



## Industry Profiles – Advanced Manufacturing

**The Advanced Manufacturing** industry cluster is primarily composed durable goods manufacturing but also includes wholesalers, and some retailers such as car dealers. Other industry clusters contain manufacturing within them, while this cluster is focused around its four sub-clusters: Chemicals, Rubber & Plastics; Electronics; Metals; and Vehicles & Vehicle Parts<sup>1</sup>.

This report presents an overview of employment trends. We examine how Advanced Manufacturing 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.

- The Advanced Manufacturing industry cluster represents 15,892 jobs in Philadelphia, with 6,860 jobs in the core manufacturing industries, 6,470 jobs in wholesale and retail supporting industries, and about 2,562 jobs in automotive services.
- Supporting industries in the cluster declined by 7 percent since 2007, while core industries and automotive services industries grew by 13 and 3 percent respectively. Core industries in the cluster grew due to increases in employment in Vehicle & Vehicle Parts manufacturing.

### SUMMARY OF ADVANCED MANUFACTURING INDUSTRY CLUSTER IN PHILADELPHIA

Industry Cluster Summary	Core	Supporting	Automotive	All Industries in Adv. Manuf
Number of Jobs	6,860	6,470	2,562	15,892
Number of Establishments	195	369	502	1,066
% of Total Phila. Jobs	1.0%	1.0%	0.4%	2.4%
% V. Small Businesses (1-4)	30%	42%	76%	56%
% Small Businesses (5-99)	61%	57%	24%	42%
% Big Businesses (100+)	9%	1%	0%	2%
Average Wages	\$56,722	\$45,168	\$33,262	\$48,236
Job Change 2007-2013 (#)	772	(501)	67	337
Job Change 2007-2013 (%)	13%	-7%	3%	2%
% workers 55+	31%	25%	21%	27%

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

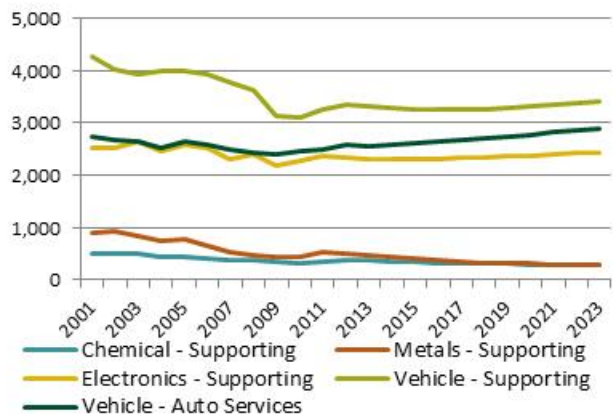
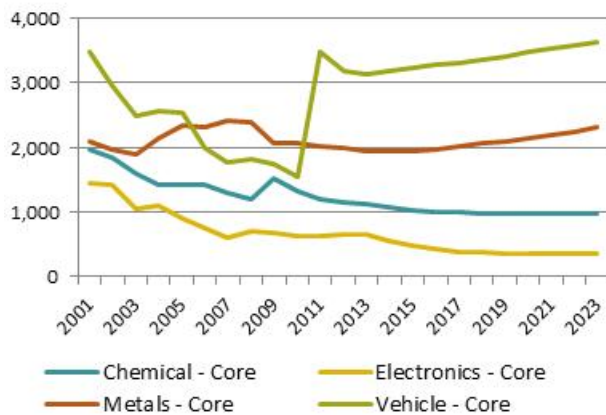
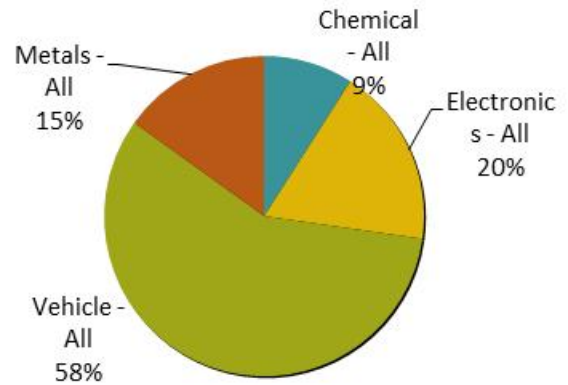
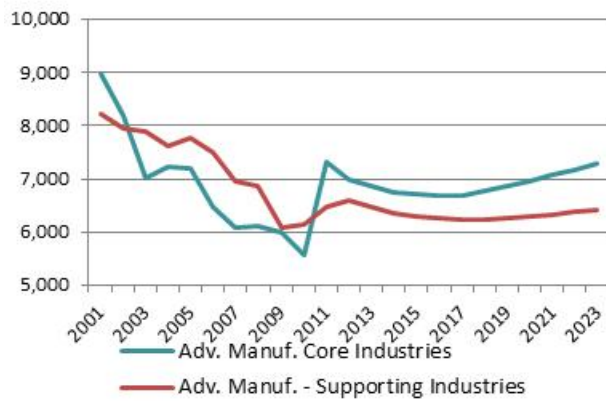
<sup>1</sup> Descriptions of industry clusters are borrowed directly from the State report. The full report can be found here: <http://www.portal.state.pa.us/portal/server.pt/community/products/19738>

### % CHANGE IN EMPLOYMENT IN CORE ADVANCED MANUFACTURING INDUSTRIES 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

### NUMBER OF JOBS IN ADVANCED MANUFACTURING CORE AND SUPPORTING INDUSTRIES IN PHILADELPHIA



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

## Industry Highlights

Each sub-cluster making up the Advanced Manufacturing industry cluster is further sub-divided into “core” industries and “supporting” industries. The Vehicle & Vehicle Parts sub-cluster includes a third subdivision: “automotive services” industries.

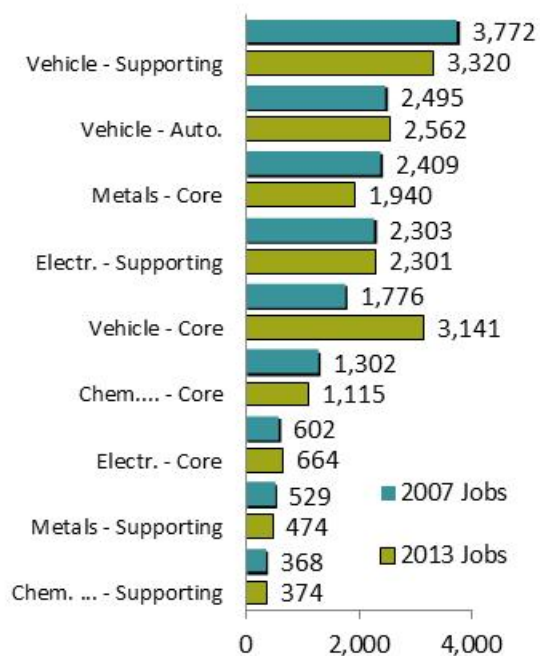
- Core industries in Advanced Manufacturing grew 13 percent while supporting industries declined by 7 percent from 2007 to 2013. Core industries in Electronics and Vehicle & Vehicle Parts manufacturing increased during the same time period, while core industries in Metals and Chemicals, Rubber, and Plastics declined.
- Wages in Chemicals, Rubber & Plastics and Metals are higher compared other sub-clusters in Advanced Manufacturing. Automotive services and other supporting retail and wholesale industries in Vehicle & Vehicle Parts sub-cluster paid lower wages in comparison to other sub-clusters and average earnings in Philadelphia.

