with 982 establishments, was primarily engaged in two sectors: drugs & druggists sundries wholesalers (56.3%) and pharmaceutical preparation manufacturing (23.8%). (Note: Two of this component's sectors; toiletry preparation manufacturing and pharmaceutical & medicine manufacturers -- accounted for 9.9% and 7.6%. respectively, of the nation's cluster establishments.)

BioTech: The 1,354 establishments in this component's sectors were primarily engaged in R&D related bio-life science services (50.7%).

Medical Devices: This component's two sectors consisting of 704 establishments were split between being engaged in medical equipment & supplies manufacturing (56.0%) and navigational, measuring, electromedical & controlling instruments manufacturing (44.0%).

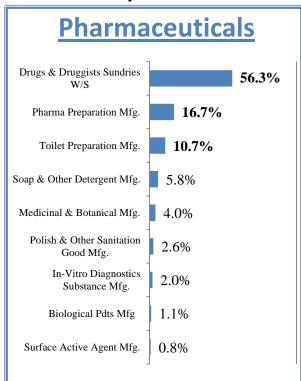


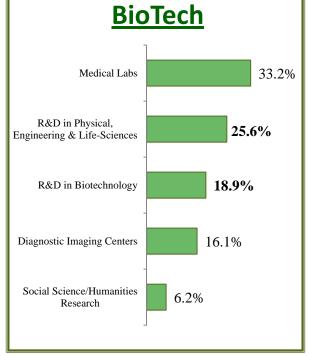
NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER Sub-Sector Establishments



In 2013, New Jersey had 3,040 establishments in this cluster engaged in:

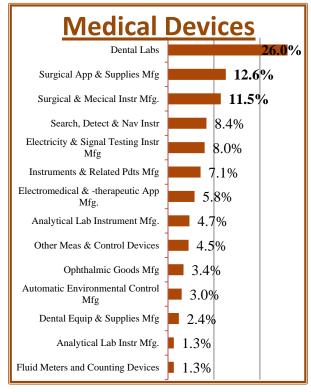
Pharmaceuticals: Consisting of 982 establishments, three sub-sectors accounted for 83.7 percent of this cluster's activities in New Jersey.

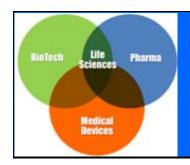




BioTech: R&D related bio-life science related service subsectors accounted for 44.5 percent of the 1,354 establishments in this component followed by medical laboratories (33.2%).

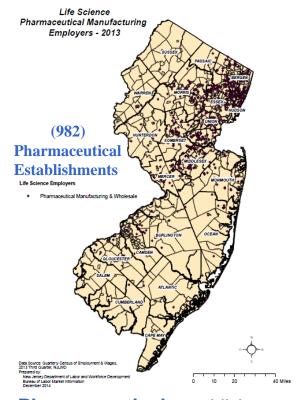
Medical Devices: The majority of the 704 establishments in this sub-sector were engaged in dental labs (26.0%) and surgical & supply related mfg. (24.1%).





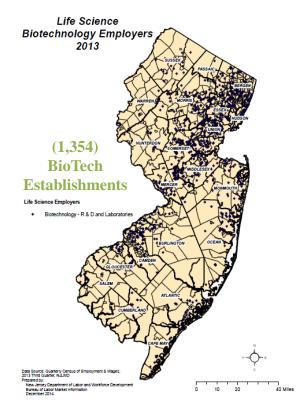
NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER Establishment Concentration

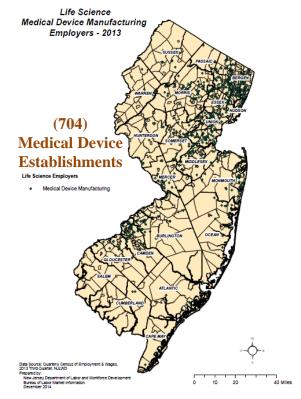




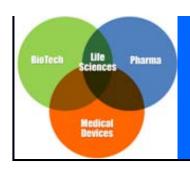
Pharmaceutical establishments have a powerful presence in northern New Jersey - attracted by an excellent labor pool, major universities and access to all modes of superior transportation.

BioTech establishments have a strong presence in New Jersey, especially within the "Einstein Alley Corridor" area. Nearby universities and incubators are a significant contributing factor.



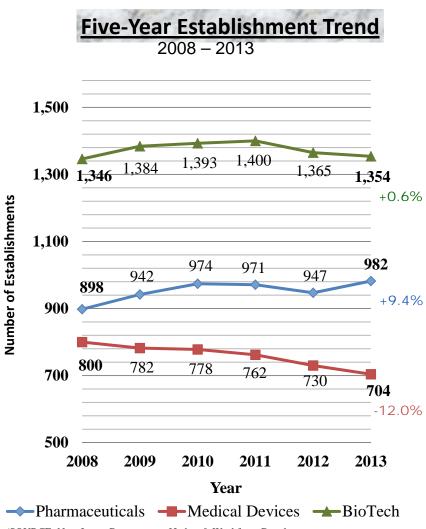


Medical Device establishments have a dynamic presence in New Jersey, especially located in the northeastern section of the state in the heart of the manufacturing area, adjoining "Pharma" country.



NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER 5-Year Establishment Trend



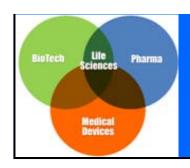


(SOURCE: New Jersey Department of Labor & Workforce Development, Quarterly Census of Employment and Wages, 2013 Annual Averages: 5-digits NAICS) Establishments in this cluster totaled 3,040 in 2013. Due in part due to the numerous industry consolidation and/or reorganization activities over the past five-years (2008-2013), the establishments declined by 0.1 percent.

Pharmaceuticals accounted for 32.3 percent of the cluster's establishments in 2013, up from 29.5 percent in 2008. Pharma & medicine and soap, compounds, & toiletry preparation manufacturing establishments declined over the five-year period (-7.9% & -2.0%, respectively), while drug wholesaler realized a substantial increase (+24.3%).

BioTech accounted for 44.5 percent of the establishments in this cluster in 2013, up from 44.2 percent in 2008. Scientific R&D Services declined slightly (-0.9%) while medical & diagnostic labs continued to grow (+2.1%).

Medical Devices averaged 704 establishments in 2013 and accounted for 25.3 percent of the cluster. Over the five-year period, its industry sectors results were mixed: medical equipment & supplies manufacturing declined (-2.2%) while measuring and control instrument manufacturing grew (+3.4%).



NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER Total Wage Impact



- While New Jersey's Biopharmaceutical Life Sciences Cluster accounted for only 3.6 percent of the employment in 2013, wages accounted for 7.9 percent of the state's total wages.
- This cluster's total wages from 2008 to 2013, increased by 3.3 percent (or \$231.6 million), notably adding to the state's economy.
- ❖ Five out of the seven industry groups experienced total wage growth, which ranged from 8.1 percent to an astonishing 58.7 percent. The top three were: drugs & druggists sundries wholesalers (58.7%), followed by scientific research & development services (14.4%) and medical equipment & supplies manufacturing. (12.8%).

(SOURCE: New Jersey Department of Labor & Workforce Development, Quarterly Census of Employment and Wages, 2013 Annual Averages: 4-digits NAICS)

Note: Total wages is an important factor to consider because it can be used to: □ Determine the value a cluster or industry has in relationship to high paying jobs. □ Anticipate projected state revenues from payroll taxes. □ Help policy makers determine: ➤ Type of industries to focus on for attracting and retaining quality jobs; ❖ Type of jobs that likely will be created, expanded and/or retained.

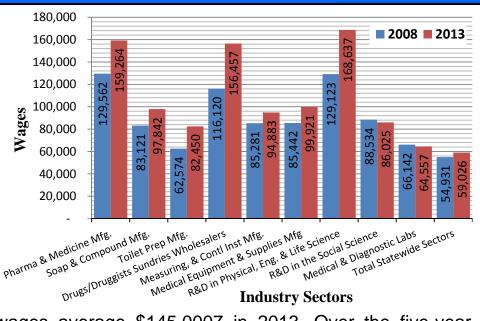
Where and how to invest for economic development, education, training programs, etc.



NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER **Average Annual Wages**



This cluster's average annual wage was \$130,411 in 2013, which was 120.9% higher than the state's total private sector's annual average wage \$59,026. Individually, all three of this cluster's components had 2013 wages that were significantly higher than the state's total annual average wage; ranging from 64.8% (medical devices) 124.0% (biotech) 145.7% and (pharmaceuticals).

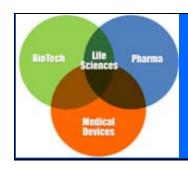


Pharmaceuticals: This component saw annual wages average \$145,0007 in 2013. Over the five-year (2008-2013) period, it increased \$28,858 (+24.8%). Increases in the industry sectors ranged from 17.7 percent (soap & cleaning compound manufacturing) to 34.7 percent (drugs & druggists sundries wholesalers).

BioTech: This component's 2013 annual average wage was \$132,199, up from \$109,700 in 2008. The wages overall rose 20.5 percent between 2008-2013. However, the industry sectors experienced mixed results: from medical & diagnostic laboratory's, which declined (-2.4%) between 2008-2013 to R&D in physical, engineering & life science, which realized an increase of 30.6 percent over the same time period.

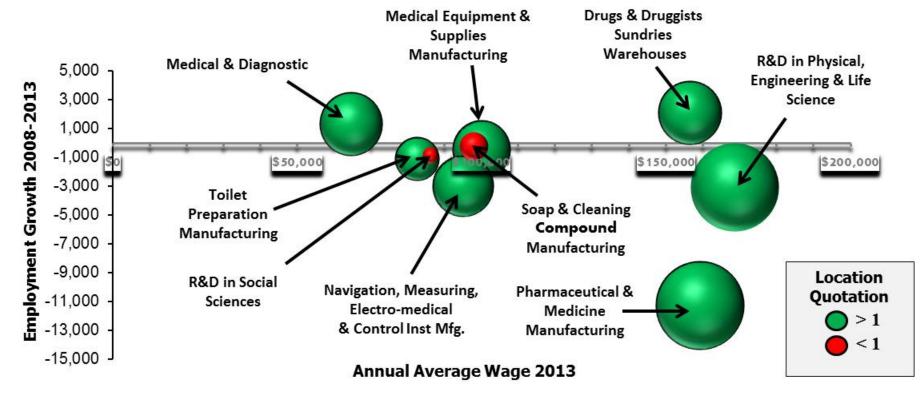
Medical Devices: This component's annual average wage was \$97,302 in 2013, up from \$85,352 in 2008. Over the five-years, the annual average wage increased 14.0 percent. Growth for the industry sectors ranged from +11.3 percent (measuring & control instrument manufacturing) to +16.9 percent (medical equipment manufacturing).

(SOURCE: New Jersey Department of Labor & Workforce Development, Quarterly Census of Employment and Wages, 2008-13 Annual Averages)

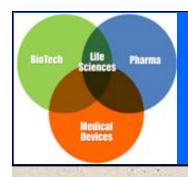


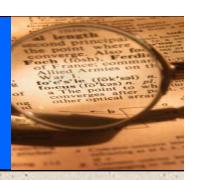
NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER Location Quotation





This Location Quotient graph quantifies the concentration of the sectors of New Jersey's Biopharmaceutical & Life Sciences Cluster as compared to the nation. The nine industry sectors above illustrate the ratio between the percentage of industry employment found in each sector in New Jersey as it compares to the same industry sectors nationally. The chart acts as a barometer to show the concentration value; greater then 1 indicates that NJ's industry employment is greater than the nation. The theory is the greater (or stronger) concentration means that the area's employment is an exporter of goods and/or services for that industry.





Analysis: Staffing Patterns

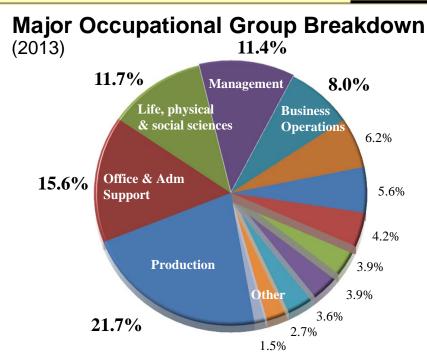
New Jersey's
Biopharmaceutical
Life Sciences
Cluster





Staffing Patterns

Overall Cluster



- **■**Production
- Life, Physical, and Social Sci
- **■**Business and Financial Ops
- Architecture and Engineering
- Material Moving
- Healthcare Support
- Others

- **■**Office & Adm Support
- **■**Management
- Healthcare Practitioners & Tech
- Computer and Math
- Sales
- Maintence

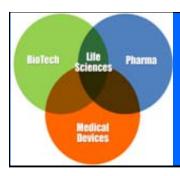
There were 207 occupational titles in New Jersey's Biopharmaceutical Life Sciences cluster that were identified from 2013's estimated employment data.

An occupational analysis of 100,200* jobs revealed that five major occupational groups in this cluster accounted for nearly two-thirds (65.6%) of the jobs. They included:

- Production
- Office & administrative support
- Life, physical, and social sciences
- Management
- Business & Financial Operations.

* NOTE: Due to disclosure issues, of the total 116,190 jobs identified, only 86.2 percent of the estimates could be used for this occupational analysis.

(SOURCE: New Jersey Department of Labor & Workforce Development, Bureau of Occupational Research, Occupational Employment Statistics, May 2013)



NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER Occupations within Cluster

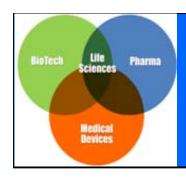


NJ Biopharmaceutical Life Sciences Cluster's Top 20 Occupations

Occurred on a Tital	2013	Typical Minimum Requirements		
Occupational Title	Employment	Education	Work Experience	Job Training
Packaging and Filling Machine Operators and Tenders	4,740	High school diploma or equivalent	None	Moderate-term on-the-job training
Chemists	3,380	Bachelor's degree	None	None
Chemical Technicians	2,760	Associate's degree	None	Moderate-term on-the-job training
Inspectors, Testers, Sorters, Samplers, and Weighers	2,570	High school diploma or equivalent	None	Moderate-term on-the-job training
Business Operations Specialists, All Other	2,230	High school diploma or equivalent	Less than 1 year	Long-term on-the-job training
First-Line Supervisors/Managers of Production	2,050	Postsecondary non-degree award	1 to 5 years	None
Customer Service Representatives	2,050	High school diploma or equivalent	None	Short-term on-the-job training
Mixing and Blending Machine Setters, Operators, and Tenders	2,030	High school diploma or equivalent	None	Moderate-term on-the-job training
Office Clerks, General	1,940	High school diploma or equivalent	None	Short-term on-the-job training
Sales Representatives (Wholesale/Manufacturing: Tech & Scientific Pdts)	1,890	Bachelor's degree	None	Moderate-term on-the-job training
General and Operations Managers	1,880	Associate's degree	1 to 5 years	None
Assemblers and Fabricators, All Other	1,750	High school diploma or equivalent	None	Moderate-term on-the-job training
Machine Setters, Operators, and Tenders	1,640	High school diploma or equivalent	None	Moderate-term on-the-job training
Biochemists and Biophysicists	1,620	Doctoral or professional degree	None	None
Mechanical Engineers	1,530	Bachelor's degree	None	None
Medical and Clinical Laboratory Technologists	1,530	Bachelor's degree	None	None
Natural Sciences Managers	1,520	Bachelor's degree	More than 5 years	None
Laborers and Freight, Stock, and Material Movers, Hand	1,500	Less than high school	None	Short-term on-the-job training
Shipping, Receiving, and Traffic Clerks	1,460	High school diploma or equivalent	None	Short-term on-the-job training
Biological Technicians	1,430	Bachelor's degree	None	None

(SOURCE: New Jersey Department of Labor & Workforce Development,

Bureau of Occupational Research, Occupational Employment Statistics, May 2013)



NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER NJ's Occupational Ranking

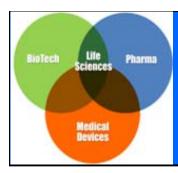


In 2013, in terms of employment, the occupations below were among the most prevalent nationally within certain industries - including life sciences. (The column to the right of each occupation below identifies only the industries related to this cluster. The column to the immediate left of each occupation provides the total occupational employment (including industries outside this cluster), in New Jersey. The ranking to the far left is New Jersey's standing in comparison to all state's total employment for the occupation.)

