

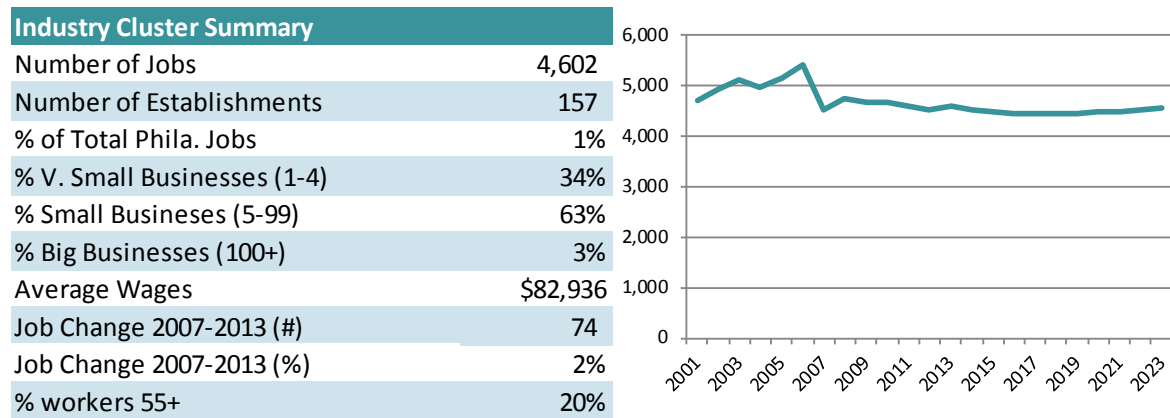
Industry Profiles – Bio-Medical

The Bio-Medical cluster includes industries that develop and use technology to enhance life from a health perspective. Industries in this cluster include research laboratories, pharmaceutical manufacturing, surgical and medical equipment manufacturing and imaging centers. This cluster largely represents industries that employ advanced technology and serve as a foundation for enhanced medical services¹.

This report presents an overview of employment trends. We examine how the Bio-Medical industry cluster has changed since 2007, the year before the Great Recession had an impact. Then, we examine the composition of the industry cluster by size of businesses and highlight clusters with the largest share of smaller businesses. The section on workers demographics shows the composition of industry clusters by gender, age, and education. Finally, we look at the major occupations that support industry clusters.

- Employment in the Bio-Medical cluster has decreased by over 16 percent following the recessionary period but has since recovered to the 2007 levels.

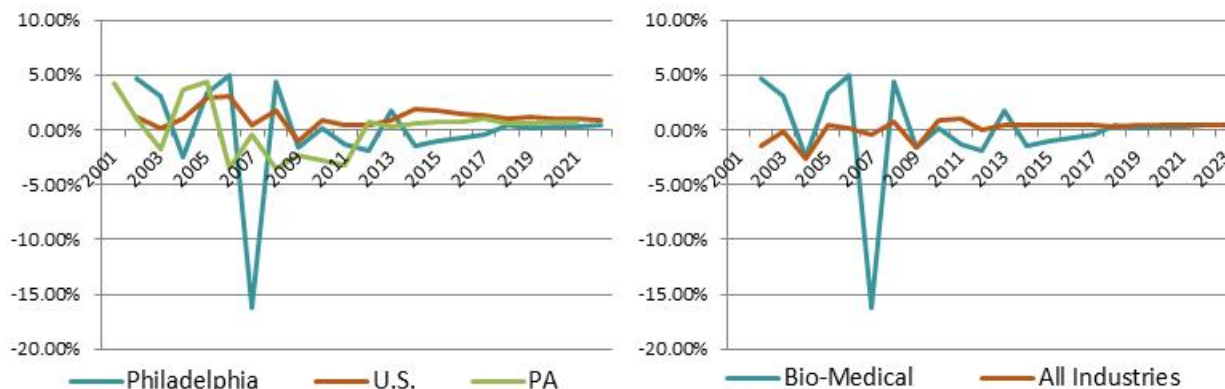
SUMMARY OF BIO-MEDICAL INDUSTRY CLUSTER IN PHILADELPHIA



Source: Philadelphia Works analysis of the QCEW Employees & Non-QCEW Employees - EMSI 2013.4 Class of Worker data