### SUB-CLUSTERS IN ADVANCED MANUFACTURING IN PHILADELPHIA

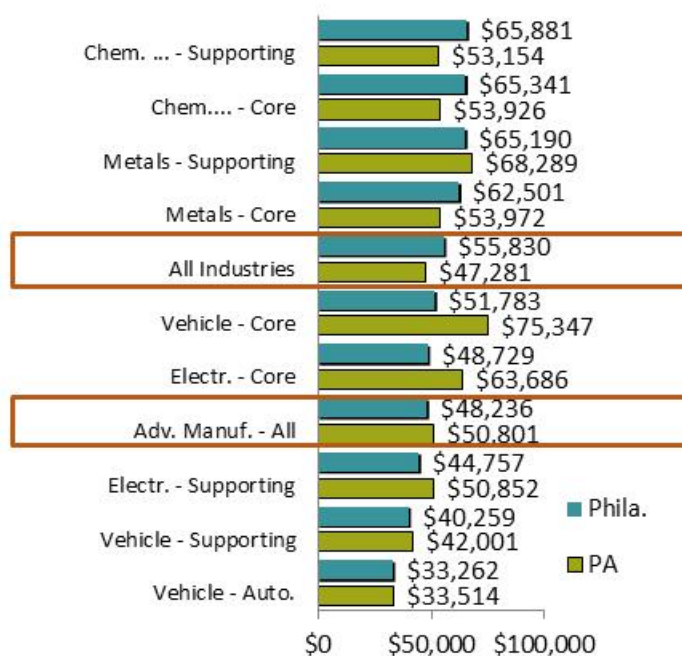
Industry Cluster and Sub-cluster Summary	Jobs 2013 (#)	Jobs 2013 (%)	% Change 2007-2013	Earnings	Jobs 2013 (#)	Jobs 2013 (%)	% Change 2007-2013	Earnings
	<b>Philadelphia</b>				<b>PA</b>			
<b>Advanced Manufacturing - All industries</b>	<b>15,892</b>	<b>2.4%</b>	<b>2.2%</b>	<b>\$48,236</b>	<b>283,019</b>	<b>4.8%</b>	<b>-5.1%</b>	<b>\$50,801</b>
Advanced Manufacturing - Core Industries	6,860	1.0%	12.7%	\$45,168	118,953	2.0%	-3.4%	\$58,912
Advanced Manufacturing - Supporting Industries	6,470	1.0%	-7.2%	\$56,722	128,445	2.2%	-7.0%	\$48,083
<b>Chemicals, Rubber &amp; Plastics - All Industries</b>	<b>1,489</b>	<b>0.2%</b>	<b>-10.8%</b>	<b>\$65,477</b>	<b>40,876</b>	<b>0.7%</b>	<b>-9.1%</b>	<b>\$53,720</b>
Chemicals, Rubber & Plastics - Core Industries	1,115	0.2%	-14.4%	\$65,341	29,996	0.5%	-11.3%	\$53,926
Chemicals, Rubber & Plastics - Supporting Industries	374	0.1%	1.6%	\$65,881	10,879	0.2%	-2.6%	\$53,154
<b>Electronics - All Industries</b>	<b>2,965</b>	<b>0.4%</b>	<b>2.1%</b>	<b>\$45,647</b>	<b>35,592</b>	<b>0.6%</b>	<b>-11.3%</b>	<b>\$54,392</b>
Electronics - Core Industries	664	0.1%	10.3%	\$48,729	9,816	0.2%	-12.6%	\$63,686
Electronics - Supporting Industries	2,301	0.3%	-0.1%	\$44,757	25,775	0.4%	-10.8%	\$50,852
<b>Metals - All Industries</b>	<b>2,414</b>	<b>0.4%</b>	<b>-17.8%</b>	<b>\$63,030</b>	<b>72,469</b>	<b>1.2%</b>	<b>-4.3%</b>	<b>\$57,217</b>
Metals - Core Industries	1,940	0.3%	-19.5%	\$62,501	56,044	1.0%	-4.3%	\$53,972
Metals - Supporting	474	0.1%	-10.4%	\$65,190	16,425	0.3%	-4.2%	\$68,289
<b>Vehicle &amp; Vehicle Parts- All Industries</b>	<b>9,024</b>	<b>1.3%</b>	<b>12.2%</b>	<b>\$42,284</b>	<b>134,082</b>	<b>2.3%</b>	<b>-2.5%</b>	<b>\$45,490</b>
Vehicle - Core Industries	3,141	0.5%	76.9%	\$51,783	23,096	0.4%	18.4%	\$75,347
Vehicle - Supporting Industries	3,320	0.5%	-12.0%	\$40,259	75,365	1.3%	-6.9%	\$42,001
Vehicle - Automotive Services Industries	2,562	0.4%	2.7%	\$33,262	35,621	0.6%	-4.0%	\$33,514

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

### EMPLOYMENT IN IN ADVANCED MANUFACTURING IN PHILADELPHIA



### AVERAGE WAGES IN ADVANCED MANUFACTURING IN PHILADELPHIA VS. PA



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

### TOP INDUSTRIES IN ADVANCED MANUFACTURING SUB-CLUSTERS

Description	2013 Jobs	% Change 2007-2013	Change	Expected Change	Competitive Effect	Wages
<b>Chemicals, Rubber &amp; Plastics - All Industries</b>	<b>1,489</b>	<b>-11%</b>	<b>(180)</b>	<b>(118)</b>	<b>(61)</b>	<b>\$65,477</b>
<b>Chemicals, Rubber &amp; Plastics - Core Industries</b>	<b>1,115</b>	<b>-14%</b>	<b>(187)</b>	<b>(126)</b>	<b>(59)</b>	<b>\$65,341</b>
All Other Plastics Product Manufacturing	269	▲ 92%	129	(20)	150	\$37,160
Cyclic Crude and Intermediate Manufacturing	158	▲ 100%	158	-	158	\$106,519
Plastics Material and Resin Manufacturing	146	▼ -15%	(25)	(12)	(12)	\$68,264
All Other Miscellaneous Chemical Product and Preparation Manufacturing	103	▲ 27%	22	(3)	25	\$71,054
Soap and Other Detergent Manufacturing	100	▲ 335%	77	-	77	\$81,675
Printing Ink Manufacturing	49	▼ -36%	(28)	(17)	(11)	\$59,047
Paint and Coating Manufacturing	47	▼ -90%	(420)	(37)	(383)	\$54,962
Synthetic Organic Dye and Pigment Manufacturing	46	▼ -25%	(15)	(13)	(2)	\$58,168
<b>Chemicals, Rubber &amp; Plastics - Supporting Industries</b>	<b>374</b>	<b>2%</b>	<b>6</b>	<b>8</b>	<b>(2)</b>	<b>\$65,881</b>
Other Chemical and Allied Products Merchant Wholesalers	169	▲ 43%	51	(1)	53	\$90,360
Tire Dealers	147	▼ -20%	(37)	10	(48)	\$39,145

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

**TOP INDUSTRIES IN METALS SUB-CLUSTER IN PHILADELPHIA, CONTINUED**

Description	2013 Jobs	% Change 2007-2013	Change	Expected Change	Competitive Effect	Wages
<b>Electronics - All Industries</b>	<b>2,965</b>	<b>2%</b>	<b>60</b>	<b>(304)</b>	<b>364</b>	<b>\$45,647</b>
<b>Electronics - Core Industries</b>	<b>664</b>	<b>10%</b>	<b>62</b>	<b>(90)</b>	<b>153</b>	<b>\$48,729</b>
Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing	254	-15%	(46)	(59)	13	\$38,434
Switchgear and Switchboard Apparatus Manufacturing	121	17%	18	(5)	23	\$81,886
<b>Electronics - Supporting Industries</b>	<b>2,301</b>	<b>0%</b>	<b>(2)</b>	<b>(214)</b>	<b>211</b>	<b>\$44,757</b>
Radio, Television, and Other Electronics Stores	1,367	50%	457	(17)	474	\$36,360
Electrical Apparatus and Equipment, Wiring Supplies, and Related Equipment Merchant Wholesalers	364	-26%	(126)	(20)	(105)	\$61,705
Computer and Software Stores	202	-39%	(129)	(84)	(45)	\$36,360
Household Appliance Stores	148	59%	55	(18)	73	\$32,754
Other Electronic Parts and Equipment Merchant Wholesalers	137	-23%	(40)	(22)	(19)	\$93,256
Electrical and Electronic Appliance, Television, and Radio Set Merchant Wholesalers	83	-73%	(219)	(53)	(167)	\$70,644
<b>Metals - All Industries</b>	<b>2,414</b>	<b>-18%</b>	<b>(524)</b>	<b>(183)</b>	<b>(339)</b>	<b>\$63,030</b>
<b>Metals - Core Industries</b>	<b>1,940</b>	<b>-19%</b>	<b>(469)</b>	<b>(153)</b>	<b>(314)</b>	<b>\$62,501</b>
Sheet Metal Work Manufacturing	461	-24%	(147)	(56)	(90)	\$47,432
Machine Shops	214	-14%	(34)	11	(44)	\$45,992
Ball and Roller Bearing Manufacturing	201	36%	53	(16)	69	\$76,465
Iron and Steel Pipe and Tube Manufacturing from Purchased Steel	160	-62%	(259)	(7)	(253)	\$39,593
Rolled Steel Shape Manufacturing	148	151%	89	(9)	98	\$84,068
Electroplating, Plating, Polishing, Anodizing, and Coloring	143	-22%	(40)	(24)	(16)	\$45,431
Ammunition (except Small Arms) Manufacturing	93	-34%	(47)	(7)	(40)	\$41,857
Industrial Process Furnace and Oven Manufacturing	72	-40%	(48)	(28)	(20)	\$74,313
Plate Work Manufacturing	65	-42%	(47)	(2)	(44)	\$53,650
<b>Metals - Supporting Industries</b>	<b>474</b>	<b>-10%</b>	<b>(55)</b>	<b>(30)</b>	<b>(25)</b>	<b>\$65,190</b>
Metal Service Centers and Other Metal Merchant Wholesalers	293	26%	60	(14)	73	\$65,632
Industrial Machinery and Equipment Merchant Wholesalers	182	-39%	(114)	(16)	(98)	\$64,479

