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THE INSTITUTE FOR PUBLIC POLICY & ECONOMIC DEVELOPMENT



Institute Insights: **Workforce Development in the Face of COVID 19**



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Introduction

This research was underwritten by **the Greater Scranton Chamber of Commerce, Sordoni Family Foundation, and UGI Utilities** and with support from **the Luzerne County COVID-19 Emergency Response Fund of The Luzerne Foundation, the Scranton Area Community Foundation COVID 19 Fund and the Wells Fargo Foundation.**

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Executive Summary

An author in Forbes poses the question, “Would an automated workforce have alleviated some economic damage that COVID has caused?” Could doing so save companies if/when a second round of COVID hits?¹

COVID-19 has made the question of how to upskill, reskill, and outskill our workforce more urgent, especially in light of the digital age and the ever looming presence of automation, the Fourth Industrial Revolution. Beyond economic downturn that coronavirus has brought, there was already a workforce crisis: lack of skills. Employers across the country consistently report they are facing skill shortages that are vital for economic stability and growth.² These shortages can cause employers to experience problems in terms of cost efficiency, product or service quality, and time management. A 2017 survey by McKinsey to 1,500 business, public sector, and nonprofit leaders across various regions and industries found 66 percent of respondents view “addressing potential skills gaps related to automation/ digitization” in their workforce as a “top-ten priority” and about 30 percent saw it as the

top priority.³ The skills gap has been on the rise for some time.

The skills gap is not only limited to hard skills but also soft skills. In a taskforce research brief completed earlier this year, The Institute stated the top seven soft skills needed were: leadership, teamwork, communication, problem-solving abilities, work ethic, flexibility/ adaptability, and interpersonal skills.⁴

The World Economic Forum’s “The Future of Jobs Report: 2018,” projected “by 2022, no less than 54% of all employees will require significant re- and upskilling due to automation.”⁵ Upskilling initiatives target workers who currently have stable employment but who need additional training in order to remain relevant in their industry. It has a higher return on investment of productivity and competitive advantage. This is highly important with the ongoing growth of automation. It is also applicable to coronavirus impacts so that workers can upskill to positions that could possibly be done from home or are deemed essential.

Some employers may find upskilling employees as a way to create “a more well-rounded, cross trained workforce, and increase [the] team’s effectiveness.”⁶ By upskilling America’s frontline workers, more than 42 percent of all workers in the U.S., would then have the opportunity to become more educated, receive higher wages, and move into higher-skilled roles.⁷ In return, the employer may be able to improve retention, boost morale, increase customer satisfaction, and attract new talent.⁸ Overall, improving industry outcomes and workforces capabilities to serve its consumers amid COVID-19.

Reskilling programs are for workers who are switching jobs, industries, and/or fields. Unlike upskilling, they do not need updated skills, they need entirely new ones. Programs like these help to avoid layoffs and costly hiring. In the age of COVID economic impacts, employers can use reskilling

¹ Farshchi.2020. Expect More Jobs and More Automation in the Post-COVID-19 Economy. 20 April. Forbes.

² <https://www.forwardtalent.org/stories/greatherhoustonpartnership/>

³ Illanes et al. 2018. Retraining and reskilling workers in the age of automation. McKinsey Global Institute.

⁴ The Institute. 2020. Soft Skills: How Emotional Intelligence Generates Workplace Success.

⁵ <https://trainingindustry.com/articles/workforce-development/upskilling-employees-for-the-future-of-work/>

⁶ <https://www.itagroup.com/insights/how-upskilling-your-workforce-benefits-your-organization>

⁷ <https://econofact.org/essential-and-frontline-workers-in-the-covid-19-crisis>

⁸ <https://www.itagroup.com/insights/how-upskilling-your-workforce-benefits-your-organization>

initiatives to retrain workers to be essential workers instead of shutting down.

Out of the three workforce training programs, outskilling is a last resort. These programs help support and train employees who will not be able to hold a position with their current employer. It uses education as severance when employees are laid off. Several large companies have started outskilling initiatives like Amazon, Walmart, and McDonalds but there are ways to create these initiatives at a smaller and/or mid-size level. Job search and labor exchange infrastructure are underfunded at the federal level. Becoming an employer who outskills or improves their outskilling programs creates a sense of community engagement through an extension of the social contract between employer and employee.

Not only are current or furloughed employees affected by the COVID-19 economy, but recent graduates looking to enter the workforce are also largely affected. At a time of massive layoffs and hiring freezes, many are unable to secure sustainable, or any, employment, especially something that provides a living wage.

Pandemic economic distress will cause further regional disparities that the already ongoing recession would have caused. Reskilling and upskilling the workforce is part of a response to our metro's loss of innovation sector jobs.⁹

When envisioning and creating workforce development plans, community leaders, business owners, and/ or government leaders need to ensure they use a human centered approach to their plans. They need to account for various biological, psychological, and social stressors which will inherently affect learning and retention. In keeping theme with a human centered approach, leaders need to ensure equity and justice in the workforce especially for minorities, women, and particularly minority women. Along with these assurances, employers and development, recruiting, and employment agencies need to keep their employees' childcare needs in mind. During the last few months of the school year and during parts of the early summer, the effects of no childcare dragged on

much of the workforce. When coupling occupation growth and automation, leaders should consider certificate programs for certain occupations that are at risk of automation, are projected to have significant growth, and are lower pay. A program could upskill workers and ensure a higher quality of work so these workers can garner a higher pay and remain relevant in the Fourth Industrial Revolution.

Overview

This paper will highlight how workers affected by industry shutdowns during the COVID-19 pandemic can reskill and enter into a different industry or occupation that has not been as affected as their own. Furthermore this report will also highlight how industries and workforce might be affected post-COVID-19 in regards to automation, skills gaps, and unstable industries.

The report will discuss the most and least affected industries in the region based off of the Governor's ordered shut down as well as which of the industries are still able to work though physically shut down and which are unable to work or have a lack of work though they are able to remain open (with some restrictions). An analysis of unemployment claim activity by industry and demographics will identify which categories of workers have been most impacted by recent job losses. The report will also discuss occupations and jobs that are at risk of automation as well as characteristics of these jobs and of those who are employed in them; this data will overlap and connect with data on industries affected by COVID-19.

The study will then discuss reskilling, upskilling, and outskilling in detail. Following this, real time job posting data will be dissected and occupations that are suffering due to COVID and/ or at risk of automation will be discussed in terms of upskilling or reskilling workers. Indicators and measures of the future workforce will be presented and discussed in terms of the two county region. This will include job postings, postsecondary awards, occupation growth, and the cross section of the last two.

⁹ The Philadelphia Federal Reserve. 2020. Research for Equity in Recovery II: Place-based Strategies. 17 July. Webinar.

Finally, findings and analyses will bring together the data provided in the sections of the report for a comprehensive understanding of the workforce in conjunction with COVID-19 economic repercussions and automation. Lastly, recommendations based on the report's findings will be broken down at various levels for business and policy leaders.

Methodology

A variety of data sources, both quantitative and qualitative, were gathered for this report to create a clearer idea of how the region has and will be affected by the COVID economy and ongoing automation. The most up to date data was used in all instances. There are some difference in data throughout the report based on date collected. For example, job posting data varies due to different dates of collection but the most recent data can be found in the job posting subsection in the Future Workforce section. In some cases data from 2019Q4 was collected as well as 2020Q1 so a percentage change was able to be calculated. 2020Q2 data was not yet available at the time of publication.

All industry and occupation data were collected from JobsEQ, a Chmura Economics database, unless otherwise specified. Data on the racial breakdown of the counties is from the 2018 American Community Survey one year estimates. Unemployment claim data and demographic data is from the data dashboard: PA WORKSTATS, Center for Workforce Information & Analysis, Department of Labor and Industry. Graduation data in this report is from the 2017-2018 school year. This is the most recent award data on JobsEQ.

Industry disruption is based on five indicators: non-life sustaining employment (with or without exceptions), Chmura Economics' job loss projections, job postings, expert panel survey, and telework potential.¹⁰

Essential/ non-essential industry data were found by creating custom filters for JobsEQ using the industry distinctions mandated as life sustaining or non-life sustaining from the Governor in March when the two county region was in the red phase of COVID

reopening. These filters were applied to various data tables. JobsEQ also has two occupation group filters: Remote (95-0300) and non-remote (95-0280) jobs that were used to further filter data to create a better understanding of who was affected by the state shutdown. There is also a partially remote job (95-0290) filter but that was not included in this report as it did not provide enough clarity on how severely the occupations were affected.

In all instances except when distinguished as 'Greater NEPA region' or 'NEPA region', region, area, and other references to place refer to the combined two county area of Lackawanna and Luzerne Counties.

When the Greater NEPA Region is referenced it includes the following counties:

- Bradford
- Carbon
- Clinton
- Columbia
- Lackawanna
- Luzerne
- Lycoming
- Monroe
- Montour
- Pike
- Schuylkill
- Sullivan
- Susquehanna
- Tioga
- Wayne
- Wyoming

Any table listing occupations or industries refers to the top, most populous ones unless otherwise specified.

¹⁰ The Institute. 2020. Quarterly Economy Tracker Special Edition: Tracking the Impact of Novel Coronavirus COVID-19. April.

Affected industries in the two county region and greater NEPA

In April of 2020, The Institute published a special COVID-19 edition of the Quarterly Economy Tracker. It analyzed economic disruption amongst other factors of the economy. The following table from the QET shows industry disruption based on five indicators: employment initially classified as non-life sustaining (with or without exceptions) per statewide orders, Chmura Economics' job loss projections, real-time job postings, an expert panel survey, and telework potential.¹¹

The industry groups assigned as having the highest potential disruption were Construction, Retail Trade, Arts, Entertainment and Recreation, and Accommodation and Food Service. These industries make up 25 percent of total employment in the both Lackawanna and Luzerne Counties. Those facing medium high disruption represent 16.3 percent, low-medium 34.9 percent (the largest share), and finally 13 percent are confronted with lower disruption.

Non-life sustaining employment could face short term interruptions with future shutdown measures

as well as delayed effects. This classification is based on the regulation put into place in the Commonwealth at that particular time in March. If a job was considered non-life sustaining or nonessential in the red phase does not mean the demand for that occupation within the industry is any less real; it is still important regardless of 'essential' or 'nonessential' titles.

As with overall industry disruption, there is a vast amount of variation within an industry and within nonessential employment titles. Many workers within each industry are most likely experiencing job loss, furloughs, layoffs, reduced hours, and/or reduced pay. The economic repercussions of COVID will not be limited to this; there will most likely be delayed and prolonged effects. Therefore, both the industry disruption and the nonessential employment only show a part of the picture. Though the two counties have moved into the green phase of reopening, the economic effects of the shutdown may continue and if case numbers increase, these industries and occupations will be affected most again.

NAICS Description	2-County Total Employment	Chmura Econ. Job Loss Projections (High End)	Weighted Job Posting Decline (Top 10 Occupations)	Survey of Regional Expert Panel	Telework Potential (NBER)	Overall Qualitative Classification	
Agriculture, Forestry, Fishing and Hunting	560	0.0%	5%	3.53	3.50	8%	Low-Medium Disruption
Mining, Quarrying, and Oil and Gas Extraction	369	0.0%	10%	100.61	4.00	25%	Low-Medium Disruption
Utilities	2,312	0.0%	5%	-34.73	2.00	37%	Lower Disruption
Construction	10,466	100.0%	10%	-24.71	4.44	19%	High Disruption
Manufacturing	26,847	33.8%	10%	5.76	3.50	22%	Medium-High Disruption
Wholesale Trade	9,594	16.2%	25%	88.54	3.50	52%	Low-Medium Disruption
Retail Trade	29,673	46.5%	25%	-84.59	4.89	14%	High Disruption
Transportation and Warehousing	21,744	0.4%	25%	247.98	3.25	19%	Low-Medium Disruption
Information	3,943	6.9%	25%	-30.52	2.13	72%	Lower Disruption
Finance and Insurance	10,432	7.0%	5%	-38.79	2.75	76%	Lower Disruption
Real Estate and Rental and Leasing	2,328	70.0%	5%	-27.37	4.33	42%	Medium-High Disruption
Professional, Scientific, and Technical Services	7,534	84.4%	5%	-10.84	3.50	80%	Low-Medium Disruption
Management of Companies and Enterprises	2,782	100.0%	5%	-36.55	4.00	79%	Medium-High Disruption
Administrative and Support and Waste Management and Remediation Services	16,490	65.2%	5%	10.57	3.22	31%	Lower Disruption
Educational Services	18,616	100.0%	5%	-13.75	5.00	83%	Medium-High Disruption
Health Care and Social Assistance	48,309	8.0%	5%	38.44	4.33	25%	Low-Medium Disruption
Arts, Entertainment, and Recreation	3,430	100.0%	60%	-51.88	5.00	30%	High Disruption
Accommodation and Food Services	20,259	13.8%	60%	-88.61	4.78	4%	High Disruption
Other Services (except Public Administration)	9,533	40.3%	25%	-14.69	4.22	31%	Medium-High Disruption

¹¹ The Institute. 2020. Quarterly Economy Tracker Special Edition: Tracking the Impact of Novel Coronavirus COVID-19. April.

Agriculture, Forestry, Fishing and Hunting; Mining, Quarrying, and Oil and Gas Extraction; Public Administration; and Utilities were the least affected industries by this measure, with zero percent of their workforces defined as non-life-sustaining. Three of those four are among the region's smallest industries by employment.

Less than half one percent of those employed in the Transportation and Warehousing industry in the greater NEPA region and two-county area were considered nonessential in the Governor's order. Other industries that had smaller percentages of workers considered non-essential in both regions include: Manufacturing, Finance and insurance, Health care and social assistance, and Information.

Over a third of the region's workforce was determined non-life-sustaining (with or without

exceptions) and was unable to work in-person according to the Governor's March 16th order.

Within the industries classified as non-life-sustaining, there are more retail salespersons affected than any other occupation. Though retail salesperson make up the largest share of the non-life-sustaining workers, other occupations are affected at a greater rates, such as teachers. As many teachers were able to teach online and/or were still paid, the following occupations, in order of share of workforce affected, will be considered to be the most negatively altered: Hairdressers, Hairstylists, and Cosmetologists; Construction Laborers; Carpenters; Electricians; Childcare Workers; and Lawyers. Less affected workers include Stockers and Order Filers; Fast Food Counter Workers; and Laborers and Freight, and Hand Stock, and Material Movers.

Occupations, Lackawanna and Luzerne Counties

Occupation Distribution for Non-Life-Sustaining Industries	Lackawanna and Luzerne Counties, 2020Q1 ¹		
	Non-Life-Sustaining	Employed	Percent NLS
Retail Salespersons	4,338	6,754	64.2%
Office Clerks, General	2,769	6,100	45.4%
Laborers and Freight, Stock, and Material Movers, Hand	2,191	8,777	25.0%
Customer Service Representatives	2,034	5,569	36.5%
Elementary School Teachers, Except Special Education	1,924	1,952	98.6%
Cashiers	1,871	6,569	28.5%
Teaching Assistants, Except Postsecondary	1,846	1,972	93.6%
Construction Laborers	1,687	1,809	93.3%
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	1,603	3,358	47.7%
Secondary School Teachers, Except Special and Career/Technical Education	1,487	1,505	98.8%
First-Line Supervisors of Retail Sales Workers	1,386	2,590	53.5%
General and Operations Managers	1,316	3,346	39.3%
Fast Food and Counter Workers	1,291	6,834	18.9%
Childcare Workers	1,180	1,438	82.0%
Team Assemblers	1,075	1,949	55.1%
Carpenters	1,040	1,132	91.9%
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	1,011	3,355	30.1%
Hairdressers, Hairstylists, and Cosmetologists	985	1,047	94.1%
Stocker and Order Fillers	975	5,522	17.7%
Bookkeeping, Accounting, and Auditing Clerks	891	2,240	39.8%
Middle School Teachers, Except Special and Career/Technical Education	868	874	99.3%
Electricians	851	982	86.6%
First-Line Supervisors of Office and Administrative Support Workers	811	2,836	28.6%
Maintenance and Repair Workers, General	811	2,389	33.9%
Lawyers	722	976	73.9%
TOTAL	89,969	254,227	35.4%

Source: JobsEQ

The following section will discuss how the region’s top ten industries have been affected and which occupations within each industry have been most severely impaired. Tables for data concerning the Greater NEPA region can be found in the appendix but are mentioned accordingly below.

Health Care and Social Assistance

According to the governor’s mandate, eight percent of those who work in the health care and social assistance industry were affected by the state shutdown. It was classified as having low-medium disruption. An estimated 3,959 people in the occupations below were unable to work due to the mandate. The number of workers increased by 0.2 percent from 2019Q4 to 2020Q1.

Childcare Workers were heavily affected by the mandate, as were preschool teachers, except special education; teaching assistants, except post-secondary; and education and childcare administrators, preschool and daycare. These four occupations make up half of those considered nonessential.

Occupation Distribution for Health Care and Social Assistance in Lackawanna and Luzerne Counties, Baseline

Occupation	Employed
Personal Care Aides	6,023
Registered Nurses	5,436
Nursing Assistants	3,564
Home Health Aides	1,890
Licensed Practical and Licensed Vocational Nurses	1,687
Medical Assistants	1,150
Office Clerks, General	1,090
Childcare Workers	991
Receptionists and Information Clerks	867
Medical Secretaries	833

Source: JobsEQ

Nonessential 4-digit NAICS code Distribution for Health Care and Social Assistance in Lackawanna and Luzerne Counties, 2020Q1

Industry	Employed
Child Day Care Services	2,399
Offices of Dentists	1,560

Source: JobsEQ

Eight percent of those employed in the industry in the Greater NEPA region are considered nonessential. In addition to the aforementioned occupations Office Clerks, General; Cooks, Institution and Cafeteria; Dental Assistants; Dental Hygienists; Dentists, General; Receptionists and Information Clerks; and Medical Secretaries and Administrative Assistants are also affected by the shutdown.