¹ Descriptions of industry clusters are borrowed directly from the State report. The full report can be found here: <http://www.portal.state.pa.us/portal/server.pt/community/products/19738>

% CHANGE IN EMPLOYMENT IN BIO-MEDICAL IN PHILADELPHIA VS. PA AND U.S. AND VS. ALL INDUSTRIES



Source: Philadelphia Works analysis of the QCEW Employees & Non-QCEW Employees - EMSI 2013.4 Class of Worker data

Industry Highlights

- Employment in Bio-Medical has dipped during the recession but recovered to the 2007 levels. Research and Development in Physical, Engineering, and Life Sciences and Pharmaceutical Preparation Manufacturing employ most workers in the industry.

TOP INDUSTRIES IN BIO-MEDICAL IN PHILADELPHIA

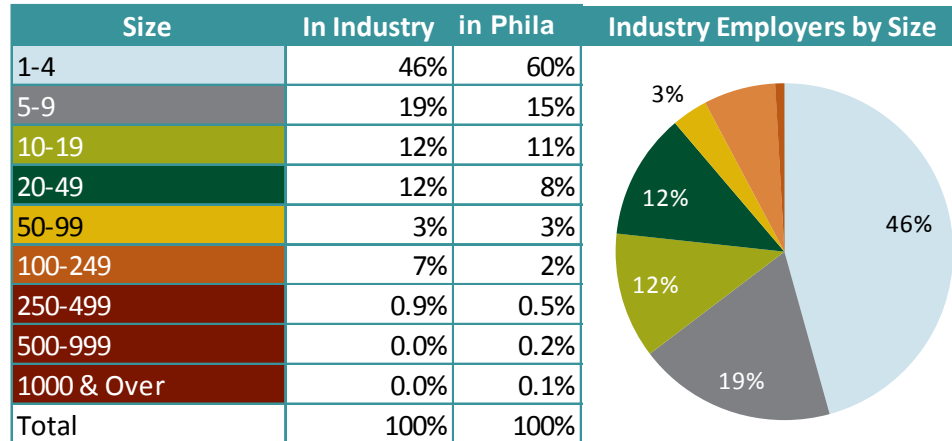
Industry	Jobs 2013	% Change 2007-2013	Change	Expected Change	Competitive Effect	Wages
Research and Development in the Physical, Engineering, and Life Sciences (except Biotechnology)	1,117	▲ 15%	144	96	49	\$74,360
Pharmaceutical Preparation Manufacturing	1,084	▼ -5%	(62)	(103)	41	\$127,471
Research and Development in Biotechnology	713	▲ 28%	158	28	130	\$81,651
Medical Laboratories	495	▬ 1%	6	96	(90)	\$54,962
Research and Development in the Social Sciences and Humanities	316	▼ -15%	(54)	(33)	(21)	\$66,555
Surgical Appliance and Supplies	277	▬ -4%	(11)	2	(12)	\$70,243
Diagnostic Imaging Centers	238	▼ -31%	(108)	21	(129)	\$49,099
Dental Laboratories	109	▬ -3%	(3)	(12)	9	\$39,332

Source: Philadelphia Works analysis of the QCEW Employees & Non-QCEW Employees - EMSI 2013.4 Class of Worker data

Employers in Bio-Medical

- Over 116 businesses make up Bio-Medical industry cluster— 47 percent of businesses in the cluster are “small businesses” employing 5 to 99 workers, which is 10 percent above the share of small businesses across all industries (37 percent).