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

**TOP INDUSTRIES IN METALS SUB-CLUSTER IN PHILADELPHIA, CONTINUED**

Description	2013 Jobs	% Change 2007-2013	Change	Expected Change	Competitive Effect	Wages
<b>Vehicle &amp; Vehicle Parts- All Industries</b>	<b>9,024</b>	<b>▲ 12%</b>	<b>981</b>	<b>(520)</b>	<b>1,500</b>	<b>\$42,284</b>
<b>Vehicle - Core Industries</b>	<b>3,141</b>	<b>▲ 77%</b>	<b>1,365</b>	<b>(228)</b>	<b>1,592</b>	<b>\$51,783</b>
Ship Building and Repairing	659	▼ -26%	(233)	15	(249)	\$65,294
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	466	▲ 497%	388	(15)	403	\$42,852
Aircraft Manufacturing	420	▲ 2900%	406	-	406	\$73,144
All Other Motor Vehicle Parts Manufacturing	389	▲ 270%	284	(15)	299	\$44,161
Carburetor, Piston, Piston Ring, and Valve Manufacturing	293	▲ 100%	293	-	293	\$25,699
Railroad Rolling Stock Manufacturing	293	▲ 100%	292	-	292	\$84,192
Gasoline Engine and Engine Parts Manufacturing	256	▲ 1180%	236	(3)	238	\$25,699
<b>Vehicle &amp; Vehicle Parts - Supporting Industries</b>	<b>3,320</b>	<b>▼ -12%</b>	<b>(452)</b>	<b>(170)</b>	<b>(281)</b>	<b>\$40,259</b>
New Car Dealers	1,369	▼ -25%	(463)	(191)	(272)	\$51,605
Automotive Parts and Accessories Stores	969	▼ -10%	(112)	54	(166)	\$25,988
Motor Vehicle Supplies and New Parts Merchant Wholesalers	478	▲ 6%	29	(28)	57	\$38,722
Used Car Dealers	286	▬ 2%	6	9	(2)	\$38,195
Motor Vehicle Parts (Used) Merchant Wholesalers	142	▲ 89%	67	-	67	\$36,077
Vehicle & Vehicle Parts - Automotive Services Industries	2,562	▬ 3%	67	(122)	189	\$33,262
General Automotive Repair	1,172	▬ 0%	2	(9)	11	\$34,462
Automotive Body, Paint, and Interior Repair and Maintenance	716	▲ 14%	88	(36)	125	\$41,815
Car Washes	426	▲ 15%	55	(20)	75	\$17,052

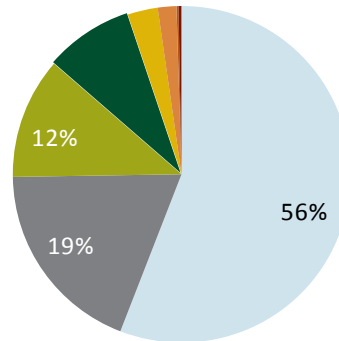
Source: Philadelphia Works analysis of the QCEW Employees & Non-QCEW Employees - EMSI 2013.4 Class of Worker data

**Employers in Advanced Manufacturing**

- Over 1,000 businesses represent the Advanced Manufacturing industry cluster. The majority of businesses are “very small” (1-4 employees) and “small” (5-99 employees).
- Core industries in Vehicle & Vehicle Parts manufacturing have the highest concentration of “medium” (100-246) and “large” (250+) businesses.

**EMPLOYERS IN ADVANCED MANUFACTURING INDUSTRY CLUSTER BY SIZE**

Size	In Industry	in Phila
1-4	56%	60%
5-9	19%	15%
10-19	12%	11%
20-49	8%	8%
50-99	3%	3%
100-249	2%	2%
250-499	0.2%	0.5%
500-999	0.3%	0.2%
1000 & Over	0.0%	0.1%
<b>Total</b>	<b>100%</b>	<b>100%</b>



Source: PA Employer Database 2013

**SUB-CLUSTERS IN ADVANCED MANUFACTURING BY SIZE (NUMBER AND PERCENT OF EMPLOYERS)**

Industry Sector (4-digit)	V. Small (1-4)	Small (5-99)	Medium (100-249)	Large (250+)	Total (#)
<b>Advanced Manufacturing - All industries</b>	<b>56%</b>	<b>42%</b>	<b>2%</b>	<b>0%</b>	<b>1,066</b>
Advanced Manufacturing - Core Industries	30%	61%	7%	3%	195
Advanced Manufacturing - Supporting Industries	42%	57%	1%	0%	369
<b>Chemicals, Rubber &amp; Plastics - All Industries</b>	<b>30%</b>	<b>68%</b>	<b>2%</b>	<b>0%</b>	<b>103</b>
Chemicals, Rubber & Plastics - Core Industries	22%	75%	4%	0%	55
Chemicals, Rubber & Plastics - Supporting Industries	40%	60%	0%	0%	48
<b>Electronics - All Industries</b>	<b>36%</b>	<b>59%</b>	<b>5%</b>	<b>0%</b>	<b>59</b>
Electronics - Core Industries	29%	59%	12%	0%	17
Electronics - Supporting Industries	38%	60%	2%	0%	42
<b>Metals - All Industries</b>	<b>38%</b>	<b>58%</b>	<b>3%</b>	<b>1%</b>	<b>138</b>
Metals - Core Industries	40%	55%	4%	1%	96
Metals - Supporting	36%	64%	0%	0%	42
<b>Vehicle &amp; Vehicle Parts- All Industries</b>	<b>64%</b>	<b>34%</b>	<b>1%</b>	<b>1%</b>	<b>766</b>
Vehicle - Core Industries	15%	52%	19%	15%	27
Vehicle - Supporting Industries	44%	54%	2%	0%	237
Vehicle - Automotive Services Industries	76%	24%	0%	0%	502

Source: PA Employer Database 2013

**TOP EMPLOYERS IN CHEMICALS, RUBBER & PLASTICS SUB-CLUSTER**

HONEYWELL INTERNATIONAL INC	NATL CHEMICAL LABORATORIES OF PA
NORTHEAST BUILDING PRODUCTS CORP	NORTHEAST BUILDING PRODUCTS CORP
BROTECH CORP	THE DOW CHEMICAL CO

Source: PA Employer Database 2013

**TOP EMPLOYERS IN ELECTRONICS SUB-CLUSTER**

PEI GENESIS	BILLOWS ELEC SUPPLY CO INC
SPD TECHNOLOGIES INC	DE VAL CORPORATION
SIMKAR LLC	GRAYBAR ELECTRIC CO INC
ANGELO BROTHERS COMPANY INTERNATION	SPECTRUM MICROWAVE INCORPORATED

Source: PA Employer Database 2013

**TOP EMPLOYERS IN METALS SUB-CLUSTER**

SOUTHWARK METAL MANUFACTURING CO	COMPUTER COMPONENTS CORPORATION
ACTION MANUFACTURING CO	HADCO METAL TRADING CO INC
ALLIED TUBE & CONDUIT CORPORATION	MICROCISION LLC
KINGSBURY INC	NORTHEAST METAL TRADERS INC
SANDMEYER STEEL COMPANY	COILPLUS INC
AMUNEAL MANUFACTURING CORP	THALHEIMER BROTHERS LLC