Retail Trade

Retail trade employs the second most amount of people in the two counties who were considered nonessential (13,785 people) with 2019Q4 data. Just under half of the industry (46.5 percent) is considered nonessential and, due to the nature of most occupations such as those listed below, are unable to work during the shutdown and possibly with social distancing restrictions in place. But, when looking at 2020Q1 data, this decreased by nearly 40 percent. Almost a third of those in the retail trade industry were considered nonessential with only half a percentage decrease in employment.

This industry has experienced high disruption due to a high percentage of non-life sustaining employment, job loss, significant decreases in job posts, high level of worry from survey panel, and low telework potential.

Retail salespersons, first-line supervisors of retail sales workers, cashiers, pharmacy technicians, and stock clerks and order fillers were most affected by the statewide shutdown.

Occupation Distribution for Retail Trade in Lackawanna and Luzerne Counties, Baseline

Occupation	Employed
Retail Salespersons	6,278
Cashiers	5,745
Stock Clerks and Order Fillers	2,596
First-Line Supervisors of Retail Sales Workers	2,311
Customer Service Representatives	872
Pharmacy Technicians	705
Automotive Service Technicians and Mechanics	685
Laborers and Freight, Stock, and Material Movers, Hand	645
Combined Food Preparation and Serving Workers, Including Fast Food	516
Office Clerks, General	486

Source: JobsEQ

A much smaller share of the greater NEPA population in Retail Trade is considered nonessential (27.8 percent) than just in the two county area. In addition, Outdoor Power Equipment and Other Small Engine Mechanics; Farmworkers and Laborers, Crop, Nursery, and Greenhouse; and Landscaping and Groundskeeping Workers are considered nonessential throughout NEPA.

Nonessential 4-digit NAICS code Distribution for Retail Trade in Lackawanna and Luzerne Counties, 2020Q1

Industry	Employed
Automobile Dealers	2,488
Health and Personal Care Stores	2,299
Clothing Stores	1,188
Electronics and Appliance Stores	644
Beer, Wine, and Liquor Stores	467
Furniture Stores	300
Home Furnishings Stores	293
Shoe Stores	229
Lawn and Garden Equipment and Supplies Stores	227
Jewelry, Luggage, and Leather Goods Stores	168
Other Motor Vehicle Dealers	135

Source: JobsEQ

Manufacturing

The manufacturing industry employs the third largest share of the regional workforce and had the second largest change in nonessential workers affected from 2019Q4 to 2020Q1, -98.6 percent. The Q4 data shows that over a third of those employed in manufacturing were considered nonessential, 9,087 people, while Q1 shows that only 0.5 percent are, 123 people, with no change in overall employment figures.

Manufacturing has suffered medium-high disruption due to moderate percentage of employment classified as non-life sustaining and low telework potential.

Those who were most negatively impacted by the state closure were First-Line Supervisors of Production and Operating Workers; Laborers and Freight, Stock, and Material Movers, Hand; Inspectors, Testers, Sorters, Samplers, and Weighers.

Occupation Distribution for Manufacturing in Lackawanna and Luzerne Counties, Baseline

Occupation	Employed
Team Assemblers	1,494
First-Line Supervisors of Production and Operating Workers	1,038
Laborers and Freight, Stock, and Material Movers, Hand	965
Packaging and Filling Machine Operators and Tenders	858
Inspectors, Testers, Sorters, Samplers, and Weighers	715
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	583
Helpers--Production Workers	544
Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	521
Maintenance and Repair Workers, General	521
Machinists	521

Source: JobsEQ

Nonessential 4-digit NAICS code Distribution for Manufacturing in Lackawanna and Luzerne Counties, 2020Q1

Industry	Employed
Textile and Fabric Finishing and Fabric Coating Mills	171
Fabric Mills	153
Other Textile Product Mills	93
Apparel Accessories and Other Apparel Manufacturing	87
Fiber, Yarn, and Thread Mills	53
Tobacco Manufacturing	48
Cut and Sew Apparel Manufacturing	30
Other Leather and Allied Product Manufacturing	3
Textile Furnishings Mills	1
Leather and Hide Tanning and Finishing	1

Source: JobsEQ

A larger share of those in Manufacturing in the region as a whole are affected, at 3.6 percent. Textile Knitting and Weaving Machine Setters, Operators, and Tenders; Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders; and Sewing Machine Operators are among the other occupations in NEPA that are also affected by the government shutdown.

Transportation and Warehousing

Less than half a percentage of workers in Transportation and Warehousing in 2019Q4 were considered nonessential while 0.6 percent were in 2020Q1, an additional 41 workers. It has experienced low-medium disruption.

Bus Drivers, Transit and Intercity; Passenger Vehicle Drivers, Except Bus Drivers, Transit, and Intercity; Bus and Truck Mechanics and Diesel Engine Specialists; Cleaners of Vehicles and Equipment; and Office Clerks, General were the top occupations in the two county area that were most affected.

Occupation Distribution for Transportation and Warehousing in Lackawanna and Luzerne Counties, Baseline

Occupation	Employed
Laborers and Freight, Stock, and Material Movers, Hand	4,831
Heavy and Tractor-Trailer Truck Drivers	3,277
Industrial Truck and Tractor Operators	1,916
Stock Clerks and Order Fillers	1,033
Bus Drivers, School or Special Client	964
Light Truck or Delivery Services Drivers	743
Packers and Packagers, Hand	645
Postal Service Mail Carriers	637
Shipping, Receiving, and Traffic Clerks	599
Office Clerks, General	434

Source: JobsEQ

Nonessential 4-digit NAICS code Distribution for Transportation and Warehousing in Lackawanna and Luzerne Counties, 2020Q1

Industry	Employed
Charter Bus Industry	123
Scenic and Sightseeing Transportation, Land	0

Source: JobsEQ

Accommodation and Food Services

The Accommodation and Food Services industry has been steadily affected with just under 15 percent of the industry's workforce considered nonessential. Though it seems like only 6.4 percent more were affected from 2019Q4 to 2020Q1, there was also a negative change in employment, about one percent.

Accommodation and Food Services has seen high disruption due to a high projected job loss, weighty job posting decline, high levels of concern from surveyed panelists, and the lowest reported telework potential.

Fast Food and Counter Workers; Waiters and Waitresses; Bartenders; First-Line Supervisors of Food Preparation and Serving Workers; Cooks, Institution and Cafeterias; and Cooks, Restaurant are the top occupations affected by the shutdown in the Accommodation and Food Services industry.

Occupation Distribution for Accommodation and Food Services in Lackawanna and Luzerne Counties, Baseline

Occupation	Employed
Combined Food Preparation and Serving Workers, Including Fast Food	5,172
Waiters and Waitresses	3,556
Cooks, Restaurant	1,987
First-Line Supervisors of Food Preparation and Serving Workers	1,209
Bartenders	890
Dishwashers	726
Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	578
Dining Room and Cafeteria Attendants and Bartender Helpers	557
Maids and Housekeeping Cleaners	537
Cashiers	501

Source: JobsEQ

Nonessential 4-digit NAICS code Distribution for Accommodation and Food Services in Lackawanna and Luzerne Counties, 2020Q1

Industry	Employed
Special Food Services	2,307
Drinking Places (Alcoholic Beverages)	643

Source: JobsEQ

A slightly smaller share of those employed in the Accommodation and Food Services industry throughout the region are nonessential (11 percent). Food Service Managers; Dishwashers; Food Preparation Workers; Food Servers, Nonrestaurant; and Security Guards are also some of the occupations affected by shutdown and social distancing measures in greater NEPA.

Educational Services

Though the largest share of the workforce deemed nonessential fell within the educational services industry (18,617 people, 2019Q4) and 100 percent of the industry was ordered to shut down and cease work at all physical locations, some people were still working and being paid, such elementary and secondary school teachers thanks to online learning. Unfortunately many others in this industry do not have a job from which they can telecommute like teacher assistants, substitute teachers, office clerks, secretaries and administrative assistants, janitors, and more; therefore many individuals in this industry were without pay or are laid off.

The Education sector has seen medium-high disruption due to its high percent of non-life sustaining employment, low projected job losses, a slight decline in number of job postings, a large amount of anxiety from survey, and the highest telework potential score.

There was a 0.1 percent decrease in those considered nonessential from 2019Q4 to 2020Q1, but there was also a 0.1 decrease in employment, so the change in nonessential employees was an adjustment to the number of workers in the industry. Though the following occupations have the most people affected by the industry shutdown they are also the most likely to be able to work from home:

- Elementary School Teachers, Except Special Education;
- Secondary School Teachers, Except Special and Career/Technical Education;
- Middle School Teachers, Except Special and Career/Technical Education;
- Health Specialties Teachers, Postsecondary;

The following occupations are also affected and are *least* likely to be able to work from home:

- Substitute Teachers;
- Janitors and Cleaners, Except Maids and Housekeeping Cleaners;
- Secretaries and Administrative Assistants, Except Legal, Medical, and Executive;
- Office Clerks, General;
- Education Administrators, Postsecondary;
- Career/ Technical Education Teachers, Postsecondary

Occupation Distribution for Educational Services in Lackawanna and Luzerne Counties, Baseline

Occupation	Employed
Elementary School Teachers, Except Special Education	1,876
Secondary School Teachers, Except Special and Career/Technical Education	1,648
Teacher Assistants	1,329
Middle School Teachers, Except Special and Career/Technical Education	772
Substitute Teachers	623
Office Clerks, General	608
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	601
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	566
Health Specialties Teachers, Postsecondary	437
Teachers and Instructors, All Other	330

Source: JobsEQ

Nonessential 4-digit NAICS code Distribution for Educational Services in Lackawanna and Luzerne Counties, 2020Q1

Industry	Employed
Elementary and Secondary Schools	10,846
Colleges, Universities, and Professional Schools	5,720
Junior Colleges	1,029
Other Schools and Instruction	447
Technical and Trade Schools	401
Educational Support Services	102
Business Schools and Computer and Management Training	46

Source: JobsEQ

In addition to the occupations affected which are listed above, so too are: Tutors and Teachers and Instructors, All Other; Self-Enrichment Teachers Instructional Coordinators; and Training and Development Specialists in the Greater NEPA Region.

Administrative and Support and Waste Management and Remediation Services

This industry was one of the most affected at 65.2 percent (2019Q4) determined to be nonessential. The share has decreased by 1.4 percentage points from 2019Q4 to 2020Q1, though there was also a 0.9 percent decrease in employment over the same period as well. Though it has some of the larger amounts of non-life sustaining employment, it has much lower projected job loss than other industries and is therefore classified as having experienced lower disruption.

Laborers and Freight, Stock, and Material Movers, Hand; Customer Service Representatives; Office Clerks, General; Packers and Packagers, Hand; Team Assemblers; and Telemarketers are the occupations most affected by the shutdown.

Occupation Distribution for Administrative and Support and Waste Management and Remediation Services in Lackawanna and Luzerne Counties, Baseline

Occupation	Employed
Laborers and Freight, Stock, and Material Movers, Hand	1,653
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	1,278
Customer Service Representatives	1,146
Landscaping and Groundskeeping Workers	1,055
Security Guards	670
Office Clerks, General	659
Team Assemblers	339
Packers and Packagers, Hand	295
Telemarketers	283
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	273

Source: JobsEQ

Nonessential 4-digit NAICS code Distribution for Administrative and Support and Waste Management and Remediation Services in Lackawanna and Luzerne Counties, 2020Q1

Industry	Employed
Employment Services	6,648
Business Support Services	2,373
Other Support Services	799
Office Administrative Services	317
Travel Arrangement and Reservation Services	291

Source: JobsEQ

Construction

Like with education, all those in the construction industry were all deemed non-essential and ordered to close. Though “non-essential” many of the workers have exceptions. In the two county region, about 10,441 workers are deemed to be an exception or 99.8 percent of all construction industry workers.

Construction has also experienced high levels of disruption as a result of 100 percent non-life sustaining employment, a fair decline in job postings, worry from the survey panelists, and low telework potential.

Of this Construction Laborers; Carpenters; Operating Engineers and Other Construction Equipment Operators; Construction Managers; First-line Supervisors of Construction Trades and Extraction Workers; and Office Clerks, General are most affected by the shutdown.

Occupation Distribution for Construction in Lackawanna and Luzerne Counties, Baseline

Occupation	Employed
Construction Laborers	1,562
Carpenters	920
Electricians	772
First-line Supervisors of Construction Trades and Extraction Workers	598
Plumbers, Pipefitters, and Steamfitters	515
Construction Managers	496
Operating Engineers and Other Construction Equipment Operators	469
Office Clerks, General	402
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	397
Painters, Construction and Maintenance	277

Source: JobsEQ

Nonessential 4-digit NAICS code Distribution for Construction in Lackawanna and Luzerne Counties, 2020Q1

Industry	Employed
Other Specialty Trade Contractors	1,645
Residential Building Construction	1,123
Nonresidential Building Construction	1,109
Building Finishing Contractors	1,037
Foundation, Structure, and Building Exterior Contractors	1,004
Utility System Construction	831
Highway, Street, and Bridge Construction	537
Other Heavy and Civil Engineering Construction	47
Land Subdivision	23

Source: JobsEQ

Finance and Insurance

From 2019Q4 to 2020Q1, there was a half a percentage point decrease in the amount of individuals employed in the finance and insurance industry. Additionally there was an increase of 0.1 percent in the percentage of the industry that was affected by the shutdown. It has been characterized as having lower disruption than other industries.

Personal Financial Advisors; Securities, Commodities, and Financial Services Sales Agents; Brokerage Clerks; Office Clerks; Secretaries and Administrative Assistants, Except Legal, Medical, and Executive; General and Operations Managers; and Customer Service Representatives were most affected by the Governor’s order but only the latter four are most likely unable to telecommute.

Occupation Distribution for Finance and Insurance in Lackawanna and Luzerne Counties, Baseline

Occupation	Employed
Customer Service Representatives	1,107
Tellers	771
Insurance Sales Agents	616
Claims Adjusters, Examiners, and Investigators	535
Loan Officers	469
First-Line Supervisors of Office and Administrative Support Workers	456
Insurance Claims and Policy Processing Clerks	447
Securities, Commodities, and Financial Services Sales Agents	429
Loan Interviewers and Clerks	364
Office Clerks, General	296

Source: JobsEQ

Nonessential 4-digit NAICS code Distribution for Finance and Insurance in Lackawanna and Luzerne Counties, 2020Q1

Industry	Employed
Other Financial Investment Activities	421
Securities and Commodity Contracts Intermediation and Brokerage	315
Securities and Commodity Exchanges	0

Source: JobsEQ

Wholesale Trade

Like the Finance and Insurance Industry, Wholesale Trade saw a decrease in overall employment but experienced a decrease in number of individuals in the workforce seen as nonessential from 2019Q4 to 2020Q1 (1,555 to 1,550), though the share of nonessential to essential increased due to the overall employment decline (16.2 to 16.3 percent). Though only a relatively smaller share of the industry is considered non-life sustaining there have been somewhat significant job losses and only about half the industry is able to telecommute; as a result Wholesale Trade has experienced lower-medium disruption.

Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products; Laborers and Freight, Stock, and Material Movers, Hand; Heavy and Tractor-Trailer Truck Drivers; Stock Clerks and Order Fillers; Customer Service Representatives; and Office Clerks, General were the top occupations affected by the state's closure

Occupation Distribution for Wholesale Trade in Lackawanna and Luzerne Counties, Baseline

Occupation	Employed
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	1,382
Laborers and Freight, Stock, and Material Movers, Hand	901
Heavy and Tractor-Trailer Truck Drivers	462
Stock Clerks and Order Fillers	408
Office Clerks, General	373
Light Truck or Delivery Services Drivers	352
Customer Service Representatives	307
Driver/Sales Workers	291
General and Operations Managers	282
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	223

Source: JobsEQ

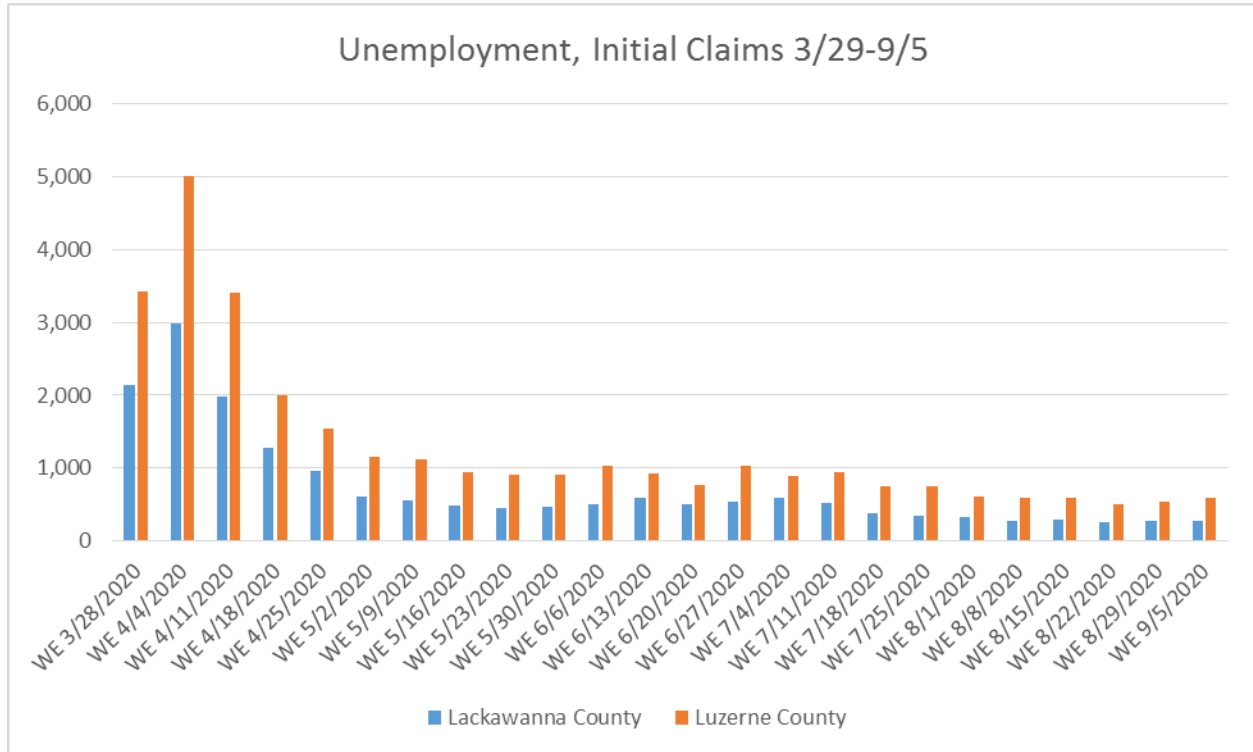
Nonessential 4-digit NAICS code Distribution for Finance and Insurance in Lackawanna and Luzerne Counties, 2020Q1

Industry	Employed
Miscellaneous Nondurable Goods Merchant Wholesalers	803
Wholesale Electronic Markets and Agents and Brokers	510
Furniture and Home Furnishing Merchant Wholesalers	162
Apparel, Piece Goods, and Notions Merchant Wholesalers	75

Source: JobsEQ

Initial Unemployment Claims

Initial claims of unemployment have been on a steady decline since they peaked the week of April 4th at 7,988 in Lackawanna and Luzerne Counties combined. Initial claims have followed a downward trajectory, but have stabilized in the most recent data.



Though the number of initial claims has been on the decrease, there have been some periods of increases. From 6/27 to 7/4 there was an increase in claims in Lackawanna County while a decrease in Luzerne County, which had experienced an increase just the week prior. The region’s share of the state’s unemployment has increased since the start of the pandemic meaning that though the number of initial claims has decreased, the area still has a larger percentage of people filing claims than other areas in the state.

The following demographic data on initial and continued claims in Lackawanna and Luzerne Counties is taken from the week ending May 9, 2020. Data were taken from that week as it had the highest number of combined initial and continued claims from March 29 to September 5 and will therefore better represent unemployed workers at the peak of the economic downturn. At that time, there were 968 initial claims in Lackawanna County and 1,747 in Luzerne. Just over 51 percent of those claims were among female workers.

Initial Claims, Week ending May 9

NAICS	Industry	Lackawanna	Luzerne	2-county average
11	Agriculture, Forestry, Fishing & Hunting	0.0%	0.0%	0.0%
21	Mining, Quarrying, and Oil and Gas Extraction	0.1%	0.2%	0.2%
22	Utilities	0.2%	0.1%	0.2%
23	Construction	5.6%	4.5%	5.1%
31	Manufacturing	8.2%	15.3%	11.8%
42	Wholesale Trade	5.1%	3.8%	4.5%
44	Retail Trade	13.7%	12.7%	13.2%
48	Transportation and Warehousing	4.2%	9.3%	6.8%
51	Information	0.9%	0.7%	0.8%
52	Finance and Insurance	2.4%	1.9%	2.2%
53	Real Estate and Rental and Leasing	1.2%	1.0%	1.1%
54	Professional and Technical Services	2.4%	2.2%	2.3%
55	Management of Companies and Enterprises	0.1%	0.3%	0.2%
56	Administrative and Waste Services	5.6%	11.7%	8.7%
61	Educational Services	4.4%	2.8%	3.6%
62	Health Care and Social Assistance	23.0%	15.7%	19.4%
71	Arts, Entertainment, and Recreation	2.0%	1.3%	1.7%
72	Accommodation and Food Services	9.7%	7.6%	8.7%
81	Other Services, Ex. Public Admin	3.7%	2.9%	3.3%
92	Public Administration	2.0%	0.9%	1.5%
99	Unclassified Industry	5.5%	5.3%	5.4%

Source: PA WORKSTATS, Center for Workforce Information & Analysis, Department of Labor and Industry

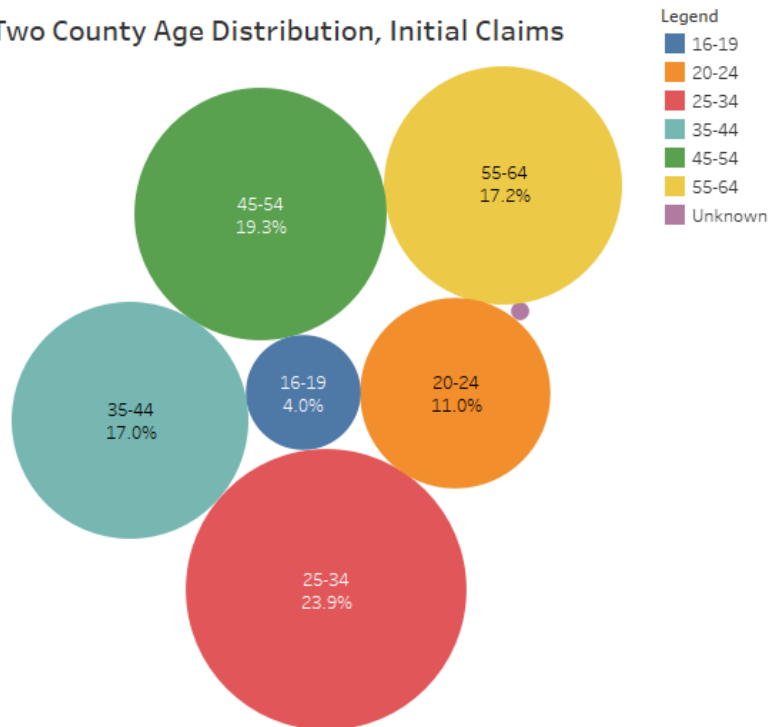
The largest share of initial claims for this week came from the Health Care and Social Assistance industry, particularly in Lackawanna County. In Luzerne County, there was a large share of unemployment claims from the manufacturing industry. Retail trade, and Accommodation and Food Services also accounted for significant shares of unemployment claims.

In the region, about one in four initial UC applicants were nonwhite, with Hispanic applicants comprising the largest share of nonwhite applicants. Nearly 40 percent of applicants were younger than age 35, with a disproportionate share aged 20 to 24. Nonetheless, another 37 percent were older than age 45.

	Race					
	Lackawanna		Luzerne		2-county average	
	% Claims	Claim Value	% Claims	Claim Value	% Claims	
American Indian or Alaskan Pacific Islander or Asian	0.4%	4	0.3%	1,219	0.4%	9
Unknown	3.0%	29	1.1%	1,219	2.1%	48
Black	3.7%	36	4.9%	1,219	4.3%	121
Black	5.7%	55	5.7%	1,219	5.7%	155
Hispanic	8.2%	79	18.2%	1,219	13.2%	397
White	79.0%	765	69.8%	706	74.4%	1,203

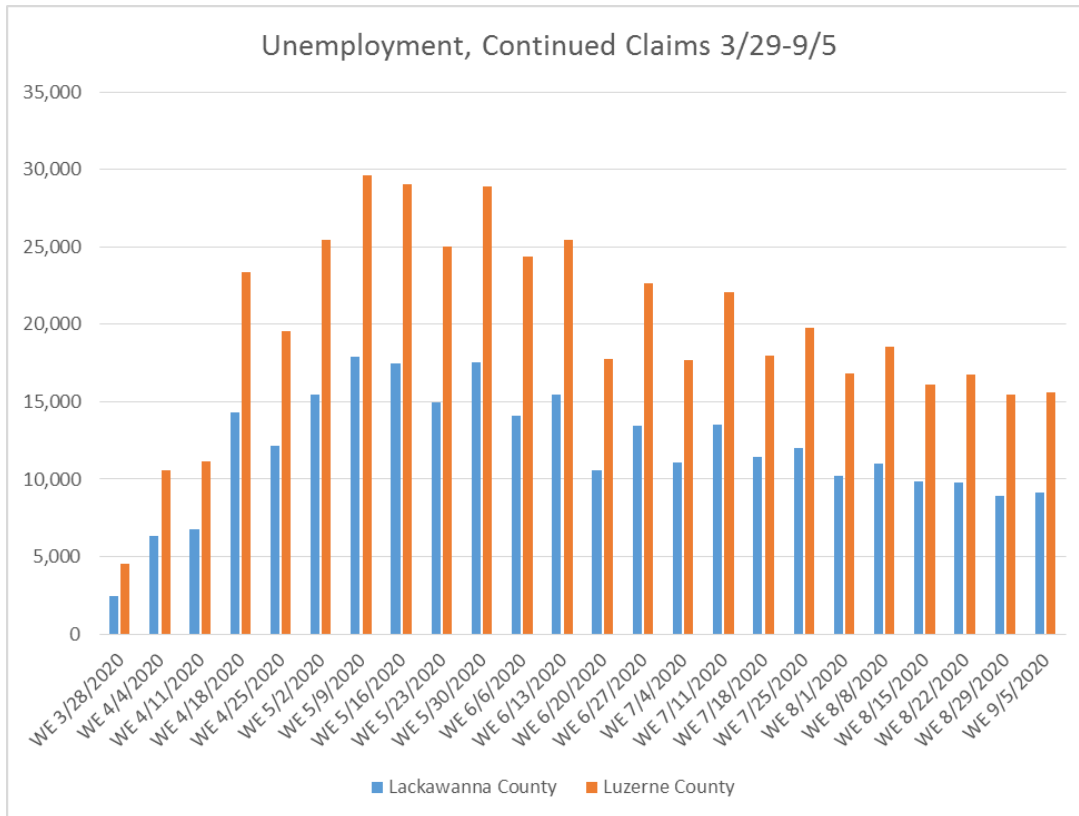
Source: PA WORKSTATS, Center for Workforce Information & Analysis, Department of Labor and Industry

Two County Age Distribution, Initial Claims



Continued Unemployment Claims

Compared to decreasing initial claims, continued claims have improved but at a slower pace. The number of continued claims in the two counties peaked in May, there is a less severe decrease than with initial claims. As of the first week of September, both counties have continued unemployment claim totals at least twice pre-pandemic levels. Lackawanna had 9,132 claims and Luzerne had 15,580 claims for the week ending September 5.



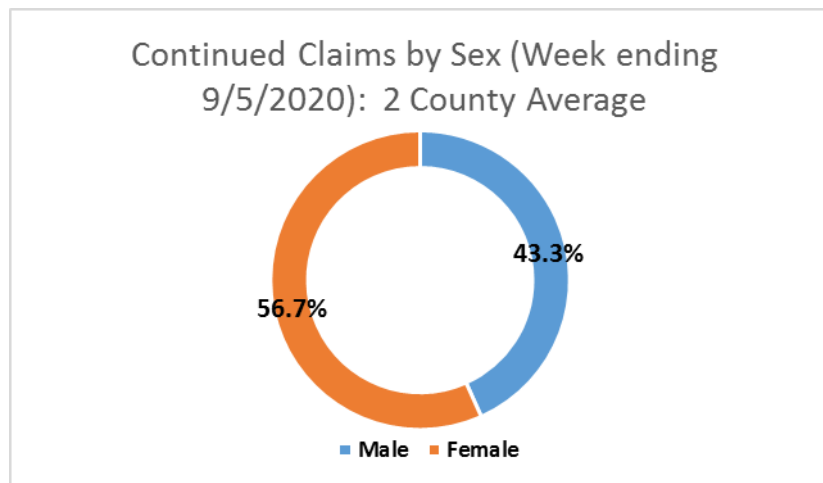
Of continued claims as of the most current data available for this report, an average of 18.4 percent of continued claims were derived from the accommodation and food services industry. This was the largest contributing industry to continuing claims in both counties. Another 15 percent of continued claims in the region were from health care and social assistance. Other major contributing industries to continued claims were retail trade, transportation and warehousing, manufacturing, and administrative and waste services.

Continued Claims, Week ending September 5

2-digit NAICS	Industry Description	Lackawanna	Luzerne	Average
11	Agriculture, Forestry, Fishing & Hunting (11)	0.1%	0.2%	0.2%
21	Mining, Quarrying, and Oil and Gas Extraction (21)	0.2%	0.1%	0.2%
22	Utilities (22)	0.0%	0.1%	0.1%
23	Construction (23)	5.3%	4.1%	4.7%
31	Manufacturing (31-33)	8.4%	11.4%	9.9%
42	Wholesale Trade (42)	3.3%	3.0%	3.2%
44	Retail Trade (44-45)	11.8%	12.8%	12.3%
48	Transportation and Warehousing (48-49)	7.9%	12.0%	10.0%
51	Information (51)	1.0%	0.9%	1.0%
52	Finance and Insurance (52)	2.1%	1.6%	1.9%
53	Real Estate and Rental and Leasing (53)	0.9%	0.7%	0.8%
54	Professional and Technical Services (54)	2.3%	1.9%	2.1%
55	Management of Companies and Enterprises (55)	0.3%	0.2%	0.3%
56	Administrative and Waste Services (56)	8.7%	11.1%	9.9%
61	Educational Services (61)	2.8%	3.0%	2.9%
62	Health Care and Social Assistance (62)	17.0%	13.6%	15.3%
71	Arts, Entertainment, and Recreation (71)	1.7%	1.6%	1.7%
72	Accommodation and Food Services (72)	19.4%	17.4%	18.4%
81	Other Services, Ex. Public Admin (81)	4.8%	3.1%	4.0%
92	Public Administration (92)	1.5%	0.6%	1.1%
99	Unclassified Industry (99)	0.5%	0.7%	0.6%

Data Source: PA Department of Labor & Industry

A disproportionate share of continued claims, over 56 percent in the two county region, were women, and this share has increased over the past several months.



In the two counties, about one in four continued claims were represented by a nonwhite worker. The largest nonwhite share of continued claims in both counties comes from Hispanic workers, totaling 18.2 percent of continued claims in Luzerne and 9.3 percent in Lackawanna.

Continued Claims by Race (Week ending 9/5/2020)

T	Lackawanna		Luzerne		2 county average	
	% Claims	Claim Total	% Claims	Claim Total	% Claims	Claim Total
American Indian or Alaskan	0.1%	9	0.2%	31	0.2%	40
Pacific Islander or Asian	1.9%	174	1.0%	156	1.5%	329
Unknown	2.9%	265	3.4%	530	3.2%	795
Black	6.0%	548	6.7%	1,044	6.4%	1,592
Hispanic	9.3%	849	18.2%	2,836	13.8%	3,685
White	79.8%	7,287	70.6%	10,999	75.2%	18,287

Source: PA WORKSTATS, Center for Workforce Information & Analysis, Department of Labor and Industry

Impact of Automation

Workforce, occupations, and industries already threatened by automation.¹²

Last year the Institute published a report on automation and its threat to the region’s workforce. It found that just under half of all jobs in Northeastern Pennsylvania are sensitive to automation, or 242,478 workers are employed in one of 320 occupations with at least a 70 percent probability of automation in the coming decades. In the immediate two-county region, 49.93 percent of all jobs in Luzerne County are at risk and 48.86 percent in Lackawanna County are at risk. Re-examining this analysis suggests that many occupations that are at risk of succumbing to automation are also jobs that are considered nonessential, non-remote, and are highly populated within the region.

Over 90 percent of food preparation and serving jobs are automation sensitive. This is followed by workers in transportation and material moving (77.5 percent), sales (77.2 percent), production (72.2 percent), and construction and extraction (69.7 percent).

Though transportation and material moving was not heavily affected by the governor’s mandate, they are at risk of losing jobs in the future due to automation. Sales as well as construction and extraction are two of those occupations that are most affected by the stay at home order as well as in the future due to automation. The jobs with high automatability tend to be lower paying than jobs that are less automation-sensitive.