NJ's Ranking	* Total NJ Employment	Occupation: Some key occupations that employers in this cluster have great demand for their expertise.	Nationally, industries where employment levels for this occupation rank in the top five included:
2	3,140	Natural Sciences Managers Plan, direct, or coordinate activities in such fields as life sciences, physical sciences, and research & development	Scientific Research and Development Services Pharmaceutical and Medicine Manufacturing
2	5,740	Chemists Conduct qualitative and quantitative chemical analyses or experiments in laboratories.	Scientific Research and Development Services Pharmaceutical and Medicine Manufacturing
2	4,950	Chemical Technicians Conduct laboratory tests to assist scientists in making qualitative and quantitative analyses.	Scientific Research and Development Services Pharmaceutical and Medicine Manufacturing
3	3,560	Biochemists and Biophysicists Study the chemical composition or physical principles of living cells and organisms and related phenomena. May conduct research to further understanding of the complex issues.	Scientific Research and Development Services Pharmaceutical and Medicine Manufacturing Drugs and Druggists' Sundries Merchant Wholesalers
3	150	Mathematical Technicians Apply standardized mathematics to technological problems.	Scientific Research and Development Services
3	4,950	Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders Set up, operate, or tend machines, to shape and form products.	Pharmaceutical and Medicine Manufacturing
5	230	Mathematicians Conduct research in fundamental mathematics or in application.	Scientific Research and Development Services

(SOURCE: U. S. Bureau of Labor Statistics, May 2013)

^{*} Total employment for the applicable occupation including employment in industries outside this cluster.





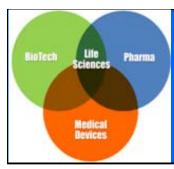


In 2013, in terms of employment, the occupations below were among the most prevalent nationally within certain industries - including life sciences. (The column to the right of each occupation below identifies only the industries related to this cluster. The column to the immediate left of each occupation provides the total occupational employment (including industries outside this cluster), within the metropolitan division. The ranking to the far left is the metro's standing in comparison to all metro's total employment for the occupation.)

	Edison-New Brunswick, NJ Metropolitan Division Comprised of Middlesex, Monmouth, Ocean, & Somerset Counties			
Metro Div. Ranking	* Total NJ Employment	Occupation: Some key occupations that employers in this cluster have great demand for their expertise.	Nationally, industries where employment levels for this occupation rank in the top five included:	
4	1,190	Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders Set up, operate, or tend machines, to shape and form products.	Pharmaceutical and Medicine Manufacturing	
5	1,240	Biochemists and Biophysicists Study the chemical composition or physical principles of living cells and organisms and related phenomena. May also conduct research to further understanding of the complex issues.	Scientific Research and Development Services Pharmaceutical and Medicine Manufacturing Drugs and Druggists' Sundries Merchant Wholesalers	
5	1,290	Chemical Technicians Conduct laboratory tests to assist scientists in making qualitative and quantitative analyses.	Scientific Research and Development Services Pharmaceutical and Medicine Manufacturing	
5	1,580	Life, Physical, and Social Science Technicians, All Other All life, physical, & social science technicians not listed elsewhere.	Scientific Research and Development Services	
7	2,140	<u>Chemists</u> Conduct qualitative and quantitative chemical analyses or experiments in laboratories.	Scientific Research and Development Services Pharmaceutical and Medicine Manufacturing	
8	1,070	Natural Sciences Managers Plan, direct, or coordinate activities in such fields as life sciences, physical sciences, and R&D.	Scientific Research and Development Services Pharmaceutical and Medicine Manufacturing	

(SOURCE: U. S. Bureau of Labor Statistics, May 2013)

^{*} Total employment for the applicable occupation including employment in industries outside this cluster.





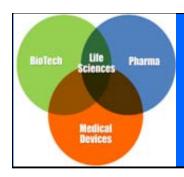


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	New York-White Plains-Wayne, NY-NJ Metropolitan Division From New Jersey this includes: Bergen, Hudson, and Passaic Counties		
Metro Div. Ranking	* Total NJ Employment	Occupation: Some key occupations that employers in this cluster have great demand for their expertise.	Nationally, industries where employment levels for this occupation rank in the top five included:
1	3,120	Life, Physical, and Social Science Technicians, All Other All life, physical, & social science technicians not listed elsewhere.	Scientific Research and Development Services
1	6,330	Medical and Clinical Laboratory Technologists Perform complex medical laboratory tests for diagnosis, treatment, and prevention of disease. May train or supervise staff.	Medical and Diagnostic Laboratories
2	1,320	Extruding, Forming, Pressing, & Compacting Machine Set up, operate, or tend machines, to shape and form products.	Pharmaceutical and Medicine Manufacturing
2	2,980	<u>Chemical Technicians</u> Conduct laboratory tests to assist scientists in making qualitative and quantitative analyses.	Scientific Research and Development Services Pharmaceutical and Medicine Manufacturing
4	2,710	Chemists Conduct qualitative and quantitative chemical analyses or experiments in laboratories.	Pharmaceutical and Medicine Manufacturing Scientific Research and Development Services
4	1,250	Biochemists and Biophysicists Study the chemical composition or physical principles of living cells and organisms and related phenomena. May conduct research to further understanding of the complex issues.	Scientific Research and Development Services Pharmaceutical and Medicine Manufacturing Drugs and Druggists' Sundries Merchant Wholesalers
5	1,370	Natural Sciences Managers Plan, direct, or coordinate activities in such fields as life sciences, physical sciences, and R&D.	Scientific Research and Development Services Pharmaceutical and Medicine Manufacturing

(SOURCE: U. S. Bureau of Labor Statistics, May 2013)

* Total employment for the applicable occupation including employment in industries outside this cluster.







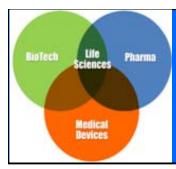
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	Newark-Union, NJ-PA Metropolitan Division		
		From New Jersey this includes: Essex, Hunterdon, Morr	is, Sussex & Union Counties
Metro Div.	* Total NJ	Occupation: Some key occupations that employers in this cluster	Nationally, industries where employment levels for
Ranking	Employment	have great demand for their expertise.	this occupation rank in the top five included:
2	40	Mathematical Technicians	
		Apply standardized mathematics to technological problems.	Scientific Research and Development Services
		Extruding, Forming, Pressing, and	
3	1,260	Compacting Machine Setters, Operators, and Tenders	
		Set up, operate, or tend machines, to shape and form products.	Pharmaceutical and Medicine Manufacturing

	Wilmington, DE-MD-NJ Metropolitan Division From New Jersey this includes: Salem County		
Metro Div. Ranking	* Total NJ Employment	Occupation: Some key occupations that employers in this cluster have great demand for their expertise.	Nationally, industries where employment levels for this occupation rank in the top five included:
2	3,450	<u>Chemists</u> Conduct qualitative and quantitative chemical analyses or experiments in laboratories.	Scientific Research and Development Services Pharmaceutical and Medicine Manufacturing
9	910	<u>Chemical Technicians</u> Conduct laboratory tests to assist scientists in making qualitative and quantitative analyses.	Scientific Research and Development Services Pharmaceutical and Medicine Manufacturing
10	930	Chemical Equipment Operators and Tenders Operate or tend equipment to control chemical changes or reactions in the processing of industrial or consumer products.	Pharmaceutical and Medicine Manufacturing Soap, Cleaning Compound, and Toilet Preparation Mfg.

(SOURCE: U. S. Bureau of Labor Statistics, May 2013)

^{*} Total employment for the applicable occupation including employment in industries outside this cluster.



NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER NJ's Occupational Ranking



In 2013, in terms of concentration of employment, the occupations below were among the most prevalent nationally within certain industries - including life sciences. (The column to the right of each occupation below identifies only the industries related to this cluster. The column to the immediate left of each occupation indicates the concentration of the occupational employment (including industries outside this cluster), in New Jersey. The ranking to the far left is New Jersey's standing in comparison to all state's concentration of employment for the occupation.)

NJ's Ranking	* Location Quotation	Occupation: Some key occupations that employers in this cluster have great demand for their expertise.	Nationally, industries where employment levels for this occupation rank in the top five included:
2	4.24	Biochemists and Biophysicists Study the chemical composition or physical principles of living cells and organisms and related phenomena. May conduct research to further understanding of the complex issues.	Scientific Research and Development Services; Pharmaceutical and Medicine Manufacturing; Drugs and Druggists' Sundries Merchant Wholesalers; Medical and Diagnostic Laboratories
2	2.69	Chemical Technicians Conduct laboratory tests to assist scientists with analyses.	Pharmaceutical and Medicine Manufacturing
2	4.85	Mathematical Technicians Apply standardized mathematics to technological problems.	Scientific Research and Development Services
2	5.03	Mathematical Science Occupations, All Other Solve problems using mathematical methods.	Scientific Research and Development Services
3	2.27	Chemists Conduct qualitative and quantitative chemical analyses or experiments in laboratories for quality or process control or to develop new products or knowledge.	Pharmaceutical and Medicine Manufacturing Scientific Research and Development Services
5	2.66	Mathematicians Conduct research in fundamental mathematics or in application.	Scientific Research and Development Services
5	1.84	Managers, All Other All managers not listed separately.	Scientific Research and Development Services







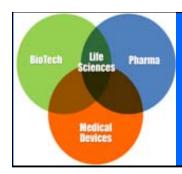
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	Edison-New Brunswick, NJ Metropolitan Division		
		Comprised of Middlesex, Monmouth, Ocean, &	Somerset Counties
Metro Div.	* Location	Occupations Some key occupations that employers in this cluster	Nationally, industries where employment levels for
Ranking	Quotation	Occupation: have great demand for their expertise.	this occupation rank in the top five included:
2	4.78	Mathematical Science Occupations, All Other Solve problems using mathematical methods.	Scientific Research and Development Services
6	5.77	Biochemists and Biophysicists Study the chemical composition or physical principles of living cells and organisms and related phenomena. May conduct research to further understanding of the issues.	Scientific Research and Development Services Pharmaceutical and Medicine Manufacturing Drugs and Druggists' Sundries Merchant Wholesalers Medical and Diagnostic Laboratories
9	3.46	Life, Physical, and Social Science Technicians, All Other All life, physical, & social science technicians not listed elsewhere.	Scientific Research and Development Services

Newark-Union, NJ-PA Metropolitan Division			
		From New Jersey this includes: Essex, Hunterdon, Morri	s, Sussex & Union Counties
Metro Div.	* Location	Occupations Some key occupations that employers in this cluster	Nationally, industries where employment levels for
Ranking	Quotation	Occupation: Some key occupations that employers in this cluster have great demand for their expertise.	this occupation rank in the top five included:
2	5.00	Mathematical Technicians	
		Apply standardized mathematics to technological problems.	Scientific Research and Development Services
9	1.5	Mathematicians Conduct research in fundamental mathematics on in application	Scientific Passarah and Davelonment Services
		Conduct research in fundamental mathematics or in application.	Scientific Research and Development Services

(SOURCE: U. S. Bureau of Labor Statistics, May 2013)

^{*} This accounts for employment for the occupation including industries outside this cluster.







In 2013, in terms of concentration of employment, the occupations below were among the most prevalent nationally within certain industries - including life sciences. (The column to the right of each occupation below identifies only the industries related to this cluster. The column to the immediate left of each occupation indicates the concentration of the occupational employment (including industries outside this cluster), for the identified metro division. The ranking to the far left is the metro division's standing in comparison to all metro division's concentration of employment across the nation for that occupation.)

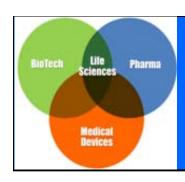
	Trenton-Ewing, NJ Metropolitan Division Consist of Mercer County		
Metro Div. Ranking	* Location Quotation	Occupation: Some key occupations that employers in this cluster have great demand for their expertise.	Nationally, industries where employment levels for this occupation rank in the top five included:
6	2.88	Managers, All Other All managers not listed separately.	Scientific Research and Development Services
6	3.47	Physical Scientists, All Other All physical scientists not listed separately.	Scientific Research and Development Services
7	4.95	Natural Sciences Managers Natural sciences managers supervise the work of scientists, including chemists, physicists, and biologists. They direct research and development projects and coordinate activities.	Scientific Research and Development Services Pharmaceutical and Medicine Manufacturing Drugs and Druggists' Sundries Merchant Wholesalers

(SOURCE: U. S. Bureau of Labor Statistics, May 2013)

Note: Recently, Trenton, NJ was ranked #5 on the "10 Best U.S. Cities for Science, Math and Tech Grads" by consumer-advocacy website NerdWallet. It identified the area as "home to a high concentration of biotech and pharmaceutical companies. What's more, the local Center for Excellence in STEM Education in the Trenton-Ewing metro area is working to innovate teaching techniques from pre-kindergarten through college. Also, the cost of living in Trenton is comparatively low, a definite plus for recent college grads carrying heavy student loan loads."

(SOURCE: Entrepreneur, July 17, 2013)

^{*} This accounts for employment for the occupation including industries outside this cluster.







In 2013, in terms of concentration of employment, the occupations below were among the most prevalent nationally within certain industries - including life sciences. (The column to the right of each occupation below identifies only the industries related to this cluster. The column to the immediate left of each occupation indicates the concentration of the occupational employment (including industries outside this cluster), for the identified metro division. The ranking to the far left is the metro division's standing in comparison to all metro division's concentration of employment across the nation for that occupation.)

