

Manufacturing Employment Demand Study for Southwestern Pennsylvania

— Powered by Catalyst Connection

September, 2018

Making YOUR Future[™]

*A venture of the Greater Pittsburgh Metals Manufacturing Community
powered by Catalyst Connection*



CATALYST CONNECTION[™]
Your Strategic Partner for Manufacturing Growth

INTRODUCTION:

Key goals of the study — Investment, Improvement, Perception and Practice



Catalyst Connection initiated the *Making Your Future Manufacturing Employment Demand Study* to support manufacturing job growth in Southwestern Pennsylvania and to better understand the current and projected demand for workers and the skill sets sought after by the regions' employers.

Key goals of the study were to determine if there is an increased need for: investments in workforce development, improvements in immediate employability skills, change in perceptions of manufacturing careers, and improved employer practices to attract and retain a skilled and qualified workforce. The Employment Demand Study was conducted during the period of May – June, 2018.

The study concluded with 111 respondents, with 41% in the metal fabricating and machinery sectors, and 50% having between 21-100 employees.

There are
93,113
Employees
Working in
Manufacturing
in SWPA



Here are the issues —

Manufacturing Sales are up, but:

- Manufacturing employment in SWPA is down by 4.6%¹
- Profitability is limited, and
- Manufacturers are demanding more workers.

How can all of those be true at once?

Simple — we don't have enough people in the pipeline.

¹Manufacturing Scorecard 2017 — Period 2011-2016: Pittsburgh Regional Alliance for Catalyst Connection

EXECUTIVE SUMMARY: Unfilled positions lead to loss of on-time delivery, inability to expand, lost productivity, and reduced profitability.



Catalyst Connection initiated the “*Making Your Future Manufacturing Employment Demand Study*” to support manufacturing job growth in Southwestern Pennsylvania and to better understand the current and projected demand for workers and the skill sets sought after by the regions’ employers. Key goals of the study were to determine if there is an increased need for: investments in workforce development, improvements in immediate employability skills, change in perceptions of manufacturing careers, and improved employer practices to attract and retain a skilled and qualified workforce. The Employment Demand Study was conducted during the period of May - June, 2018.

The results are in and confirm that manufacturers are committed to the Southwestern Pennsylvania region although they are being impacted by the skilled worker shortage, with those impacts resulting in increased costs and lower profitability. Almost all respondents have current open positions, with approximately one third of open positions being entry level and not requiring a degree. About half of respondents have open “technical production” positions; machine operator is the most needed position. Basic employability skills and basic mechanical skills are the most needed.

Respondents Have
**1,070-
2,300**
Current Open
Job Positions.



Almost all respondents also report significant amounts of hiring over the next 2-5 years, with business growth, retirement and voluntary turnover being the main reasons for hiring projections in entry level positions. Companies are investing in new technology, with almost all respondents expecting hiring to remain the same or increase as a result of these investments. Finally, engagement between training providers and companies is limited to less than half of respondents, although the need for skilled workers continues to grow.

As a result of this study, Catalyst Connection will increase its investments in workforce development, create opportunities for job seekers to improve immediate employability skills, connect businesses to training providers, and assist businesses become employers of choice to attract and retain workers leading to less turnover and improved profitability. We will also continue our Explore the New Manufacturing initiatives to introduce students and parents to advanced manufacturing career pathways.

Manufacturers are hiring across all job categories, with machine operator being the most needed technical production position.

Approximately one third of hiring needs are in entry level production, which do not require a degree, but do require basic employability and mechanical skills.

**Thank you
to the Richard King
Mellon Foundation for
their generous support
for this study.**



CATALYST CONNECTIONSM
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KEY FINDINGS: Respondents are committed to this region, but are experiencing higher costs due to the skilled worker shortage.



Respondents Ranking:
81%
Most Critical
Skill Deficiency is
Employability Skills
(Attendance, Timeliness
and Work Ethic)



1. 92% of respondents say that the skilled worker shortage is having some impact on their business while 60% say that impact is significant or critical.
2. Though sales growth is happening in most companies, only two thirds are seeing employment growth or profitability growth.
3. The top three most likely business impacts of the skilled worker shortage include the need to invest in overtime pay, loss of growth and profitability, and cost of quality, while loss of customers and outsourcing come in close behind.
4. Respondents are committed to SWPA (offshoring, relocation, selling or closing the business are the least likely impacts), but higher costs, leading to limited profitability growth may lead to a potential loss of state and local tax revenues.
5. Companies are hiring — they hired between 1,600 and 3,000 people in 2017, but they spent a significant amount of time screening candidates — almost half are screening 5-10 candidates, while almost one quarter are screening more than 20 candidates before hiring.
6. 81% of respondents ranked basic employability skills as the most critical skills deficiency. Employability skills was defined as attendance, timeliness and work ethic. 53% of respondents ranked basic technical training (degree, industry certification or vocational training) and basic mechanical skills as a critical skills deficiency.
7. Respondents have between 1,070–2,300 current open positions. Approximately one third of open positions are entry level and do not require a degree. About half of respondents have open “technical production” positions; machine operator is the most needed position. The hardest to fill open positions, regardless of the number of positions open, include CNC machine operator, entry level production, fabricator, industrial maintenance, machinist and welder.

8. The top 3 root causes for unfilled entry level positions are: lack of qualified applicants, lack of applicants and drug screening and the top three business performance measures being impacted by the unfilled positions are on-time delivery, production costs and sales growth.

9. Short and long term projections continue the trend of hiring by manufacturing companies. Once again, approximately one third of hiring projections are in entry level, with the remainder split between technical production and management/professional positions.

10. Business growth, retirement and voluntary turnover were the main reasons for hiring projections in entry level positions, while almost three fourths of respondents indicated that retirement is among the Top 3 reasons for hiring in management/leadership, the highest of all job categories. Voluntary turnover was noted as a reason for hiring across all job categories, a business condition that can be addressed with employer best practices related to company culture and employee engagement.

