CREDENTIALS MATTER
COVID-19 CASE STUDY

Examining the effect of the COVID-19 pandemic on Career and Technical Education and associated industry credentials

September 2020

ExcelinEd   burningglass
TECHNOLOGIES

ABOUT THE PROJECT

Credentials Matter is a partnership between Excel*in*Ed and Burning Glass Technologies. This ongoing, comprehensive research project seeks to understand the industry credential landscape in the United States and provide actionable data analysis and resources for states and the public to improve outcomes for students.

Launched by former Florida Governor Jeb Bush in 2008, the Foundation for Excellence in Education (ExcelinEd) supports state leaders in transforming education to unlock lifelong opportunity and success for each and every child. From policy development to implementation, ExcelinEd brings deep expertise and experience to customize education solutions for each state's unique needs. Focused on educational quality, innovation and opportunity, ExcelinEd's agenda is increasing student learning, advancing equity and readying graduates for college and career. Learn more at ExcelinEd.org.

Burning Glass Technologies delivers job market analytics that empower employers, workers and educators to make data-driven decisions. The company's artificial intelligence technology analyzes hundreds of millions of job postings and real-life career transitions to provide insight into workforce demand patterns. This real-time strategic intelligence offers crucial insights, such as which jobs are most in demand, the specific skills employers need and the career directions that offer the highest potential for workers. For more information, visit burning-glass.com.

AUTHORS

This report was written by Rucha Vankudre and Layla O'Kane, with support from Joel Simon.

FOREWORD

Patricia Levesque
ExcelinEd CEO

Matt Sigelman
*Burning Glass
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The first six months of the novel coronavirus (COVID-19) pandemic has affected nearly every aspect of American life. The public health implications alone are staggering. As of September 2020, millions of Americans have tested positive for the virus and nearly 200,000 Americans have died.

The onset of COVID-19 provoked a national effort to "slow the spread" of the virus, a response unprecedented in modern memory. From March through May across the nation, our economy went almost dormant. State and local "stay-at-home" orders required "non-essential" businesses, schools and other institutions to either shift to remote operations or close their doors indefinitely – resulting in record job-loss and unemployment claims. Meanwhile, "essential" workers continued to provide critical services in the face of great personal and family health risks. We mourn with the families and communities who have lost loved ones, jobs, businesses, home and food security and a sense of normalcy.

Recovering and post-pandemic labor markets may look very different from pre-pandemic labor conditions. While we do not yet know the extent of these changes, we can anticipate that remote work, automation and business closures will be significant influencing factors based on what we have seen thus far.

> **It's imperative that we learn from the pandemic and its ripple effects to both support recovery efforts and prepare for life in a "new normal." With regards to recovery, education systems will need to ensure that learners can actively participate in the nation's recovery while also considering additional factors that may shape occupational opportunities in the future.**

This report provides insights into labor market trends across career clusters, occupations and credentials during the first few months of the pandemic. It highlights how different occupational factors like critical worker designation, physical proximity to others, and automation risk impact physical safety and economic security across occupations – and how these factors may reshape the landscape of opportunity for workers and learners. It is intended to provide educators and policy makers with a framework for evaluating their career and technical education and workforce training investments to ensure that they align with the new contours of opportunity. Unpacking the effects of the almost complete economic shutdown during the pandemic can help inform future policies, educational offerings, and individual career decisions as our pandemic response and recovery continues.

The pandemic has and will continue to change how we balance notions of risk and opportunity. As students and displaced workers evaluate future career opportunities, they will surely weigh them in light of health and economic security. We hope this report provides some new insight into how educators and policymakers can help learners – new and older – achieve the balance they need to succeed in the future.

TABLE OF CONTENTS

INTRODUCTION

COVID-19 has disrupted students, educators and policymakers across the nation. Between March and May of 2020, over 20 million Americans lost their jobs and the unemployment rate shot up to 14.7%, the highest it has been since the Great Depression.[1] More recently, the nation's gross domestic product — the broadest measure of economic activity — shrank at an annual rate of 32.9%. Indeed, the economic decline in April, May and June was more than four times as steep as the worst quarter during the Great Recession.[2]

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1   https://www.washingtonpost.com/business/2020/05/08/april-2020-jobs-report/
2   https://www.npr.org/sections/coronavirus-live-updates/2020/07/30/896714437/3-months-of-hell-u-s-economys-worst-quarter-ever

As the economy navigates reopening and education systems adjust not only to how they will deliver instruction safely but to make sure that what they are teaching remains relevant, states must understand the labor market changes that have occurred already so they can begin to anticipate future labor market trends. This *Credentials Matter* case study can help.