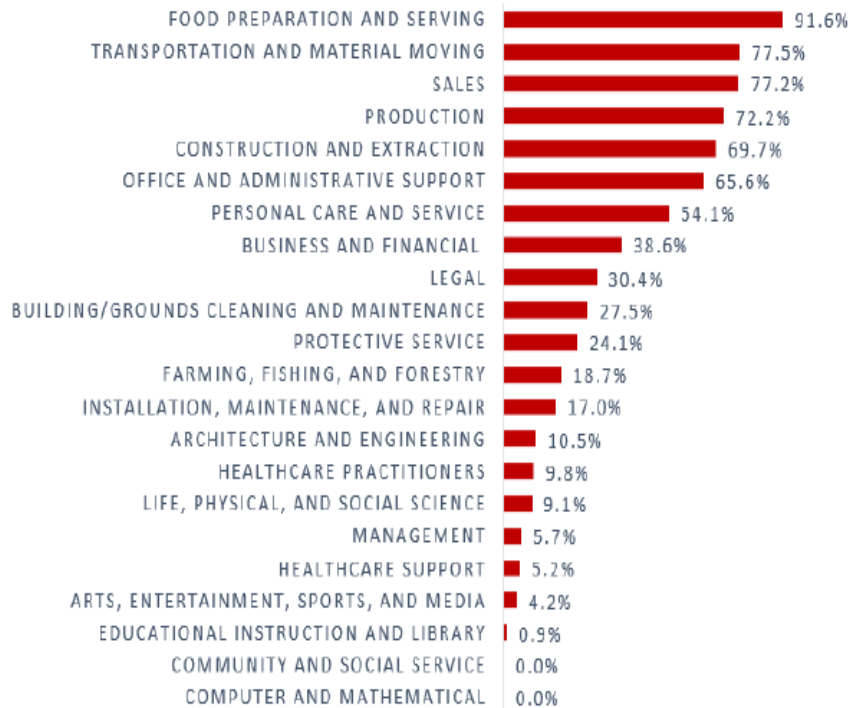
¹² The Institute’s Workforce Disruption Index. 2019.

AUTOMATION-SENSITIVE JOBS AS A PERCENTAGE OF ENTIRE WORKFORCE

SCHUYLKILL COUNTY, PA	50.65%
INDIANA	50.45%
WISCONSIN	49.94%
LUZERNE COUNTY, PA	49.93%
COLUMBIA COUNTY, PA	49.74%
WYOMING COUNTY, PA	49.34%
NORTHEASTERN PENNSYLVANIA	49.24%
SUSQUEHANNA COUNTY, PA	48.97%
LACKAWANNA COUNTY, PA	48.86%
MONROE COUNTY, PA	48.61%
BRADFORD COUNTY, PA	48.52%
CARBON COUNTY, PA	48.24%
OHIO	47.56%
MICHIGAN	47.42%
WAYNE COUNTY, PA	47.29%
PENNSYLVANIA	46.22%
PIKE COUNTY, PA	46.16%
DELAWARE	45.70%
NEW JERSEY	43.92%
NEW YORK	42.30%
MARYLAND	41.08%

Source: The Institute's Workforce Disruption Index. 2019.

WORKERS IN AUTOMATION-SENSITIVE JOBS BY OCCUPATION



Source: The Institute's Workforce Disruption Index. 2019

The National League of Cities published a report titled, “Assessing the Future of Our Work: Automation and the Role of Cities” in 2018. It included tables of occupations by automatability, or the risk of succumbing to automation, which are included in this report. Many of the jobs listed below are jobs that are considered nonessential, non-remote, and are highly populated within the region including:

- Laborers and freight, stock, and material movers;
- Combined food preparation and serving workers, including fast food;
- Cooks, restaurant;
- Food preparation workers;
- Waiters and waitresses;
- Sales representatives, wholesale and manufacturing, except technical and scientific product;
- Carpenters; and
- Receptionists and information clerks.

Automation in a variety of industries and occupations will also affect future workforce demands. Studies have attempted to quantify the percentage of job duties that could be automated within occupations. In an analysis by the National League of Cities using BLS data, occupations were sorted in high, medium, and low potential for automatability. Full tables can be found in the appendix of this report.

Job titles with highest automatability include landscaping workers, hand laborers and material movers, several categories of restaurant workers, carpenters, and receptionists. These jobs are generally associated with manual or physical labor skills and/or completing repetitive tasks, making them more subject to automation disruption. A large number of the highest automatability required no formal education credentials, and only one requires a postsecondary degree – accountants and auditors, with 94 percent automatability.

Jobs with moderate levels of automatability include several which involve a mix of physical or manual labor and specific expertise such as plumbers, building maintenance workers, home health aides, and dental assistants. These are jobs that will continue to require human input but where some tasks could be streamlined through automation. The occupations require differing levels of education and training.

Common job titles associated with low levels of automatability include many managerial and supervisory positions, which involve critical thinking skills not easily replicated by current technology. Other low automatability occupations include several in the health care field, software developers, analysts, and electricians. Many of these occupations require a bachelor’s degree or higher, though this is not universally true: first-line supervisors or managers in retail, skilled trades, or administrative often require only a high school diploma or equivalent.

Characteristics of Workers by COVID-19 Job Risk Level

Of those whose jobs and wages are at risk, lessened, and/or lost due to COVID 19 the Federal Reserve Bank of Philadelphia found that they are most likely young, minority, have a high poverty level/low income, are less educated and less likely to have health insurance. According to the Federal Reserve Bank's analysis, they are most likely to be characterized as the following: ¹³

- Under 25 years old
- Non-white or Latino
- Without a Bachelor's degree (25 years and older)
- Enrolled in school (18-24 yrs.)
- Have a median income of \$23,339
- Wages makes up nearly half of household earnings
- Are more likely to rent their home
- Are more likely to work part time
- Less likely to have health insurance
- More likely to have an income below the poverty line
- And, are housing cost burdened.

Workers with these characteristics that are at high-risk of unemployment during COVID also tend to be employed in automation sensitive jobs. Hourly workers and workers unable to complete tasks off-site like gym attendants, department store clerks, and waiters are at high risk of unemployment, and perhaps automation.

The Federal Reserve Bank of St. Louis identified three characteristics of workers that are *not* at high risk of unemployment:

1. Occupations essential to public health or safety (e.g., police, nurses)
2. Occupations able to telecommute (e.g., computer programmers)
3. Positions likely to be salaried (e.g., elementary school teachers)

Though lawyers and school teachers were ordered to stay at home, they can complete their work from home and/or are salaried.

¹³ Wardrip and Tranfaglia. 2020. COVID-19: Which Workers Will Be Most Impacted? Federal Reserve Bank of Philadelphia.

Reskilling, Upskilling, and Outskilling

The following section will highlight how the workforce can respond to economic repercussions of the COVID shutdown as well as impending automation, which may be sped up in light of COVID and new social distancing and workplace safety measures.

When looking to upskill and reskill it is important to build employee skills critical to the business or a new business model. In order to successfully do this, businesses, business leaders, and community leaders should start with a strategic workforce plan. This would determine what skills (hard or soft) and technology are lacking and what could be needed in the future. Furthermore, those undertaking these initiatives should determine how their business or workforce will grow and how many new employees, if applicable, a business, workforce, or region will need.

Reskilling

In order to successfully reskill in the time of COVID and automation, workers and employers must have a career pathway in mind that is achievable, has similar skills requirements, and is sustainable.

Workers may reskill in order to transfer to a new industry and employers may reskill their workforce in order to enter a new industry or to remain relevant in face of automation. When looking to reskill employees, employers should identify what career cluster they belong to and what career pathways would be the most similar or have the most transferable skills, hard or soft.

Reskilling should not be viewed as unapproachable from a small or medium business size standpoint. A McKinsey & Company report found that it is more successful if an entity reskills like a small business. A survey showed that reskilling programs at smaller organizations were more successful than larger ones.¹⁴ Though this should not be taken to say that larger businesses would not be successful in their efforts, and reskilling initiatives do not need to be undertaken all at once. About ten percent of a workforce is at risk of not having up to date skills in any given year. A strategic workforce plan would target the at-risk populations and up- or reskill them. In five years' time, 50 percent of the workforce would be up to date.

Job Match

The following tables are from data in the World Economic Forum's Towards a Reskilling Revolution report. It identifies several examples of clusters, or

starting jobs, and pathways, or target jobs, for a variety of occupations. The appendix includes tables on target job matches for occupations in production and office administrative occupation groups.

The below table underscores how there are various pathways someone in a job can take based on similar transferable skills. Out of the highlighted occupations, office clerks make up the largest part of our regional workforce. The job they would most likely succeed in with ease would be municipal clerks. They would have a very difficult time becoming aerospace engineering and operations technicians, the occupation with the low similarity score.

Examples of high, medium, and low similarity jobs

Starting job	Job-Fit category	Similarity score	Target job
Office Clerks, General	High	0.92	Municipal Clerks
	Medium	0.87	First-Line Supervisors of Office and Administrative Workers
	Low	0.81	Aerospace Engineering and Operations Technicians
Cooks, Fast Food	High	0.93	Dining Room and Cafeteria Attendants and Bartender Helpers
	Medium	0.86	Butchers and Meat Cutters
	Low	0.82	Locksmiths and Safe Repairers

¹⁴ Agrawal et al. 2020. To emerge stronger from the COVID-19 crisis, companies should start reskilling their workforces now. 7 May. McKinsey & Company.

Electrical Engineering Technicians	High	0.91	Electrical and Electronics Repairers, Powerhouse, Substation and Relay
	Medium	0.86	Geothermal Technicians
	Low	0.81	First-Line Supervisors of Agricultural Crop and Horticultural Workers
Computer Programmers	High	0.92	Web Developers
	Medium	0.86	Computer and Information Systems Managers
	Low	0.82	Anthropologists

Source: World Economic Forum: Towards a Reskilling Revolution

The tables in the appendix note that office clerks could easily transfer to customer service representatives. As for production occupations, Inspectors, Testers, Sorters, Samplers, and Weighers have various career pathways that include: Production, Planning, and Expediting Clerks; First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand; Quality Control Analysis; and Civil Engineering Technicians.

Upskilling

Upskilling workers saves employers millions; the skills gaps costs companies about \$1 million per year¹⁵ and hiring a new person rather than upskilling an existing employee lead to higher costs for employers. Upskilling is not only needed to close the skills gap and in response to automation but especially now in response to the economic situation due to COVID-19. According to a report from the Capgemini Institute employees who benefit from upskilling are able to better leverage automation tools but more importantly move to more value-added activities thus driving more output for the organization.¹⁶

Methods to upskill

There are myriad of ways to upskill workforces but the following are some of the most often cited forms.

1. Microlearning/ culture of learning

2. Peer support programs, like peer coaching, mentorship and reverse mentorship
3. Continuous professional development
4. Retraining
5. Offer new career paths

Microlearning and Building a Culture of Learning

Instituting a culture of learning was the most often cited method of upskilling. Rewarding those who increase or use their autodidactic skills further inculcates this culture. Microlearning is packaging upskilling lessons or workshops into bite-sized pieces and done often. Some lessons or reviews can be done in five minutes time and done once a day. Some lessons could be an hour once a week rather than an arduous multi- week program that only occurs once. Again, the efforts need to be continuous.

Peer support programs, like peer coaching, mentorship and reverse mentorship

Peer coaching was seen to be more effective than regular peer support programs. In peer coaching programs, two people are paired together. They share their goals and how they'd like to achieve them; their partner can give them advice on ways to achieve them or ask them questions on aspects of their goals they might not have thought of. The coaching aspect comes in when these employees check in on each other on their progress and support each other in reaching their goals.

Reverse mentorships is simply the opposite relationship of a mentorship program. Both are applicable and useful in an upskilling context. A mentorship program would pair an established employee in the same position or one who used to work in the position of the mentee who would help the mentee with various aspects of on-the-job training and learning. A reverse mentorship program would make the same pairing but the mentee would be an older worker while the mentor would be the younger worker. The mentor would help the mentee with newer technological skills that are necessary for their positions in order to remain relevant and productive.

¹⁵ GQR. 2018. How Upskilling Will Boost Retention & Lower the Skills Gap. Available at: <<https://www.gqrgm.com/how-upskilling-will-boost-retention-lower-skills-gap/>>.

¹⁶ Training Industry. Upskilling employees for the future of work.

Continuous professional development

As a part of instilling a culture of learning in a workforce, continuous professional development (CPD) should be made available to employees. Not only should relevant CPD be made available, but there should be incentives paired with it. If an employee completes a particular program they could be rewarded with things such as a gift card, a bonus, or a promotion. The incentive should be appropriate and applicable to amount of effort and time dedicated to their development; for example, if their time spent learning new skills now makes them overqualified for their position and qualified for the next step up, they could be rewarded with a promotion.

Retraining

Retraining the workforce ensures they are as up to date on the skills needed for their occupation. This could be as simple as taking time to retrain workers when a new software update for a particular computer application becomes available or more in depth, retraining people to do something they used to do by hand and now doing it in a software package. If an employee needs to reapply or renew a certification after a period of time, there should be retraining dedicated to that studying.

Offer new career paths

Another way employers could upskill their workforce would be to offer new career paths. If an employee does not have a clear career pathway to follow when earning experience and learning new skills, an employer could create a career path that works for the employee and also for the organization. Once pathways are identified companies will need to create 'learning journeys' and employees will need to prepare for roles different from which they were hired.¹⁷

For example, if an office clerk is upskilling and sees no upward trajectory for themselves within the company, the employer could create a career path for them to become a municipal clerk, a first-line supervisor of office and administrative workers, a customer service representative, or another position that has transferable and buildable skills from an

office clerk that serves both the employee and organization well.

Upskilling Best Practices

This section highlights some best practices of organizations based on occupation.

The Outcomes of Upskilling Opportunities for Health Care & Social Assistance Employees

Healthcare workers represent 20 percent of all frontline workers, including doctors, registered nurses, pharmacists, nursing assistants, and home health aides.¹⁸ The National Fund for Workforce Solutions created the CareerSTAT recognition program to highlight healthcare organizations making exemplary investments in the skills their frontline workers. In 2019, five champion organizations were chosen along with four emerging champions across the country.

The champion organizations and their initiatives include:

- **Advocate Aurora Health – NAVIGATE** program, “a robust incumbent worker strategy designed to positively impact the career trajectory of frontline workers...combines learning opportunities and workforce development into a single program, providing team members the ability to learn and hone new skills, determine career pathways with mentoring and coaching assistance, and access tools and resources that promote mobility and wage growth.”¹⁹ 129 frontline workers have participated in the program resulting in 64 percent identifying their career pathway, 10 percent being promoted and received an average of a 24 percent increase in salary.²⁰
- **Cincinnati Children’s Hospital Medical Center** – “Developed an improvement team to address burgeoning turnover rates...ultimately determined to be the result of employee

¹⁷ Harvard Business Review. 2020. It’s time for a C-Level Role Dedicated to Reskilling Workers.

¹⁸ <https://econofact.org/essential-and-frontline-workers-in-the-covid-19-crisis>

¹⁹ <https://nationalfund.org/learning-evaluation/publications/2019-careerstat-frontline-healthcare-worker-champion-cincinnati-childrens-hospital-medical-center/>

²⁰ Ibid.

tardiness and absenteeism.”²¹ The hospital implemented job coaching and mentoring which “utilized problem-solving, rather than punitive, approach to employment barriers.”²² More than 300 frontline workers take part in the program each year, in return the hospital has been able to save more than \$4 million in turnover costs in the past ten years.²³

- **Methodist Health System** – partnered with community workforce training partner Oak Cliff Works and Dallas County Community College District to evolve its patient care technician certificate program. “The program first provides local un- and underemployed community members with work readiness education, followed by preparation for PCT certification.”²⁴ Upon employment, participants gain access to meaningful career pathways: nursing, surgical technologist, pharmacy technician, respiratory therapists, and radiology technologist.²⁵
- **Parkland Health & Hospital System** – “unmatched dedication to providing efficient, effective, and up-to-date job skills training and educational opportunities to low income workers.”²⁶
- **RWJ Barnabas Health** – “An anchor institution, ‘Outside In, Inside Up’ approach is used to recruit and mentor qualified candidates from the community, while providing frontline employees career ladder support and training, tuition reimbursement and grants, and internal promotions. There is an online tracking system that shows all available opportunities, outreach activities and informational sessions, and job shadowing opportunities.”²⁷

The Outcomes of Upskilling Opportunities for Retail Workers

Over the years, thousands of brick-and-mortar stores have been forced to close across the country, yet retail remains the largest private-sector employer. Ellen Davis, senior vice president of the National Retail Federation (NRF) recognized consumer shopping habits have shifted. To prepare for the changes in the retail industry, the NRF Foundation launched **RISE UP** (Retail Industry Skills and Education), which provides training and credentials. Two dozen companies including BJ’s Wholesale Club, Brooks Brothers, Disney Store, Target, Walmart and Tractor Supply Company supported this initiative. Associates are to study and complete a 15-module training program, then pass an exam to earn a credential in more than just traditional skills: “customer service, digital fluency and upselling in an environment where a customer, through online research, may know more about a product than a salesperson in the store.”²⁸

Other initiatives include **Reimagine Retail** by Aspen Institute Economic Opportunities Program, which “explores ways to enhance job quality and advancement for retail workers.”²⁹ Goodwill Industries of San Diego developed career pathways and trainings for entry-level workers to advance to a store manager position. Goodwill saw a 15 percent increase in revenues and a 45 percent increase in internal promotions in just two years.³⁰ Pete’s Fresh Market partnered with Institute del Progreso Latino in Chicago, to help Latino immigrants gain access to an education, customer service and sales training, and continued employment. In return, 80 percent of Pete’s employees are promoted from within, which resulted in more than 20 percent of workers staying with the company for more than 10 years.³¹

²¹ Ibid.

²² Ibid.

²³ Ibid.

²⁴ <https://nationalfund.org/learning-evaluation/publications/2019-careerstat-frontline-healthcare-worker-champion-methodist-health-system/>

²⁵ Ibid.

²⁶ <https://nationalfund.org/learning-evaluation/publications/2019-careerstat-frontline-healthcare-worker-champion-parkland-health-and-hospital-system/>

²⁷ <https://nationalfund.org/learning-evaluation/publications/2019-careerstat-frontline-healthcare-worker-champion-rwjbarnabas-health/>

²⁸ <https://workingnation.com/reimagining-retail-jobs-upskilling-and-credentialing/>

²⁹ Ibid.