	Wilmington, DE-MD-NJ Metropolitan Division From New Jersey this includes: Salem County		
Metro Div. Ranking	* Location Quotation	Occupation: Some key occupations that employers in this cluster have great demand for their expertise.	Nationally, industries where employment levels for this occupation rank in the top five included:
1	16.07	<u>Chemists</u> Conduct qualitative and quantitative chemical analyses or experiments in laboratories for quality or process control or to develop new products or knowledge.	Pharmaceutical and Medicine Manufacturing Scientific Research and Development Services
1	7.56	Materials Scientists Research and study the structures and chemical properties of various natural and manmade materials.	Scientific Research and Development Services Pharmaceutical and Medicine Manufacturing
2	3.26	Magnetic Resonance Imaging Technologists Operate Magnetic Resonance Imaging (MRI) scanners.	Medical and Diagnostic Laboratories
3	5.78	Chemical Technicians Conduct laboratory tests to assist scientists in making qualitative and quantitative analyses.	Pharmaceutical and Medicine Manufacturing
5	5.05	Natural Sciences Managers Natural sciences managers supervise the work of scientists, including chemists, physicists, and biologists. They direct research and development projects and coordinate activities.	Scientific Research and Development Services Pharmaceutical and Medicine Manufacturing Drugs and Druggists' Sundries Merchant Wholesalers

(SOURCE: U. S. Bureau of Labor Statistics, May 2013)

^{*} This accounts for employment for the occupation including industries outside this cluster.

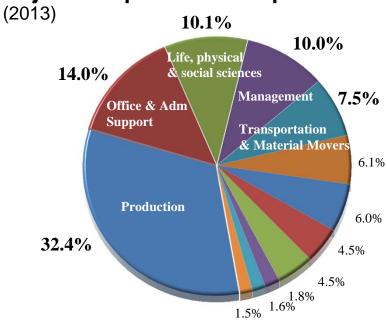




Staffing Patterns

Pharmaceutical Component





- **■**Production
- Life, Physical, and Social Sci
- **■**Transp. & Material Movers
- **■**Sales
- **■**Maintence
- Architecture and Engineering

- **■**Office & Adm Support
- **■**Management
- Business and Financial Ops
- Healthcare Practitioners & Tech
- Computer and Math
- Others

(SOURCE: New Jersey Department of Labor & Workforce Development, Bureau of Occupational Research, Occupational Employment Statistics, May 2013) There were 117 occupational titles in New Jersey's pharmaceutical component that were identified from 2013's estimated occupational employment data.

An occupational analysis of 45,630* jobs revealed that five major occupational groups in this component accounted for almost three-quarters (74.0%) of the employment. They included:

- Production
- Office & administrative support
- Life, physical, and social sciences
- Management
- Transportation & Material Movers

* NOTE: Due to disclosure issues, of the total 50,070 jobs identified, only 91.1 percent of the estimates could be used for this occupational analysis.

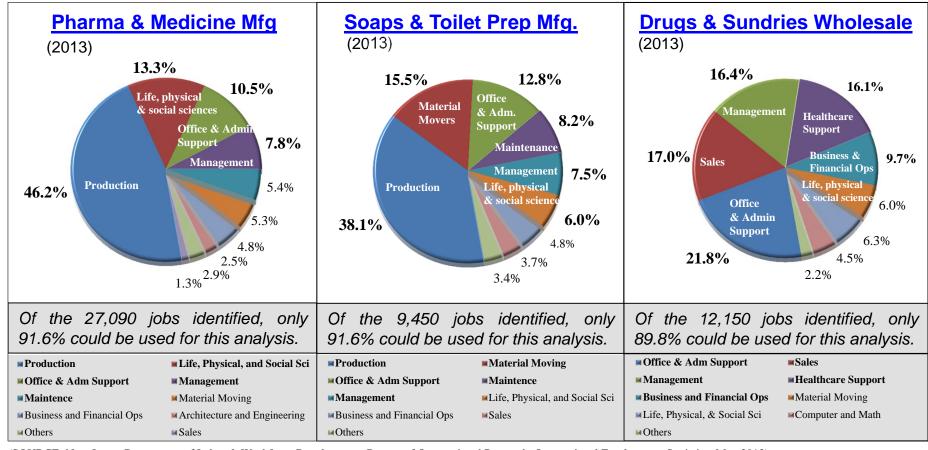


NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER Staffing Patterns

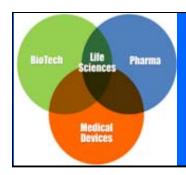


Pharmaceutical's Major Occupational Groups

In all three industry groups, management and office & administrative support workers account for a significant portion of the employment.



(SOURCE: New Jersey Department of Labor & Workforce Development, Bureau of Occupational Research, Occupational Employment Statistics, May 2013)



NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER Occupations within the Pharma Group



NJ Pharmaceutical Group's Top 20 Occupations

	2013	Typical Minimum Requirements				
Occupational Title	Employment		Work Experience	Job Training		
51-9111 Packaging and Filling Machine Operators and Tenders	4,710	High school diploma or equivalent	None	Moderate-term on-the-job training		
19-2031 Chemists	2,340	Bachelor's degree	None	None		
51-9023 Mixing and Blending Machine Setters, Operators, and Tenders	2,000	High school diploma or equivalent	None	Moderate-term on-the-job training		
51-9061 Inspectors, Testers, Sorters, Samplers, and Weighers	1,890	High school diploma or equivalent	None	Moderate-term on-the-job training		
51-9041 Pressing, and Compacting Machine Setters, Operators, and Tender	1,640	High school diploma or equivalent	None	Moderate-term on-the-job training		
51-1011 First-Line Supervisors of Production and Operating Workers	1,510	Postsecondary non-degree award	1 to 5 years	None		
41-4011 Sales Reps, Wholesale & Mfg, Technical & and Scientific Products	1,440	Bachelor's degree	None	Moderate-term on-the-job training		
53-7062 Laborers and Freight, Stock, and Material Movers, Hand	1,350	Less than high school	None	Short-term on-the-job training		
29-2052 Pharmacy Technicians	1,230	High school diploma or equivalent	None	Moderate-term on-the-job training		
51-9011 Chemical Equipment Operators and Tenders	1,110	High school diploma or equivalent	None	Moderate-term on-the-job training		
41-4012 Sales Reps, Wholesale and Mfg, Except Tech & Scientific Produc	1,090	High school diploma or equivalent	None	Moderate-term on-the-job training		
49-9041 Industrial Machinery Mechanics	1,070	High school diploma or equivalent	None	Long-term on-the-job training		
19-4031 Chemical Technicians	1,060	Associate's degree	None	Moderate-term on-the-job training		
43-5071 Shipping, Receiving, and Traffic Clerks	970	High school diploma or equivalent	None	Short-term on-the-job training		
11-1021 General and Operations Managers	810	Associate's degree	1 to 5 years	None		
43-4051 Customer Service Representatives	780	High school diploma or equivalent	None	Short-term on-the-job training		
53-7064 Packers and Packagers, Hand	750	Less than high school	None	Short-term on-the-job training		
49-9071 Maintenance and Repair Workers, General	670	High school diploma or equivalent	None	Long-term on-the-job training		
43-3031 Bookkeeping, Accounting, and Auditing Clerks	660	High school diploma or equivalent	None	Moderate-term on-the-job training		
53-3033 Light Truck or Delivery Services Drivers	640	High school diploma or equivalent	None	Short-term on-the-job training		

(SOURCE: New Jersey Department of Labor & Workforce Development, Bureau of Occupational Research, Occupational Employment Statistics, May 2013)

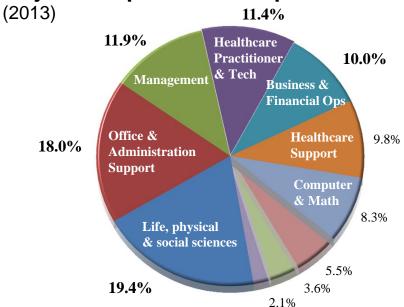




Staffing Patterns

Biotech (R&D) Component





■Life, Physical, and Social Sci

■Office & Adm Support

■Management

■Healthcare Practitioners & Tech

■Business and Financial Ops

■Healthcare Support

■Computer and Math

■ Architecture and Engineering

■Others

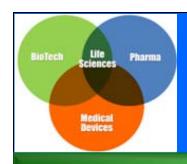
■Sales

(SOURCE: New Jersey Department of Labor & Workforce Development, Bureau of Occupational Research, Occupational Employment Statistics, May 2013) There were 137 occupational titles in New Jersey's biotech component that were identified from 2013's estimated occupational employment data.

An occupational analysis of 36,230* jobs revealed that five major occupational groups in this component accounted for over two-thirds (69.0%) of the employment. They included:

- Life, physical, & social science
- Office & administrative support
- Management
- Healthcare Practitioner & Technical
- Business & Financial Operations

* NOTE: Due to disclosure issues, of the total 41,970 jobs identified, only 86.3 percent of the estimates could be used for this occupational analysis.

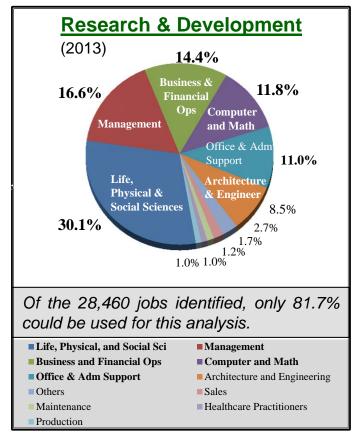


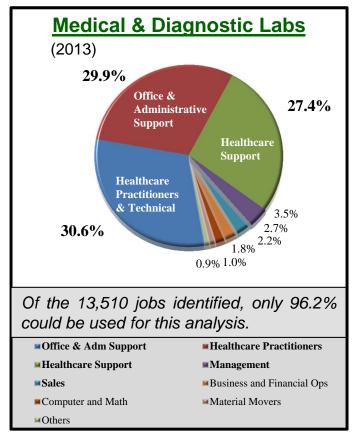


Staffing Patterns

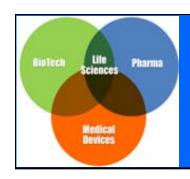
Biotech (R&D) Component

Biotech's occupational groups show that these industry groups utilize a significant portion of professional, scientific, and technical workers with an in-depth knowledge and skills related to science and healthcare.





(SOURCE: New Jersey Department of Labor & Workforce Development, Bureau of Occupational Research, Occupational Employment Statistics, May 2013)



NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER Occupations within the Biotech Group



NJ Biotech Group's Top 20 Occupations

O comment and Title	2013	Туріс	Typical Minimum Requirements			
Occupational Title	Employment	Education	Work Experience	Job Training		
19-4031 Chemical Technicians	1,700	Associate's degree	None	Moderate-term on-the-job training		
29-2011 Medical and Clinical Laboratory Technologists	1,530	Bachelor's degree	None	None		
13-1199 Business Operations Specialists, All Other	1,370	High school diploma or equivalent	Less than 1 year	Long-term on-the-job training		
31-9099 Healthcare Support Workers, All Other	1,230	High school diploma or equivalent	None	None		
19-1021 Biochemists and Biophysicists	1,210	Doctoral or Professional degree	None	None		
19-4021 Biological Technicians	1,140	Bachelor's degree	None	None		
43-4171 Receptionists and Information Clerks	1,140	High school diploma or equivalent	None	Short-term on-the-job training		
43-9061 Office Clerks, General	1,060	High school diploma or equivalent	None	Short-term on-the-job training		
19-2031 Chemists	1,040	Bachelor's degree	None	None		
19-1042 Medical Scientists, Except Epidemiologists	930	Doctoral or Professional degree	None	None		
29-2034 Radiologic Technologists and Technicians	920	Associate's degree	None	None		
11-9121 Natural Sciences Managers	900	Bachelor's degree	More than 5 years	None		
15-1132 Software Developers, Applications	840	Bachelor's degree	None	None		
43-6011 Executive Secretaries and Executive Administrative Assistants	800	High school diploma or equivalent	1 to 5 years	None		
43-4051 Customer Service Representatives	700	High school diploma or equivalent	None	Short-term on-the-job training		
43-3021 Billing and Posting Clerks and Machine Operators	690	High school diploma or equivalent	None	Short-term on-the-job training		
29-2012 Medical and Clinical Laboratory Technicians	680	Associate's degree	None	None		
11-1021 General and Operations Managers	620	Associate's degree	1 to 5 years	None		
43-6014 Secretaries and Administrative Assistants, Except Legal, Medical,	590	High school diploma or equivalent	None	Short-term on-the-job training		
15-1131 Computer Programmers	480	Bachelor's degree	None	None		

(SOURCE: New Jersey Department of Labor & Workforce Development, Bureau of Occupational Research, Occupational Employment Statistics, May 2013)

There were 137 occupational titles identified from 2013's 41,970 jobs analyzed for this industry group.

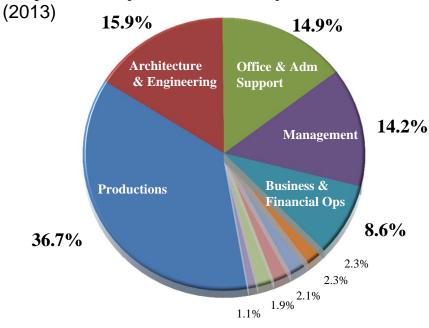


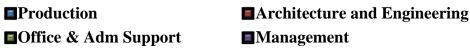




Medical Device Component







■Business and Financial Ops

■ Maintence

■Computer and Math

■Sales

■ Transportation/Material Moving

■Others

(SOURCE: New Jersey Department of Labor & Workforce Development, Bureau of Occupational Research, Occupational Employment Statistics, May 2013) There were 115 occupational titles in New Jersey's medical device component that were identified from 2013's estimated occupational employment data.

An occupational analysis of 18,220* jobs revealed that six major occupational groups in this component accounted for 90.3 percent of the employment. They included:

- Productions
- Architecture & engineering
- Office & Administrative support
- Management
- Business & financial operations

* NOTE: Due to disclosure issues, of the total 24,150 jobs identified, only 75.4 percent of the estimates could be used for this occupational analysis.

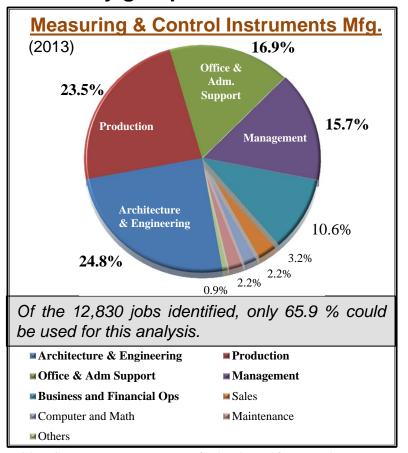


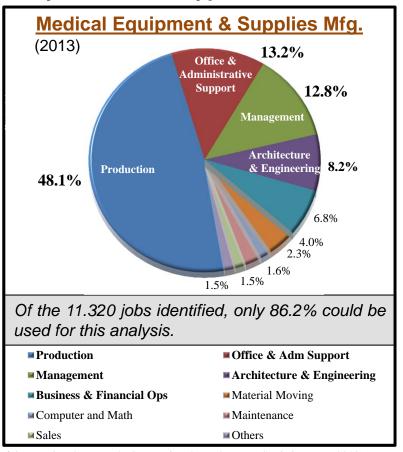


Staffing Patterns

Medical Device Component

While the percentages differ, the top four occupational groups reveal that these two industry groups both have a need for many of the same type of workers.