11. Companies are investing in new technology, with almost all respondents expecting hiring to remain the same or increase as a result of these investments

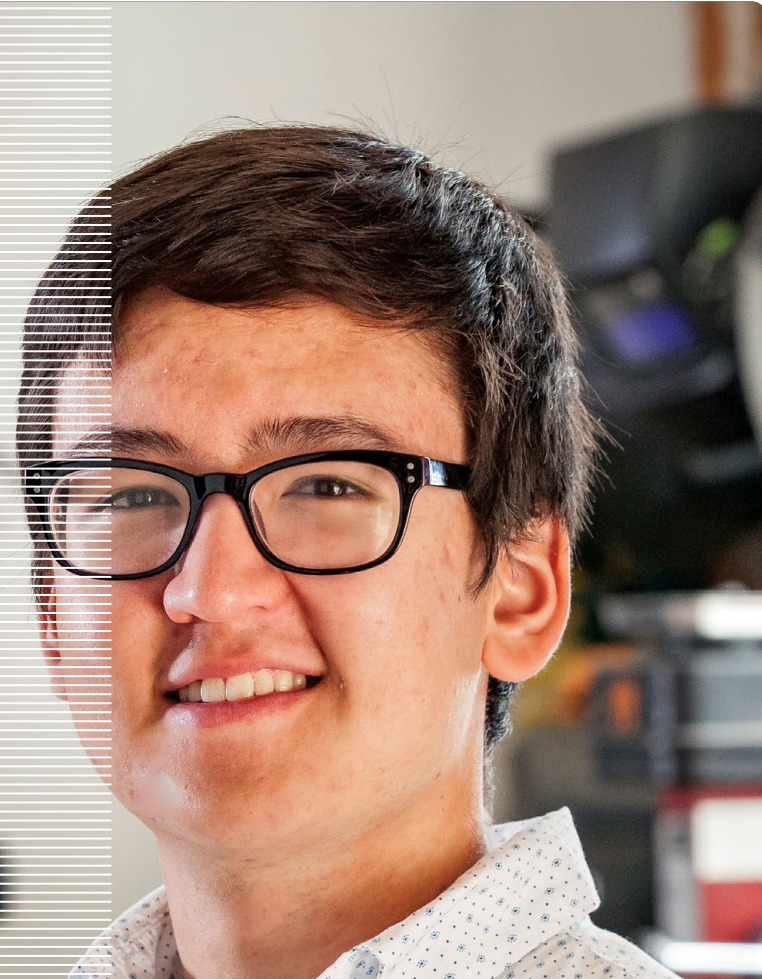
12. Local trade schools, followed by Catalyst Connection, are the training providers with whom employers are most engaged, yet only 40% are engaged with us, and even fewer are engaged with other training providers. Employers and training providers have a significant opportunity to increase this engagement!

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Employers and training providers have a significant opportunity to increase this engagement.



KEY RECOMMENDATIONS: Employer Engagement to provide career awareness and workplace learning is critical to solving our workforce skills shortage.



Manufacturing at:
\$12.2 B
GDP/2016
Is the 4th Largest
Industry
in Pittsburgh MSA



1. Stakeholders should increase their investment in workforce development efforts, as there are significant lost opportunities for additional tax revenue due to the skilled worker shortage. Stakeholder support is required to accelerate successful initiatives such as:

Career Awareness and Readiness

The skilled worker shortage can be improved through support for student and employer engagement activities within local communities. Examples include: Manufacturing Day, Manufacturing Innovation Challenge, What's So Cool About Manufacturing Video Contest, and BotsIQ.

Maker Skills Lead to Manufacturing Skills

Maker spaces create access for members of the community to engage in design and manufacturing on a small scale. Maker spaces are important because they allow the creativity of individuals to flourish by providing the necessary equipment and expertise that would otherwise be difficult to access.

Workforce and Training

Expand apprenticeships, internships, and community college offerings for high-skilled, high-wage metals jobs, particularly for the unemployed, under-employed and disadvantaged populations of the region.

2. Job seekers should pursue improvements in their basic employability skills, basic mechanical skills, and other related technical training.

- Take a self-assessment and discover careers that match your skills, interests, or values.
- Participate in training and earn credentials that align with your interests and job opportunities.
- Begin an Apprenticeship program that allows you to “earn and learn” while gaining valuable on- the-job experience and recognized credentials.

- **Locate a Maker Space** — As hubs of creativity and innovation, maker spaces provide the perfect environment to build upon new ideas and hone core manufacturing skills.
- **Find a Job** — Research thousands of jobs currently available in manufacturing. Sort and filter by location, title, salary and more.

3. Businesses should pursue best practices in human resources, company culture and employee engagement to reduce voluntary turnover and the costs associated with a lack of workers, such as overtime, poor quality and poor on-time delivery.

Create a Culture of Continuous Improvement

Creating a desirable work environment is critical to attracting top talent. Discover resources to assist in developing into an employer of choice.

Host an Apprenticeship

Manufacturing Apprenticeships provide viable pathways to long-term career success while developing the advanced skills required by manufacturers today.

Find Employees

Post current job openings where job seekers can easily find them and apply.

Develop Leaders

Help managers and supervisors obtain the skills they need to keep employees productive, motivated, and happy!

4. Training providers should seek to expand their employer engagement to better connect employers to students.

- Create opportunities for collaboration among com-

panies in similar sectors with similar workforce needs and build curriculum to address gaps.

- Incorporate core competencies into all relevant curriculum, including, but not limited to, work ready behavioral skills, digital skills and the ability to continue to learn and develop.

Many makers might be surprised at how modern shop floors resemble maker spaces

Manufacturers might be shocked to learn that there are maker communities in their own backyards teaching the same skills they value in their employees.

Visit:

www.explorethenewmfg.org

The annual *What's So Cool About Manufacturing?* video contests excite students to explore cool manufacturing careers.

www.makingyourfuture.org

***Making Your Future* is a new initiative to help thousands of people find a career in manufacturing.**

BACKGROUND: 2 million manufacturing jobs will go unfilled due to the current skills gap in the United States.