³⁰ Ibid.

³¹ Ibid.

The Outcomes of Upskilling Opportunities for Food Service Employees

The fast-food chain Pal’s Sudden Service has an hourly worker turnover rate of 23 percent, only one-third of the industry average. According to the company’s President Tom Crosby, training is the most crucial element to “set the stage of engagement.”³² Each employee will spend hours learning all the restaurant functions and will be tested on their knowledge. To work at particular stations, employees must be able to achieve a perfect score on the initial test and random tests throughout the year.³³

Managers at Pal’s Sudden Service are expected to teach employees new skills in addition to their regular job functions. Employees are taught good personal grooming and communication skills, along with receiving access to company sales and profit records to draw connection to their work.³⁴

The Outcomes of Upskilling Opportunities for Day Laborers

The Greater Houston Partnership established UpSkill Houston, “an industry-led collaboration working with education and community stakeholders to strategically expand the ‘talent pipeline’ and attract talent to high-demand careers in the industry sectors considered the drivers of the region’s economy.”³⁵

- **Upskill Houston** increased enrollment by 32 percent in petrochemical courses at community colleges and increased completion rates by 42 percent for two-year degrees and technical training programs
- **Petrochemical Manufacturing** – developed a career exploration platform for individuals and returning service members to explore the industry’s careers. One million dollars in scholarships were awarded to support students enrolled in relevant community college programs. In the last five years, more

than 17,000 students complete the curriculum

- **Women in Construction Program** – three months of on-the-job training for 20 women to become a pipefitter helper. 80 percent of those enrolled graduated and work in the field.

Job Match

The table below shows career pathways to upskill workers in positions that are highly susceptible to automation. It is grouped by 2-digit SOC code and further broken down into 6-digit occupations. Not only does it show pathways within their industry to a new, less at-risk profession but most also move to higher wages.

BUILDING THE BRIDGE FROM HIGH TO LOW AUTOMATABILITY: ON-RAMPS & SKILLS				
		HIGH	LOW	
39 - Personal Care and Service Occupations	Personal Care Aide	\$21,920	Childcare Workers	\$21,170
	Non-Farm Animal Caretaker	\$21,990	Hairdressers	\$24,260
	Combined Fast Food Workers	\$19,440		
35 - Food Preparation and Serving Related Occupations	Waiters	\$19,990	First-line Food Prep (Medium)	\$31,480
	Cooks (Restaurant)	\$24,140		
	Food Prep Worker	\$21,440		
43 - Office and Administrative Support Occupations	Billing Clerk	\$36,150	Stock Clerk	\$23,840
	Receptionist and info clerk	\$27,920	First-line Admin.Support Worker	\$54,340
53 - Transportation and Material Moving Occupations	Laborer & Freight	\$25,980	Heavy & Tractor trailer Truck Driver	\$41,340
47 - Construction and Extraction Occupations	Construction Laborer	\$24,140	First-line Construction Supervisor	\$62,980
	Carpenter	\$43,600	Electrician	\$52,700
41 - Sales and Related Occupations	Retail Salesperson	\$22,680	Services Sales Representative	\$62,490
	Wholesale Sales Rep.	\$57,140	First-line Retail Supervisor	\$39,040
13 - Business and Financial Operations Occupations	Accountants and Auditors	\$68,150	Business Operations Specialis	\$69,040
	Management Analyst	\$81,330	Health Specialties Teachers	\$99,360
25 - Educational Instruction and Library Occupations	Teachers, all other	\$30,110	Secondary School Teachers	\$58,030
			Self-Enrichment	\$37,330
			Preschool Teachers	\$28,790

Figure 1. Source: NLC. 2018. *Assessing the Future of Our Work*.

³² <https://www.shrm.org/hr-today/news/all-things-work/pages/to-have-and-to-hold.aspx>

³³ Ibid.

³⁴ Ibid.

³⁵

<https://www.forwardontalent.org/stories/greaterhoustonpartner/ship/>

Outskilling

Not only are reskilling and upskilling important to employers and employees, so is outskilling: the process in which employers help employees in massive layoffs by providing guidance, support, education and training, and connections to new employers.

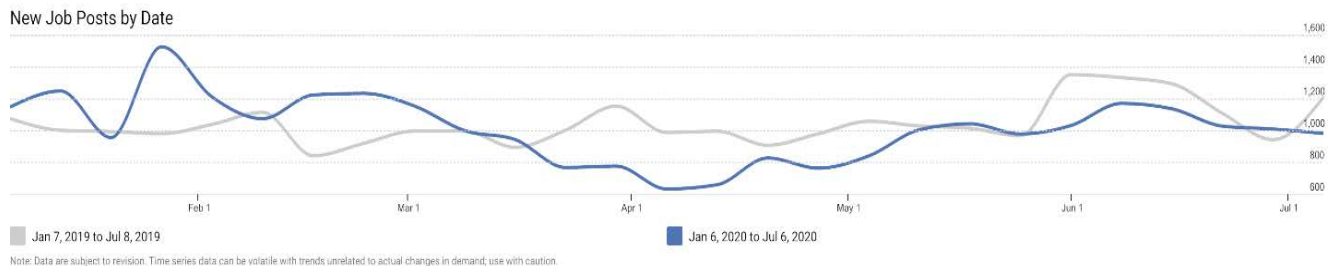
Though it may seem counterintuitive to help employees who are leaving the company, outskilling largely benefits the employers too. It benefits the company's reputation with not only its consumers but also its remaining employees. Research has shown that not just the reputation suffers but poorly handled layoffs negatively impact job performance and increase turnover. Productivity and profits then suffer.

Future Workforce: Job Openings, Occupation Growth and Gaps, Graduation and Award Gaps

The following section will look at how the future of our workforce is shaped through new growth and new members of the workforce.

Job openings in the region

The number of job openings starting dropping just before the Governor reported the first cases of coronavirus in the Commonwealth on March 6th. Since bottoming out in April, the number of postings has increased though it appears there is a slight decrease from the end of June onwards. As of July 7, there were 13,465 job postings in Lackawanna and Luzerne Counties through the end of the second quarter of 2020.



The most job postings were for stockers and order fillers followed by retail salespersons and registered nurses. Additionally, all occupations but social and human service assistants are non-remote positions.

Top 10 Job Postings	
Occupation	Total Ads
Stockers and Order Fillers	798
Registered Nurses	744
Retail Salespersons	695
First-Line Supervisors of Retail Sales Workers	493
Heavy and Tractor-Trailer Truck Drivers	404
Laborers and Freight, Stock, and Material Movers, Hand	343
Customer Service Representatives	329
Fast Food and Counter Workers	318
Social and Human Service Assistants	308
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	286

Source: JobsEQ

Considering the occupation with the second highest number of postings is registered nurses it is unsurprising that the top certification would be an RN. This is closely followed by a driver's license and basic life support. There were 188 various certifications listed in the postings.

Certifications	
Certificate Name	Total Ads
Registered Nurse (RN)	459
Driver's License	455
Basic Life Support (BLS)	307
Certification in Cardiopulmonary Resuscitation (CPR)	246
Advanced Cardiac Life Support Certification (ACLS)	160
Licensed Practical Nurse (LPN)	160
Certified Nursing Assistant (CNA)	117
Pediatric Advanced Life Support (PALS)	99
Class A Commercial Driver's License (CDL-A)	92
First Aid Certification	83

Source: JobsEQ

Employers indicated 1,035 different hard skills needed in all job postings. Physical strength were the two most often needed skills while knowledge of Microsoft Office and Excel were the next two. Just under half the top hard skills require some physical strength. These skills are much more specific to job postings in comparison to soft skills.

Hard Skills	
Skill Name	Total Ads
Ability to Lift 51-100 lbs.	808
Ability to Lift 41-50 lbs.	806
Microsoft Office	724
Microsoft Excel	704
Retail Sales	480
Ability to Lift 21-30 lbs.	429
Cash Handling	429
Ability to Lift 31-40 lbs.	388
Merchandising	379
Forklifts	349

Source: JobsEQ

There was a far smaller amount of soft skills listed amongst the listings; a total of 99 different skills were listed. These skills are far more universal in positions than hard skills. By an overwhelming majority, communication (both verbal and written) was the most often requested soft skill followed by customer service and being a team player.

Soft Skills	
Skill Name	Total Ads
Communication (Verbal and written skills)	5,040
Customer Service	2,856
Cooperative/Team Player	2,422
Adaptability/Flexibility/Tolerance of Change and Uncertainty	1,865
Self-Motivated/Ability to Work Independently/Self Leadership	1,846
Organization	1,517
Detail Oriented/Meticulous	1,493
Ability to Work in a Fast Paced Environment	1,311
Accountable/Responsible/Reliable/Dependable/Trustworthy	1,106
Interpersonal Relationships/Maintain Relationships	1,035

Source: JobsEQ

The majority of job postings did not specify a required minimum education level however those that did specify noted that applicants needed a minimum of a high school diploma or equivalent.

Education Levels	
Minimum Education Level	Total Ads
High school diploma or equivalent	3,936
Bachelor's degree	1,062
Associate's degree	365
Master's degree	211
Doctoral or professional degree	41
Unspecified/other	7,415

Source: JobsEQ

Remote Job Ads

The tables on remote job ads are real time job postings over the last 30 days. The graphic below shows the overall trend of the number of remote job ads posted from January 6th to July 6th. It also shows the trendline from this time last year, in grey.

For the most part, the fluctuations of job posts is similar to last year save the spike in postings around February 1st and more fluxes after April 1st. There are currently lower numbers of postings from last year around this same time but it has been slightly increasing since mid-June.

The most ads are for software developers, this is true for the past month and since January. There is currently a smaller demand for market research analysts and for marketing managers over the last six months.

Remote Occupations, RTI 7/15

Occupation	Total Ads	
	30 days	6 months
Software Developers	73	238
Accountants and Auditors	53	198
Bookkeeping, Accounting, and Auditing Clerks	45	183
Sales Managers	38	142
Management Analysts	30	154
Business Operations Specialists, All Other	28	117
Network and Computer Systems Administrators	25	105
Financial Managers	20	106
Web Developers	20	58
Loan Officers	18	50
Human Resources Managers	16	53
Software Quality Assurance Analysts and Testers	15	77
Computer Systems Analysts	12	52
Marketing Managers	10	47
Market Research Analysts and Marketing Specialists	8	61
Total	561	2,205

Source: JobsEQ

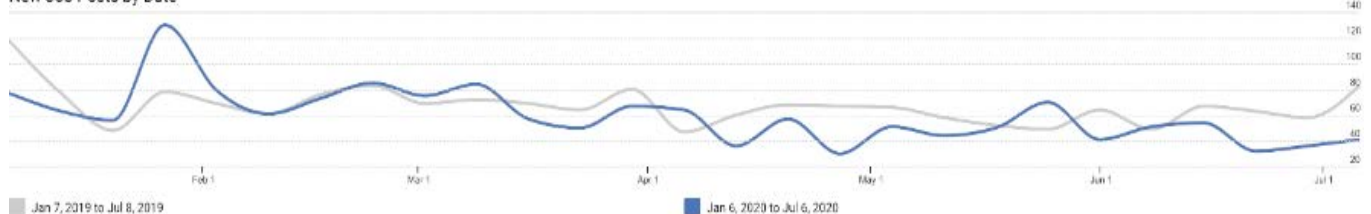
Nearly three-fourths of the last month's job postings for remote jobs require at least a Bachelor's degree.

Education Levels

Minimum Education Level	Total Ads	
Bachelor's degree	242	72.2%
High school diploma or equivalent	54	16.1%
Associate's degree	29	8.7%
Master's degree	9	2.7%
Doctoral or professional degree	1	0.3%
Unspecified/other	226	NA

Source: JobsEQ

New Job Posts by Date



Note: Data are subject to revision. Time series data can be volatile with trends unrelated to actual changes in demand; use with caution.

Non-Remote Job Ads

The tables on non-remote job ads are real time job postings over the last 30 days. The graphic below shows the fall and slow rise of the number of non-remote job ads posted from January 6th to July 6th. It also shows the trendline from this time last year, in grey.

Overall, non-remote job ads have steadily increased since they initially plummeted, along with remote jobs ads, around April 1st. There was a slight dip around the end of May and since the beginning of June there has been a slight gradual decline, not unlike the year before.

Though there has been a higher demand for stockers and order fillers over the last month, the need for registered nurses over the past half year has been greater. Though not insignificant, there has been the smallest need of first-line supervisors of production and operating workers over the last month and six months.

The overwhelming majority of job postings for non-remote positions require a minimum of a high school diploma or equivalent followed by a Bachelor's degree.

Non Remote Occupations, RTI 7/15

Occupation	Total Ads	
	30 days	6 months
Stockers and Order Fillers	798	1,976
Registered Nurses	744	2,214
Retail Salespersons	695	1,780
First-Line Supervisors of Retail Sales Workers	493	1,022
Heavy and Tractor-Trailer Truck Drivers	404	1,453
Laborers and Freight, Stock, and Material Movers, Hand	343	796
Customer Service Representatives	329	929
Fast Food and Counter Workers	318	669
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	286	777
First-Line Supervisors of Food Preparation and Serving Workers	275	549
Maintenance and Repair Workers, General	251	740
Licensed Practical and Licensed Vocational Nurses	244	675
Nursing Assistants	197	543
Production Workers, All Other	197	495
First-Line Supervisors of Production and Operating Workers	155	447
Total	9,887	27,149

Source: JobsEQ

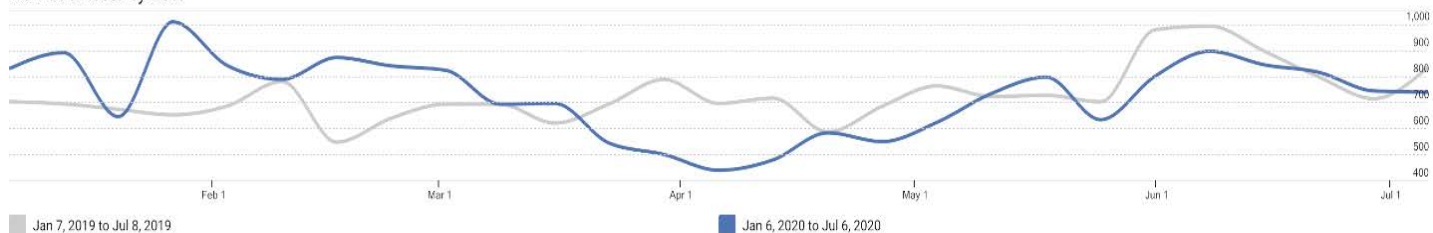
Education Levels

Minimum Education Level	Total Ads	
High school diploma or equivalent	3,183	84.2%
Bachelor's degree	340	9.0%
Associate's degree	201	5.3%
Master's degree	40	1.1%
Doctoral or professional degree	16	0.4%
Unspecified/other	6,107	NA

Source: JobsEQ

Overall, non-remote job postings saw a more noticeable dip relative to the prior year, particularly in March, April, and May, coinciding with the statewide shutdown orders.

New Job Posts by Date



Note: Data are subject to revision. Time series data can be volatile with trends unrelated to actual changes in demand; use with caution.

Awards and Graduation

Data for the most recent graduates is not yet available but from year to year, expected graduating classes is not likely to change much except if a college closes or a new major is opened or eliminated from the curriculum.

Registered nursing had the most graduates in the region with 615 awards followed by those in business administration and management, general and accounting. As is known, the region specializes in healthcare and social services, in education and industry, therefore it is not surprising that there are the most awards given out for nursing and a large amount of awards given in healthcare.

Top Awards in Lackawanna and Luzerne Counties, 2017-2018 year

Title	Certificates and 2yr Awards		Postgraduate Awards	Total Awards
	Awards	4yr Awards		
Registered Nursing/Registered Nurse	120	312	183	615
Business Administration and Management, General	75	210	130	415
Accounting	29	173	105	307
Liberal Arts and Sciences/Liberal Studies	163	93	0	256
Teacher Education and Professional Development, Specific Subject Areas, Other	0	3	208	211
Education, Other	0	0	193	193
Psychology, General	8	163	12	183
Physician Assistant	0	1	169	170
Biology/Biological Sciences, General	5	159	0	164
Health Services/Allied Health/Health Sciences, General	2	148	0	150
Licensed Practical/Vocational Nurse Training	149	0	0	149
Health Professions and Related Clinical Sciences, Other	0	140	0	140
Business/Commerce, General	75	61	0	136
Cosmetology/Cosmetologist, General	129	0	0	129
Health/Health Care Administration/Management	0	48	78	126
Total	1,984	3,502	2,897	8,383

Source: JobsEQ

Occupation Growth

Personal care aides, home health aides, and registered nurses are expected to experience the most employment growth over the next ten years. Though fast food and counter workers have the highest total demand, the occupation is not growing. The demand is a result of those exiting and transferring out of the occupation to a new one.

In general, many of the occupations experiencing growth fall within the healthcare or social services sector in some way. This is expected as a large amount of the population, the Baby Boomers, are expected to retire and reach their golden years over the next ten years so there would be an increase in personal and home care.