EMPLOYERS IN BIO-MEDICAL BY SIZE (PERCENT OF TOTAL EMPLOYERS)



Source: PA Employer Database 2013

TOP EMPLOYERS IN BIO-MEDICAL

MPC OLDSCO INC	BEN FRANKLIN TECHNOLOGY CENTER
DELAVALU LLC	BONEL MEDICAL EQUIPMENT INC
HARRY J LAWALL & SON INC	COLLINS CERAMIC DENTAL LAB
IMPAX LABORATORIES, INC.	ESOTERIX GENETIC LABORATORIES
MEDICAL PRODUCTS LABORATORIES INC	MAX LEVY AUTOGRAPH INC
MEDIMMUNE INC	MECHANICAL SAFETY EQUIPMENT
WESTAT INC	MEDICAL IMAGING ASSOC
WUXI APPTTEC INC	ORTHOPLI CORP
AMERICAN RED CROSS BLOOD SERVICES	PENN HERB CO LTD
GENERAL ECONOPAK INC	PREMIER DENTAL PRODUCTS CO
GERSON ASSOCIATES INC	YOUNG DENTAL LABORATORY INC
LANNETT CO INC	MNAP MEDICAL SOLUTIONS INC
TREATMENT RESEARCH INSTITUTE	TRI STATE IMAGING PR LLC

Source: PA Employer Database 2013

Worker Demographics

Workforce demographics are examined by gender, age, and Bio-Medical of workers.

Gender of Workers in Bio-Medical

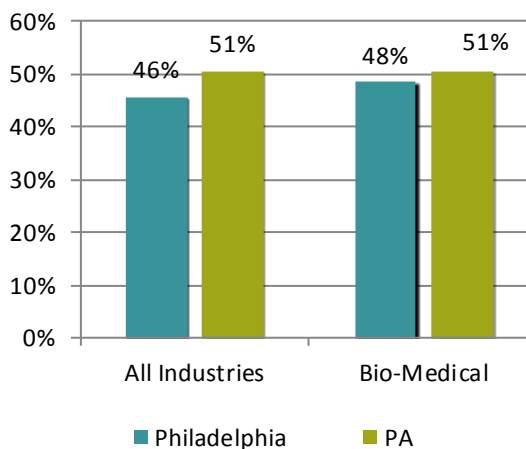
- Slightly more women than men were employed in the Bio-Medical industry cluster, similar to gender of workers in the industry in Pennsylvania. Men dominated Pharmaceutical and Medicine Manufacturing (62 percent), while women comprised nearly 7 out of 10 workers in Medical and Diagnostic Laboratories.

GENDER OF WORKERS IN 2013Q1+3 PREVIOUS QUARTERS

% MEN EMPLOYED IN BIO-MEDICAL CLUSTER IN PHILADELPHIA

	% men
Pharmaceutical & Medicine Mfg	62%
Medical Equip. & Supplies Mfg	56%
Bio-Medical	48%
Scient. Research & Develop. Svc	47%
All Industries	46%
Medical & Diagnostic Lab.	29%

% MEN EMPLOYED BY CLUSTER AND GEOGRAPHY



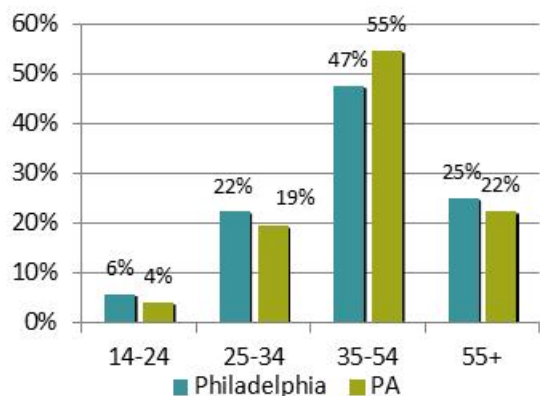
Source: Philadelphia Works Analysis of Quarterly Workforce Indicators data.

Age of Workers in Bio-Medical

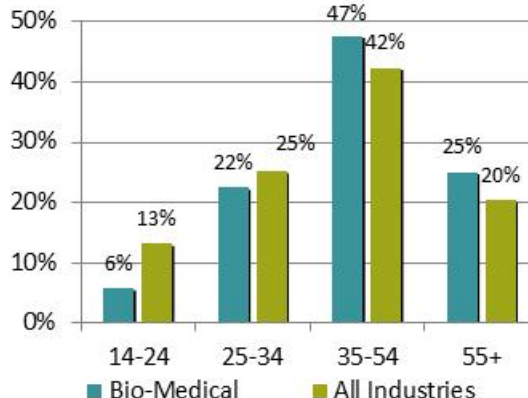
- The majority of workers in Bio-Medical are middle age –from 35 to 54 years of age. Philadelphia workers in the industry cluster tend to be older compared to workers across all industries.
- Medical Equipment and Supplies Manufacturing (28 percent) and Pharmaceutical and Medicine Manufacturing (30 percent) had the largest share of workers ages 55 and over compared to the average in the Bio-Medical industry cluster and across all industries in Philadelphia.