(SOURCE: New Jersey Department of Labor & Workforce Development, Bureau of Occupational Research, Occupational Employment Statistics, May 2013)



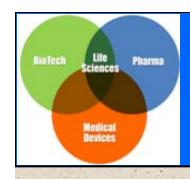




NJ Medical Device Group's Top 20 Occupations

	Occupational Title	2013	Typical Minimum Requirements			
•		Employment	Education	Work Experience	Job Training	
51-2099	Assemblers and Fabricators, All Other	1,750	High school diploma or equivalent	None	Moderate-term on-the-job training	
17-2141	Mechanical Engineers	1,150	Bachelor's degree	None	None	
51-9081	Dental Laboratory Technicians	720	High school diploma or equivalent	None	Moderate-term on-the-job training	
51-2022	Electrical and Electronic Equipment Assemblers	710	High school diploma or equivalent	None	Short-term on-the-job training	
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	650	High school diploma or equivalent	None	Moderate-term on-the-job training	
51-2023	Electromechanical Equipment Assemblers	610	High school diploma or equivalent	None	Short-term on-the-job training	
17-2112	Industrial Engineers	590	Bachelor's degree	None	None	
43-4051	Customer Service Representatives	570	High school diploma or equivalent	None	Short-term on-the-job training	
51-1011	First-Line Supervisors of Production & Ops Workers	500	Postsecondary non-degree award	Less than 5 years	None	
43-5071	Shipping, Receiving, and Traffic Clerks	460	High school diploma or equivalent	None	Short-term on-the-job training	
11-1021	General and Operations Managers	450	Bachelor's degree	Less than 5 years	None	
11-9041	Architectural and Engineering Managers	390	Bachelor's degree	5 years or more	None	
51-4041	Machinists	330	High school diploma or equivalent	None	Long-term on-the-job training	
51-2092	Team Assemblers	320	High school diploma or equivalent	None	Moderate-term on-the-job training	
11-3051	Industrial Production Managers	310	Bachelor's degree	5 years or more	None	
13-1023	Purchasing Agts, Except Wholesale, Retail, & Farm Pdts	300	High school diploma or equivalent	None	Long-term on-the-job training	
13-1199	Business Operations Specialists, All Other	300	High school diploma or equivalent	None	None	
43-9061	Office Clerks, General	300	High school diploma or equivalent	None	Short-term on-the-job training	
43-3031	Bookkeeping, Accounting, and Auditing Clerks	290	High school diploma or equivalent	None	Moderate-term on-the-job training	
43-6014	Secretaries & Admin Assist-Except Legal, Medical	280	High school diploma or equivalent	None	Short-term on-the-job training	

(SOURCE: New Jersey Department of Labor & Workforce Development, Bureau of Occupational Research, Occupational Employment Statistics, May 2013)





Analysis: Characteristics

New Jersey's
Biopharmaceutical
Life Sciences
Cluster

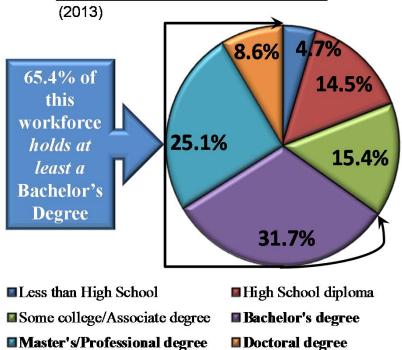


NJ BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER Education Characteristics



It is often mentioned that life sciences related employers require a well-educated and highly skilled workforce to meet the high level and technical demands of many of the occupations they need to fill.

Educational Breakdown



This chart highlights the fact that employers in the life sciences related establishments utilized New Jersey's highly well-educated workforce. In fact, almost two-thirds of New Jersey's workforce employed in this cluster holds at least a bachelor's degree, with many holding even more advanced degrees.

❖ Bachelors: 31.7%

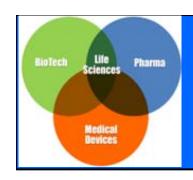
❖ Master's/Professional: 25.1%

❖ Doctoral: 8.6%

Note: The "Pharmaceutical/Life Science" is defined as industries with NAICS codes in 3254,3256,3345,3391,5417 in ACS PUMS file excluding "Drug & Druggists Sundries wholesaler (4242)" and "Medical & Diagnosis Labs services (6215)".

Source: 2013 American Community Survey Public Use Microdata Sample (5% sample).

Prepared by: New Jersey Department of Labor and Workforce Development, Division of Labor Market & Demographic Research, January 2015.



NJ BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER Education Attainment



In 2013, New Jersey awarded *over* 22,000 certificates/degrees for many of the related occupations employed within Life Sciences including:

Degrees Awarded in 2013 by New Jersey's Institution of Higher Education	Certification	Associate Degrees	Bachelor's Degrees	Master's Degrees	Doctoral Research Degrees	Doctoral Professional Practice Degrees	TOTALS
Computer and Information Sciences and Support Services	52	377	972	701	16		2,118
Engineering	2	204	2,315	1,211	212		3,944
Engineering Technologies & Engineering-Related Fields	57	507	260	136	1_		961
Biological and Biomedical Sciences	2	132	2,392	506	182		3,214
Mathematics & Statistics		26	695	294	54		1,069
Physical Sciences		120	561	200	126		1,007
Science Technologies/Technicians		25	20	2			47
Health Professions & Related Programs	922	3,419	2,854	1,467	214	909	9,785
Totals	1,035	4,810	10,069	4,517	805	909	22,145

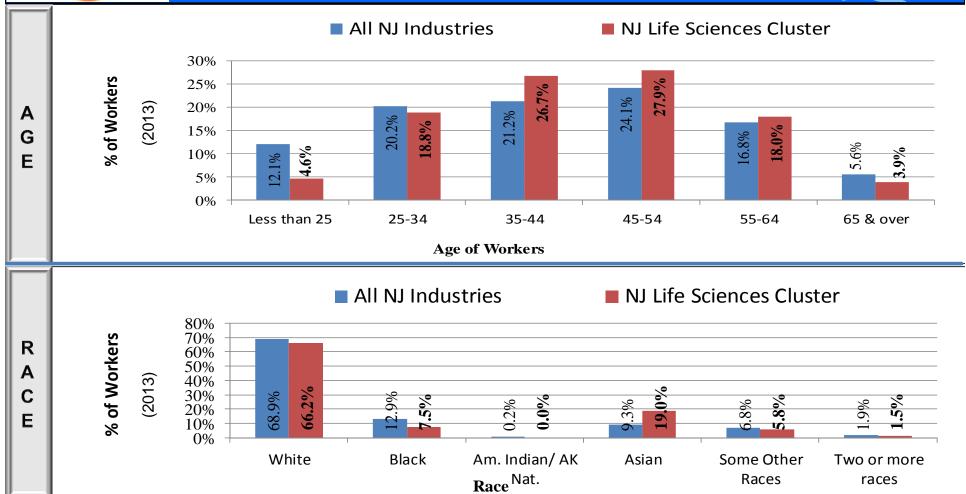
(SOURCE: State of New Jersey's Office of the Secretary of Higher Education, 2013 IPEDS Completions Survey)

The certificates & degrees shown above accounted for 26.4% of the total 83,788 awarded in 2013. *In fact, the above cited Doctoral degrees accounted for 53.7% of the total 3,192 awarded for this year.*



NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER Characteristics





Note: The "Pharmaceutical/Life Science" is defined as industries with NAICS codes in 3254,3256,3345,3391,5417 in ACS PUMS file excluding "Drug & Druggists Sundries wholesaler (4242)" and "Medical & Diagnosis Labs services (6215)".

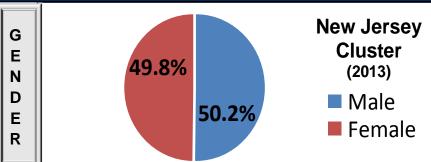
Source: 2013 American Community Survey Public Use Microdata Sample (5% sample).

Prepared by: New Jersey Department of Labor and Workforce Development, Division of Labor Market & Demographic Research, January 2015.



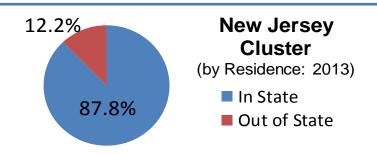
NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER Characteristics

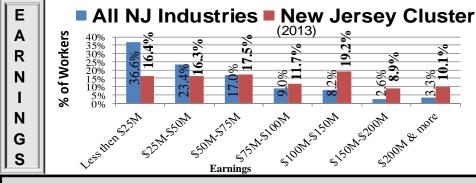




- In 2013, there was a slightly higher number of males (50.2%) employed than females (49.8%) in the life sciences.
- For all industries there was a greater percentage of workers who were male (52.4%) and a lower percentage of female workers (47.6%).
- Almost 88 percent of New Jersey residents who worked in life sciences occupations worked in-state in 2013 compared with 86.4 percent across all industries.





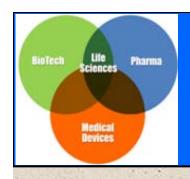


- Over two-thirds of the workers (67.4%) earned *over* \$50,000 in 2013, whereas for all industries combined three-fifths (60.0%) *earned less than* \$50,000.
- The proportion of workers making \$150,000 or more is greater than 3:1 in favor of life sciences vs. all industries.

Note: The "Pharmaceutical/Life Science" is defined as industries with NAICS codes in 3254,3256,3345,3391,5417 in ACS PUMS file excluding "Drug & Druggists Sundries wholesaler (4242)" and "Medical & Diagnosis Labs services (6215)".

Source: 2013 American Community Survey Public Use Microdata Sample (5% sample).

Prepared by: New Jersey Department of Labor and Workforce Development, Division of Labor Market & Demographic Research, January 2015.





Job Postings

(from 2013)

New Jersey's
Biopharmaceutical
Life Sciences
Cluster



NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER Job Postings

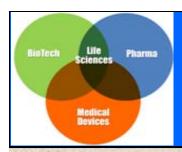


Analyzing job postings is helpful in knowing what type of occupations employers are seeking. It also provides an insight to the related skills and educational attainment employers require (or at least desired). Therefore, the following section was added in order to help identify and provide information about related occupations within New Jersey's bio-pharmaceutical life sciences cluster.

The findings are intended to help identify and increase awareness of what employers in this cluster are seeking from New Jersey's labor force. This information can be useful for a variety of purposes, such as informing job-seeker, economic developers, educational institutions, and many others about:

- **❖** Occupations that are in demand.
- * Basic and technical skills employers are looking for an applicant to possess.
- * Educational requirements employers require/desire from prospective hires.

The New Jersey Department of Labor and Workforce Development through its agreement with Burning Glass Technologies is able to provide the following labor market information aggregated from 2013 online employer job listings. This data provides valuable insight regarding current employer demand for characteristics such as skills and educational requirements. Note that this data is not meant to represent all available employment opportunities or employer requirements but rather should be viewed in terms of analysis of labor market demand, as demonstrated by online job postings.

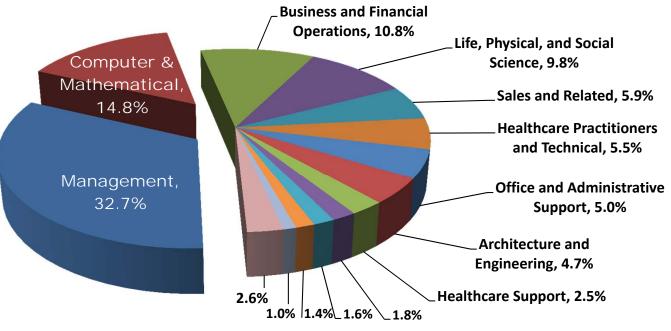


NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER Occupation Family

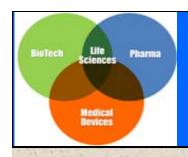


Job Postings: January-December 2013

- **■** Management
- Computer and Mathematical
- Business and Financial Operations
- Life, Physical, and Social Science
- Sales and Related
- Healthcare Practitioners and Technical
- Office and Administrative Support
- Architecture and Engineering
- Healthcare Support
- Production
- Legal
- Arts, Design, Entertainment, Sports, and Media
- Installation, Maintenance, and Repair
- Other



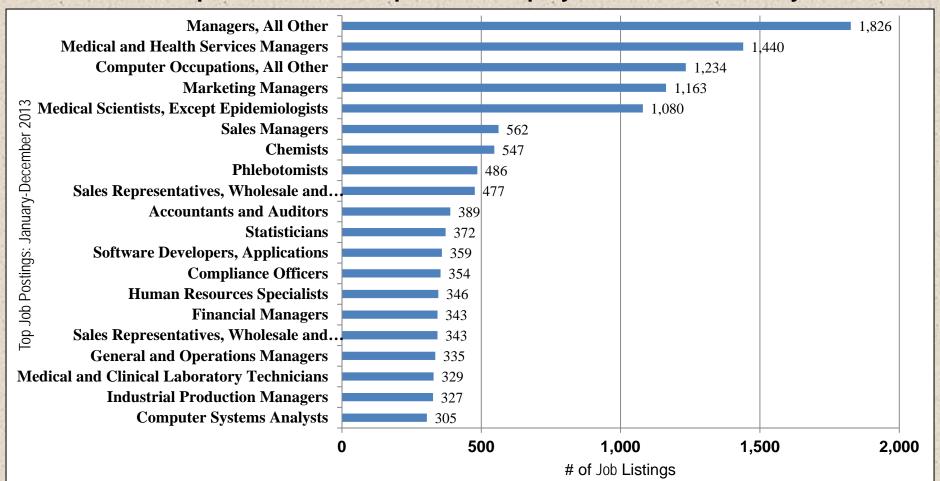
In 2013, *Management* (32.7%) and *Computer* & *Mathematical* (14.8%) listings accounted for 47.5% of the 23,015 job postings for positions within New Jersey's Biopharmaceutical Life Sciences Cluster.





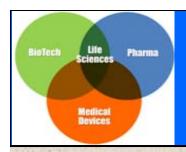


The following were some of the most frequently listed positions by biopharmaceutical life sciences companies in 2013 for potential employment at a New Jersey location.



NOTE: Total identified postings: 23,423

(SOURCE: Labor Insight-Burning Glass Technologies, December 2014)







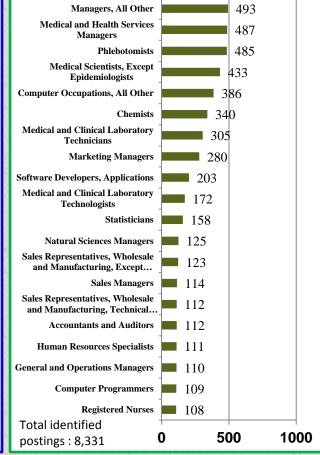
In 2013, the following were some of the most frequently listed positions by companies within this cluster for potential employment at a New Jersey location.

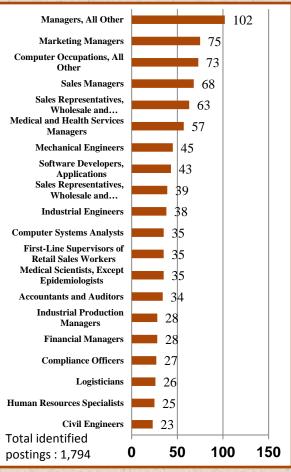
Pharmaceutical



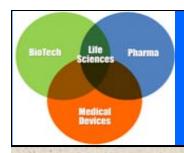








(SOURCE: Labor Insight-Burning Glass Technologies, December 2014) NOTE: Total identified postings: 23,423

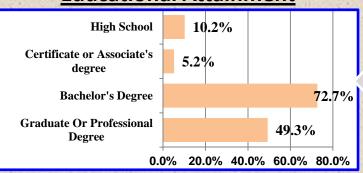






In addition to education...