Lackawanna and Luzerne Counties, 2020Q1, by growth (top 15)¹

Occupation	Current			5-Year History		10-Year Forecast				
	Employment	Average Annual Wages ²	Online Job Ads ³	Employment Change	Annual %	Total Demand	Exits	Transfers	Employment Growth	Ann % Growth
					10.8%					
Personal Care Aides	6,379	\$25,600	189	2,558	%	11,144	5,163	4,535	1,446	2.1%
Home Health Aides	2,246	\$25,600	90	-200	-1.7%	3,269	1,328	1,426	515	2.1%
Registered Nurses	5,829	\$67,100	708	413	1.5%	3,444	1,658	1,540	246	0.4%
Cooks, Restaurant	2,190	\$26,400	123	205	2.0%	3,420	1,206	2,002	213	0.9%
Substance Abuse, Behavioral Disorder, and Mental Health Counselors	887	\$45,500	88	60	1.4%	1,168	310	677	181	1.9%
Medical Assistants	1,244	\$32,400	61	146	2.5%	1,611	512	933	166	1.3%
Fast Food and Counter Workers	6,834	\$20,400	243	270	0.8%	12,677	5,753	6,777	147	0.2%
Social and Human Service Assistants	747	\$32,300	253	30	0.8%	1,030	315	622	92	1.2%
Medical and Health Services Managers	766	\$90,900	123	92	2.6%	720	200	440	80	1.0%
Child, Family, and School Social Workers	828	\$39,000	21	21	0.5%	925	259	587	79	0.9%
Market Research Analysts and Marketing Specialists	820	\$56,400	8	149	4.1%	940	203	669	68	0.8%
Nurse Practitioners	356	\$99,600	53	84	5.5%	275	77	131	68	1.8%
Physical Therapists	493	\$86,000	63	38	1.6%	278	94	120	64	1.2%
Medical Secretaries and Administrative Assistants	816	\$31,800	99	56	1.4%	1,006	429	513	63	0.7%
Health Specialties Teachers, Postsecondary	522	\$109,000	14	50	2.1%	505	201	250	54	1.0%
Total - All Occupations	254,227	\$45,600	11,785	4,065	0.3%	276,270	110,802	175,994	-10,527	-0.4%

Source: JobsEQ

Awards and Occupations

In order to better understand where our employment and unemployment stands after calculating in recent graduates, an overall gap was calculated by adding together the award gap and projected annual supply gap. The occupation gap was used rather than pairing graduates with job openings in the real time job postings as some industries and occupations are overrepresented in job postings and some open positions are not privy to the public and are filled in house through promotions or otherwise.

Chmura Economics supplies an award gap table which shows a gap in the number of current awards given out to the number of occupations matched between CIP (awards) and SOC (occupations) codes. These data presume that graduates find work in the region from which they graduate. These data apply to current mismatches between education and the workforce. The economic consulting firm also have occupation gap data. The figure shows the gap or surplus of those trained for an occupation over the next ten years. This works on education level alone.

Those without award data have no required education that is a two year degree or higher. The awards do not account for certificates or other types of awards, such as a CDL license certificate.

Though the supply gap shows that there is a lack of registered nurses, the supply gap only accounts for education, not awards. Therefore, we know this region trains a large amount of nurses, as seen by the surplus in the award gap, so there might not be, or at least as large shown, an occupation gap if the education level (Bachelor's degree) is distributed evenly amongst the occupations requiring a BA/BS.

The same logic is why the region has a surplus of cashiers, though this may not be false, it is predicated on level of education (High School Diploma or equivalent). As it is with Lawyers, the occupation in the table with the largest overall gap. There is a supply gap of three, which is plausible, but an award gap of 40. This gap is a result of the area not having a law school to give degrees; those who receive degrees elsewhere come and work in the area.

Award and Occupation Gap

Occupation	Award Gap	Annual	Overall Gap
		Supply Gap	
Registered Nurses	281	(73)	208
Elementary School Teachers, Except Special Education	145	0	145
Health Specialties Teachers, Postsecondary	134	(8)	126
Cashiers		106	106
Accountants and Auditors	106	(9)	97
Directors, Religious Activities and Education	77	0	77
Fast Food and Counter Workers		76	76
Physical Therapists	79	(9)	70
Medical Scientists, Except Epidemiologists	67	(1)	66
Middle School Teachers, Except Special and Career/Technical Education	65	0	65
Postsecondary Teachers, All Other	63	0	63
Physician Assistants	61	(6)	55
Waiters and Waitresses		53	53
Medical and Health Services Managers	59	(12)	47
Retail Salespersons		42	42
Team Assemblers		21	21
Customer Service Representatives		18	18
Packers and Packagers, Hand		17	17
Laborers and Freight, Stock, and Material Movers, Hand		16	16
Office Clerks, General		16	16
Stockers and Order Fillers		16	16
General and Operations Managers	14	(20)	(6)
Calibration Technologists and Technicians and Engineering Technologists and Technicians, Except Drafters, All Other	(9)	0	(9)
Maintenance and Repair Workers, General		(10)	(10)
Heavy and Tractor-Trailer Truck Drivers		(11)	(11)
Occupational Therapy Assistants	(10)	(1)	(11)
Computer Occupations, All Other	(8)	(5)	(13)
Medical Assistants		(14)	(14)
Industrial Engineers	(14)	(2)	(16)
Licensed Practical and Licensed Vocational Nurses		(17)	(17)
Computer Systems Analysts	(12)	(6)	(18)
Child, Family, and School Social Workers	(11)	(9)	(20)
Substance Abuse, Behavioral Disorder, and Mental Health Counselors	(11)	(14)	(25)
Civil Engineers	(23)	(2)	(25)
Software Developers and Software Quality Assurance Analysts and Testers	(18)	(12)	(30)
Lawyers	(40)	(3)	(43)

Source: JobsEQ

Of these gaps and surpluses there are some possible career pathways from a surplus to a gap, or in one case from a gap to a surplus with more easily buildable skillset. All of the possible transitions come with an increase in pay. These pathways were created by matching the major occupation groups

together (first two digits of SOC code). For example, the 21-1000 SOC group (Counselors, Social Workers, and Other Community and Social Service Specialists) were linked to 21-2000 (Religious Workers) loosely based on the major occupation group SOC code and similar job attributes.

Possible Occupation and Award Gap Career Pathways

First 3-digits of 6-digit SOC	Overall surplus	Average wages		First 3-digits of 6-digit SOC	Overall gap	Average wages
11-9	Medical and Health Services Managers	\$90,900	→	11-1	General and Operations Managers	\$114,200
21-2	Directors, Religious Activities and Education	\$32,100	→	21-1	Child, Family, and School Social Workers	\$39,000
				21-1	Substance Abuse, Behavioral Disorder, and Mental Health Counselors	\$45,500
29-1	Registered Nurses	\$67,100	←	29-2	Licensed Practical and Licensed Vocational Nurses	\$45,400
29-1	Physical Therapists	\$86,000				
29-1	Physician Assistants	\$98,900				
53-7	Packers and Packagers, Hand	\$26,000	→	53-3	Heavy and Tractor-Trailer Truck Drivers	\$49,900
53-7	Laborers and Freight, Stock, and Material Movers, Hand	\$31,100				
53-7	Stockers and Order Fillers	\$27,600				
51-2	Team Assemblers	\$31,700	→	49-9	Maintenance and Repair Workers, General	\$36,400

Those who would like to be a registered nurse, physical therapist, or physician assistant can first become an LPN or LVN. The pathway from LPN to RN is particularly easy as an LPN would go from receiving orders from an RN to giving orders as the RN. There are similar programs for an LPN to PA transition. Training as an LVN or LPN to a PT is a less traditional route though there are some transferrable skills and knowledge sets.

The pathway of team assembler to maintenance and repair workers, general is different from the others as the occupations are not within the same major occupation group. When looking at the attributes of the occupations, they are similar hence why they are grouped together.

Synthesis

Unemployment Trends

Though manufacturing is currently experiencing the high initial claims being filed, those in accommodation and food service, health care and social assistance, and retail trade are struggling to gain employment back or obtain new employment. Accommodation and food services has the largest share of continued claims; the others mentioned have the next largest shares. The continuing repercussions of the statewide shutdown and general exercised caution are affecting accommodation through reduced business and leisure travel.

While unemployment has since fallen, uncertainty remains, especially as COVID cases persist. A new wave of viral activity or even localized outbreaks could necessitate further restrictions on business or undermine consumer confidence, hampering the already gradual pace of recovery.

Millennials are the generation most affected by COVID-related job disruptions and younger workers are accounting for a disproportionate share of unemployment claims. Focusing appropriate workforce development efforts on them is key to preparing the longevity of the workforce and employers abilities to stay relevant as automation grows and becomes more standardized.

Economy of Automated Jobs

During the red phase and beyond, many factories and warehouses have shut down or altered operations to protect their workers. Experts have predicted an increase in automation post-COVID, especially in environments where it keeps workers and consumers safe.

Of the top 15 occupations in Lackawanna and Luzerne County, just under 50 percent are highly susceptible to automation. The top five occupations in the two county area are given a high automatability score: Laborers and Freight, Stock, and Material Movers, Hand; Fast Food and Counter Workers; Retail Salespersons; Cashiers; and Personal Care Aides.

Occupations by automation score

Automatability score	Total employment	% of top 15 occupations total employment
High	39,130	48.6%
Medium	8,924	11.1%
Low	23,044	28.6%
NA	9,458	11.7%

Though personal care aides have a high automatability score, they are also the occupation projected to grow the most over the next ten years. When training those to be personal care aides or when retraining them, it is vital to instill continuous upskilling initiatives so that the region's occupation with the highest growth does not become the occupation that is the most automated.

Some of the region's occupations with the most employment are highly susceptible to automation. These include:

- Retail salespersons
- Laborers and freight, stock, and material movers, hand
- Food preparation workers
- Waiters and waitresses
- Combined food preparation and serving workers, including fast food
- Carpenters
- Cooks (restaurant)
- Construction laborer
- Accountants and auditors

These occupations deserve the most attention in terms of upskilling. These workers make up at least 27,546 individuals in our regional workforce.

The Intersection of Automation and 'Life-Sustaining' Determination

The following table combines top regional occupations and automation risk score classifications from the National League of Cities in "Assessing the Future of Our Work: Automation and the Role of Cities." If an occupation does not have a risk attached to it, it does not mean it is free from automation. For example, it is widely understood that cashiers hold a highly automated position. However, the report does not make this explicit in its tables, therefore for consistency only risks in the report were noted here.

Automation risk of top occupations in two county region, 2020Q1

Occupation	Employed	% in Non-Life-Sustaining Industries	Qualitative automation risk (High/Med/Low)	% of Workforce Susceptible to Automation
Retail Salespersons	6,754	64.2%	H	
Laborers and Freight, Stock, and Material Movers, Hand	8,777	25.0%	H	56.8%
Construction Laborers	1,809	93.3%	H	
Fast Food and Counter Workers	6,834	18.9%	H	
Customer Service Representatives	5,569	36.5%	M	
Elementary School Teachers, Except Special Education	1,952	98.6%	M	22.3%
Teaching Assistants, Except Postsecondary	1,972	93.6%	M	
Secondary School Teachers, Except Special and Career/Technical Education	1,505	98.8%	L	
First-Line Supervisors of Retail Sales Workers	2,590	53.5%	L	20.9%
General and Operations Managers	3,346	39.3%	L	
Childcare Workers	1,438	82.0%	L	
Office Clerks, General	6,100	45.4%	NA	
Cashiers	6,569	28.5%	NA	
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	3,358	47.7%	NA	NA
Team Assemblers	1,949	55.1%	NA	

Source: JobsEQ and NLC

The occupations that employ a large share of the region’s workers are all highly susceptible to automation: Laborers and Freight, Stock, and Material Movers, Hand; Fast Food and Counter Workers; and Retail Salespersons.

Construction laborers and retail salespersons both have percentages of their workforce determined to be non-life sustaining over 50 percent. Two-thirds of the top occupations at medium risk each have over 90 percent of their workforce classified as non-life-sustaining. Finally, three of four occupations with lower risk have a percentage of nonessential workers at 50 percent or over.

Job postings

A majority of job postings are for positions that are non-remote. A larger percentage of the non-remote positions have a higher automatability score than remote ones.

Automability Score	Non-remote	Remote
Low	46.2%	70.0%
Medium	30.8%	10.0%
High	23.1%	20.0%

Though there are 9,267 more job ads for non-remote jobs than remote ones, these jobs are at a higher risk of automation, especially in light of COVID.

Awards & The COVID Workforce

The following table are the occupations from the Award and Occupation gap table that have both an award and occupation gap. Occupations like lawyers were previously discussed in terms of why the overall gap could possibly be skewed as in-migration and out-migration are not taken into account with awards.

These occupations are the ones that are the highest priority for training, incentivizing education or reskilling, and/ or incentivizing those trained to come to the region. For example, there are award programs for computer occupations, other yet there is supply gap. In the 2017-18 year the area graduated 91 students who would be able to work in this occupation group yet there is still an award gap and there will be a supply gap if the number of

awards, or the number of graduates remaining in the area, does not increase.

However, there are no industrial engineering programs within the two county region so, the region must be able to attract some engineers educated elsewhere but not enough to meet the supply gap.

As mentioned before, the Federal Reserve Bank of Philadelphia noted that those affected by COVID economic repercussions would be:

- Under 25 years old
- Non-white or Latino
- Without a Bachelor’s degree (25 years and older)
- Enrolled in school (18-24 yrs.)
- Have a median income of \$23,339
- Wages makes up nearly half of household earnings
- Are more likely to rent their home
- Are more likely to work part time
- Less likely to have health insurance
- More likely to have an income below the poverty line
- Are housing cost burdened.

Occupations with award and supply gap

Occupation	Award Gap	Annual Supply Gap	Overall Gap
Occupational Therapy Assistants	(10)	(1)	(11)
Computer Occupations, All Other	(8)	(5)	(13)
Industrial Engineers	(14)	(2)	(16)
Computer Systems Analysts	(12)	(6)	(18)
Child, Family, and School Social Workers	(11)	(9)	(20)
Substance Abuse, Behavioral Disorder, and Mental Health Counselors	(11)	(14)	(25)
Civil Engineers	(23)	(2)	(25)
Software Developers and Software Quality Assurance Analysts and Testers	(18)	(12)	(30)
Lawyers	(40)	(3)	(43)

Source: JobsEQ

Populations affected most

Both the Philadelphia and St. Louis Federal Reserve Banks noted that more often than not minorities were at risk or harmed as a result of the COVID economy. Comparison of unemployment by race to overall population racial breakdown shows that Hispanic residents of Lackawanna and Luzerne Counties comprise a larger proportion of the unemployed than they do the county population as well as American Indians. The same can be said for Black and American Indian residents of Lackawanna County.

Though men have a higher labor force participation rate (81 percent Lackawanna, 78.8 percent Luzerne) than women (74.4 percent Lackawanna Counties, 74.2 percent Luzerne County) and there are more men than women in the workforce (147,567 men and 134,105 women) in both Luzerne and Lackawanna Counties, women have filed more continued unemployment claims than men.

Education and workforce pipeline

The occupation and award gap data show that we have an excess of nurses though it does not account for those who come to the area to receive an education or receive an education and leave the area. In order to keep up with the projected ten year growth demand, the area must determine why nurses do not remain in the area following graduation and how to incentivize them to stay.

When looking at the current award gaps and future occupation gaps, local education institutions should create talent retention programs to incentivize and create attachment to place for those graduating from regional schools who would otherwise leave the area.

It is currently unknown how and if there will be future delays in the pipeline due to COVID affecting schooling.

Recommendations

The following recommendations are made based on the data above with the consideration that pandemic economic distress will cause further hardships for certain populations, industries, and occupations, and these impacts will vary as the pandemic and economic recovery continue.

Continuous regional upskilling and reskilling programs

These programs are not limited to implementation by organizations, businesses, and companies; locales have been investing in upskilling initiatives for a plethora of reasons, but one is ROI. This capital is generally put back into the local economy thus creating a more prosperous region. Luxembourg, Canada, and the UK have all instituted some sort of larger scale workforce program. Florida has also done the same. Complete Florida helps employers support their employees' education goals and is free to employers as it is funded by the state to create a stronger, more highly educated workforce.

A deterrent to organizations upskilling is cost. The World Economic Forum estimates a costs of \$24,800 per person with costs being higher for high-tech industries or smaller groups. But a larger regional effort across industries will significantly drop costs, with estimates around \$5-10K per person.³⁶ As much as costs may be a deterrent, an analysis of ROI for ongoing upskilling program suggested that \$1 invested in the workforce generally returns \$2 in revenues or savings.

Leaders in the region can advocate to start a regional upskilling program for the workforce. A group of experts and leaders in the region can identify industry and occupation groups, starting with those most susceptible to automation who are also largely affected by COVID shutdown and create a regional strategic workforce plan.

Programs can partner with local education institutions, like local trade schools, community colleges, and four-year institutions for continued learning, continuous professional development, and reskilling programs. When undertaking an

up/reskilling program, the strategic plan should identify and/or create qualitative and quantitative benchmarks and reevaluate them as well as the overall plan often.

If done at an organizational level, one approach is to start a modern apprentice program. For example, modern apprenticeship program like Adobe- create a program individuals can apply and be accepted to. They then go through a training period after which the enrollees have a guaranteed job. They are paid during training.

If smaller groups wish to upskill, they can use the same method as the recommended regional approach. About ten percent of a workforce is at-risk in any given year so an employer can focus on that group for up/reskilling at one time. Over a five year period, half the workforce has been retrained and the cost burden is not as taxing at first.

Regions and organizations can upskill/ reskill in other ways. Offering an education stipend or tuition assistance programs as a benefit builds a culture of learning.