The premise in the United States is that manufacturing jobs are available nationally and locally. The Deloitte report, *The Skills Gap in Manufacturing, 2015 and Beyond*, states that over the next decade nearly 3.5 million manufacturing jobs will likely need to be filled in the US. Unfortunately, it is also likely 2 million of these jobs will go unfilled due to the current skills gap in the workforce.

One of the top plights heard from manufacturing companies is the need for more workers. Pennsylvania IRC Network, *Advanced Manufacturing Technology Survey Interviews Report*, states talent is among the top three business challenges for manufacturers. Job seekers are out there, yet somehow companies cannot seem to find them and the reasoning behind this is not clear. In the Brookings Institution Report, *Capturing the next economy: Pittsburgh's rise as a global innovation city*, they state "job seekers don't see viable pathways to careers in advanced industries, including manufacturing."

In Southwestern PA, workforce development practitioners continually field employers' requests for more skilled workers even though the SWPA Manufacturing Scorecard states manufacturing employment in the Pittsburgh MSA area has declined by 4.6% from 2012-2016. Is the demand changing for manufacturers causing a need for more workers, is the need due to the skills gap and retirements or is technology creating the need for new jobs? Or, is it a combination of some or all of the above?

APPROACH: Catalyst Connection conducted a Manufacturing Employment Demand Study to support manufacturing growth and gain insight into the above-mentioned topics. The study consisted of six segments, including the following topics:

- Recently filled positions
- Current unfilled positions, and
- Short and long term hiring projections for workers.

The study used the following occupational categories shown in Table 1 below. The study further separated technical production into the 4 job categories noted in ↓ Table 1.

There are a large number of current and projected job openings in manufacturing in SWPA.

Job seekers may not see viable pathways to careers in advanced manufacturing.

Table 1: Occupational Categories	
Entry Level Production	Require High School diploma and little to no manufacturing experience
Technical Production	Require post-secondary education and OJT (Machinists, Welders, Industrial Maintenance, Machine Operator; Other Similar Positions)
Management/Leadership	Typically require a bachelor’s degree or equivalent (Supervisors, Managers, Vice Presidents, Executive Level)
Engineers/Professional	Require bachelors or advanced degrees (Accounting, Human Resources, Sales, Chemists, Design Engineers, Mechanical Engineers)

The objective of the study was to determine if Small and Medium Sized Manufacturers (SMMs) are growing and creating employment demand even though manufacturing jobs may have decreased. It sought to look at the impact the skilled workforce shortage is having on manufacturing businesses for past, current and projected hiring needs. The study also examined specific occupations that are in demand and companies’ experience with job seekers in terms of skills gaps/deficiencies and turnover rates.

The study also looked at which jobs are currently unfilled (open for 30+ days) and the impact these unfilled jobs have on the business. It identifies best business practices that have been successful in attracting and retaining qualified workers, as well as companies’ engagement with training providers. Lastly, it looks at the new technologies companies are currently investing in and how those technologies may impact their hiring needs.

RESULTS:

Section 1 – Company Demographics/Business and Employment Growth

The study sought to engage respondents from the small and medium sized, manufacturing sector (SMMs) in the twelve counties of Southwestern Pennsylvania. According to the US Census Bureau, metal fabricating, machinery and equipment, and similar advanced manufacturing sub-sectors make up the majority of SMMs in Southwestern Pennsylvania, with 99% of all manufacturing companies having less than 500 employees per location.

Manufacturing company business leaders were invited to participate in the study via Catalyst Con-

nection’s email marketing, newsletter, and personal outreach. There were a total of 111 unique responses submitted from 111 different companies, including eight responses that were gathered via in-person interviews, which provided additional anecdotal feedback to the skilled worker shortage. The respondents represented 11 out of the 12 counties in Southwestern Pennsylvania (↓ Figure 1); 41% of these companies fell in the fabricating and machinery industry sectors (↓ Figure 2); and 50% of respondents have between 21 and 100 employees (→ Figure 3)