AGE OF WORKERS IN 2013Q1+3 PREVIOUS QUARTERS:

EMPLOYED IN BIO-MEDICAL CLUSTER IN PHILADELPHIA VS. PA



EMPLOYED IN BIO-MEDICAL CLUSTER VS. ALL INDUSTRIES IN PHILA.



Source: Philadelphia Works Analysis of Quarterly Workforce Indicators data.

TOP INDUSTRIES IN BIO-MEDICAL IN PHILADELPHIA BY AGE OF WORKERS IN 2013Q1+3 PREVIOUS QUARTERS

Industry/Age	14-24	25-54	55+	Total	# Employed
Scient. Research & Develop. Svc	7.1%	68.8%	24.1%	100%	2,301
Pharmaceutical & Medicine Mfg	3.1%	68.4%	28.5%	100%	1,185
Medical & Diagnostic Lab.	5.1%	76.4%	18.5%	100%	823
Medical Equip. & Supplies Mfg	5.2%	64.9%	29.9%	100%	498
Bio-Medical	6%	70%	25%	100%	4,806
All Industries	13%	67%	20%	100%	558,394

Source: Philadelphia Works Analysis of Quarterly Workforce Indicators data.

Education of Workers in Bio-Medical

- The majority of workers in Bio-Medical have a bachelor’s degree or more education – at 40 percent compared to only 29 percent across all industry clusters.

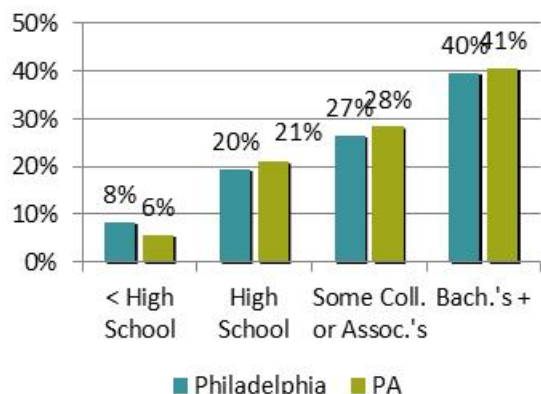
TOP INDUSTRIES IN BIO-MEDICAL IN PHILADELPHIA BY EDUCATION OF WORKERS IN 2013Q1+3 PREVIOUS QUARTERS

Industry/Education	< High School	High School	Some College or Assoc.'s	Bach.'s +	Unknown	Total	# Employed
Scient. Research & Develop. Svc	6.0%	16.4%	25.0%	45.5%	7.1%	100%	2,301
Pharmaceutical & Medicine Mfg	12.1%	21.6%	25.3%	37.8%	3.3%	100%	1,185
Medical & Diagnostic Lab.	6.3%	20.4%	32.4%	35.7%	5.2%	100%	823
Medical Equip. & Supplies Mfg	14.6%	27.4%	27.5%	24.7%	5.7%	100%	498
Bio-Medical	8.5%	19.5%	26.6%	39.8%	5.7%	100%	4,806
All Industries	10.0%	21.4%	26.2%	29.5%	12.9%	100%	558,394

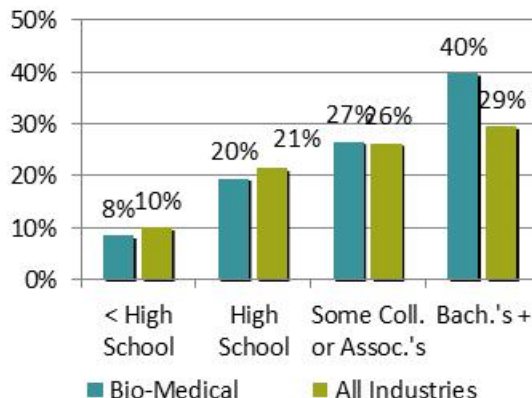
Source: Philadelphia Works Analysis of Quarterly Workforce Indicators data.