Credentials Matter: COVID-19 Case Study examines short-term changes in credential demand based on the economic ramifications of COVID-19 and analyzes factors that may continue to affect credential demand in potential future waves of the pandemic as well as throughout economic recovery.

Credentials Matter: COVID-19 Case Study also builds a future-looking analysis. It examines how credential demand continues to shift, identifies how credentials can support students in the recovery and considers how credentials can prepare students to support recovery efforts. Throughout, the report focuses on credentials that have been reported to have been earned by K-12 students to remain consistent with previous *Credentials Matter* research and to provide actionable insights for the secondary school systems.

THIS REPORT SEEKS TO ANSWER THE FOLLOWING RESEARCH QUESTIONS:

▶ How has COVID-19 shifted short-term employment demand nationally across occupations?
> What are the trends by occupation and career cluster?
> What factors have influenced these shifts?

▶ How has COVID-19 affected employer demand in the short-term for industry-recognized credentials earned by K-12 students?

METHODOLOGY

This report analyzes the COVID-19 time period during the weeks between March 2, 2020 and May 31, 2020.

DEMAND FOR OCCUPATIONS

We calculated the percent change in weekly postings between the week of March 2 and the weeks of May 11, May 18 and May 25. To provide a more robust estimate of the change over this time period, we then took the average of these three percent changes. This metric was used throughout the analysis to calculate changes at the occupation level, defined by six-digit O*NET-Standard Occupational Classification (SOC) codes. We used the national average decline in weekly job postings of 41% across this same time period as a benchmark to compare differences in COVID-19 impact across occupations. All employment numbers are based on OES 2018 data, and annual median salary numbers are from OES May 2019 data.[3]

DEMAND WITHIN CAREER CLUSTERS

We calculated the percent change in demand within a career cluster[4] by linking career pathways and clusters to SOC occupations using the Perkins IV crosswalks.[5] We summed the weekly number of job postings across all occupations linked to a cluster and then calculated the percent change in the same manner as described above.

DEMAND FOR CREDENTIALS

Demand for an industry certification looks specifically at the job postings that request that certification, while demand for a license is the same as demand for the whole occupation (regardless of whether the posting explicitly mentions the license). This is consistent with previous definitions of demand as described in more detail in our first Credentials Matter report.

DEMAND BY STATE

When looking at state level analyses, we only considered states that had at least 100 postings in a career cluster during the week of March 2.

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3 https://www.bls.gov/oes/tables.htm
4 State CTE programs are typically organized under 16 career clusters that are made up of multiple pathways and occupations. AdvanceCTE - Career Clusters, 2019
5 The Perkins IV crosswalks were developed by the U.S. Office of Vocational and Adult Education in 2007 and updated by the National Research Center for Career and Technical Education and the National Association of State Directors of Career-Technical Education Consortium in 2012.

In addition to the demand analyses described above, we use the following three key occupational factors in our analysis: **Automation Risk score, Physical Proximity score** and **Critical Worker designation**. These occupational factors help illuminate how jobs may be affected differently through the economic recovery period.

AUTOMATION RISK SCORE

This score is a measure from 0 to 100 derived from *Frey and Osbourne's 2013 paper The Future of Employment*.[9] It is calculated by breaking occupations down into individual tasks and evaluating the ability of automated systems to perform the tasks within that occupation. To calculate the Automation Risk score for each career cluster, we took a weighted average of the individual occupation scores based on the distribution of employment by occupation in the cluster in 2018.

PHYSICAL PROXIMITY SCORE

This score is constructed for each occupation from data gathered by O*NET in response to this survey question[7]: "To what extent does this job require the worker to perform job tasks in close physical proximity to other people?"[8] Physical Proximity scores exist at the eight-digit SOC level and range from 0 to 100. We took a simple average of the scores to roll up to the six-digit SOC level. We then calculated a weighted average of all the occupations within a cluster based on the share of employment in that cluster in 2018.