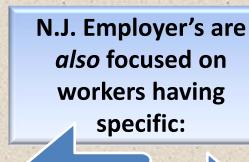
Educational Attainment



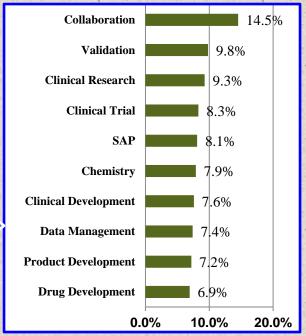
Job Postings: January-December 2013

NOTE: This chart provides information on both the preferred and required education levels listed in job postings. For this reason, a job posting may be counted in more than one of the educational categories shown to the left.

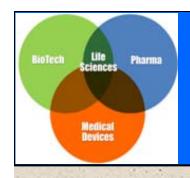








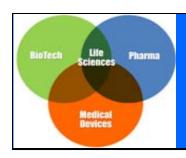
NOTE: Data was obtained from January-December 2013 filtered job Postings: 23,423





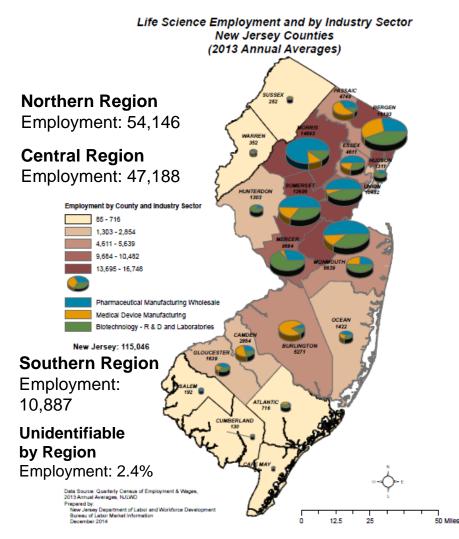
Analysis: Regional Review

New Jersey's
Biopharmaceutical
Life Sciences
Cluster



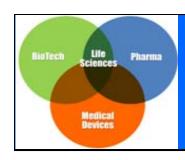


Regional Concentration of Employment



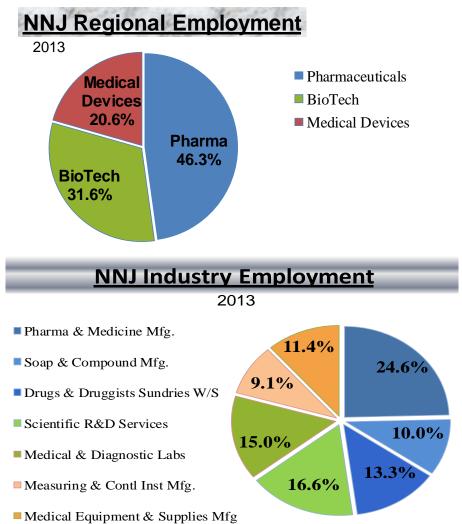
New Jersey's Biopharmaceuticals Life Sciences Cluster employed an average of 115,046 workers in 2013.

- Northern NJ's nine counties (Bergen, Essex, Hudson, Hunterdon, Morris, Passaic, Sussex, Union, & Warren) accounted for 47.1 percent of the cluster's employment with the largest share working in Pharmaceuticals (47.8%).
- ❖ Central NJ's five counties (Mercer, Middlesex, Monmouth, Ocean, & Somerset) accounted for 41.0 percent of the cluster's employment with the largest share working in Biotech (43.5%).
- ❖ Southern NJ's seven counties (Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester & Salem) accounted for 9.5 percent of the cluster's employment with the largest share working in Medical Devices (55.4%).

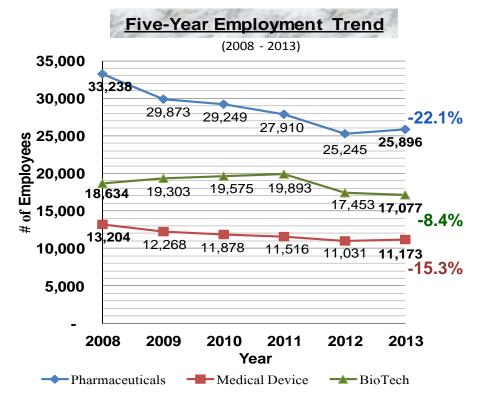


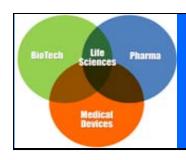


- Northern NJ Regional Employment -



Over 54,000 workers were employed within this cluster in Northern NJ in 2013. The region's cluster employment declined by 16.8 percent over the five-year period (2008-2013) period.

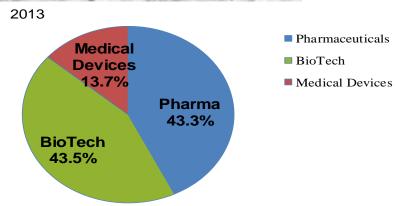






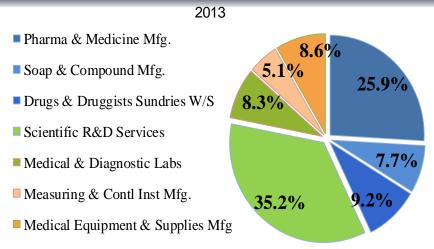
- Central NJ Regional Employment -

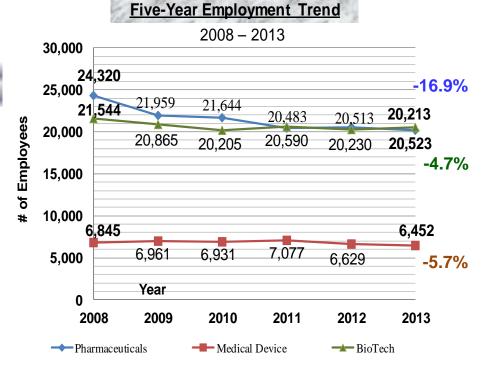
CNJ Regional Employment

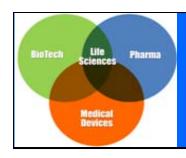


In 2013, Biopharmaceutical Life Sciences employed an average of 47,188 workers in Central NJ. This region's cluster employment declined by 10.5 percent over the five-year period (2008-2013) period.

CNJ Industry Employment

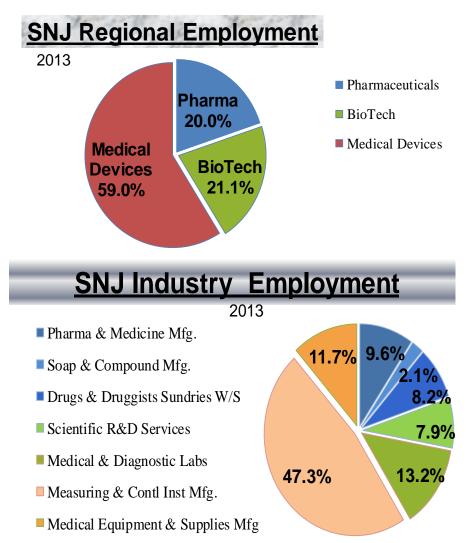






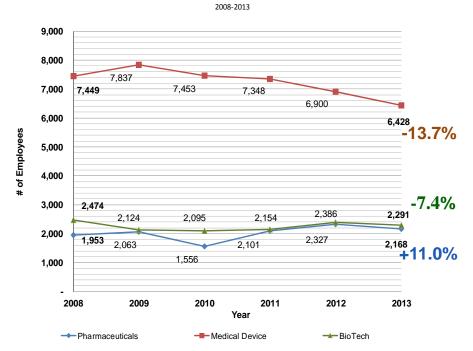


- Southern NJ Regional Employment -



Almost 10,900 workers were employed in this cluster in Southern NJ in 2013. The Biopharmaceutical Life Sciences' employment in this region declined by 8.3 percent over the five-year period (2008-2013) period.

Five-Year Employment Trend

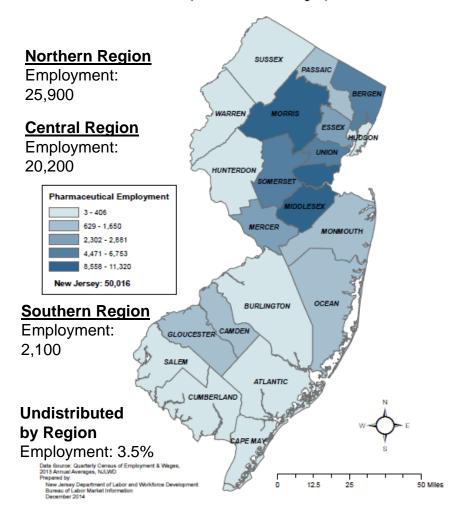






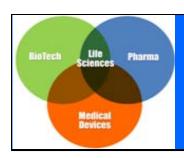
Concentration of Pharmaceutical Employment

Pharmaceutical Employment - New Jersey Counties (2013 Annual Averages)



New Jersey's pharmaceutical statewide employment averaged 50,016 in 2013. This component's employment was mostly concentrated in the pharmaceutical & medicine manufacturing (53.4%) industry group.

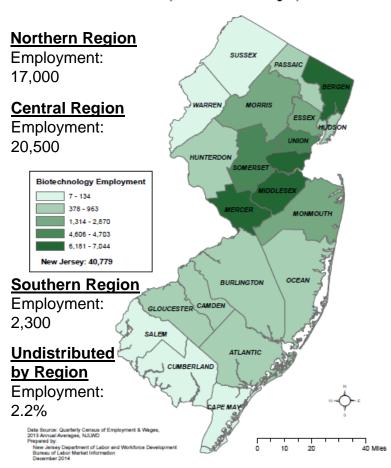
- ❖ Northern region accounted for 51.8 percent of the employment with most jobholders employed in pharmaceutical & medicine manufacturing (51.4%) industry group.
- ❖ Central region accounted for 40.4 percent of the employment with most jobholders employed in pharmaceutical & medicine manufacturing (60.6%) industry group.
- ❖ Southern region accounted for 4.3 percent of the employment with most jobholders employed in pharmaceutical & medicine manufacturing (48.4%) industry group.





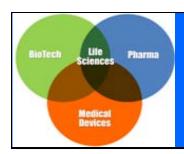
Concentration of Biotechnology Employment

Biotechnology Employment - New Jersey Counties (2013 Annual Averages)



New Jersey's statewide biotech employment averaged almost 40,800 in 2013. It was largely concentrated in scientific research & development services (66.6%) industry group.

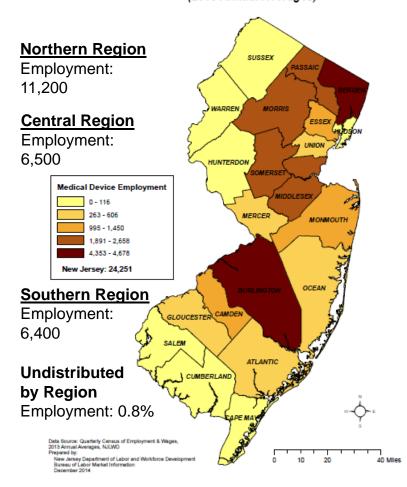
- ❖ Northern region accounted for 41.9 percent of the employment with most jobholders employed in scientific R&D services (52.5%) industry group.
- ❖ Central region accounted for 50.3 percent of the employment with most jobholders employed in scientific R&D services (80.9%) industry group.
- ❖ Southern region accounted for 5.6 percent of the employment with most jobholders employed in medical & diagnostic laboratories (62.5%) industry group.





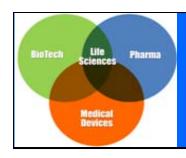
Concentration of Medical Device Employment

Medical Device Employment - New Jersey Counties (2013 Annual Averages)



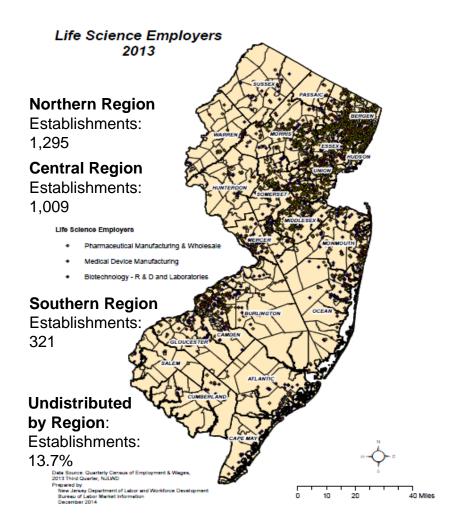
New Jersey's statewide medical device employment averaged 24,251 in 2013. It was mostly in navigational, measuring, electro-medical & control instrument manufacturing (52.0%) industry group.

- ❖ Northern region accounted for 46.1 percent of the employment with most jobholders employed in medical equipment & supplies manufacturing (55.8%) industry group.
- ❖ Central region accounted for 26.6 percent of the employment with most jobholders employed in medical equipment & supplies mfg. (62.9%) industry group.
- ❖ Southern region accounted for 26.5 percent of the employment with most jobholders employed in navigational, measuring, electromedical & control instrument manufacturing (80.2%) industry group.



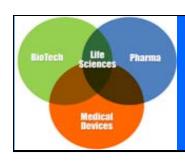


Concentration of Establishments



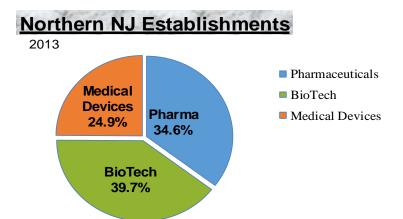
New Jersey had over 3,000 establishments directly engaged in its highly concentrated Biopharmaceutical Life Sciences Cluster in 2013.

- Northern NJ's nine counties (Bergen, Essex, Hudson, Hunterdon, Morris, Passaic, Sussex, Union, & Warren) accounted for 42.6 percent of life sciences led by establishments in the Biotech component. (39.8%).
- Central NJ's five counties (Mercer, Middlesex, Monmouth, Ocean, & Somerset) accounted for 33.2 percent of the life sciences establishments led by the Biotech component. (48.9%)
- Southern NJ's seven counties (Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester & Salem) accounted for 10.6 percent of life sciences led by the Biotech component. (54.8%)

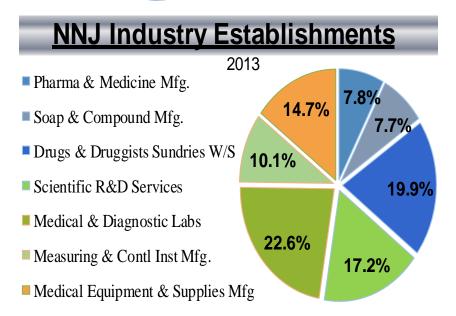


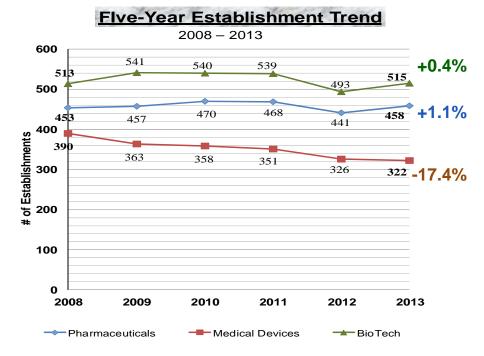


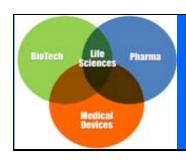
Northern NJ Regional Establishments



Northern NJ's Biopharmaceutical Life Sciences cluster had an average of 1,295 establishments in 2013. Its establishments declined 4.5 percent over the Five-year period (2008-2013) period.