EDUCATION OF WORKERS IN 2013Q1+3 PREVIOUS QUARTERS:

% EMPLOYED IN BIO-MEDICAL CLUSTER IN PHILADELPHIA VS. PA



% EMPLOYED IN BIO-MEDICAL CLUSTER VS. ALL INDUSTRIES IN PHILA.



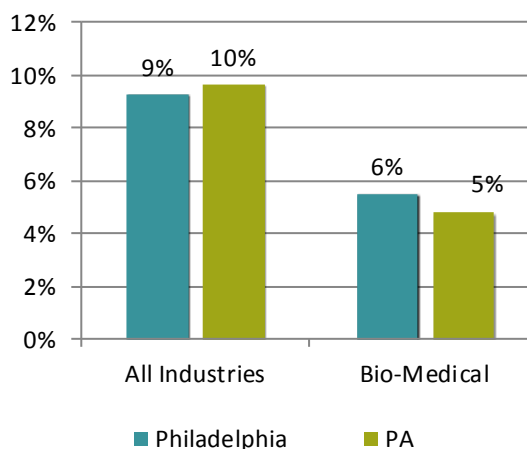
Source: Philadelphia Works Analysis of Quarterly Workforce Indicators data. Bio-Medical attainment is not available for workers under 25 – this category is not shown.

Turnover in Bio-Medical

- Turnover rates help us evaluate the churning in the labor force – average number of separations and hires for the industry group. The rate shows what percentage of the labor force is new. Turnover rates in Bio-Medical in Philadelphia (6 percent) were similar to turnover in Pennsylvania and below the turnover across all industries.

TURNOVER RATES IN BIO-MEDICAL PHILADELPHIA IN 2012Q3 (FOUR QUARTER MOVING AVERAGE)

Industry/Turnover Rate	Turnover
All Industries	9%
Scient. Research & Develop. Svc	7%
Medical & Diagnostic Lab.	7%
Bio-Medical	6%
Pharmaceutical & Medicine Mfg	4%
Medical Equip. & Supplies Mfg	2%



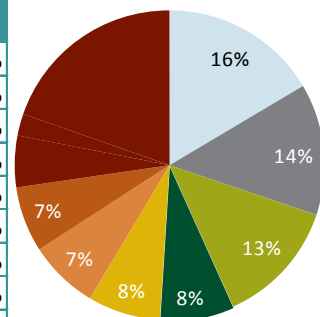
Source: Philadelphia Works Analysis of Quarterly Workforce Indicators data.

Occupation Highlights

- Staffing patterns analysis was used to identify occupations that are needed in the industry. The Bio-Medical industry cluster mostly relied on workers in Life, Physical, and Social Science; Production; Office and Administrative Support; and Architecture and Engineering Occupations.

TOP OCCUPATIONAL FAMILIES IN BIO-MEDICAL INDUSTRY CLUSTER

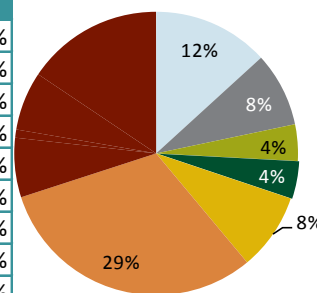
Occupational Family	Jobs 2007	Jobs 2013	Change %	% of 2013 Jobs
Life, physical, and soc.science	693	758	9%	16%
Production	657	632	-4%	14%
Office and admin. support	632	601	-5%	13%
Architecture and Engineering	304	356	17%	8%
Healthcare pract.	381	348	-9%	8%
Business and financial operations	313	336	7%	7%
Management	312	314	1%	7%
Comp. and mathematical	223	248	11%	5%
Sales and related	98	104	6%	2%
Unidentified + Other	915	905	-1%	20%
Total	4,528	4,602	2%	100%