Source: PA Employer Database 2013

**TOP EMPLOYERS IN VEHICLES & VEHICLE PARTS SUB-CLUSTER**

AGUSTA WESTLAND PHILADELPHIA CORP	BWP PA DISTRIBUTORS INC
AKER PHILADELPHIA SHIPYARD INC	CARDONE INDUSTRIES INC
CARDONE INDUSTRIES INC	CHAMPION TOYOTA
ACTIVE RADIATOR MPN, INC.	CHAPMAN CHEVROLET LLC
ALLIANCE REMANUFACTURING INC	CHAPMAN NISSAN LLC
ALLISON LLC	LIBERTY BELL EQUIPMENT CORPORATION
CARDONE INDUSTRIES INC	MUTUAL INDUSTRIES NORTH INC
CHAMPION AUTOMOTIVE GROUP INC	BARBERAS AUTOLAND
CHAPMAN FORD SALES INC	GENE'S AUTO BODY
HYUNDAI ROTEM USA CORPORATION	GORDON CHEVROLET
M & B PAUL INC	KEYSTONE AUTOMOTIVE INDUSTRIES INC
PACIFICO FORD INC	THE PEP BOYS-MANNY MOE & JACK
AMERICAN CABLE CO INC	PHILADELPHIA HONDA

Source: PA Employer Database 2013



## Worker Demographics

Workforce demographics are examined by gender, age, and education of workers.

### Gender of Workers in Advanced Manufacturing

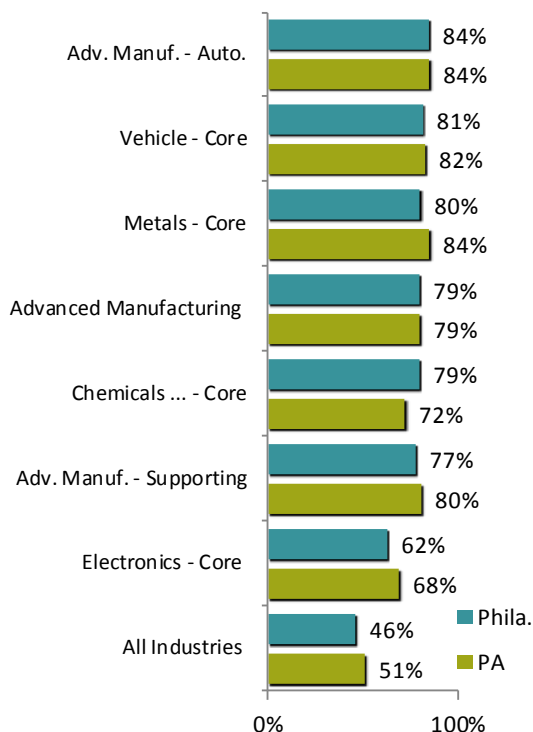
- 8 of 10 workers in Advanced Manufacturing are men, similar to the gender split in Advanced Manufacturing in Pennsylvania.
- Automotive Services industries in the Vehicle & Vehicle Parts sub-cluster employ the largest share of men among sub-clusters. Electronics core industries employ fewer men compared to other sub-clusters.
- Ship and Boat Building; Automotive Repair and Maintenance; Steel Product Manufacturing from Purchased Steel, and Automotive Repair and Maintenance, among top industries employer a larger share of men compared to other industries in Advanced Manufacturing.

### GENDER OF WORKERS IN 2013Q1+3 PREVIOUS QUARTERS

#### % MEN EMPLOYED IN ADVANCED MANUFACTURING IN PHILADELPHIA VS. PA

	% men
Ship & Boat Building	94%
Purchased Steel Prod. Mfg	90%
Auto. Repair & Maint.	84%
Motor Vehicle/Part Merch. Whls.	83%
Electr. & Appliance Stores	82%
Machine Shops & Threaded Prod.	82%
Other Chem. Prep. Mfg	82%
Auto Parts, Acc., & Tire Stores	81%
Advanced Manufacturing	79%
Automobile Dealers	79%
Aero. Prod. & Parts Mfg	79%
Arch. & Structural Metals	78%
Motor Vehicle Parts Mfg	74%
Plastics Prod. Mfg	74%
Machinery & Supply Merch. Whls.	74%
Metal & Mineral Merch. Whole.	74%
Motor Vehicle Body & Trailer Mfg	73%
Other Fabric. Metal Prod. Mfg	68%
Chem. Merch. Whole.	68%
Electr. Goods Merch. Whls.	65%
Electr. Lighting Equip. Mfg	53%
All Industries	46%

#### % MEN EMPLOYED BY CLUSTER AND GEOGRAPHY



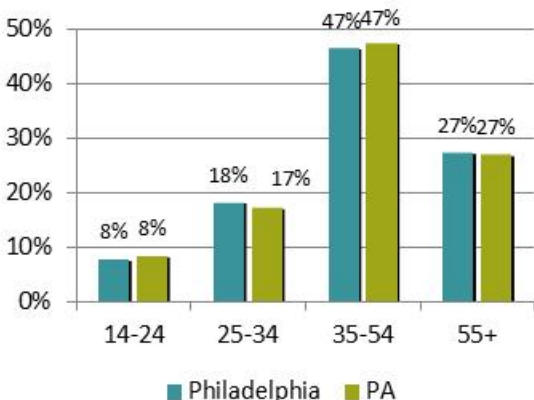
Source: Philadelphia Works Analysis of Quarterly Workforce Indicators data.

## Age of Workers in Advanced Manufacturing

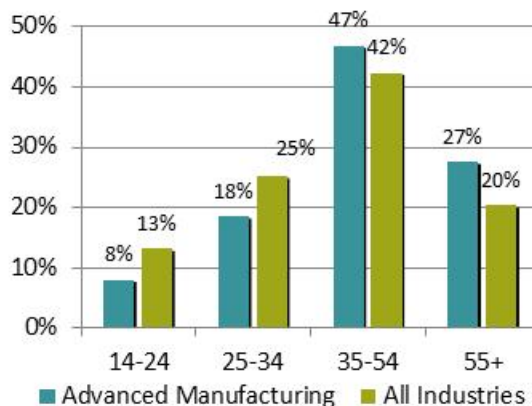
- The Advanced Manufacturing industry cluster employs a larger share of older workers compared to other industries – 27 percent of workers are 55 or older, compared to only 20 percent across all industries.
- Core industries in Advanced Manufacturing tend to have older workforce, while supporting industries in retail and wholesale and automotive services tend to employ a larger share of younger workers.

### AGE OF WORKERS IN 2013Q1+3 PREVIOUS QUARTERS:

**EMPLOYED IN ADVANCED MANUFACTURING IN PHILADELPHIA VS. PA**

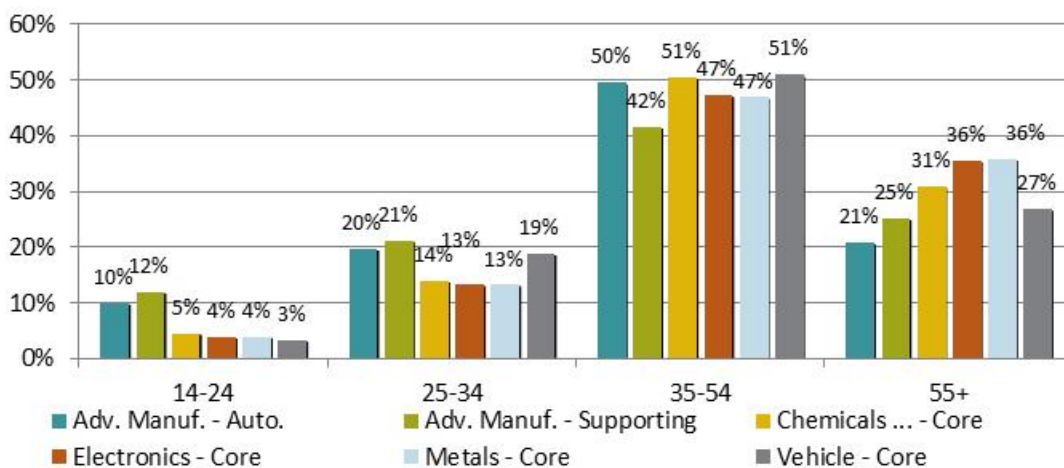


**EMPLOYED IN ADVANCED MANUFACTURING VS. ALL INDUSTRIES IN PHILADELPHIA**



Source: Philadelphia Works Analysis of Quarterly Workforce Indicators data.