Human centered workforce approach

As mentioned earlier, workforce development needs to account for the human factor rather than just what makes up a job. Various stressors, including biological, psychological, and social, can affect on-the-job learning as well as overall job retention. Furthermore, many workers may have home lives that are highly traumatic which could involve substance abuse, housing instability, food insecurity, poverty, physical / emotional abuse, and single parent households. These traumas are mostly prevalent in youth, but are also seen in adults. Seeing that reports show that millennials are being hit the hardest and that most recent initial claims show that younger generations are filing more often than older, trauma needs to be accounted for. Taking age into further consideration, a human centered approach is needed for the younger generations especially as the Baby Boomers continue to reach retirement age and leave the workforce in large numbers, with COVID having surely sped up the phenomenon.

³⁶ Strategists Guide to Upskilling.

Following the onset of the pandemic, the added stress of living through a pandemic, concerns about personal protective equipment, new stresses about childcare and remote schooling of children are just some of the many more traumatic experiences and stressors that affect workers and need to be accounted for in workforce development.

The data also shows that the top occupations in the region are also the largest count of nonessential workers and non-remote jobs are generally lower paid and without healthcare. In order to prepare our workforce for automation and to shoulder the ongoing recession along with the pandemic recession, the region needs family sustaining jobs. When employees in these positions are upskilled they should have the ability to access healthcare through their employer.

Equity in Workforce Development

Both the Federal Reserve Bank of Philadelphia found that workers who are at risk or are unemployed due to COVID are non-white or Latino and the Federal Reserve Bank of St. Louis found that those employed in occupations at risk of automation are overwhelmingly minority workers.

The region has seen a large increase in the Hispanic population along with more gradual increases of other non-white minorities over the past few years.

Like how Pete's Fresh Market partnered with Institute del Progreso Latino in Chicago to help Latino immigrants with upskilling and professional development, so too could leaders in the two county region and in the greater NEPA region as a whole. Furthermore, the region could also partner with other minority groups and local education institutions to provide further education and professional development to non-white populations.

Women are experiencing longer times at getting their jobs back based on their overrepresentation in continued unemployment claims compared to their numbers in the workforce. This could be based upon a number of things like the gender breakdown of particular occupations and industries that are predominantly female. Similar to how the region could partner with minority groups and local education institutions, it could do the same for women's centers or groups in the area, with a special focus on women of color as they are a part of two different groups suffering doubly.

Childcare Initiatives

This recommendation can be easily tied into the previous on equity and justice in the workforce. Women are experiencing longer wait times of getting their jobs back or being hired for a new position. This can be attributed to many things but one that must not be overlooked is the lack of childcare. The issue of childcare can be extremely problematic for single female households, as well as male, as they are unable to leave their children to work.

Getting back into the workforce, childcare has become much more difficult. There's a need for job placement and training services to provide as much help as they can around it. Employment and workforce agencies should inquire about a person's childcare situation and help them find a job that will fit the person's situation. If a person needs to be reskilled, the agencies, businesses, or regional initiatives must find a way that makes it as childcare friendly as possible. These efforts should make sure childcare is not a barrier or burden to employment.

Targeted Upskilling Initiatives

The following recommendations will focus on the following occupations but can and should be applied more broadly:

- Retail salespersons
- Laborers and freight, stock, and material movers, hand
- Food preparation workers
- Waiters and waitresses
- Combined food preparation and serving workers, including fast food
- Carpenters
- Cooks (restaurant)
- Construction laborer
- Accountants and auditors

Apprenticeships

Many upskilling initiatives are possible for our area but some are very limited to the types of occupations they would serve. For example, apprenticeships are great opportunities for people to gain knowledge in trades and other non-trade occupations. But in looking at which occupations are most affected by automation and the state shutdown, apprenticeships are available for carpenters, cooks (restaurant), and construction laborers. In order to expand this upskilling initiative, local unions and other similar organizations could partner together to create joint apprenticeships so that multiple resources can be shared.

Employee Training Innovations

As retail salespersons is the third largest occupation category in the two county region, and as consumer shopping habits have shifted through online shopping and online research of products before arriving to the store combined with coming automation, these workers are in desperate need of upskilling practices.

The Harvard Business review notes that while retail workers are outpaced by automation they can be reskilled to serve in a customer service capacity while others may supervise robots unloading pallets in the back of the store. Others may be moved to distribution centers to work within e-commerce.

New data analyst roles will be available to improve marketing.³⁷ Businesses can upskill and reskill their own employees through on-the-job employee training. Though the following are examples from large organizations and companies, they can be made to scale for our region.

Disney has developed a coding program for women in non-technical roles to switch careers within the company after a training and apprenticeship period.³⁸ The employees complete three months of training and then enter into two half year apprenticeships within the company after which they'll have a job opportunity within the company. A program like this promotes retention and loyalty but also reskills employees to work in a capacity that would not be eliminated due to automation.

The Los Angeles Rams have used gamification tools, or phone-based games, to upskill their employees. Their method teaches employees history of the organization and sales techniques.

Similarly, some long-term and home health care companies and facilities services companies use the service MOBILE UP to upskill their workforce. It is an employee training program via cell phone. The program targets low-income immigrant service workers so they can gain skills, retrain, and improve English language skills. The coding program and gamification program suggestions are not limited to retail salespersons; they would be highly applicable

³⁷ Harvard Business Review. 2020. It's time for a C-Level Role Dedicated to Reskilling Workers.

³⁸ Disney's CODE: Rosie.

for laborers and freight, stock, and material movers too.

Management Skill Building

The creation of a management course for those in entry level positions who would like to rise in the ranks at their employer would help those in jobs at high-risk of automation to upskill and remain relevant in their field while also garnering a higher pay.

This course can be developed through collaboration of professionals at regional business schools, workforce development consultants, and regional business leaders as well as those business owners who would like to implement the program at their workplaces. This type of collaborations would allow the business owners to make sure the program has what their employees and workforce need, would ensure that the course is feasible and efficient thanks to business school professionals, and would let business leaders and workforce development individuals to make sure the program is built sustainably for future workforce and management needs.

The course can be built off the practice set forth by Goodwill Industries of San Diego. This type of program would be great for all the occupations highly susceptible to automation (mentioned above) and more.

Creation of Certificate Programs

Home health aides and personal care aides are projected to see the most growth over the next ten years in the region yet they are some of the lowest paid workers in the Health and health care industry and carry a huge responsibility. The creation of a certificate program for these workers would give graduates a leg up and an opportunity for higher pay and allow for a greater consistency of quality of workers. The creation of a certificate program could also lower the automatability score of the occupations: Home Health Aides at 39 percent (M) and Personal care aides at 74 percent (H).

Focus on New Entry Level Jobs Resistant to Automation

The region as a whole, by means of a regional workforce development taskforce, and/or employer collaborate, should identify appropriate crosswalks between occupations they foresee changing to automation and more automation-resistant occupations. For example, this could include skilling stock clerks for customer service/ experience positions in a store.

Furthermore within this strategic workforce plan, other types of employment should be identified like the jobs that will be created by automation such as programmer and data analysts. The region and employers can find paths employees can take to train for these new positions and inform the workforces of them. They can also ascertain which jobs they can provide in-house employee training or partner with a local education institution for reskilling.

Statewide Upskilling Program

Policy leaders and legislators can advocate for the commonwealth to adopt and implement a program similar to Florida's Complete Florida program, which allows residents who have some college credits but no degree to complete their training. A similar program in Pennsylvania could be opened up to those who only have a high school diploma or equivalent who wish to obtain a higher education diploma.

Over a third of regional residents only have a high school diploma. In an automating world in which a large amount of the region's, and nation's, frontline workers may only hold a high school diploma and are not yet equipped to move into positions that are not automation sensitive without a certificate, license, and/or degree.

Educational Attainment

	Lackawanna	Luzerne	2 county region	PA	FL	USA	Region to PA difference	Region to USA difference	PA to FL difference
Less than 9th grade	2.6%	3.0%	2.8%	3.1%	4.6%	5.0%	-9.7%	-44.0%	-32.6%
9th to 12th grade, no diploma	5.9%	7.4%	6.7%	5.9%	6.9%	6.7%	12.7%	-0.7%	-14.5%
High school graduate (includes equivalency)	36.4%	39.2%	37.8%	34.6%	28.7%	26.9%	9.2%	40.5%	20.6%
Some college, no degree	15.6%	17.3%	16.5%	15.9%	19.7%	20.3%	3.5%	-19.0%	-19.3%
Associate's degree	10.6%	9.5%	10.1%	8.6%	9.7%	8.6%	16.9%	16.9%	-11.3%
Bachelor's degree	18.3%	14.9%	16.6%	19.2%	19.1%	20.0%	-13.5%	-17.0%	0.5%
Graduate or professional degree	10.5%	8.7%	9.6%	12.7%	11.3%	12.6%	-24.4%	-23.8%	12.4%
High school graduate or higher	91.4%	89.6%	90.5%	91.0%	88.5%	88.3%	-0.5%	2.5%	2.8%
Bachelor's degree or higher	28.8%	23.6%	26.2%	31.8%	30.4%	32.6%	-17.6%	-19.6%	4.6%

Source: US Census Bureau, American Community Survey 1-year estimates 2018

The region's share of those who have some college but no degree is slightly higher than the Pennsylvania averages but much lower than the national. However, the share of high school graduates is significantly higher than the state and both the region and the state are largely higher than the national as well as Florida's average.

The program could also be opened up to educational institutions beyond college degree programs, like trade schools.

Furthering equity and justice in workforce development through government programs, the region and/or the Commonwealth can institute a dedicated taskforce and later develop a program for

minorities, Latino and other immigrants that would act similarly as the Institute del Progreso Latino in Chicago helps Latino immigrants with upskilling and professional development.

When looking at the difference between educational attainment of whites compared to that of minorities, there is a stark difference. Black and Hispanic populations all have smaller shares of individuals with a high school diploma or higher and much smaller amounts of those with Bachelor's degrees or higher. This difference is even harsher when looking at men, especially those with Bachelor's degrees. The Hispanic population sees greater disparities when looking at both education thresholds. The full table is available in the appendix.

Educational Attainment differences by race, difference from white alone group

		US			PA			2 County region		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
Black alone	High school graduate or higher	-4%	-5%	-4%	-6%	-5%	-6%	-5%	-6%	-3%
	Bachelor's degree or higher	-35.1%	-43.0%	-28.6%	-40.5%	-46.8%	-35.5%	-60.4%	-78.4%	-39.8%
Hispanic or Latino	High school graduate or higher	-22.7%	-24%	-22%	-21%	-23%	-20%	-26%	-29%	-23%
	Bachelor's degree or higher	-49.9%	-54.0%	-46.1%	-46.0%	-50.2%	-41.9%	-54.0%	-61.8%	-46.0%

Source: US Census Bureau, American Community Survey 1-year estimates 2018

Considering the vast differences in education, stakeholders can target their upskilling and professional development efforts at minorities, particularly males and Latinos.

If it is a state-wide program, the government can partner with the state schools around the Commonwealth, along with any other schools that would like to participate, to offer classes- academic and professional development- for those in the program.

Conclusion

The region is well suited for upskilling and reskilling programs, at an individual and regional level. The analysis identified over 27,000 employed in occupations highly susceptible to automation, or just over 10 percent of the regional workforce. Many of the more susceptible positions are also classified as non-essential under Governor Wolf's initial statewide shutdown. These occupations are well situated to start an up/reskilling program as soon as possible so that if another shutdown occurs, nonessential employees can continue up/reskilling at home through online learning or otherwise.

Preparing our workforce for automation during COVID is not only timely, it is necessary. Past Institute reports have identified skills gaps^{39,40} and as we enter a workforce crisis originally brought about by an aging, shrinking workforce lacking

certain hard and soft skills, and now amplified by the pandemic recession, it is imperative that our region takes the time and money to up/reskill to not only buffer ourselves from delayed economic repercussions of the pandemic but also to create a return of investment that will only benefit our community.

Though we can prepare for the future with knowledge that is known to us, there are some things we cannot be sure of just yet. As previously mentioned, we should prepare for a potential gap, or break, in the education and workforce pipeline in the future. As a result of all that has occurred thus far, there will be rethinking about how we, as a region, as a state, as nation, do schooling and job training in the next few years. This reevaluation should help further prepare us for more widespread challenges at filling positions and classrooms than before.

The ripple effects of these disruptions can cause medium to long term delays which could go on for years. Another unknown is how the pandemic and how it has been handled by industries and authority figures will shape how students choose their careers- will it spur them to go into healthcare or the biological sciences? There are several unanswered questions before the pandemic and there are even more now, but there are several ways we as a region can attempt to answer them.

³⁹ The Institute. 2020. Skills Shortages: Exploring the Skills Most Pertinent to the Area's Emerging Workers.

⁴⁰ The Institute. 2020. Soft Skills: How Emotional Intelligence Generates Workplace Success.

Appendix

Automatability of jobs

TABLE 1.1 LOW AUTOMATABILITY - NO BACHELORS DEGREE REQUIRED

Occupation Titles	New Jobs (in thousands), 2016-2026	Automatability	Education for Entry	Median Income
First-line supervisors of construction trades and extraction workers	75.8	17%	High school diploma or GED	\$ 62,980
First-line supervisors of office and administrative support workers	51.2	1%	High school diploma or GED	\$ 54,340
Electricians	59.6	15%	High school diploma or GED	\$ 52,720
Sales representatives, services, all other	94.9	19%	High school diploma or GED	\$52,490
First-line supervisors of retail sales workers	57.7	28%	High school diploma or GED	\$39,040
Self-enrichment education teachers	57.4	13%	High school diploma or GED	\$ 37,330
Social and human service assistants	63.9	13%	High school diploma or GED	\$ 31,810
Stock clerks and order fillers	100.9	13%	High school diploma or GED	\$23,840
Childcare workers	84.3	8%	High school diploma or GED	\$ 21,170
Licensed practical and licensed vocational nurses	88.9	6%	Postsecondary nondegree award	\$44,090
Heavy and tractor-trailer truck drivers	108.4	0%	Postsecondary nondegree award	\$ 41,340
Medical assistants	183.9	30%	Postsecondary nondegree award	\$31,540
Nursing assistants	173.4	N/A	Postsecondary nondegree award	\$ 26,590
Hairdressers, hairstylists, and cosmetologists	80.1	11%	Postsecondary nondegree award	\$24,260
Preschool teachers, except special education	50.1	1%	Associate degree	\$ 28,790

SOURCE: Bureau of Labor Statistics, Table 1.7 & The Future of Employment, Oxford Martin

Figure 2. Source: NLC. 2018. *Assessing the Future of Our Work*.

TABLE 1.2 LOW AUTOMATABILITY - BACHELOR'S DEGREE NEEDED

Occupation Titles	New Jobs (in thousands), 2016-2026	Automatability	Education for Entry	Median Income
Financial managers	108.6	7% (low)	Bachelor's degree	\$121,750
Managers, all other	79.5	25% (low)	Bachelor's degree	\$104,970
Software developers, applications	255.4	13% (low)	Bachelor's degree	\$100,080
General and operations managers	205.2	16% (low)	Bachelor's degree	\$ 99,310
Medical and health services managers	72.1	1% (low)	Bachelor's degree	\$ 96,540
Computer systems analysts	54.4	1% (low)	Bachelor's degree	\$ 87,220
Business operations specialists, all other	90.3	23% (low)	Bachelor's degree	\$ 69,040
Registered nurses	438.1	1% (low)	Bachelor's degree	\$ 68,450
Secondary school teachers, except special and career/technical education	76.8	1% (low)	Bachelor's degree	\$ 58,030
Nurse practitioners	56.1	N/A	Master's degree	\$100,910
Lawyers	65.0	4% (low)	Doctoral or professional degree	\$118,160
Health specialties teachers, postsecondary	60.6	N/A	Doctoral or professional degree	\$ 99,360
Physical therapists	67.1	2% (low)	Doctoral or professional degree	\$ 85,400

SOURCE: Bureau of Labor Statistics, Table 1.7 & The Future of Employment, Oxford Martin

Figure 3. Source: NLC. 2018. *Assessing the Future of Our Work*.

TABLE 2 JOBS WITH MEDIUM AUTOMATABILITY

Occupation Titles	New Jobs (in thousands), 2016-2026	Automatability	Education for Entry	Median Income
Janitors and cleaners, except maids and housekeeping cleaners	236.5	66%	No formal educational credential	\$24,190
Maids and housekeeping cleaners	87.9	69%	No formal educational credential	\$21,820
Plumbers, pipefitters, and steamfitters	75.2	35%	High school diploma or equivalent	\$51,450
Maintenance and repair workers, general	112.5	64%	High school diploma or equivalent	\$36,940
Customer service representatives	136.3	61%	High school diploma or equivalent	\$32,300
First-line supervisors of food preparation and serving workers	87.6	63%	High school diploma or equivalent	\$31,480
Light truck or delivery services drivers	62.1	69%	High school diploma or equivalent	\$ 30,580
Home health aides	431.2	39%	High school diploma or equivalent	\$22,600
Dental assistants	64.6	51%	Postsecondary nondegree award	\$36,940
Teacher assistants	109.5	56%	Some college, no degree	\$ 25,410
Computer user support specialists	72.1	65%	Some college, no degree	\$49,390
Market research analysts and marketing specialists	138.3	55%	Bachelor's degree	\$62,560
Elementary school teachers, except special education	104.1	64%	Bachelor's degree	\$ 55,800

SOURCE: Bureau of Labor Statistics, Table 1.7 & The Future of Employment, Oxford Martin

Figure 4. Source: NLC. 2018. *Assessing the Future of Our Work*.