Source: Philadelphia Works analysis of the QCEW Employees & Non-QCEW Employees - EMSI 2013.4 Class of Worker data

EDUCAITON REQUIRED OF WORKERS IN BIO-MEDICAL INDUSTRY CLUSTER

Skill	Jobs 2007	Jobs 2013	Change %	% of 2013 Jobs
Short-term on-the-job training	607	569	-6%	12%
Moderate-term on-the-job training	687	665	-3%	8%
Long-term on-the-job training	175	179	2%	4%
Work experience in a related occupation	187	185	-1%	4%
Postsecondary non-degree award	398	378	-5%	8%
Associate's degree	1,230	1,335	9%	29%
Bachelor's degree	288	292	1%	6%
Bachelor's or higher degree, plus work experience	38	40	5%	1%
Master's degree +	243	289	19%	6%
Unidentified	675	670	n/a	15%
Total	4,528	4,602	2%	100%



Source: Philadelphia Works analysis of the QCEW Employees & Non-QCEW Employees - EMSI 2013.4 Class of Worker data

Top occupations in the cluster are shown in the tables below. Highlighted occupations are Philadelphia 2013 High Priority Occupations important to the Bio-Medical industry cluster. Wage data are not industry specific and describe all workers in the occupation.

TOP OCCUPATIONS IN BIO-MEDICAL INDUSTRY CLUSTER

SOC	Occupation	Jobs 2013	% Change from 2007	Entry-Level Earnings	Median Hourly Earnings	% of the Total Jobs in Cluster
Limited Skills Required						
43-9061	Office Clerks, General	91	(2%)	\$14.76	\$14.76	2.0%
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	87	(3%)	\$16.61	\$16.61	1.9%
43-4051	Customer Service Representatives	65	(8%)	\$17.30	\$17.30	1.4%
31-9097	Phlebotomists	54	(16%)	\$14.38	\$14.38	1.2%
43-4171	Receptionists and Information Clerks	38	(10%)	\$14.34	\$14.34	0.8%
43-5071	Shipping, Receiving, and Traffic Clerks	34	(8%)	\$14.52	\$14.52	0.7%
43-3021	Billing and Posting Clerks	31	(11%)	\$17.12	\$17.12	0.7%
43-5021	Couriers and Messengers	31	(3%)	\$14.20	\$14.20	0.7%
Some Training or Experience						
51-2092	Team Assemblers	90	(5%)	\$13.13	\$13.13	2.0%
51-9111	Packaging and Filling Machine Operators and Tenders	89	(5%)	\$13.40	\$13.40	1.9%
51-9011	Chemical Equipment Operators and Tenders	73	3%	\$18.66	\$18.66	1.6%
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	73	1%	\$18.38	\$18.38	1.6%
51-1011	First-Line Supervisors of Production and Operating Workers	60	(3%)	\$28.11	\$28.11	1.3%
43-6011	Executive Secretaries and Executive Administrative Assistants	52	2%	\$25.27	\$25.27	1.1%
49-9071	Maintenance and Repair Workers, General	47	0%	\$17.56	\$17.56	1.0%
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	47	(4%)	\$19.80	\$19.80	1.0%
13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	44	7%	\$29.89	\$29.89	1.0%
51-9081	Dental Laboratory Technicians	43	(17%)	\$17.06	\$17.06	0.9%
43-1011	First-Line Supervisors of Office and Administrative Support Workers	38	(5%)	\$27.43	\$27.43	0.8%
51-9082	Medical Appliance Technicians	37	(5%)	\$15.85	\$15.85	0.8%
43-3031	Bookkeeping, Accounting, and Auditing Clerks	37	0%	\$19.49	\$19.49	0.8%
13-1199	Business Operations Specialists, All Other	34	(3%)	\$36.54	\$36.54	0.7%
43-5061	Production, Planning, and Expediting Clerks	34	3%	\$21.90	\$21.90	0.7%
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	33	3%	\$18.14	\$18.14	0.7%
49-9041	Industrial Machinery Mechanics	31	15%	\$20.74	\$20.74	0.7%
Some College or Associate's						
29-2012	Medical and Clinical Laboratory Technicians	141	(8%)	\$17.90	\$17.90	3.1%
19-4031	Chemical Technicians	56	4%	\$18.28	\$18.28	1.2%
29-2034	Radiologic Technologists	43	(9%)	\$28.88	\$28.88	0.9%
15-1151	Computer User Support Specialists	26	0%	\$19.76	\$19.76	0.6%
29-2032	Diagnostic Medical Sonographers	22	0%	\$27.26	\$27.26	0.5%