### SUB-CLUSTERS IN ADVANCED MANUFACTURING IN PHILADELPHIA BY AGE OF WORKERS IN 2013Q1+3 PREVIOUS QUARTERS



Source: Philadelphia Works Analysis of Quarterly Workforce Indicators data.

**TOP INDUSTRIES IN ADVANCED MANUFACTURING IN PHILADELPHIA BY AGE OF WORKERS IN 2013Q1+3 PREVIOUS QUARTERS**

Industry/Age	14-24	25-54	55+	Total	# Employed
Auto. Repair & Maint.	10.0%	69.2%	20.8%	100%	2,521
Automobile Dealers	13.3%	65.7%	21.0%	100%	1,299
Auto Parts, Acc., & Tire Stores	23.2%	60.0%	16.8%	100%	1,092
Arch. & Structural Metals	3.9%	62.8%	33.3%	100%	949
Ship & Boat Building	4.1%	63.5%	32.4%	100%	778
Motor Vehicle/Part Merch. Whls.	6.5%	55.7%	37.8%	100%	701
Motor Vehicle Parts Mfg	5.7%	64.9%	29.4%	100%	667
Aero. Prod. & Parts Mfg	1.7%	86.0%	12.2%	100%	659
Electr. Goods Merch. Whls.	4.5%	66.1%	29.5%	100%	654
Motor Vehicle Body & Trailer Mfg	1.4%	65.4%	33.2%	100%	567
Machinery & Supply Merch. Whls.	4.9%	65.5%	29.6%	100%	461
Other Fabric. Metal Prod. Mfg	4.7%	50.8%	44.5%	100%	443
Purchased Steel Prod. Mfg	2.3%	62.1%	35.6%	100%	428
Plastics Prod. Mfg	8.3%	64.6%	27.1%	100%	410
Machine Shops & Threaded Prod.	3.8%	57.9%	38.3%	100%	327
Metal & Mineral Merch. Whls.	5.9%	62.2%	31.9%	100%	314
Electr. Lighting Equip. Mfg	3.9%	65.3%	30.8%	100%	265
Other Chem. Prep. Mfg	1.5%	63.0%	35.5%	100%	217
Electr. & Appliance Stores	19.1%	58.6%	22.3%	100%	212
Chem. Merch. Whls.	2.8%	66.2%	31.0%	100%	203
<b>Advanced Manufacturing</b>	<b>8%</b>	<b>65%</b>	<b>27%</b>	<b>100%</b>	<b>14,244</b>
<b>All Industries</b>	<b>13%</b>	<b>67%</b>	<b>20%</b>	<b>100%</b>	<b>558,394</b>

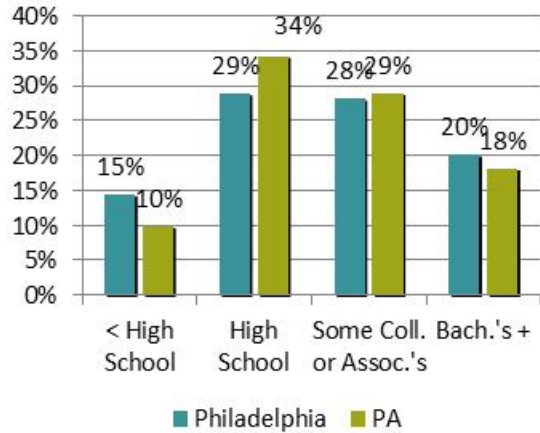
Source: Philadelphia Works Analysis of Quarterly Workforce Indicators data.

**Education of Workers in in Advanced Manufacturing**

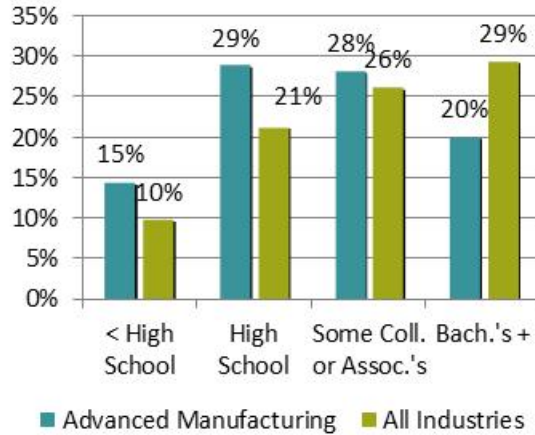
- Most workers employed in Advanced Manufacturing have a high school diploma or some college or an Associate’s degree. The share of workers without a Bachelor’s degree in Advanced Manufacturing is larger compared to all industries. Educational attainment was similar across sub-clusters.
- Educational attainment varies across industries that make up the cluster. Motor Vehicle Body and Trailer Manufacturing; Motor Vehicle Parts Manufacturing; and Electric Lighting Equipment Manufacturing employed a larger share of workers without a high school diploma.
- Nearly all the industries employed a larger share of workers with a high school diploma or some college or an Associate’s degree compared to the Philadelphia average.
- Chemical and Allied Products Merchant Wholesalers employed the most educated workforce – the share of workers with a Bachelor’s degree or higher was above the Philadelphia average, at 31 percent.