Figure 1: Unique Respondents by County

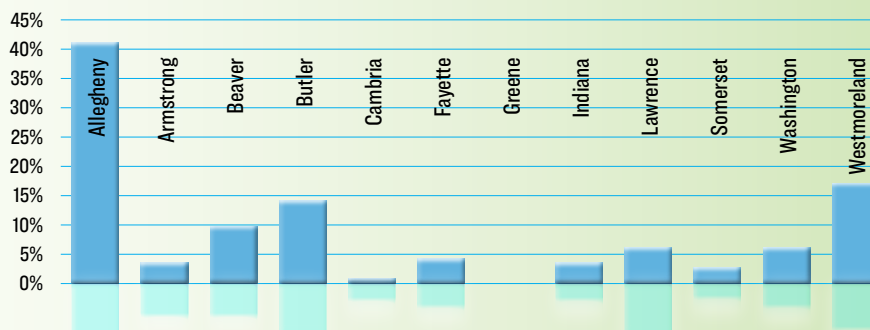


Figure 2: Respondents by Sector

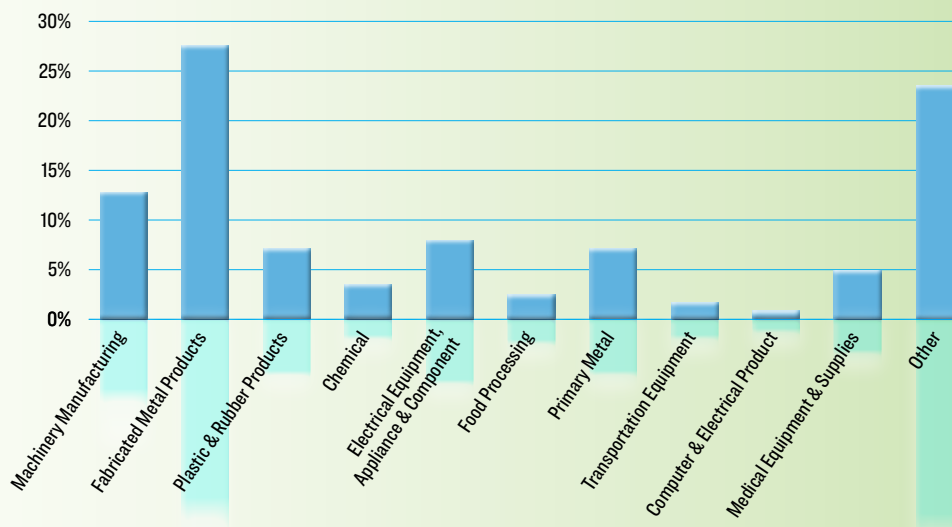
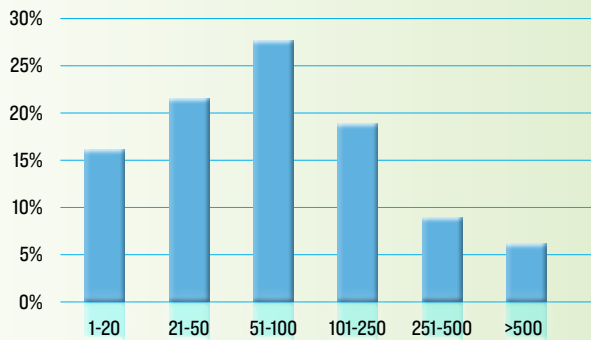


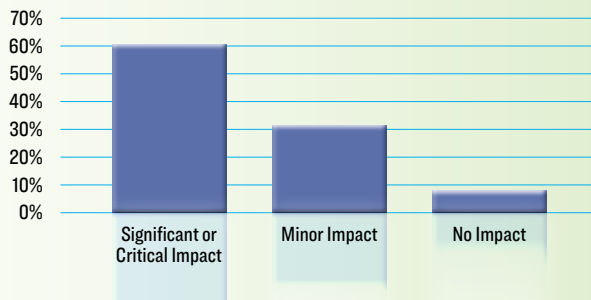
Figure 3: Respondents by Employment



The study confirms that the skilled worker shortage is an important issue for the Southwestern Pennsylvania region; potentially leading to lost opportunity costs for jobs created and retained, loss of profitability and a potential loss of state and local tax revenues.

Overall, in regards to the skilled worker shortage, 92% of the respondents say it is having some impact on their business and 60% say this impact on business is critical/significant (↓ Figure 4).

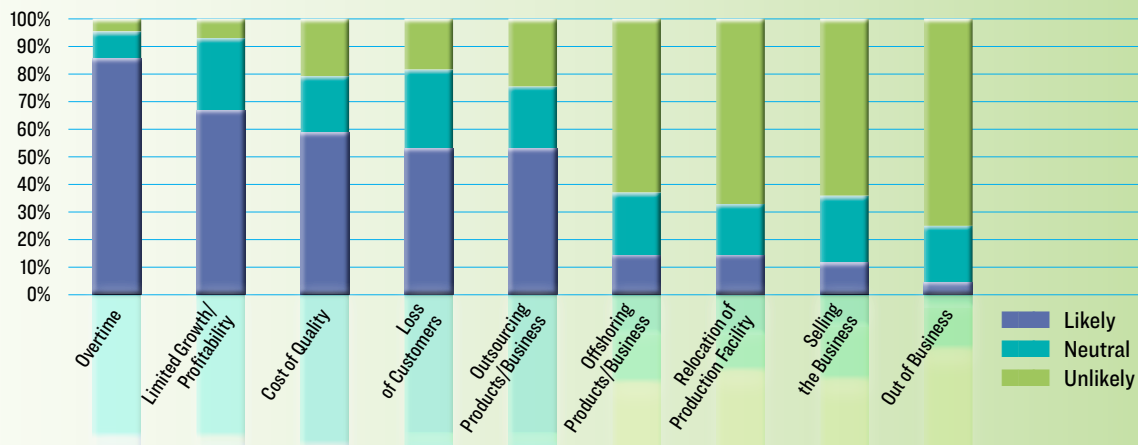
Figure 4: Level of Impact on Business Due to Skilled Worker Shortage



In the past year, 83% of respondents are seeing growth in sales while 68% are seeing growth in profitability and about 66% are seeing growth in total employment. The study confirms that although a majority of respondents are seeing sales growth, almost a third are seeing profitability stay the same or decline.

The top three most likely business impacts of the skilled worker shortage include the need to invest in overtime pay, limited growth and profitability, and cost of quality; loss of customers and outsourcing come in close behind. (↓ Figure 5). The data shows that although employers are committed to this region, (relocation, offshoring, selling or closing the business are highly unlikely) the skilled worker shortage is costing companies money, which could lead to limited or no profitability growth.

Figure 5: Likelihood of Business Impacts Due to Skilled Worker Shortage



RECENT HIRING:

Section 2 — In 2017, the study respondents hired between 1610-3178 workers.

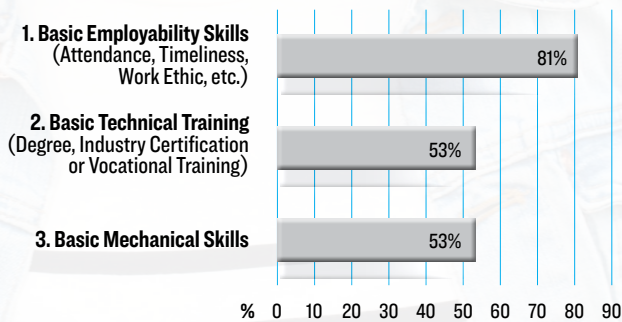


The study sought to identify the number of recently filled positions, as an indicator for future hiring needs. Based on recently filled positions, the study sought to gather insights into employers' experiences with candidates, skills gaps and turnover rates.