TOP OCCUPATIONS IN BIO-MEDICAL INDUSTRY CLUSTER, CONTINUED

SOC	Occupation	Jobs 2013	% Change from 2007	Entry-Level Earnings	Median Hourly Earnings	% of the Total Jobs in Cluster
Bachelor's or Higher						
19-1042	Medical Scientists, Except Epidemiologists	195	23%	\$42.70	\$42.70	4.2%
19-2031	Chemists	162	6%	\$33.26	\$33.26	3.5%
19-4021	Biological Technicians	106	9%	\$21.09	\$21.09	2.3%
29-2011	Medical and Clinical Laboratory Technologists	92	(11%)	\$28.96	\$28.96	2.0%
19-3022	Survey Researchers	84	(3%)	\$11.37	\$11.37	1.8%
11-1021	General and Operations Managers	70	(5%)	\$56.04	\$56.04	1.5%
15-1133	Software Developers, Systems Software	69	23%	\$43.49	\$43.49	1.5%
19-1021	Biochemists and Biophysicists	65	20%	\$43.45	\$43.45	1.4%
17-2112	Industrial Engineers	63	5%	\$37.70	\$37.70	1.4%
17-2031	Biomedical Engineers	61	36%	\$35.96	\$35.96	1.3%
17-2141	Mechanical Engineers	60	20%	\$37.20	\$37.20	1.3%
13-2011	Accountants and Auditors	58	5%	\$34.46	\$34.46	1.3%
13-1161	Market Research Analysts and Marketing Specialists	50	14%	\$30.14	\$30.14	1.1%
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	48	9%	\$43.83	\$43.83	1.0%
11-9121	Natural Sciences Managers	47	7%	\$69.54	\$69.54	1.0%
17-2011	Aerospace Engineers	42	24%	\$36.50	\$36.50	0.9%
15-1142	Network and Computer Systems Administrators	38	15%	\$39.00	\$39.00	0.8%
11-9041	Architectural and Engineering Managers	34	10%	\$61.31	\$61.31	0.7%
15-1121	Computer Systems Analysts	33	6%	\$41.04	\$41.04	0.7%
13-1111	Management Analysts	33	3%	\$42.78	\$42.78	0.7%
15-1132	Software Developers, Applications	31	7%	\$42.88	\$42.88	0.7%

Source: Philadelphia Works analysis of the QCEW Employees & Non-QCEW Employees - EMSI 2013.4 Class of Worker data

Notes on Data

We followed industry cluster definitions proposed by the Center for Workforce Information & Analysis. Some industries that have a low number of jobs in Philadelphia County were excluded from the analysis and PA industry clusters were formed in the same way to make comparisons possible.

All the wage, employment, and staffing patterns data in this report come from the EMSI 2013.4 Class of Worker Data. EMSI industry data have various sources including the QCEW (Quarterly Census of Employment and Wages), with supplemental estimates from County Business Patterns and Current Employment Statistics. Non-QCEW employee data are based on a number of sources including QCEW, Current Employment Statistics, County Business Patterns, BEA State and Local Personal Income reports, the National Industry-Occupation Employment Matrix (NIOEM), the American Community Survey, and Railroad Retirement Board statistics.

Philadelphia Works worked with the Quarterly Workforce Indicators data available through the U.S. Census and defined the industry clusters at the four-digit NAICS code level. An industry group was assigned to a cluster if most of the employment fell in that cluster. Because the data are cyclical, the quarterly data were smoothed using a simple moving average. This report shows the data for the third quarter of 2012 plus three previous quarters.

The PA Employer Database available through the Center for Workforce Information & Analysis was used to report on the employers by size.