**EDUCATION OF WORKERS IN 2013Q1+3 PREVIOUS QUARTERS:**

**EMPLOYED IN ADVANCED MANUFACTURING IN PHILADELPHIA VS. PA**

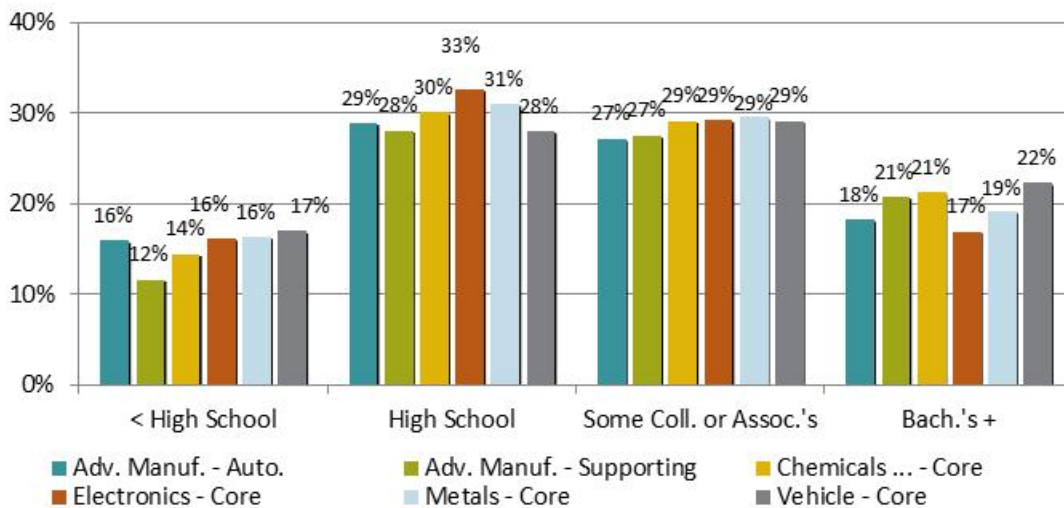


**EMPLOYED IN ADVANCED MANUFACTURING VS. ALL INDUSTRIES IN PHILADELPHIA**



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

**SUB-CLUSTERS IN ADVANCED MANUFACTURING IN PHILADELPHIA BY EDUCATION OF WORKERS IN 2013Q1+3 PREVIOUS QUARTERS**



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

## TOP INDUSTRIES IN ADVANCED MANUFACTURING 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
Auto. Repair & Maint.	15.9%	28.9%	27.1%	18.2%	10.0%	100%	2,521
Automobile Dealers	11.4%	27.7%	27.2%	20.4%	13.3%	100%	1,299
Auto Parts, Acc., & Tire Stores	13.6%	26.1%	23.5%	13.6%	23.2%	100%	1,092
Arch. & Structural Metals	18.8%	30.2%	29.4%	17.3%	4.2%	100%	949
Ship & Boat Building	12.2%	32.4%	30.6%	20.4%	4.4%	100%	778
Motor Vehicle/Part Merch. Whls.	14.4%	31.3%	29.1%	18.4%	6.8%	100%	701
Motor Vehicle Parts Mfg	23.1%	26.5%	26.0%	18.2%	6.2%	100%	667
Aero. Prod. & Parts Mfg	10.0%	27.7%	32.8%	27.0%	2.5%	100%	659
Electr. Goods Merch. Whls.	8.2%	28.2%	30.4%	28.6%	4.5%	100%	654
Motor Vehicle Body & Trailer Mfg	24.1%	23.8%	26.4%	24.0%	1.7%	100%	567
Machinery & Supply Merch. Whls.	9.9%	29.7%	30.4%	24.5%	5.5%	100%	461
Other Fabric. Metal Prod. Mfg	15.5%	31.4%	27.9%	20.3%	4.9%	100%	443
Purchased Steel Prod. Mfg	13.2%	32.9%	31.9%	19.4%	2.6%	100%	428
Plastics Prod. Mfg	18.6%	31.8%	27.1%	13.8%	8.7%	100%	410
Machine Shops & Threaded Prod.	15.3%	30.3%	29.0%	21.2%	4.2%	100%	327
Metal & Mineral Merch. Whls.	12.2%	28.4%	28.0%	24.9%	6.4%	100%	314
Electr. Lighting Equip. Mfg	19.7%	31.6%	27.9%	16.0%	4.8%	100%	265
Other Chem. Prep. Mfg	13.8%	29.4%	28.8%	25.6%	2.5%	100%	217
Electr. & Appliance Stores	7.8%	26.2%	27.6%	18.6%	19.7%	100%	212
Chem. Merch. Whls.	10.5%	26.3%	28.0%	30.6%	4.6%	100%	203
<b>Advanced Manufacturing</b>	<b>14.5%</b>	<b>29.0%</b>	<b>28.2%</b>	<b>20.2%</b>	<b>8.1%</b>	<b>100%</b>	<b>14,244</b>
<b>All Industries</b>	<b>10.0%</b>	<b>21.4%</b>	<b>26.2%</b>	<b>29.5%</b>	<b>12.9%</b>	<b>100%</b>	<b>558,394</b>

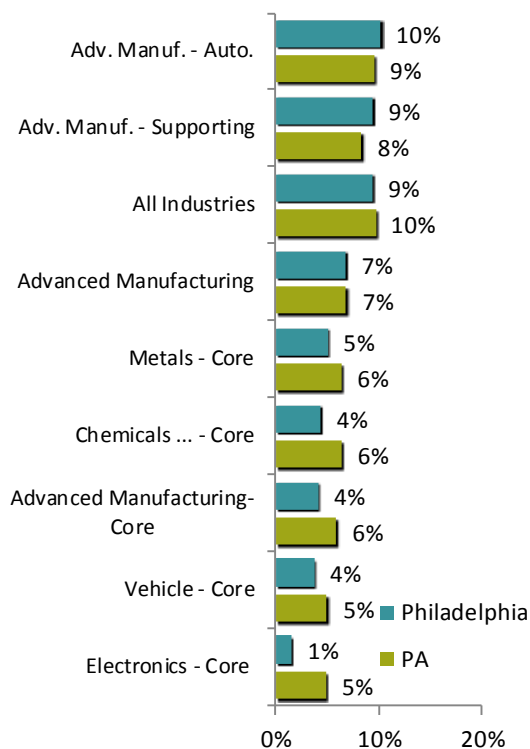
Source: Philadelphia Works Analysis of Quarterly Workforce Indicators data.

### Turnover in Advanced Manufacturing

- 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 the Advanced Manufacturing industry cluster in Philadelphia was 7 percent - similar to Pennsylvania but below the turnover rate across all industries in Philadelphia (9 percent).
- Vehicle & Vehicle Parts sub-cluster industries in automotive services had the highest turnover rate, while core industries in Advanced Manufacturing had the lowest turnover rate.

### TURNOVER RATES IN ADVANCED MANUFACTURING PHILADELPHIA IN 2012Q3 (FOUR QUARTER MOVING AVERAGE)

Industry/Turnover Rate	Turnover
Auto Parts, Acc., & Tire Stores	16%
Automobile Dealers	14%
Auto. Repair & Maint.	10%
All Industries	9%
Arch. & Structural Metals	8%
Electr. & Appliance Stores	7%
Advanced Manufacturing	7%
Plastics Prod. Mfg	7%
Other Chem. Prep. Mfg	7%
Ship & Boat Building	6%
Machinery & Supply Merch. Whls.	6%
Motor Vehicle/Part Merch. Whls.	6%
Machine Shops & Threaded Prod.	5%
Electr. Goods Merch. Whole.	5%
Coating, Engraving & Heat Treating Metal	4%
Motor Vehicle Parts Mfg	4%
Other Fabric. Metal Prod. Mfg	3%
Motor Vehicle Body & Trailer Mfg	3%
Purchased Steel Prod. Mfg	2%
Aero. Prod. & Parts Mfg	2%
Electr. Lighting Equip. Mfg	2%
Metal & Mineral Merch. Whls.	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. In Advanced Manufacturing we examine staffing patterns for three sectors making up the industry cluster: core manufacturing industries, supporting industries in retail and wholesale, and automotive services industries.

- Production; Office and Administrative Support; Architecture and Engineering; Transportation; and Installation, Maintenance, and Repair occupational families are most important to the core industries in Advanced Manufacturing.
- Sales and Related Occupations; Installation, Maintenance, and Repair; and Office and Administrative Support are families that represent a larger share of jobs in supporting industries in Advanced Manufacturing.
- Automotive services industries rely on Installation, Maintenance, and Repair and Transportation occupations most.

### TOP OCCUPATIONAL FAMILIES IN ADVANCED MANUFACTURING INDUSTRY CLUSTER

Occupation	Jobs 2013	Change % 2007-2013	Jobs 2013	Change % 2007-2013	Jobs 2013	Change % 2007-2013	Jobs 2013	Change % 2007-2013
	<b>Core</b>		<b>Supporting</b>		<b>Auto. Services</b>		<b>All Adv. Manuf.</b>	
Production	3,378	15%	66	-10%	103	1%	3,547	14%
Sales and related	211	-4%	2,812	-2%	123	5%	3,146	-1%
Installation, maint., and repair	300	16%	1,093	-13%	1,405	1%	2,798	-4%
Office and admin. support	597	0%	974	-10%	235	0%	1,806	-6%
Transportation	348	7%	637	-7%	422	8%	1,407	0%
Business and financial operations	285	27%	122	-13%	58	21%	465	12%
Architecture and Engineering	415	41%	-	0%	-	0%	415	41%
Management	106	-9%	203	-15%	40	-2%	349	-12%
Construction	172	-14%	-	0%	-	0%	172	-14%
Unidentified + Other	1,048	n/a	563	n/a	176	n/a	1,787	n/a
<b>Total</b>	<b>6,860</b>	<b>100%</b>	<b>6,470</b>	<b>100%</b>	<b>2,562</b>	<b>100%</b>	<b>15,892</b>	<b>2%</b>

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

- Occupations requiring a Bachelor’s degree grew most in core industries in Advanced Manufacturing and Automotive Services.

### EDUCATION REQUIRED OF WORKERS IN ADVANCED MANUFACTURING INDUSTRY CLUSTER

Skill	Jobs 2013	Change % 2007-2013	Jobs 2013	Change % 2007-2013	Jobs 2013	Change % 2007-2013	Jobs 2013	Change % 2007-2013
	<b>Core</b>		<b>Supporting</b>		<b>Auto. Services</b>		<b>All Adv. Manuf.</b>	
Short-term on-the-job training	1,236	17%	3,115	-1%	719	5%	5,070	4%
Moderate-term on-the-job training	2,523	9%	1,232	-12%	537	3%	4,292	2%
Long-term on-the-job training	763	13%	73	-13%	-	-	836	10%
Work experience in a related occupation	330	3%	422	-6%	119	3%	871	-1%
Postsecondary non-degree award	232	5%	691	-16%	927	0%	1,850	-6%
Associate's degree	124	0%	28	4%	-	-	152	1%
Bachelor's degree	624	37%	226	-18%	58	21%	908	17%
Bachelor's or higher degree, plus work experience	266	5%	203	-15%	40	-2%	509	-5%
Unidentified	762	n/a	480	n/a	162	n/a	1,404	n/a
<b>Total</b>	<b>6,860</b>	<b>13%</b>	<b>6,470</b>	<b>-7%</b>	<b>2,562</b>	<b>3%</b>	<b>15,892</b>	<b>2%</b>

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 cluster. Wage data are not industry specific and describe all workers in the occupation.