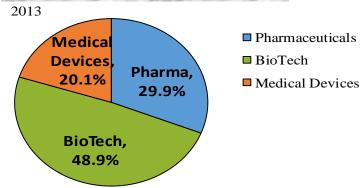




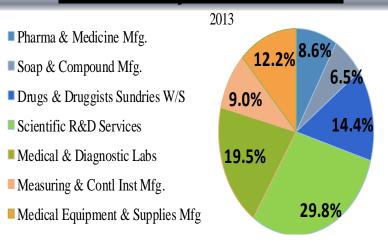


Central NJ Regional Establishments

Central NJ Establishment

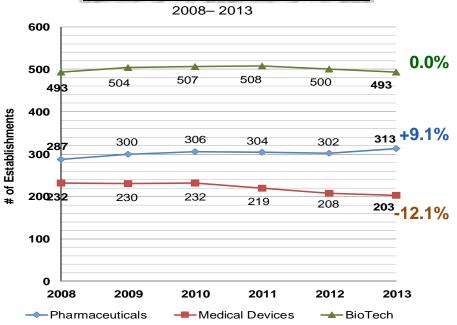


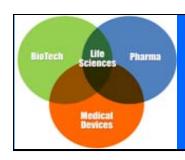
CNJ Industry Establishments



Central NJ had 1,009 establishments within this cluster in 2013. These establishments declined 0.3 percent over the five-year period (2008-2013) period.

Five-Year Establishment Trend







Southern NJ Regional Establishments

Southern NJ Establishment

Pharma,
16.8%

BioTech
29.0%

BioTech,
54.8%

SNJ Industry Establishments

2013

14.6%

36.8%

14.3%

Pharma & Medicine Mfg.

Soap & Compound Mfg.

■ Drugs & Druggists Sundries W/S

Scientific R&D Services

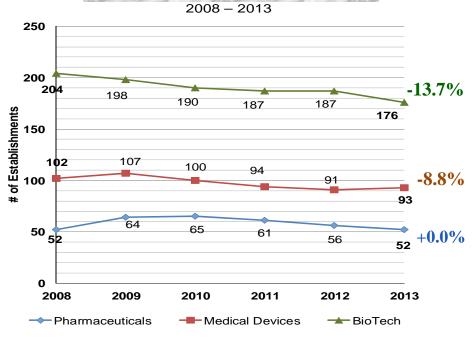
Medical & Diagnostic Labs

Measuring & Contl Inst Mfg.

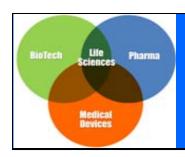
■ Medical Equipment & Supplies Mfg

Southern NJ had 321 establishments within this cluster in 2013. These establishments declined 10.3 percent over the five-year period (2008-2013) period.

Five-Year Establishment Trend

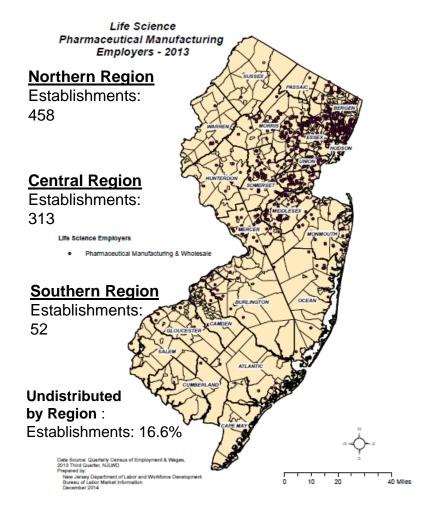


18.1%



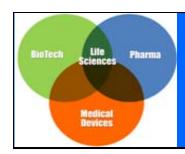


Concentration of Pharmaceutical Establishments



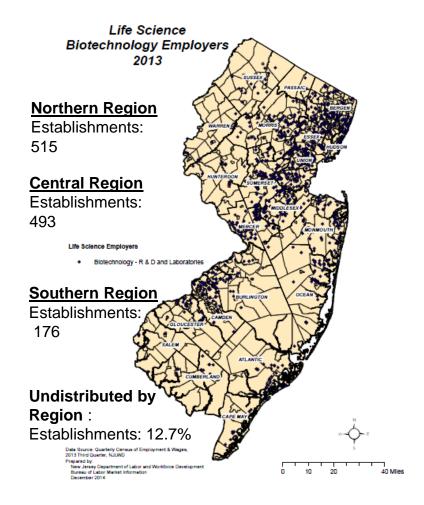
In 2013, New Jersey had an average of 982 establishments directly engaged in the pharmaceutical industries.

- Northern Region accounted for 46.4 percent of the establishments, led by Bergen and Morris Counties. Collectively, these two counties accounted for over 50 percent (56.8%) of NNJ's pharmaceutical establishments.
- Central Region accounted for 31.7 percent of the establishments, led by Middlesex and Somerset counties. Together, these 2 counties accounted for over two-thirds (68.7%) of CNJ's pharmaceutical establishments.
- Southern Region accounted for 5.3 percent of the establishments, led by Camden and Burlington counties. Collectively, these two counties accounted for over three-fifths (63.5%) of SNJ's pharmaceutical establishments.



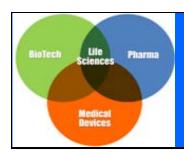


Concentration of Biotechnology Establishments



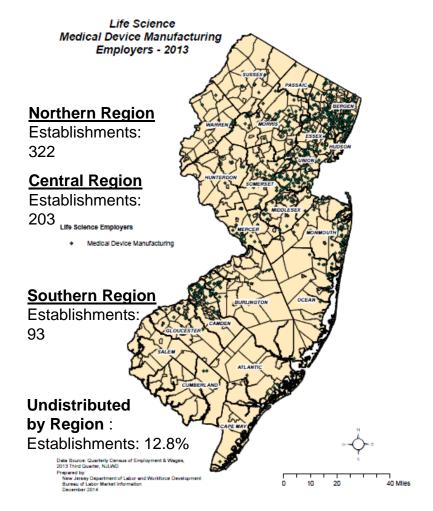
In 2013, New Jersey had an average of 1,357 establishments directly engaged in the biotech industries.

- ❖ Northern Region accounted for 38.0 percent of the establishments, led by Bergen, Morris, Essex, & Union counties. Collectively, these four counties accounted over three quarters (75.8%) of NNJ's biotech establishments.
- Central Region accounted for 36.3 percent of the establishments, led by Middlesex and Mercer counties. Collectively, these two counties accounted for over half (54.5%) of CNJ's biotech establishments.
- ❖ Southern Region accounted for 13.0 percent of the establishments, led by Burlington, Camden, & Atlantic counties. Collectively, these three counties accounted for nearly threequarters (72.1%) of SNJ's biotech establishments.



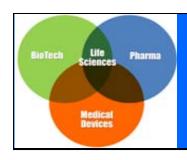


Concentration of Medical Device Establishments



In 2013, New Jersey had an average of 709 establishments directly engaged in the medical device industries.

- Northern Region accounted for 45.4 percent of the establishments, led by Bergen & Morris Counties. Collectively, these two counties accounted almost half (49.4%) of NNJ's medical device establishments.
- Central Region accounted for 28.6 percent of the establishments, led by Middlesex & Monmouth counties. Combined, these two counties accounted for over half (58.1%) of CNJ's medical device establishments.
- ❖ Southern Region accounted for 13.1percent of the establishments, led by Camden & Burlington counties. Combined, these two Counties accounted for over three-quarters (75.3%) of SNJ's medical device establishments.





Summary of Employment & Establishments

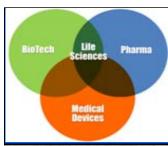
The following chart provides a geographic summary of Life Sciences' employment & establishments in New Jersey.

Employment *	2013		5-Year (2008-2013) Trend			
Employment *	Cluster		Pharmaceutical	Biotech	Medical Device	Overall Cluster
Statewide	115,046		-17.3%	-5.9%	-12.2%	-12.5%
Nothern New Jersey	54,146	47.1%	-22.1%	-8.4%	-15.3%	-16.8%
Central New Jersey	47,188	41.0%	-16.9%	-4.7%	-5.7%	-10.5%
Southern New Jersey	10,887	9.5%	11.0%	-7.4%	-13.7%	-8.3%
Fatabiliah manta *	2013		5-Year (2008-2013) Trend			
Establishments *	Cluster	•	Pharmaceutical	Biotech	Medical Device	Overall Cluster
Statewide	3,040		9.4%	0.6%	-12.0%	-0.1%
Nothern New Jersey	1,295	42.6%	1.1%	0.4%	-17.4%	-4.5%
_	•					
Central New Jersey	1,009	33.2%	9.1%	0.0%	-12.5%	-0.3%

(SOURCE: New Jersey Department of Labor & Workforce Development, Quarterly Census of Employment and Wages, 2008-13 Annual Averages: 4-digits NAICS)

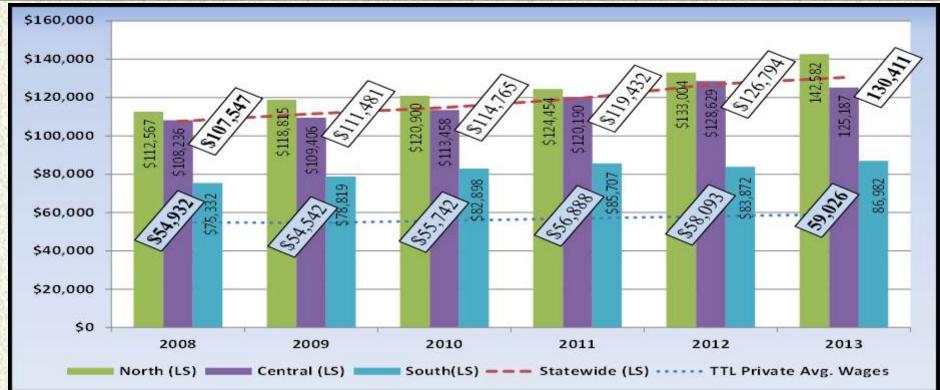
Employment: 2.4% Establishments: 13.6%

^{*} Note: Not all data was identifiable by region. Specifically:

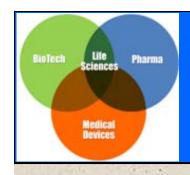




Average Annual Wages



In 2013, this cluster's statewide annual average wage was \$130,411 which was 120.9% higher than the state's total private sector's average wage of \$59,026. The cluster's three components (*statewide*) all had wages that were significantly higher than the statewide total private sector average wages; Medical Device \$97,302 (64.8%), Biotech \$132,199 (124.0%) & Pharmaceuticals \$145,007 (145.7%).



NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER

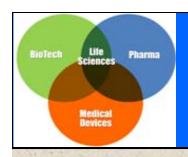


Job Postings in 2013

by

Region

New Jersey's
Biopharmaceutical
Life Science
Cluster



NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER Job Postings



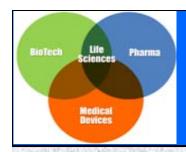
The following analysis of the job postings is broken down by the State's regions: north, central and south. It provides the same formatted information as previously shown statewide, however this will drill down to a regional level.

Just as employer's needs differ by industry clusters, they can also vary by locality. Therefore, an analysis of job postings by region can help identify certain occupations, skills, as well as educational attainment that local employers are in need of, such as:

- **❖Specific occupations needed for certain operations in a particular geographic area.**
- **❖Skill requirements (or possible gaps) for a specific location.**
- **❖**Educational requirements needed/desired to fill certain local positions.

In addition, this type of information can be used for investment opportunities. That is, by identifying and addressing skill gaps or exploring the types of workforce training needed in order to meet the demands of the business community can in turn help improve and expand employment opportunities.

The New Jersey Department of Labor and Workforce Development through its agreement with Burning Glass Technologies is able to provide the following labor market information aggregated from 2013 online employer job listings. This data provides valuable insight regarding current employer demand for characteristics such as skills and educational requirements. Note that this data is not meant to represent all available employment opportunities or employer requirements but rather should be viewed in terms of analysis of labor market demand, as demonstrated by online job postings.



■ Production

■ Other

NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER NNJ Occupational Postings



Job Postings: January-December 2013

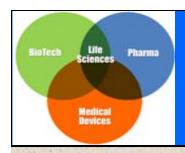
NNJ Occupational Family Postings ■ Management Business & **■** Computer and Mathematical Operations Computer & ■ Business and Financial Mathematical 11.4% Physical & Operations 13.7% Social Science ■ Life, Physical, and Social Science ■ Sales and Related 6.2% ■ Healthcare Practitioners and 5.4% Technical Management ■ Office and Administrative Support 34.0% ■ Architecture and Engineering ■ Healthcare Support ■ Legal

In 2013, Management (34.0%) and Computer & Mathematical (13.7%) listings accounted for nearly fifty percent (47.7%) of the 11,449 job postings for positions in the Biopharmaceutical Life Sciences Cluster in Northern New Jersey.

Job Postings in Greatest Demand Northern New Jersey: 2013

❖ Managers, All Other	862
❖ Medical & Health Services Managers	765
❖ Marketing Managers	661
❖ Medical Scientists	593
❖ Computer Occupations, All Other	510
❖ Sales Managers	290
❖ Chemists	263
❖ Sales Reps, W/S & Mfg, expt Tech Pdts.	261
❖ Accountants and Auditors	215
❖ Human Resources Specialists	187
❖ Financial Managers	184
❖ Phlebotomists	182
❖ Statisticians	177
❖ Compliance Officers	169
❖ Medical and Clinical Laboratory Techs	163
❖ Software Developers, Applications	162
❖ Sales Reps, W/S & Mfg include Tech Pdts	161
❖ Computer Systems Analysts	156
❖ Lawyers	155
❖ Industrial Production Managers	155

The 20 occupational postings above accounted for 54.8% of NNJ's 11,449 Biopharmaceutical Life Sciences job postings in 2013.



Total identified

postings: 6,599

NEW JERSEY BIO-PHARMACEUTICAL LIFE-SCIENCES CLUSTER



Occupations in Greatest Demand in NNJ

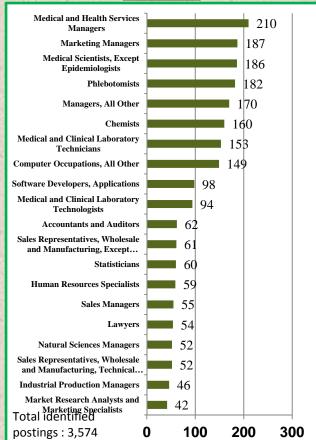
Job Postings: January-December 2013

The following were some of the most frequently listed positions in 2013 by companies within this cluster for potential employment in the Northern New Jersey Region.