In 2017, the respondents hired between 1610-3178 workers. Collectively, respondents hired between 690-1120 entry-level positions, requiring only a high school diploma and little to no manufacturing experience, which is approximately nine per company and approximately 40% of all workers hired. In addition, for technical production, (→ Figure 6) 60% of respondents collectively hired between approximately 598-958 technical production employees, with an average of 5-9 per company. The majority of these were machine operator positions. In 2017, on average, the majority of respondents hired less than five managers/leadership and less than five engineers/professionals per each company.

The study showed respondents are spending a significant amount of time screening entry-level candidates where 43% are screening 5-10 candidates before hiring for entry level production and 23% are screening more than 20 candidates before hiring.

Figure 7: Rank of Top 3 Critical Deficiencies of applicants

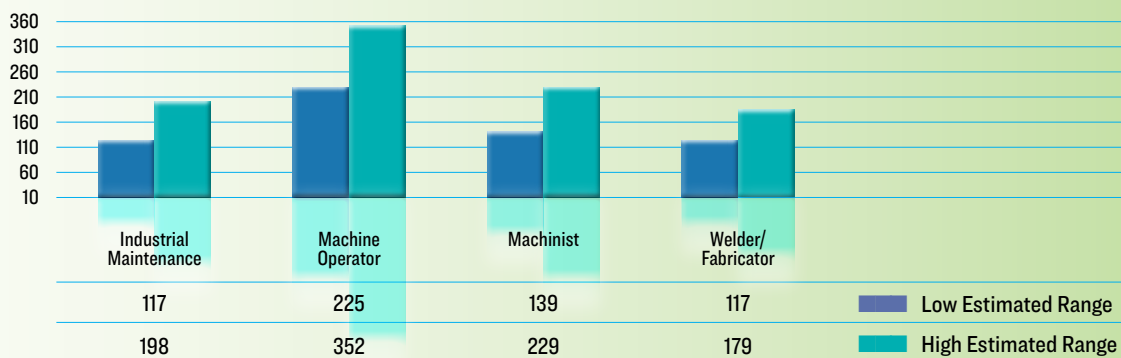


Respondents ranked the top three most critical skills deficiencies they have found in applicants (← Figure 7). 81% ranked basic employability skills as the most critical skills deficiency. Employability skills was defined as attendance, timeliness and work ethic. 53% of respondents ranked basic technical training (degree, industry certification or vocational training) and basic mechanical skills as a critical skills deficiency.

Table 2: Summary of 2017 Hiring by Occupational Category

% of Respondents	Occupational Category	Range of Hiring	% of Total
92%	Entry Level	690 - 1,120	43% - 35%
60%	Technical Production	598 - 958	37% - 30%
85%	Management/Leadership	153 - 540	10% - 17%
85%	Engineering/Professionals	160 - 560	10% - 18%
TOTAL		1,610 - 3,178	

Figure 6: Technical Production 2017 Hiring Ranges by Job Title



Majority of respondents' turnover rates were generally less than 15% in all occupational categories, which can serve as a benchmark for other companies. A potentially significant finding is 22% of respondents saw a turnover rate of 15-30% in entry-level production. This high turnover rate can be further contributing to limited profitability growth for some respondents. There are many business best practices that can be implemented to reduce this turnover. These include but are not limited to: leveraging technology to enhance communication and collaboration among employees, investing in training and development, and engaging with local communities.

The data collected on the recently filled positions confirms that manufacturing employers are hiring, but that the workforce skills shortage is impacting their ability to recruit and retain the talent needed which is potentially impacting employment growth and profitability growth for some manufacturers. Also, many respondents screen between 5-10 candidates per entry level job, and some screen more than 20 candidates, indicating that there are entry level job seekers but they are not meeting the hiring or drug screening requirements.

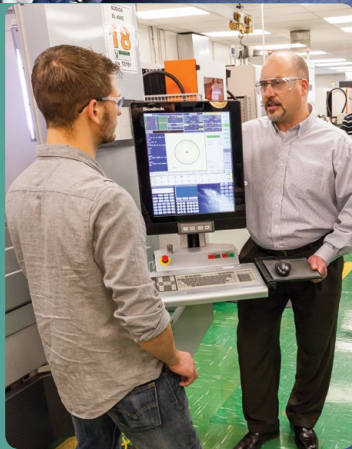
UNFILLED POSITIONS: Section 3 – The top three root causes for unfilled entry-level production jobs are: lack of qualified applicants, lack of applicants and drug screening.



The study then sought to quantify the current unfilled positions, identify the occupations that are most critical, and recognize the skills and certifications that are needed. The study asked respondents to rate the business impact of not filling the open positions. The objective of this section was to inform job seekers and training providers of immediate opportunities for employment and/or specific training programs that may be required.

Study respondents noted between 1,070 - 2300 unfilled positions, (open longer than 30 days), with approximately one third, or 369-730, unfilled entry level positions. This is an average of 4-10 per respondent. Also, similar to the 2017 hiring activities reported, the fewest number of respondents, 53% have open technical production positions. Technical production has 481-750 unfilled positions, with machine operator having the highest amount of unfilled jobs. There are at least 181 unfilled jobs and could be as high as 279 unfilled jobs for machine operator. The overall hardest positions to fill, based on an open ended question include: CNC machine operator, entry-level production, fabricator, industrial maintenance, machinist and welder (in no order).

The Average Salary is
\$54,091
for Employees
Working in
Manufacturing.



For management/leadership and engineering/professional unfilled positions, the majority of respondents have less than five openings per company.

The top three root causes for unfilled entry-level production jobs are: lack of qualified applicants, lack of applicants and drug screening. Lack of applicants and competition with other manufacturing companies are in the top three root causes for unfilled technical production positions. Competition with other manufacturing companies, compensation package and lack of qualified applicants all were top responses to root causes of unfilled jobs in management/leadership and engineers/professional.