## Top Occupations in Core Industries

### TOP OCCUPATIONS IN CORE INDUSTRIES IN ADVANCED MANUFACTURING

SOC	Occupation	Jobs 2013	% Change from 2007	Entry-Level Earnings	Median Hourly Earnings	% of the Total Jobs in Cluster
<b>Limited Skills Required</b>						
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	151	16%	\$8.31	\$12.60	2.2%
51-2022	Electrical and Electronic Equipment Assemblers	148	45%	\$10.10	\$14.98	2.2%
51-9198	Helpers--Production Workers	137	3%	\$8.09	\$11.11	2.0%
43-5071	Shipping, Receiving, and Traffic Clerks	121	(1%)	\$9.34	\$14.52	1.8%
51-2031	Engine and Other Machine Assemblers	112	67%	\$9.24	\$13.56	1.6%
51-2023	Electromechanical Equipment Assemblers	88	267%	\$9.77	\$14.12	1.3%
43-9061	Office Clerks, General	86	(3%)	\$8.72	\$14.76	1.3%
43-4051	Customer Service Representatives	70	(8%)	\$11.28	\$17.30	1.0%
53-7051	Industrial Truck and Tractor Operators	59	2%	\$10.79	\$15.81	0.9%
53-7064	Packers and Packagers, Hand	56	8%	\$7.26	\$9.76	0.8%
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	51	(2%)	\$10.32	\$16.61	0.7%
43-5081	Stock Clerks and Order Fillers	49	2%	\$7.70	\$10.10	0.7%
53-3032	Heavy and Tractor-Trailer Truck Drivers	29	12%	\$13.74	\$19.39	0.4%
37-2011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	24	0%	\$9.18	\$13.78	0.4%
53-7063	Machine Feeders and Offbearers	20	(5%)	\$8.15	\$12.90	0.3%
<b>Some Training or Experience</b>						
51-2092	Team Assemblers	558	35%	\$8.82	\$13.13	8.1%
51-4041	Machinists	257	18%	\$13.53	\$19.19	3.8%
51-1011	First-Line Supervisors of Production and Operating Workers	253	3%	\$16.83	\$28.11	3.7%
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	188	22%	\$11.97	\$18.38	2.7%
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	160	(8%)	\$14.20	\$25.51	2.3%
51-2041	Structural Metal Fabricators and Fitters	135	(11%)	\$13.42	\$19.22	2.0%
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	134	6%	\$9.44	\$14.46	1.9%
51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic	131	34%	\$12.90	\$18.68	1.9%
49-9071	Maintenance and Repair Workers, General	118	13%	\$11.66	\$17.56	1.7%
49-9041	Industrial Machinery Mechanics	113	26%	\$14.77	\$20.74	1.6%
13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	105	27%	\$19.47	\$29.89	1.5%
51-4021	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	104	11%	\$12.81	\$19.54	1.5%
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	96	37%	\$10.52	\$16.16	1.4%
43-5061	Production, Planning, and Expediting Clerks	94	13%	\$11.52	\$21.90	1.4%



**TOP OCCUPATIONS IN CORE INDUSTRIES IN ADVANCED MANUFACTURING, CONTINUED**

SOC	Occupation	Jobs 2013	% Change from 2007	Entry-Level Earnings	Median Hourly Earnings	% of the Total Jobs in Cluster
<b>Some Training or Experience</b>						
51-9011	Chemical Equipment Operators and Tenders	93	(4%)	\$11.42	\$18.66	1.3%
51-4111	Tool and Die Makers	69	57%	\$15.92	\$21.02	1.0%
43-3031	Bookkeeping, Accounting, and Auditing Clerks	56	(3%)	\$12.41	\$19.49	0.8%
47-2111	Electricians	55	(2%)	\$16.82	\$26.39	0.8%
51-9111	Packaging and Filling Machine Operators and Tenders	53	(30%)	\$8.20	\$13.40	0.8%
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	51	(55%)	\$13.72	\$19.80	0.7%
51-4193	Plating and Coating Machine Setters, Operators, and Tenders, Metal and Plastic	51	(11%)	\$10.72	\$13.37	0.7%
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	45	--	\$14.73	--	0.6%
49-9043	Maintenance Workers, Machinery	44	7%	\$9.70	\$17.98	0.6%
47-2031	Carpenters	42	(16%)	\$14.62	\$21.91	0.6%
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	41	0%	\$10.28	\$15.83	0.6%
51-4072	Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	40	38%	\$8.03	\$13.16	0.6%
47-2152	Plumbers, Pipefitters, and Steamfitters	39	(17%)	\$18.06	\$28.66	0.6%
51-2099	Assemblers and Fabricators, All Other	39	26%	\$7.54	\$10.32	0.6%
51-9122	Painters, Transportation Equipment	37	68%	\$14.25	\$20.60	0.5%
51-4191	Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	37	(12%)	\$12.03	\$16.46	0.5%
51-4192	Layout Workers, Metal and Plastic	37	(10%)	\$18.50	\$22.62	0.5%
51-2091	Fiberglass Laminators and Fabricators	36	(20%)	\$10.12	\$12.90	0.5%
47-2211	Sheet Metal Workers	36	(23%)	\$16.34	\$25.64	0.5%
51-8091	Chemical Plant and System Operators	31	35%	\$13.33	\$19.48	0.5%
51-9121	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	31	(14%)	\$10.61	\$14.59	0.5%
43-1011	First-Line Supervisors of Office and Administrative Support Workers	31	0%	\$16.73	\$27.43	0.5%
51-9041	Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders	28	12%	\$10.93	\$17.11	0.4%
51-4023	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	25	(19%)	\$13.55	\$18.01	0.4%
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	25	9%	\$22.24	\$33.40	0.4%

**TOP OCCUPATIONS IN CORE INDUSTRIES IN ADVANCED MANUFACTURING, CONTINUED**

SOC	Occupation	Jobs 2013	% Change from 2007	Entry-Level Earnings	Median Hourly Earnings	% of the Total Jobs in Cluster
<b>Some College or Associate's</b>						
51-4121	Welders, Cutters, Solderers, and Brazers	198	3%	\$12.33	\$18.79	2.9%
17-3013	Mechanical Drafters	62	3%	\$15.36	\$23.90	0.9%
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	34	17%	\$11.09	\$16.07	0.5%
19-4031	Chemical Technicians	24	(31%)	\$11.87	\$18.28	0.3%
17-3026	Industrial Engineering Technicians	21	40%	\$14.76	\$22.86	0.3%
17-3023	Electrical and Electronics Engineering Technicians	17	21%	\$15.03	\$24.09	0.3%
<b>Bachelor's or Higher</b>						
17-2141	Mechanical Engineers	121	38%	\$24.55	\$37.20	1.8%
17-2112	Industrial Engineers	118	53%	\$24.94	\$37.70	1.7%
11-1021	General and Operations Managers	89	(8%)	\$28.37	\$56.04	1.3%
11-3051	Industrial Production Managers	78	13%	\$29.26	\$44.84	1.1%
13-2011	Accountants and Auditors	66	20%	\$21.15	\$34.46	1.0%
11-9041	Architectural and Engineering Managers	38	41%	\$43.53	\$61.31	0.6%
13-1081	Logisticians	37	85%	\$21.86	\$32.98	0.5%
17-2071	Electrical Engineers	36	50%	\$27.14	\$41.88	0.5%
15-1133	Software Developers, Systems Software	35	169%	\$28.52	\$43.49	0.5%
13-1051	Cost Estimators	35	9%	\$20.84	\$30.69	0.5%