TABLE 3 JOBS WITH HIGH AUTOMATABILITY

Occupation Titles	New Jobs (in thousands), 2016-2026	Automatability	Education for Entry	Median Income
Construction laborers	150.4	88%	\$33,430	No formal educational credential
Landscaping and grounds keeping workers	135.2	81%	\$26,320	No formal educational credential
Laborers and freight, stock, and material movers, hand	199.7	85%	\$25,980	No formal educational credential
Cooks, restaurant	145.3	96%	\$24,140	No formal educational credential
Retail salespersons	79.7	92%	\$22,680	No formal educational credential
Food preparation workers	68.6	87%	\$21,440	No formal educational credential
Walters and waitresses	182.5	94%	\$19,990	No formal educational credential
Combined food preparation and serving workers, including fast food	579.9	92%	\$19,440	No formal educational credential
Sales representatives, wholesale and manufacturing, except technical and scientific products	76.4	85%	\$57,140	High school diploma or equivalent
Carpenters	83.8	72%	\$43,600	High school diploma or equivalent
Billing and posting clerks	70.7	96%	\$36,150	High school diploma or equivalent
Medical secretaries	129.0	95%	\$33,730	High school diploma or equivalent
Receptionists and information clerks	95.5	85%	\$27,920	High school diploma or equivalent
Security guards	70.6	84%	\$25,770	High school diploma or equivalent
Nonfarm animal caretakers	58.5	82%	\$21,990	High school diploma or equivalent
Personal care aides	777.6	74%	\$21,920	High school diploma or equivalent
Management analysts	115.2	79%	\$81,330	Bachelor's degree
Accountants and auditors	139.9	94%	\$68,150	Bachelor's degree
Teachers and instructors, all other	98.0	96%	\$30,110	Bachelor's degree

SOURCE: Bureau of Labor Statistics, Table 1.7 & The Future of Employment, Oxford Martin

Reskilling: target job matches Figure 5. Source: NLC. 2018. *Assessing the Future of Our Work*.

'Good-fit' job transition options for roles within Office and Administrative job families

Starting Job		Target Job
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	→	Billing, Cost, and Rate Clerks
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	→	First-Line Supervisors of Office and Administrative Support workers
Executive Secretaries and Executive Administrative Assistants	→	Human Resource Specialists
Legal Secretaries	→	Paralegals and Legal Assistants
Executive Secretaries and Executive Administrative Assistants	→	Property, Real Estate, and Community Association Managers
Office Clerks, General	→	Customer Service Representatives
Tellers	→	First-Line Supervisors of Food Preparation and Serving Workers
Executive Secretaries and Executive Administrative Assistants	→	Administrative Service Managers
Data Entry Keyers	→	Medical Secretaries
Bookkeeping, Accounting, and Auditing Clerks	→	Accountants
Word processors and typists	→	Real Estate sales Agents
Executive Secretaries and Executive Administrative Assistants	→	Training and Development Specialists
Computer Operators	→	Network and Computer Systems Administrators
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	→	Meeting, Convention, and Event Planners
Tellers	→	Opticians, Dispensing
Data Entry Keyers	→	Interviewers, except Eligibility and Loan
Postal Service Mail Carriers	→	Brickmasons and Blockmasons
Office Machine Operators, Except Computer	→	First-line supervisors of Retail Sales Workers
File Clerks	→	Eligibility Interviewers, Government Programs
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	→	Paralegals and Legal Assistants

Source: World Economic Forum: Towards a Reskilling Revolution

'Good-fit' job transition options for roles within Production job families

Starting Job		Target Job
Assembly Line Workers	→	Construction Laborers
Electrical and Electronic Equipment Assemblers	→	Electricians
Inspectors, Testers, Sorters, Samplers, and Weighers	→	Production, Planning, and Expediting Clerks
Printing Press Operators	→	Farm and Ranch Managers
Inspectors, Testers, Sorters, Samplers, and Weighers	→	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand
Molding, Coremaking, and Casting Machine Setters, Operators and Tenders, Metal and Plastic	→	Industrial Machinery Mechanics
Extruding and Drawing Machine Setters, Operators and Tender, Metal and Plastics	→	Roustabouts, Oil and Gas

Cutting, Punching, and Press Machine Setters, Operators and Tender, Metal and Plastic	→	Construction Laborers
Electromechanical Equipment Assemblers	→	Electricians
Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators and Tender, Metal and Plastics	→	Sheet Metal Workers
Structural Metal Fabricators and Fitters	→	Pipelayers
Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	→	Structural Iron and Steel Workers
Inspectors, Testers, Sorters, Samplers, and Weighers	→	Quality Control Analysis
Prepress Technicians and Workers	→	Farm and Ranch Managers
Inspectors, Testers, Sorters, Samplers, and Weighers	→	Civil Engineering Technicians
Engine and Other Machine Assemblers	→	Electricians
Cutting, Punching, and Press Machine Setters, Operators and Tender, Metal and Plastic	→	Tie and Marble Settlers
Grinding and Polishing Workers, Hand	→	Automotive Body and Related Repairers
Tool and Die Makers	→	Industrial Machinery Mechanics
Photographic Process Workers and Processing Machine Operators	→	Computer User Support Specialists

Source: World Economic Forum: Towards a Reskilling Revolution

Greater NEPA Region nonessential industry / occupation mix data

Occupation Distribution for Health Care and Social Assistance in Greater NEPA Region, Baseline

Occupation	Employed
Registered Nurses	13,208
Personal Care Aides	11,267
Nursing Assistants	7,992
Licensed Practical and Licensed Vocational Nurses	3,676
Home Health Aides	3,567
Medical Assistants	2,669
Office Clerks, General	2,362
Childcare Workers	2,268
Receptionists and Information Clerks	1,929
Medical Secretaries	1,896

Nonessential 4-digit NAICS code Distribution for Health Care and Social Assistance in Greater NEPA Region, 2020Q11

Industry	Employed
Child Day Care Services	5,325
Offices of Dentists	3,153

Occupation Distribution for Retail Trade in Greater NEPA Region, Baseline

Occupation	Employed
Retail Salespersons	15,245
Cashiers	14,473
Stock Clerks and Order Fillers	6,138
First-Line Supervisors of Retail Sales Workers	5,998
Customer Service Representatives	1,891
Automotive Service Technicians and Mechanics	1,644
Laborers and Freight, Stock, and Material Movers, Hand	1,462
Pharmacy Technicians	1,395
Combined Food Preparation and Serving Workers, Including Fast Food	1,282
Office Clerks, General	1,173

**Nonessential 4-digit NAICS code Distribution for Retail Trade in in
Greater NEPA Region, 2020Q11**

Industry	Employed
Automobile Dealers	5,745
Health and Personal Care Stores	4,482
Clothing Stores	2,540
Beer, Wine, and Liquor Stores	1,675
Electronics and Appliance Stores	1,328
Lawn and Garden Equipment and Supplies Stores	967
Other Motor Vehicle Dealers	684
Shoe Stores	637
Furniture Stores	624
Home Furnishings Stores	567
Jewelry, Luggage, and Leather Goods Stores	363

Occupation Distribution for Manufacturing in Greater NEPA Region, Baseline

Occupation	Employed
Team Assemblers	4,038
First-Line Supervisors of Production and Operating Workers	2,765
Laborers and Freight, Stock, and Material Movers, Hand	2,609
Packaging and Filling Machine Operators and Tenders	2,197
Inspectors, Testers, Sorters, Samplers, and Weighers	1,938
Helpers--Production Workers	1,496
Maintenance and Repair Workers, General	1,440
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	1,440
Paper Goods Machine Setters, Operators, and Tenders	1,399
Welders, Cutters, Solderers, and Brazers	1,376

**Nonessential 4-digit NAICS code Distribution for Manufacturing in in
Greater NEPA Region, 2020Q11**

Industry	Employed
Fabric Mills	871
Textile Furnishings Mills	529
Cut and Sew Apparel Manufacturing	304
Textile and Fabric Finishing and Fabric Coating Mills	215
Apparel Accessories and Other Apparel Manufacturing	159
Other Textile Product Mills	146
Tobacco Manufacturing	145
Apparel Knitting Mills	57
Fiber, Yarn, and Thread Mills	53
Other Leather and Allied Product Manufacturing	15
Footwear Manufacturing	12
Leather and Hide Tanning and Finishing	5

**Occupation Distribution for Accommodation and Food Services in Greater NEPA
Region, Baseline**

Occupation	Employed
Combined Food Preparation and Serving Workers, Including Fast Food	11,872
Waiters and Waitresses	8,613
Cooks, Restaurant	4,831
First-Line Supervisors of Food Preparation and Serving Workers	2,856
Maids and Housekeeping Cleaners	2,734
Bartenders	2,275
Dishwashers	1,726
Hotel, Motel, and Resort Desk Clerks	1,596
Dining Room and Cafeteria Attendants and Bartender Helpers	1,436
Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	1,382

**Nonessential 4-digit NAICS code Distribution for
Accommodation and Food Services in in Greater
NEPA Region, 2020Q11**

Industry	Employed
Special Food Services	4,155
Drinking Places (Alcoholic Beverages)	1,706

Occupation Distribution for Educational Services in Greater NEPA Region, Baseline

Occupation	Employed
Elementary School Teachers, Except Special Education	5,312
Secondary School Teachers, Except Special and Career/Technical Education	4,635
Teacher Assistants	3,718
Middle School Teachers, Except Special and Career/Technical Education	2,179
Substitute Teachers	1,785
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	1,438
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	1,307
Office Clerks, General	1,285
Education Administrators, Elementary and Secondary School	874
Teachers and Instructors, All Other	759

**Nonessential 4-digit NAICS code Distribution
for Educational Services in in Greater NEPA
Region, 2020Q11**

Industry	Employed
Elementary and Secondary Schools	30,578
Colleges, Universities, and Professional Schools	9,086
Junior Colleges	1,522
Other Schools and Instruction	1,037
Technical and Trade Schools	569
Educational Support Services	215
Business Schools and Computer and Management Training	112

Occupation	Total Ads	Description	Education (entry level, otherwise dominant education of those employed in occupation)	entry level annual wages	licensing/ registration	top five attributes	apprenticeable specialties (Rapids code and title)	work experience needed	on the job training needed	on the job
Stockers and Order Fillers	827	Receive, store, and issue sales floor merchandise, materials, equipment, and other items from stockroom, warehouse, or storage yard to fill shelves, racks, tables, or customers' orders. May mark prices on merchandise and set up sales displays. Excludes "Laborers and Freight, Stock, and Material Movers, Hand" (53-7062), and "Shipping, Receiving, and Traffic Clerks" (43-5071).	High school diploma or equ	\$19,600	na	na	na	no	short term	short term
Retail Salespersons	772	Sell merchandise, such as furniture, motor vehicles, appliances, or apparel to consumers. Excludes "Cashiers" (41-2011).	55.2 percent have no colleg	\$18,500	no	sales and marketing, customer and personal service, English language,	no	no	short term	short term
Registered Nurses	718	Assess patient health problems and needs, develop and implement nursing care plans, and maintain medical records. Administer nursing care to ill, injured, convalescent, or disabled patients. May advise patients on health maintenance and disease prevention or provide case management. Licensing or registration required. Includes Clinical Nurse Specialists. Excludes "Nurse Anesthetists" (29-1151), "Nurse Midwives" (29-1161), and "Nurse Practitioners" (29-1171).	Most have a bachelor's deg	\$50,600	yes	medicine and dentistry, psychology, English language, customer and personal service, and education and training	na	no	no	no
First-Line Supervisors of Retail Sales Workers	467	Directly supervise and coordinate activities of retail sales workers in an establishment or department. Duties may include management functions, such as purchasing, budgeting, accounting, and personnel work, in addition to supervisory duties.	Over a third have a high sch	\$27,900	no	customer and personal service, administration and management, sales and marketing, English language, and education	0587- Manager, Retail	less than five	none	none
Heavy and Tractor-Trailer Truck Drivers	382	Drive a tractor-trailer combination or a truck with a capacity of at least 26,000 pounds Gross Vehicle Weight (GVW). May be required to unload truck. Requires commercial drivers' license.	High school diploma or equ	\$35,300	commercial dri	customer and personal	0980- Truck Driver, He	none	short term	short term
Driver/Sales Workers	363	Drive truck or other vehicle over established routes or within an established territory and sell or deliver goods, such as food products, including restaurant take-out items, or pick up or deliver items such as commercial laundry. May also take orders, collect payment, or stock merchandise at point of delivery. Includes newspaper delivery drivers. Excludes "Coin, Vending, and Amusement Machine Servicers and Repairers" (49-9091) and "Light Truck or Delivery Services Drivers" (53-3033).	high school diploma or equ	\$18,200	na	customer and personal service, transportation, English language, Public Safety and Security, Sales and Marketing	no	no	short term	short term
Laborers and Freight, Stock, and Material Movers, Hand	338	Manually move freight, stock, or other materials or perform other general labor. Includes all manual laborers not elsewhere classified. Excludes "Material Moving Workers" (53-7011 through 53-7199) who use power equipment. Excludes "Construction Laborers" (47-2061) and "Helpers, Construction Trades (47-3011 through 47-3019).	Over half have a high sc	\$23,100		English language, mathematics, transportation, mechanical, public safety and security	no	no	short term	short term
Customer Service Representatives	326	Interact with customers to provide information in response to inquiries about products and services and to handle and resolve complaints. Excludes individuals whose duties are primarily installation, sales, or repair.	High school diploma or equ	\$25,000		customer and personal service, English language, clerical, computers and electronics, education and	no	no	short term	short term
Social and Human Service Assistants	293	Assist in providing client services in a wide variety of fields, such as psychology, rehabilitation, or social work, including support for families. May assist clients in identifying and obtaining available benefits and social and community services. May assist social workers with developing, organizing, and conducting programs to prevent and resolve problems relevant to substance abuse, human relationships, rehabilitation, or dependent care. Excludes "Rehabilitation Counselors" (21-1015), "Psychiatric Technicians" (29-2053), "Personal Care Aides" (39-9021), and "Eligibility Interviewers, Government Programs" (43-4061).	Over a third have a bachelo	\$24,200	na	psychology, customer and personal service, English language, therapy and counseling, and sociology and anthropology	na	no	short term	short term
Fast Food and Counter Workers	289	na	High school diploma or equ	\$16,900	na	no	no	no	short term	short term

Source: JobsEQ

Educational Attainment differences by race and gender, difference from white alone group

	US						PA						Lackawanna						Luzerne						2 County region							
	Total		Male		Female		Total		Male		Female		Total		Male		Female		Total		Male		Female		Total		Male		Female			
White alone	90.2%	89.5%	90.8%	92.3%	91.8%	92.8%	91.8%	91.8%	91.8%	91.6%	92.0%	91.2%	90.2%	92.2%	91.5%	90.9%	92.1%															
Bachelor's degree or higher	33.9%	33.5%	34.3%	32.8%	32.5%	33.2%	29.6%	28.8%	30.2%	24.5%	24.1%	24.8%	27.1%	26.5%	27.5%																	
Black alone	86.5%	85.3%	87.5%	87.2%	87.2%	87.3%	92.9%	92.5%	93.5%	81.2%	78.4%	85.1%	87.1%	85.5%	89.3%																	
Bachelor's degree or higher	22.0%	19.1%	24.5%	19.5%	17.3%	21.4%	17.7%	10.3%	25.9%	3.7%	1.1%	7.2%	10.7%	5.7%	16.6%																	
Asian	87.6%	89.4%	86.0%	83.3%	85.1%	81.6%	84.7%	87.1%	82.4%	89.8%	95.3%	86.3%	87.3%	84.4%																		
High school graduate or higher	55.0%	57.2%	53.0%	56.9%	60.3%	54.0%	29.3%	30.1%	28.6%	48.3%	48.4%	48.2%	38.8%	39.3%	38.4%																	
Bachelor's degree or higher	69.7%	68.4%	70.9%	72.6%	70.9%	74.3%	67.8%	69.1%	66.5%	67.4%	60.6%	74.6%	67.6%	64.9%	70.6%																	
Hispanic or Latino	17.0%	15.4%	18.5%	17.7%	16.2%	19.3%	13.1%	10.5%	15.6%	11.8%	9.7%	14.1%	12.5%	10.1%	14.9%																	
Black alone	-4%	-5%	-4%	-6%	-5%	-6%	1%	1%	2%	-11%	-13%	-8%	-5%	-6%	-3%																	
High school graduate or higher	-35.1%	-43.0%	-28.6%	-40.5%	-46.8%	-35.5%	-40.2%	-64.2%	-14.2%	-84.9%	-95.4%	-71.0%	-60.4%	-78.4%	-39.8%																	
Bachelor's degree or higher	-2.9%	0%	-5%	-10%	-7%	-12%	-8%	-5%	-10%	-2%	6%	-6%	-5%	0%	-8%																	
Asian	62.2%	70.7%	54.5%	73.5%	85.5%	62.7%	-1.0%	4.5%	-5.3%	97.1%	100.8%	94.4%	43.4%	48.4%	39.6%																	
High school graduate or higher	-22.7%	-24%	-22%	-21%	-23%	-20%	-26%	-25%	-28%	-26%	-33%	-19%	-26%	-29%	-23%																	
Bachelor's degree or higher	-49.9%	-54.0%	-46.1%	-46.0%	-50.2%	-41.9%	-55.7%	-63.5%	-48.3%	-51.8%	-59.8%	-43.1%	-54.0%	-61.8%	-46.0%																	

Source: US Census Bureau, American Community Survey 1-year estimates 2018

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Turning Information into Insight

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