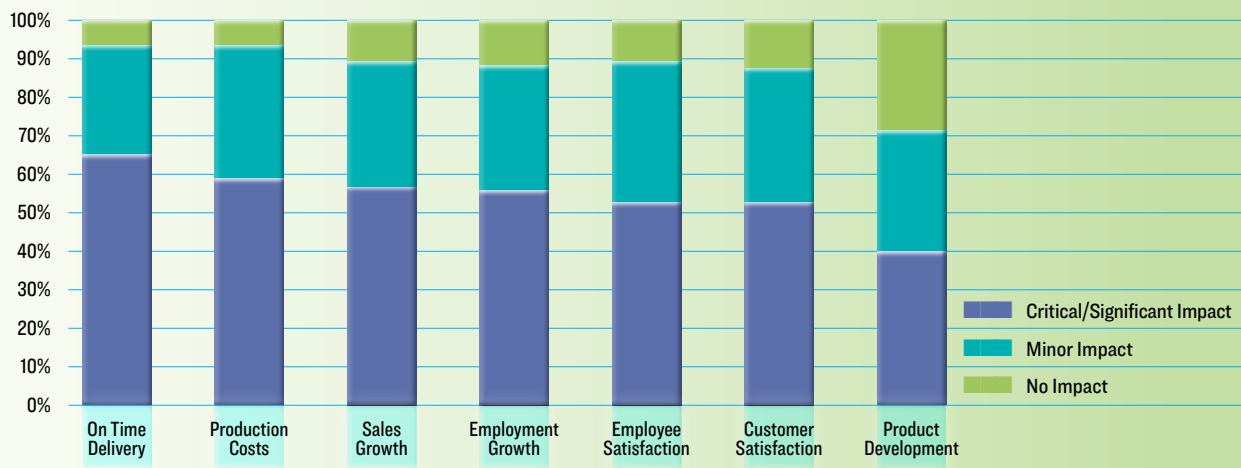
Table 3: Summary of Unfilled Positions by Occupational Category

% of Respondents	Occupational Category	Range of Hiring	% of Total
81%	Entry Level	369 – 730	34% – 32%
53%	Technical Production	481 – 750	45% – 33%
65%	Management/Leadership	103 – 390	10% – 17%
70%	Engineering/Professionals	117 – 430	11% – 19%
TOTAL		1,070 – 2,300	

These unfilled positions have had a significant impact on areas of the respondents' business (↓ Figure 8). 50% or more of respondents said these unfilled positions had a critical and/or significant impact on on-time delivery, production costs, sales growth, employment growth and customer and employee satisfaction. This is consistent with the impact respondents stated from the skilled worker shortage and may be part of the reason profitability is lagging behind sales growth.

The study confirms that companies are currently hiring, with many of them having a significant number of open positions. Machine operator has the most technical production open positions. Job seekers should pursue improvements in their basic employability skills, basic mechanical skills, and other related technical training.

Figure 8: Impacts of Unfilled Positions



HIRING PROJECTIONS: Section 4 – Almost all respondents project significant hiring in the next 2-5 years, due to business growth, retirement and voluntary turnover.

The study continued with a section related to short and long term hiring projections. The desired outcome was to determine the need and opportunity for manufacturing jobs and careers such that students, parents and job seekers will change their perceptions about careers in manufacturing and pursue STEM and technical education.

→ As shown in Table 4, a conservative estimate suggests that respondents project the need to hire 1,453 workers in 2018. This would be approximately six new entry-level production jobs per company, two management/leadership per company, and two engineer/professional hires per company. Technical production occupations projected at least 629 hires across 65 respondents for 2018. On average, this would be eight technical production hires per company.

→ Table 5 shows the total projected hiring needs by respondents for the next 2-5 years. Respondents projected hiring between 680 and 1,065 entry-level production positions.

On average, this would be eight new entry-level hires per company. Respondents projected an average of two new hires for both management/leadership and engineers/professionals per company.

Respondents also projected between 860 and 1,237 new hires in technical production for the next 2-5 years (2019-2022). This would mean approximately 14 technical production hires per respondent. By technical occupational breakdown, this is three industrial maintenance hires, five machine operator hires, three machinist hires, and three welder/fabricator hires, per company.

Business growth, retirement and voluntary turnover were the main reasons for hiring projections in entry level, technical production and management/leadership positions. It should be noted that 76% of respondents indicated that retirement is among the top 3 reasons for hiring projections in management/leadership, the highest of all job categories. Voluntary turnover continues to be noted as a reason for hiring, a business condition that can be addressed with employer best practices related to workplace culture and employee engagement.

Generally, as shown in → Figure 9, respondents expected 15% or less of all occupational workforce to retire in the next two years.

Almost all respondents project significant hiring in the next 2-5 years, due to both business growth, retirement and voluntary turnover; with voluntary turnover being a factor that is controllable for high performing employers.

**83 Respondents
Project
1,853
New Hires
in 2018 Across
All Positions.**



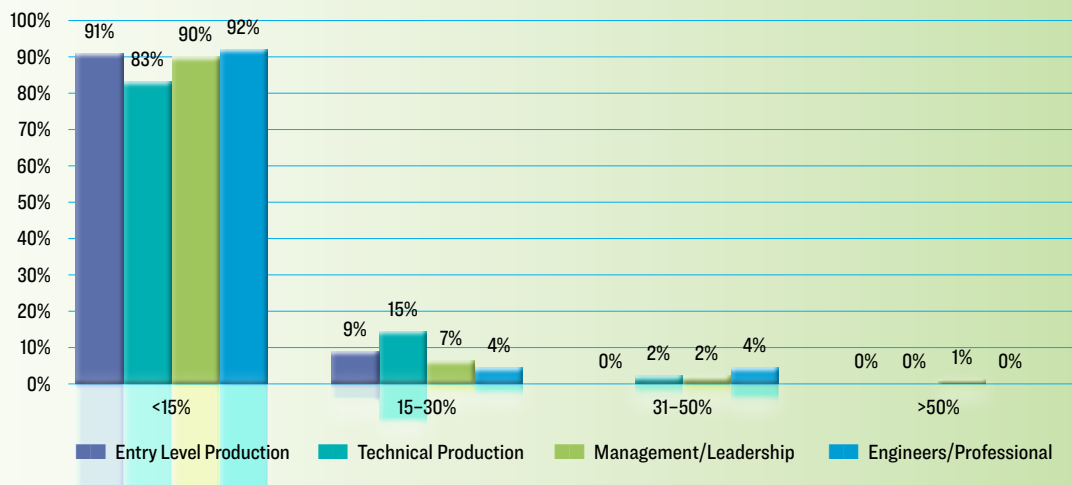
Table 4: Summary of Hiring Projections for 2018 by Occupational Category