Managers, All Other 613 Medical and Health Services 513 Managers Marketing Managers 410 Medical Scientists, Except 381 **Epidemiologists** Computer Occupations, All Other Sales Managers 207 Sales Representatives, Wholesale 155 and Manufacturing, Except... Financial Managers 132 Accountants and Auditors 128 **Compliance Officers** 116 **Human Resources Specialists** 112 110 Statisticians Secretaries and Administrative 103 Assistants, Except Legal,... Chemists 101 95 92 **Purchasing Managers** Industrial Production Managers Computer Systems Analysts Sales Representatives, Wholesale and Manufacturing, Technical... First-Line Supervisors of Retail Sales Workers

BioTech



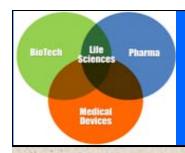
Medical Devices



(SOURCE: Labor Insight-Burning Glass Technologies, December 2014)

200 400 600 8001,000

NOTE: Total identified NNJ postings: 11,449



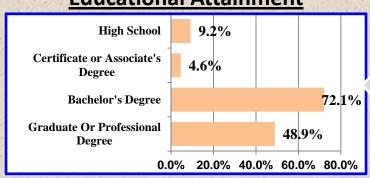
NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER



Cluster Requirements in Demand in NNJ

Educational Attainment





Job Postings: January-December 2013

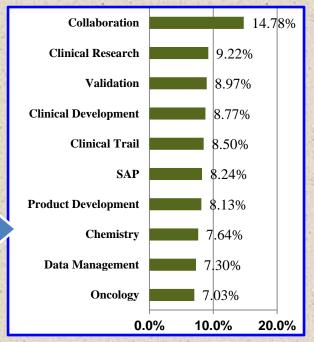
Sussex

Passaid

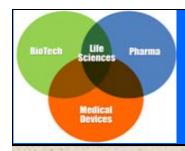
NOTE: This chart provides information on both the preferred and required education levels listed in job postings. For this reason, a job posting may be counted in more than one of the educational categories shown to the left.







(SOURCE: Labor Insight-Burning Glass, December 2014) NOTE: Data was obtained from 11,449 filtered job Postings)



■Legal

■ Other

NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER CNJ Occupational Postings



Job Postings: January-December 2013

CNJ Occupational Family Postings ■ Management Business & **■** Computer and Financial Mathematical Computer & Operations ■ Business and Financial Mathematical **Operations** 16.1% Physical & ■ Life, Physical, and Social Science Social Science VALUE1 Architecture and 5.3% Engineering ■ Sales and Related 5.3% ■ Healthcare Practitioners Management and Technical 33.2% 4.8% Office and Administrative Support ■ Healthcare Support ■ Production

In 2013, Management (33.2%) and Computer & Mathematical (16.1%) listings accounted for almost half (49.3%) of the 10,855 job postings for positions in the Biopharmaceutical Life Sciences Cluster within Central New Jersey.

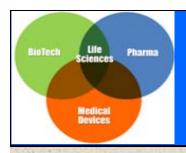
Job Postings in Greatest Demand Central New Jersey: 2013

❖ Managers, All Other	924
* Computer Occupations, All Other	686
❖ Medical and Health Services Managers	645
❖ Marketing Managers	483
❖ Medical Scientists	451
❖ Chemists	257
❖ Sales Managers	255
❖ General and Operations Managers	189
❖ Compliance Officers	180
❖ Phlebotomists	179
❖ Sales Reps, W/S & Mfg, expt Tech Pdts.	178
❖ Accountants and Auditors	170
❖ Statisticians	170
❖ Software Developers, Applications	164
❖ Industrial Production Managers	159
❖ Financial Managers	155
❖ Computer & Info Systems Managers	153
❖ Human Resources Specialists	147
❖ Sales Reps, W/S & Mfg incl Tech Pdts.	145
❖ Computer Programmers	143

The 20 occupational postings above accounted for 53.7 percent of CNJ's 10,855 Bio-pharmaceutical Life Sciences job postings in 2013.

(SOURCE: Labor Insight-Burning Glass Technologies, December 2014)

NOTE: Total identified postings: 10,855



NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER



Occupations in Greatest Demand in CNJ

Job Postings: January-December 2013

The following were some of the most frequently listed positions in 2013 by companies within this cluster for potential employment in the Central New Jersey Region.

Pharmaceutical

600 Managers, All Other Computer Occupations, All Other 455 389 Marketing Managers Medical and Health Services 372 Managers Medical Scientists, Except 220 **Epidemiologists** Sales Managers 169 **Compliance Officers** 31 General and Operations Managers Computer and Information 121 Systems Managers Financial Managers Sales Reps, W/S & Mfg, expt Tech 13 Accountants and Auditors 112 **Industrial Production Managers** 109 Financial Analysts Computer Systems Analysts 103 Lawyers Chemists **Human Resources Specialists Industrial Engineers** Logisticians Total identified 0 200 400 600 8001.000 postings: 6,387

BioTech

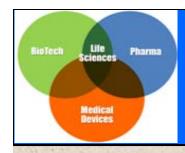


Medical Devices



(SOURCE: Labor Insight-Burning Glass Technologies, December 2014)

NOTE: Total identified CNJ postings: 10,855



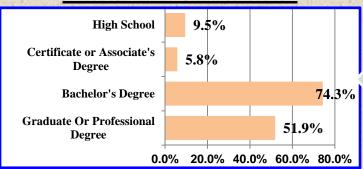
NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER



Cluster Requirements in Demand in CNJ



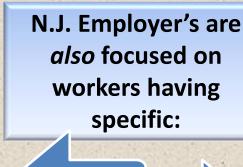
Educational Attainment

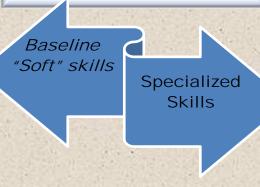


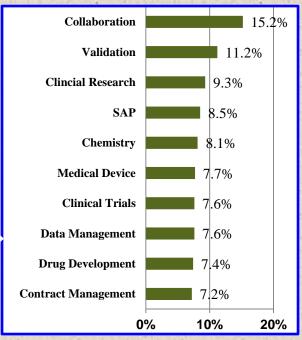
Job Postings: January-December 2013

NOTE: This chart provides information on both the preferred and required education levels listed in job postings. For this reason, a job posting may be counted in more than one of the educational categories shown to the left.

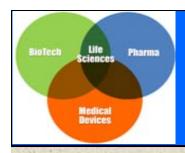








NOTE: Data was obtained from 10,855 filtered job Postings)



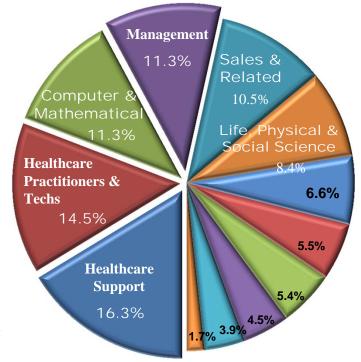
NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER SNJ Occupational Postings



Job Postings: January-December 2013

SNJ Occupational Family Postings

- **■** Healthcare Support
- Healthcare Practitioners & Technical
- Computer & Mathematical
- **■** Management
- Sales and Related
- Life, Physical, and Social Science
- Architecture & Engineering
- **■** Other
- Office & Admin Support
- Transportation & Material Moving
- Business & Financial Operations
- **■** Production

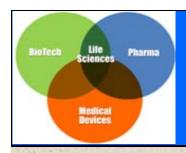


In 2013, Healthcare Support (16.3%), Healthcare Practitioners & Technical (14.5%), Computer & Mathematical (11.3%), and Management (11.3%) listings accounted for over half (534%) of all the 767 job postings for positions in this Cluster within Southern New Jersey.

Job Postings in Greatest Demand Southern New Jersey: 2013

❖ Phlebotomists	118
❖ Medical and Clinical Laboratory Techs	34
❖ Sales Reps, W/S & Mfg, includes Tech Pdts	s. 33
❖ Sales Reps, W/S & Mfg, expt Tech Pdts.	30
❖ Registered Nurses	29
❖ Software Developers, Applications	28
❖ Chemists	23
❖ Computer Occupations, All Other	22
❖ Laborers and Material Movers	22
❖ Medical Scientists	17
❖ Managers, All Other	15
❖ Medical and Health Services Managers	14
❖ Industrial Engineers	13
❖ Marketing Managers	11
❖ Sales Managers	11
❖ Industrial Production Managers	10
❖ Database Administrators	10
❖ Radiologic Technologists	9
❖ Occupational Health and Safety Specialists	8
❖ Software Developers, Systems Software	8

The 20 occupations listed above accounted for 60.6 percent of SNJ's 767 job postings in the Bio-pharmaceutical Life Sciences cluster in 2013.



NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER

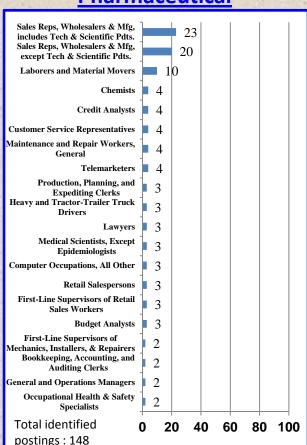


Occupations in Greatest Demand in SNJ

Job Postings: January-December 2013

The following were some of the most frequently listed positions in 2013 by companies within this cluster for potential employment in the Central New Jersey Region.

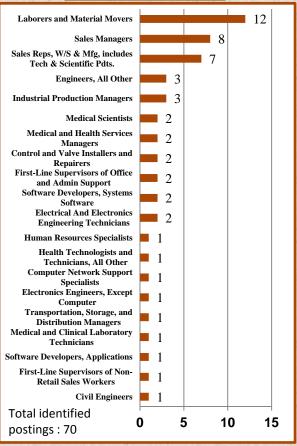




BioTech



Medical Devices



NOTE: Total identified NNJ postings: 767

(SOURCE: Labor Insight-Burning Glass Technologies, December 2014)



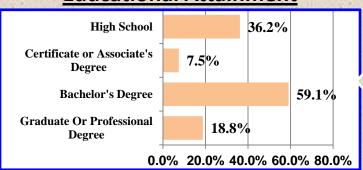
NEW JERSEY BIO-PHARMACEUTICAL LIFE SCIENCES CLUSTER



Cluster Requirements in Demand in SNJ

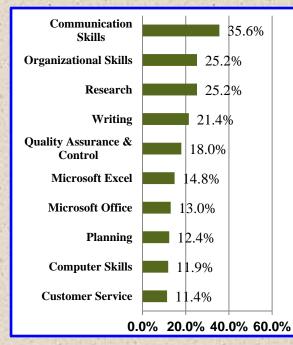
In addition to education...

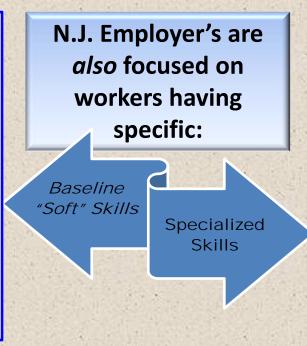
Educational Attainment

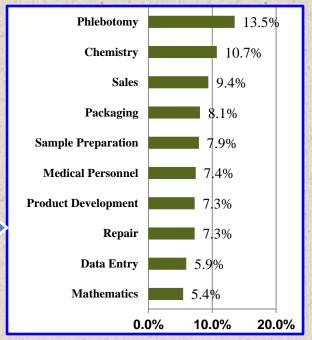


Job Postings: January-December 2013

NOTE: This chart provides information on both the preferred and required education levels listed in job postings. For this reason, a job posting may be counted in more than one of the educational categories shown to the left.







(SOURCE: Labor Insight-Burning Glass Technologies, December 2014)

NOTE: Data was obtained from 767 filtered job Postings)

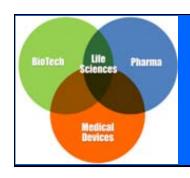


NEW JERSEY BIO-PHARMACEUTICALS LIFE SCIENCES CLUSTER

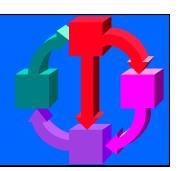


Economic Development Projects

New Jersey's
Bio-Pharmaceutical
Life Sciences
Cluster



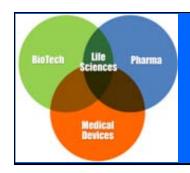
NEW JERSEY BIO-PHARMACEUTICALS LIFE SCIENCES CLUSTER DEVELOPMENT UPDATES



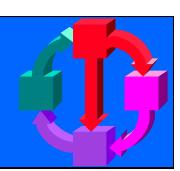
The *changing paradigm* is effecting the way this cluster's companies are making decisions involving what products/services will be researched and developed. In addition to collaborating more with other pharmaceutical, biotech and medical device companies as a cost cutting measure, the industry overall is adjusting or changing the way they have done business in the past. Examples include:

- ➤ Pharmaceuticals are changing from being the driving force of drugs it wants to explore to being driven by addressing the concerns of the financial industry along with consumer demands.
- ➤ **Biotech** is changing from the "greater the risk, the greater the reward" attitude to a "Play it safe" by investing more in late stage prospects.
- ➤ Medical device companies are adjusting its focus from developing state of the art technology to using the technology to get to the end user.

<u>Social Media</u> is also effecting the way the cluster's companies operate. While awaiting clearer guidance from government agencies on the acceptable uses of this communication, companies are taking steps to learn from it. That is, companies are using this technology to learn directly from their customer of what they want or need, collecting information about how doctors and patients are learning about their product/services, and what is being said about it. In turn, the companies are cautiously developing strategies to be able to improve marketing and sales techniques.

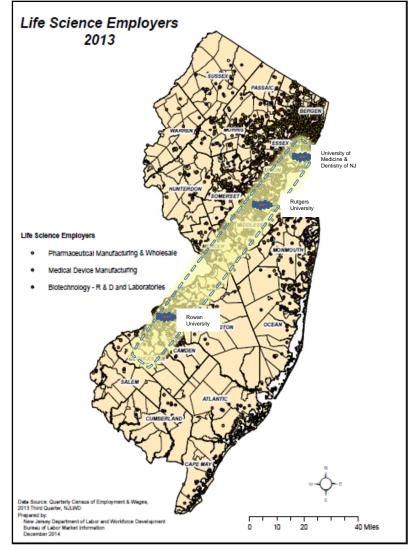


NEW JERSEY BIO-PHARMACEUTICALS LIFE SCIENCES CLUSTER DEVELOPMENT UPDATES



Changing "cluster" business approach is having a significant influence of where companies are (re-) locating operations. Once known for being self-reliant and reticent about their operations, as well as projects, the group is rapidly changing its business model (in part due to cost saving measures). As a result, there are more business collaborations taking place including partnering with educational institutions, hospitals, and other companies and associations. In addition, many of the companies are relocating from suburbs to sites in densely populated urban areas that offer accessibility to a skilled workforce, excellent research facilities, and a good transportation system, all within close proximity.