## Top Occupations in Supporting Industries

### TOP OCCUPATIONS IN SUPPORTING INDUSTRIES IN ADVANCED MANUFACTURING

SOC	Occupation	Jobs 2013	% Change from 2007	Entry-Level Earnings	Median Hourly Earnings	% of the Total Jobs in Cluster
<b>Limited Skills Required</b>						
41-2031	Retail Salespersons	1,445	8%	\$7.59	\$10.43	22.3%
53-3033	Light Truck or Delivery Services Drivers	204	(5%)	\$8.76	\$15.06	3.2%
43-9061	Office Clerks, General	179	(8%)	\$8.72	\$14.76	2.8%
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	166	(2%)	\$8.31	\$12.60	2.6%
43-4051	Customer Service Representatives	164	(2%)	\$11.28	\$17.30	2.5%
43-5081	Stock Clerks and Order Fillers	121	(5%)	\$7.70	\$10.10	1.9%
43-5071	Shipping, Receiving, and Traffic Clerks	104	(12%)	\$9.34	\$14.52	1.6%
41-2011	Cashiers	104	1%	\$8.17	\$9.72	1.6%
53-7061	Cleaners of Vehicles and Equipment	93	(18%)	\$7.25	\$9.22	1.4%
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	78	(14%)	\$10.32	\$16.61	1.2%
41-2021	Counter and Rental Clerks	73	(15%)	\$8.28	\$12.06	1.1%
41-3099	Sales Representatives, Services, All Other	73	16%	\$13.40	\$28.58	1.1%
53-3032	Heavy and Tractor-Trailer Truck Drivers	49	7%	\$13.74	\$19.39	0.8%
53-3031	Driver/Sales Workers	47	(6%)	\$7.30	\$8.79	0.7%
43-4171	Receptionists and Information Clerks	35	(15%)	\$9.48	\$14.34	0.5%
43-3021	Billing and Posting Clerks	32	(14%)	\$12.60	\$17.12	0.5%
<b>Some Training or Experience</b>						
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	431	(14%)	\$14.20	\$25.51	6.7%
41-2022	Parts Salespersons	308	(11%)	\$9.02	\$14.85	4.8%
41-1011	First-Line Supervisors of Retail Sales Workers	213	0%	\$13.22	\$20.70	3.3%
49-3093	Tire Repairers and Changers	146	(10%)	\$7.92	\$11.39	2.3%
43-3031	Bookkeeping, Accounting, and Auditing Clerks	118	(10%)	\$12.41	\$19.49	1.8%
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	76	(14%)	\$22.24	\$33.40	1.2%
49-9031	Home Appliance Repairers	70	19%	\$7.39	\$14.85	1.1%
41-1012	First-Line Supervisors of Non-Retail Sales Workers	53	(9%)	\$25.70	\$49.81	0.8%
43-1011	First-Line Supervisors of Office and Administrative Support Workers	52	(10%)	\$16.73	\$27.43	0.8%
49-3021	Automotive Body and Related Repairers	39	(24%)	\$14.32	\$19.69	0.6%
49-9098	Helpers--Installation, Maintenance, and Repair Workers	34	(15%)	\$9.24	\$11.57	0.5%
13-1022	Wholesale and Retail Buyers, Except Farm Products	27	(16%)	\$17.32	\$25.70	0.4%
49-9071	Maintenance and Repair Workers, General	24	(11%)	\$11.66	\$17.56	0.4%
51-2092	Team Assemblers	22	(15%)	\$8.82	\$13.13	0.3%
51-4041	Machinists	18	0%	\$13.53	\$19.19	0.3%

**TOP OCCUPATIONS IN SUPPORTING INDUSTRIES IN ADVANCED MANUFACTURING, CONTINUED**

SOC	Occupation	Jobs 2013	% Change from 2007	Entry-Level Earnings	Median Hourly Earnings	% of the Total Jobs in Cluster
<b>Some Training or Experience</b>						
43-3011	Bill and Account Collectors	15	(21%)	\$11.23	\$16.64	0.2%
13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	15	(12%)	\$19.47	\$29.89	0.2%
51-1011	First-Line Supervisors of Production and Operating Workers	14	(7%)	\$16.83	\$28.11	0.2%
43-6011	Executive Secretaries and Executive Administrative Assistants	14	(13%)	\$18.41	\$25.27	0.2%
49-9041	Industrial Machinery Mechanics	13	(24%)	\$14.77	\$20.74	0.2%
43-5061	Production, Planning, and Expediting Clerks	13	(13%)	\$11.52	\$21.90	0.2%
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	12	(14%)	\$11.97	\$18.38	0.2%
<b>Some College or Associate's</b>						
49-3023	Automotive Service Technicians and Mechanics	572	(20%)	\$9.80	\$17.70	8.8%
49-2011	Computer, Automated Teller, and Office Machine Repairers	85	16%	\$12.52	\$18.18	1.3%
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	34	3%	\$15.18	\$20.82	0.5%
15-1151	Computer User Support Specialists	28	4%	\$13.64	\$19.76	0.4%
<b>Bachelor's or Higher</b>						
11-1021	General and Operations Managers	111	(15%)	\$28.37	\$56.04	1.7%
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	96	(19%)	\$26.70	\$43.83	1.5%
11-2022	Sales Managers	63	(14%)	\$31.45	\$58.48	1.0%
13-2011	Accountants and Auditors	46	(13%)	\$21.15	\$34.46	0.7%
13-1161	Market Research Analysts and Marketing Specialists	22	(8%)	\$16.58	\$30.14	0.3%

## Top Occupations in Automotive Services

### TOP OCCUPATIONS IN AUTOMOTIVE SERVICES INDUSTRIES IN ADVANCED MANUFACTURING

SOC	Occupation	Jobs 2013	% Change from 2007	Entry-Level Earnings	Median Hourly Earnings	% of the Total Jobs in Cluster
<b>Limited Skills Required</b>						
53-7061	Cleaners of Vehicles and Equipment	302	7%	\$7.25	\$9.22	11.8%
43-9061	Office Clerks, General	105	1%	\$8.72	\$14.76	4.1%
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	64	(4%)	\$10.32	\$16.61	2.5%
53-6031	Automotive and Watercraft Service Attendants	56	14%	\$7.25	\$8.15	2.2%
41-2021	Counter and Rental Clerks	43	0%	\$8.28	\$12.06	1.7%
41-2011	Cashiers	36	16%	\$8.17	\$9.72	1.4%
53-3032	Heavy and Tractor-Trailer Truck Drivers	22	0%	\$13.74	\$19.39	0.8%
43-4051	Customer Service Representatives	19	6%	\$11.28	\$17.30	0.7%
51-9198	Helpers--Production Workers	19	19%	\$8.09	\$11.11	0.7%
37-2011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	14	0%	\$9.18	\$13.78	0.5%
53-3033	Light Truck or Delivery Services Drivers	13	(7%)	\$8.76	\$15.06	0.5%
41-2031	Retail Salespersons	13	8%	\$7.59	\$10.43	0.5%
41-3099	Sales Representatives, Services, All Other	13	8%	\$13.40	\$28.58	0.5%
<b>Some Training or Experience</b>						
49-3021	Automotive Body and Related Repairers	277	6%	\$14.32	\$19.69	10.8%
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	90	(1%)	\$22.24	\$33.40	3.5%
51-9122	Painters, Transportation Equipment	84	(2%)	\$14.25	\$20.60	3.3%
49-9098	Helpers--Installation, Maintenance, and Repair Workers	65	2%	\$9.24	\$11.57	2.5%
43-3031	Bookkeeping, Accounting, and Auditing Clerks	47	0%	\$12.41	\$19.49	1.8%
49-3022	Automotive Glass Installers and Repairers	30	11%	\$9.38	\$12.65	1.2%
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	29	21%	\$14.93	\$24.38	1.1%
41-2022	Parts Salespersons	18	(5%)	\$9.02	\$14.85	0.7%
49-3093	Tire Repairers and Changers	16	7%	\$7.92	\$11.39	0.6%
<b>Some College or Associate's</b>						
49-3023	Automotive Service Technicians and Mechanics	889	0%	\$9.80	\$17.70	34.7%
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	38	(5%)	\$15.18	\$20.82	1.5%
<b>Bachelor's or Higher</b>						
13-1051	Cost Estimators	58	21%	\$20.84	\$30.69	2.3%
11-1021	General and Operations Managers	40	(2%)	\$28.37	\$56.04	1.6%

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.