% of Respondents	Occupational Category	Range of Hiring	% of Total
86%	Entry Level	570 - 960	40% - 34%
60%	Technical Production	629 - 968	43% - 34%
68%	Management/Leadership	114 - 430	8% - 15%
72%	Engineering/Professionals	140 - 480	10% - 17%
TOTAL		1,453 - 2,838	

Table 5: Summary of Hiring Projections for 2019–2022 by Occupational Category

% of Respondents	Occupational Category	Range of Hiring	% of Total
83%	Entry Level Production	680 - 1,065	36% - 32%
57%	Technical Production	860 - 1,237	45% - 37%
76%	Management/Leadership	167 - 515	9% - 15%
72%	Engineering/Professionals	203 - 555	11% - 16%
TOTAL		1,910 - 3,372	

Figure 9: Percent of Workforce Retiring in Next 2 Years



BUSINESS PRACTICES: Section 5 — Employers and training providers have a significant opportunity to increase their engagement with each other.



Table 6: Most Effective Recruiting Tools

87%	Employee Referrals
86%	Referrals
78%	Online websites like INDEED
61%	Trade Schools/Training Institutes

Competitive wages, benefits and employee referrals are the top three business practices which have led to attracting talent. In retaining talent, respondents found competitive wages, benefits and the work environment/co-workers as top three business practices. ← Table 6 shows the most effective recruiting tools which were employee referrals, outside referrals, online website and trade schools.

The study asked respondents to describe their connection with local training providers as “very engaged” vs “know, don’t know, or don’t use” (→ Figure 10). Only 42% of respondents listed they were very engaged with Technical Business schools followed by 39% saying they were very engaged with Catalyst Connection. Considering that trade schools/training institutions were among the most effective recruiting tools, this data shows a significant opportunity for more employer engagement with their community.

The study also provided an opportunity for respondents to note the courses, degrees or certifications that they are looking for in training providers for the occupations in the study, via an open ended format. → Table 7 summarizes the results, which once again indicate basic math, reading and writing skills, and basic employability skills being needed for entry level production, technical skills need for technical production, and bachelors or advanced degrees being required for management/leadership and engineering/professional positions.

Employers and training providers have a significant opportunity to increase their engagement to collectively solve the workforce skills shortage in Southwestern Pennsylvania.

There are
2,840
 Manufacturing
 Establishments
 Throughout the
 SWPA Region

Over the Next 10 Years
30,000
 Manufacturing
 Jobs
 May Need to Be Filled
 in the SWPA Region

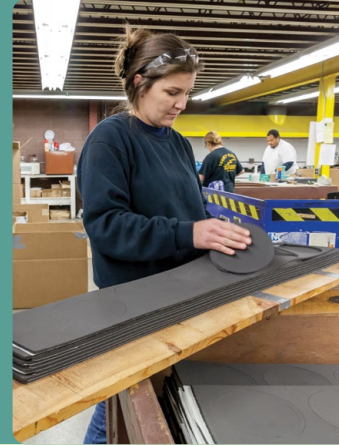


Figure 10: Company Engagement with Local Training Providers

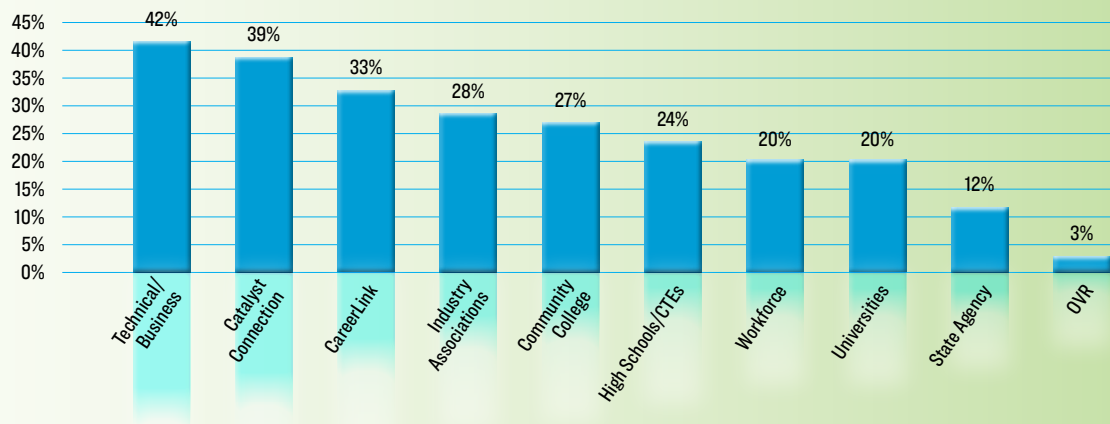


Table 7: Courses/Degrees Needed Per Occupational Category

Entry Level Production	Technical Production	Management/Leadership	Engineers/Professionals
Basic Math, Reading and Writing Skills	Blueprint Reading	Bachelors or Masters	Communications Course
Basic Employability Skills	Electrical Training		Engineering Degree
Forklift Training	Machining Courses		
Soft Skills	Welding Courses		

TECHNOLOGY INVESTMENTS: Section 6 – Almost all respondents expect hiring to remain the same or increase as a result of new technology investments.