As the business model changes, New Jersey is taking steps to address this transformation. Recent examples include: merging Rutgers University & the University of Medicine and Dentistry of N.J. as well as including Rowan University as a partner; and establishing a biotech cluster in New Brunswick, Middlesex County.





NEW JERSEY BIO-PHARMACEUTICALS LIFE SCIENCES CLUSTER NORTHERN NJ DEVELOPMENT PROJECTS

Life Science Employers

2013



<u>Actavis</u>, Parsippany (US headquarters), Morris County

Relocation/Expansion: Bring about 400 jobs from New York to several locations in NJ -- Jersey City, Elizabeth & the Parsippany area -- by mid-2015.

Ferring Pharmaceuticals,

Parsippany, Morris County **Expansion:** Constructed a new U.S. Operations Center bringing 200 new

jobs to the state.

Pernix Therapeutics Holdings,

Morristown, Morris County
Attraction: The specialty
pharmaceutical company opened its
new headquarters after relocating the
operation from Houston, TX.

Merck & Co., Kenilworth, Union County (Relocating from Whitehouse Station, Hunterdon County)

Relocation: Involves approx. 2,000 jobs. The company's animal health life sciences business – also in NJ, is expected to move to the Kenilworth site.

<u>ADM Tronics Unlimited, Inc.</u> Northvale, Bergen County

Expansion: Increasing its medical device design and engineering capabilities - includes adding to its staff of engineers.

Frontage, Secaucus, Hudson County **Expansion**: Building a new 33,000-sf clinical research center. (Will complement the company's existing clinical research center in nearby Hackensack, Bergen County.

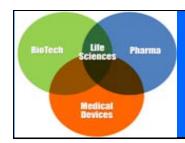
Endomedix, Enterprise Development Center incubator at NJ Institute of Technology, Newark, Essex County Start-up: This NJ medical device startup was awarded a \$1.49 million grant to help fund its product development.

L'Oreal USA, Clark, Union County.

Attraction/Expansion: The company is moving it's research institute from Chicago, IL into the company's innovation hub in Clark along with 21 jobs.

Bayer HealthCare, Whippany, Morris County

Retention / Expansion Project Jobs involved: 1,500 – 2,500



NEW JERSEY BIO-PHARMACEUTICALS LIFE SCIENCES CLUSTER CENTRAL NJ DEVELOPMENT PROJECTS

Life Science Employers



Northeast Fulfillment, Edison, Middlesex County Relocation: Moving from NY into a 68,043-sf facility to accommodate its growing business.

Celgene Corporation. Summit, Union County **Expansion:** Progress is being made on its new 560,000-sf building. It is expected to be completed in late 2015.

<u>Salvona</u>, Hamilton, Mercer County <u>Expansion</u>: Moved into a 57,000-sf facility expanding its capabilities. The project also included new hires with more intended in the coming months as it transitions to the new site.

Bristol-Myers Squibb, Lawrenceville,

Mercer County

Plans to build a 650,000-sf facility. Construction of the new facility is expected to be completed by the end of 2016. Once completed, the 'consolidation' project will house approx. 2,500 workers.

"Five percent of the [Hunterdon, Mercer, Middlesex, Monmouth & Somerset Counties'] office space, about 6.5 million square feet, is laboratory space and other specialized space for biotechnology companies."NY Times, February 2, 2012.

Valeant Pharmaceuticals,

Bridgewater, Somerset County Leased 310,000-sf of space.

Retain: 274 & New Jobs: 550 (approx.).

GENEWIZ, Inc., South Plainfield,

Middlesex County

Retention/Expansion: The company added 11,000-sf to stay and expand its administrative and laboratory operations. The project will also result in creating about 30 new jobs.

L'Occitane en Provence, South Brunswick, Middlesex County Expansion: "Needed this space to expand its distribution footprint to better serve its growing retail and ecommerce businesses in North

America," (Real Estate Weekly, 2/10/14)

<u>Novo Nordisk</u>, Plainsboro, Middlesex County

Expansion: \$215 million project for its new 770,000-sf headquarters plus 100 new jobs.

Sandoz Inc., Plainsboro

Expansion/ Retention: Moving into a 154,000-sf facility. The project will retain 292 existing in-state jobs as well as create 70 new full-time positions.



NEW JERSEY BIO-PHARMACEUTICALS LIFE SCIENCES CLUSTER SOUTHERN NJ DEVELOPMENT PROJECTS



Rowan University, Glassboro, Gloucester County Formed a new school for Biomedical Studies: The School of Biomedical Sciences operates in conjunction with the colleges of Science & Mathematics and Engineering.

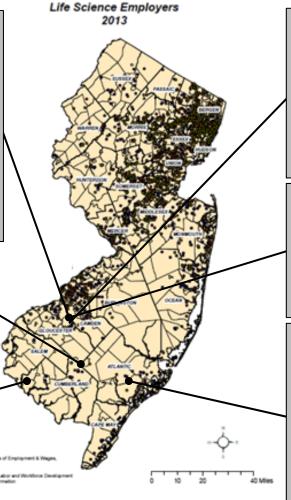
It's addressing a growing need in the region for programs that will prepare students for careers in healthcare-related fields, from pharmacy to biomedical engineering.

This school will contribute toward developing the educated workforce that businesses need if they are going to relocate to South Jersey."

<u>J.G. Finneran Associates, Inc.</u>, Vineland, Cumberland County

The manufacturer of products for life sciences industries is expanding its headquarters and creating the opportunity for generating new jobs.

<u>Siegfried-USA</u>, Pennsville, Cumberland County The international pharmaceutical production company recently expanded this facility. Currently housing 184 workers, the project is expected to lead to new job opportunities.



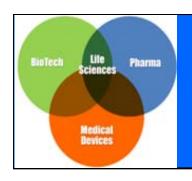
<u>Lockheed Martin (Moorestown) &</u> Rowan University (Glassboro), NJ

Collaboration: Partnering to develop new technologies for a broad range of system applications in support of national defense. Research activities will be conducted at the South Jersey Technology Park at Rowan University in Mantua Township, Gloucester County.

Rowan University, Glassboro
Ground broke on a multi-million dollar
expansion of the university's College of
Engineering. The new 90,000-sf addition
is projected to coat \$71 million.
Construction is expected to be
completed in 2016-17.

Atlantic Cape Community College,

Mays Landing, Atlantic County
Investment: \$16 Million
Atlantic Cape Community College broke
ground on its \$16 million Science,
Technology, Engineering and Math
(STEM) building. It is considered the
centerpiece of the Blueprint 2020 Master
Plan, and features five science labs and
three computer labs,



NEW JERSEY BIO-PHARMACEUTICALS LIFE SCIENCES CLUSTER



Analysis: Summing-up

New Jersey's
Biopharmaceutical
Life Sciences
Cluster

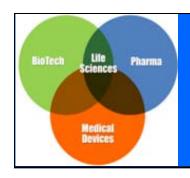


NEW JERSEY BIO-PHARMACEUTICALS LIFE SCIENCES CLUSTER OUTLOOK



New Jersey's pharmaceutical, medical device and biotech companies have been a big part of the industry cluster's transformation. As many of these businesses reorganized and regrouped, New Jersey has adapted to the changes and worked to addressed many of the challenges. Examples include: the implementation of the cluster initiative and the merging of the colleges. The State's efforts will serve to strengthen the relationship it has with its existing in-state companies, as well as attract new ones to relocate here. As a result, the outlook for this cluster's growth in New Jersey is favorable. Other reasons for this optimism include the fact that, in addition to New Jersey still being a major leader in biopharmaceutical life sciences and a place where companies want to be, the business community knows that New Jersey offers what they need in order to succeed. That is:

- ❖ A highly skilled and well educated workforce needed for life sciences operations.
- ❖ Support for this cluster, which helps companies collaborate and make necessary changes without losing their fundamental distinctiveness.
- Fundamentals that are in place for establishment growth (which is an encouraging sign for future job opportunities.)
- An improving "Business Friendly" attitude (which is once again attracting companies).
- ❖ Several major ports, airports, and other transportation alternatives allowing for the Garden State companies to be closely linked to global market activities.
- ❖ A great quality of life for work, home, and recreational activities.
- Being a key player nationally, as well as globally, which provides tremendous value being located at the epicenter of the cluster's hub.



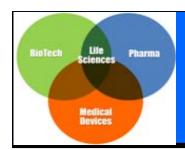
NEW JERSEY BIO-PHARMACEUTICALS LIFE SCIENCES CLUSTER



Resources

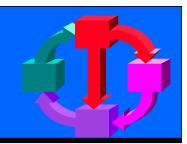
(for additional information about)

New Jersey's
Biopharmaceutical
Life Sciences
Cluster



DATA SOURCES

Labor Market & Demographic Research & Information



Employment & Wages

- Employment and wage data for New Jersey, it's Labor Areas, Counties & Municipalities.
- Estimates of NJ's nonfarm wage & salary employment data by major industry classification & labor areas for the current year and prior.
- Associated maps.

DEMOGRAPHICS:

Characteristics

- Population & Household Estimates.
- Population & Labor Force Projections.
- Annual Demographic Profile.
- Affirmative Action Data
- Census related data & information.

Occupational Information

Industry & occupational employment projections.



Labor Market Analysis

Provide labor market and economic analysis of current conditions within New Jersey, Labor Areas and Industry clusters.

- Publish regional & industry cluster labor views and reports, along with County Community Fact Books and County Fact Sheets.
- Assist & educate with the usage of labor related data/information & tools.

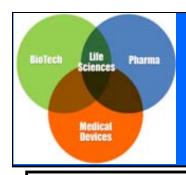
<u>Labor Demand</u> Training Programs

Are you looking to identify occupations in demand? Enhance training skills? Interested in viewing career opportunities?

These Demand & Training Program tools identify and provide answers for skills in demand *TODAY*!

Data Reports

- Comprehensive labor market information reports for New Jersey; sortable by state, county, & workforce investment board area.
- Publications & Studies pertaining to specific industries and New Jersey regions.



NEW JERSEY BIO-PHARMACEUTICALS LIFE SCIENCES CLUSTER Resources for Collaboration



Life Sciences Cluster-Specific

Private Sector Industry Groups:

- BioNJ: The Gateway to Health (formerly known as Biotechnology Council of New Jersey)
- HealthCare Institute of New Jersey

Private Sector Research Institutes:

Independent Four-Year Colleges (14)

Joint Private / Public Industry Groups:

- ChooseNJ
- NJ Hospital Associations
- NJ Technology Council's Life Science Industry Network
- > InnovationNJ

Joint Private / Public Research Institutes:

- Center for Advanced Biotechnology & Medicine
- Research & Development Council of NJ

General

Private Sector Industry Groups:

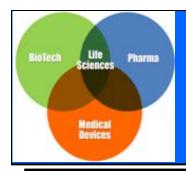
- > Greater NJ Process Technology Alliance
- >The Business Coalition for Educational Excellence
- ➤ New Jersey Business / Industry / Science Education Consortium

Informal Networks:

- New Jersey Institute of Technology, UMDNJ, Princeton, Rutgers alumni
- >Alumni from other universities
- Angel investor community

Joint Private / Public Industry Groups:

- Commission on Health Science, Education & Training
- > New Jersey Technology Council Venture Fund
- New Jersey President's Council



NEW JERSEY BIO-PHARMACEUTICALS LIFE SCIENCES CLUSTER Resources for Skilled Workers



To ensure New Jersey's Biopharmaceutical Life Sciences Cluster continues to thrive with a well-educated and talented workforce, the State continues to invest in & offer:

An Excellent Education System

- ✓ Access to more than 60 colleges, universities and technology schools including four top ranking engineering schools that are on the 100 National Best Engineering School List: Princeton University (#17); Rutgers, The State University of New Jersey (#53); Stevens Institute of Technology (#71); and New Jersey Institute of Technology (#102).
- ✓ Network of 21 public two-year community colleges with life science career programs.
- ✓ Strong continuing education opportunities including UMDNJ Biopharma and Rutgers MBS programs.
- ✓ University of Medicine & Dentistry (UMDNJ) of New Jersey offers 4 main campuses with 8 schools, plus a University Hospital and University Behavioral HealthCare on 185 acres with 64 buildings making it the largest institution of its kind in the nation.
- ✓ New Jersey maintains a high educational achievement ranking. Nationally, with individuals aged 25 or older completing a Bachelors Degree or more, N.J. ranked 6th in 2013.

Support for a Talented Workforce

New Jersey's Department of Labor's Talent Networks:

- □ Support the efforts of the workforce development system and educational institutions to prepare workers for opportunities in key industry sectors;
- □ Serve as the primary workforce contact for the industry sector;
- ☐ Encourage networking between job seekers, employers and education and training providers; and
- □ Have developed a Talent Advisory Council to obtain regular feedback on the workforce needs of employers in order to guide future workforce development efforts.

Note: Partnering with BioNJ, a NJ industry association, Labor's Life Science Talent Network has implemented effective programs to connect industry talent with job opportunities, and working to create innovative resources to engage the sector both professionals and employers. It is the key hub for industry-related talent information and resources for companies doing business in biotechnology, pharmaceuticals, medical devices, diagnostic and clinical operations in New Jersey.



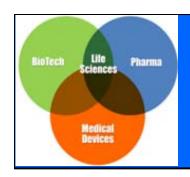
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Fast Facts Related

about

New Jersey's
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Life Sciences
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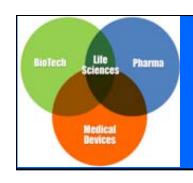


NEW JERSEY BIO-PHARMACEUTICALS LIFE SCIENCES CLUSTER Fast Facts



New Jersey's biopharmaceutical life sciences cluster...

- * Had total **employment that averaged over 115,000 in 2013**, or 3.6 percent of all private sector workers in the state. -- Nationally, the proportion was just 1.9 percent.
- ❖ Even with all the pharmaceutical mergers, acquisitions, and consolidations that took place between 2008-2013, New Jersey's Drugs & Pharmaceutical establishment component continued to expand grew (+9.4%) outpacing the nation (+7.0%).
- ❖ Employers paid over \$15 billion in wages during 2013; 7.9 percent of the state's total wages.
- **♦ Consist of a highly well-educated workforce** with nearly two-thirds (65.5%) holding at least a bachelor's (33.8%) and with many holding more advanced degrees: Master's/Professional (22.1%), or Doctoral (9.6%) degree.
- ❖ Has been responsible for contributing towards the State's 5,257 patents in 2013.
- * Over the five years (2009-2013) added significantly towards the total of New Jersey's 19,504 patents. It also added towards the nation's total industry related patents such as: 26 in perfume compositions (ranked 1st); 2,082 in drug, bio-affecting and body treating compositions (ranked 3rd); 552 in organic compounds (ranked 3rd); 498 in image analysis (ranked 4th); 123 in chemistry of inorganic compounds (ranked 4th); 340 in molecular biology and microbiology (ranked 6th); and 271: surgery medicators and receptors (ranked 6th).
- * By industry group, New Jersey's Pharmaceutical and Medicines is credited with 1,237 utility patents (fractional count) between 2008-2012: ranked 3rd highest in the nation.



NEW JERSEY BIO-PHARMACEUTICALS LIFE SCIENCES CLUSTER



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http://lwd.dol.state.nj.us/labor/lpa/LMI_index.html

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