Increase in Hiring by:
43%
 of Respon-
 dents
 Due to
 New Technology



The final segment of the Manufacturing Employment Demand Study sought insights into what new technologies business leaders are investing in, or considering, and how these technology investments will impact their hiring needs. ↓ Table 8 lists the answer choices for technology investments. → Figure 11 shows the technologies companies are investing in or have plans to invest in. 66% of respondents stated they were currently investing in Enterprise Resource Planning (ERP);

Table 8: Technology Investment Answer Choices

Additive Manufacturing
Advanced Composites/Materials
Cloud Computing
Cybersecurity
ERP (Enterprise Resource Planning)
Flexible Hybrid Electronics
Integrated Photonics
Integrated Sensors
Internet of Things – Connectivity
Multi-function Operation/Machines
Robotics and Automation
System Integration

this was followed by 59% of respondents investing in Robotics and Automation. Approximately 50% of respondents also said they were currently investing or planning to invest in Multi-function operation/machines and System Integration.

Generally, respondents answered there will not be a decrease in hiring due to new technology (→ Figure 12). 43% of respondents will have an increase in new hires due to new technology and 17% plan to upskill existing staff.

Finally, respondents had the opportunity to list, via an open-ended question, the new skills that will be

Table 9: Investing in New Technologies Will Require the Following Skills:

Advanced Electronic

- Ability to read and interpret schematics

Advanced troubleshooting and programming skills

- Basic math skills
- Basic soft skills
- CAD/CAM
- Coding

Computer/Machine Interface and Knowledge

- Digital control systems
- Lean Manufacturing
- Original Equipment Manufacturer Training while on the job

Problem Solving Skills

- Process Controls

Programmable logic controller

- Transportation and Logistics

Robotics and automation

Figure 11: Technologies Companies Are Currently Investing in or Plan to Invest In:

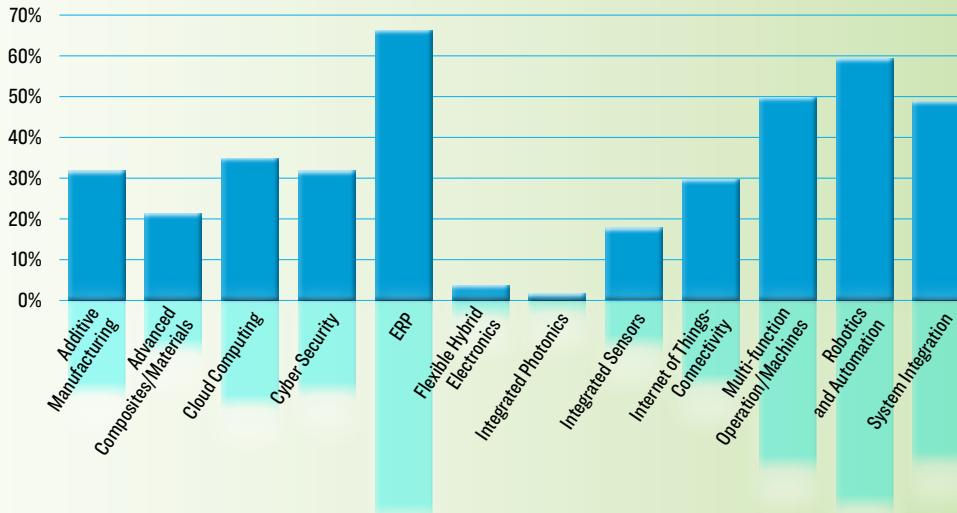
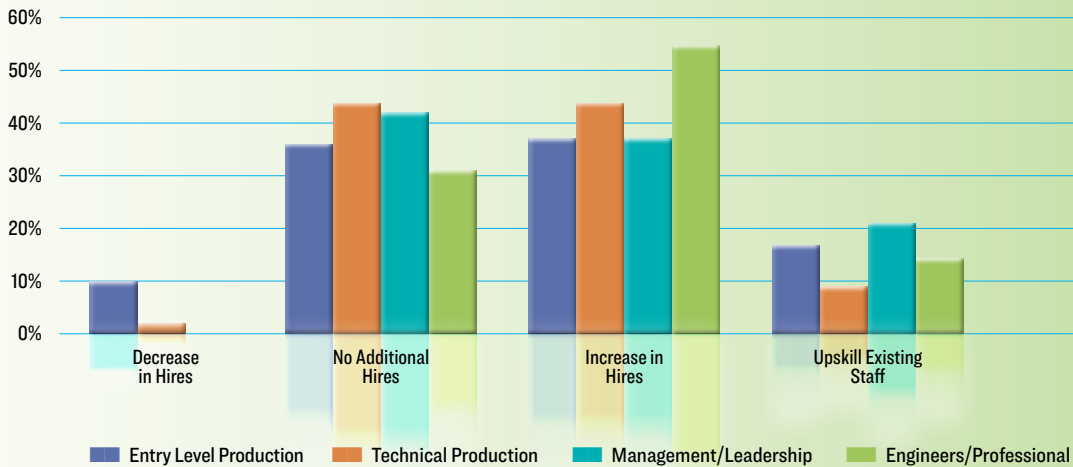


Figure 12: Impact on Business Hiring Due to New Technologies



required as a result of these technology investments. ← Table 9 provides the top responses from this question.

Companies are investing in new technology, with almost all respondents expecting hiring to remain the same or increase as a result of these investments. Automation and technology will not take jobs away — in fact, they are driving the need for more workers in manufacturing.

Manufacturing Employment Demand Study for Southwestern Pennsylvania — REPORT AUTHORS:

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A venture of the Greater Pittsburgh Metals Manufacturing Community powered by Catalyst Connection

Catalyst Connection is a private not-for-profit organization headquartered in Pittsburgh, Pennsylvania. We provide consulting and training services to small manufacturers in southwestern Pennsylvania, accelerating revenue growth and improved productivity.

Through active collaboration with our clients and the manufacturing community at large, we contribute to the growth, vibrancy, and ongoing robustness of manufacturing in our region.

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Making Your Future is a new initiative led by Catalyst Connection to help thousands of people find a career in manufacturing with a desired outcome of connecting qualified employees to job vacancies over the next 10 years.



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