CRITICAL WORKER DESIGNATION

This classification system is based on the Department of Homeland Security's guidance for identifying the critical infrastructure workforce during COVID-19. It was created by the LMI Institute and Council for Community and Economic Research at the six-digit SOC level.[6] To calculate the percent Critical Worker metric at the cluster level, we used 2018 employment by occupation.

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6 https://www.lmiontheweb.org/more-than-half-of-u-s-workers-in-critical-occupations-in-the-fight-against-covid-19/

7 In light of the pandemic, many occupations have fundamentally changed their working practices (e.g., psychologists moving to telehealth appointments), so responses on this survey may change in the future based on how various occupations adapted during and after the COVID-19 crisis.

8 For more information, see https://www.onetonline.org/find/descriptor/result/4.C.2.a.3

9 https://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf

OVERVIEW OF COVID-19 LABOR MARKET EFFECTS

Between the first week of March and the end of May 2020, there was a 41% decline in overall weekly job postings in the United States. Over a similar time period in 2019, the economy experienced a 29% increase in weekly job postings.

INDEXED U.S. JOB POSTINGS: 2019 VS 2020
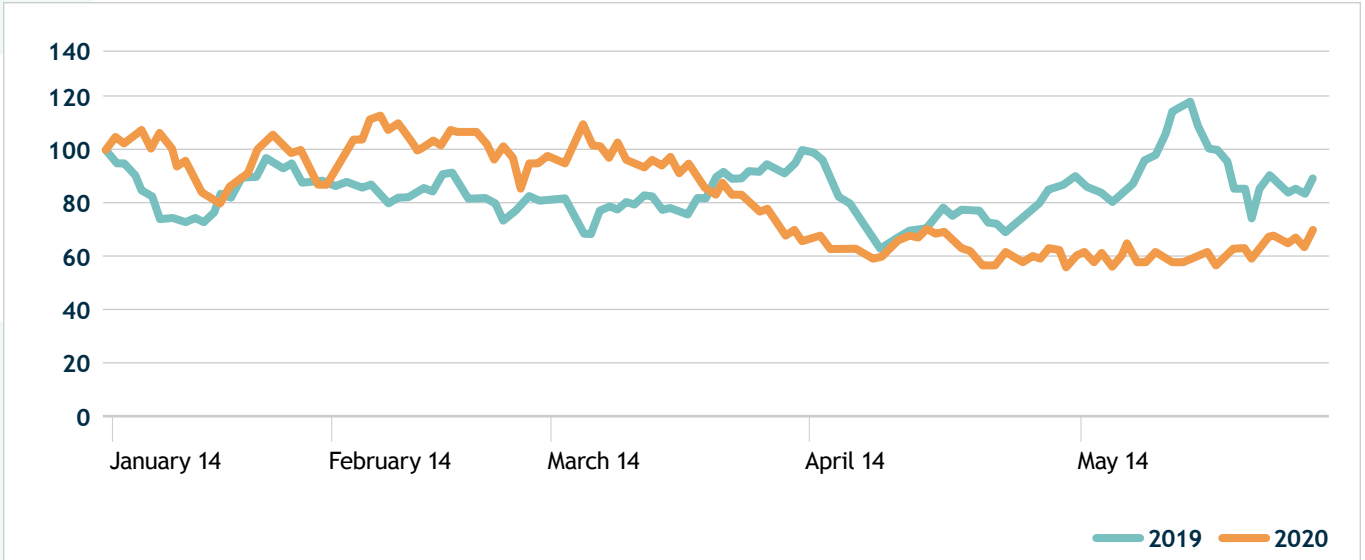
However, the pandemic-related decline in demand was not uniform; some career clusters and occupations provided relatively more stable employment prospects than others. For example, job postings for occupations in *Architecture & Construction* as well as *Transportation, Distribution & Logistics* both fell less than 30%, while *Arts, A/V Technology & Communications* job postings fell nearly 50%.

DECLINE IN U.S. JOB POSTS BY CAREER CLUSTER
(AVG. CHANGE IN WEEKLY POSTINGS MARCH TO MAY 2020)
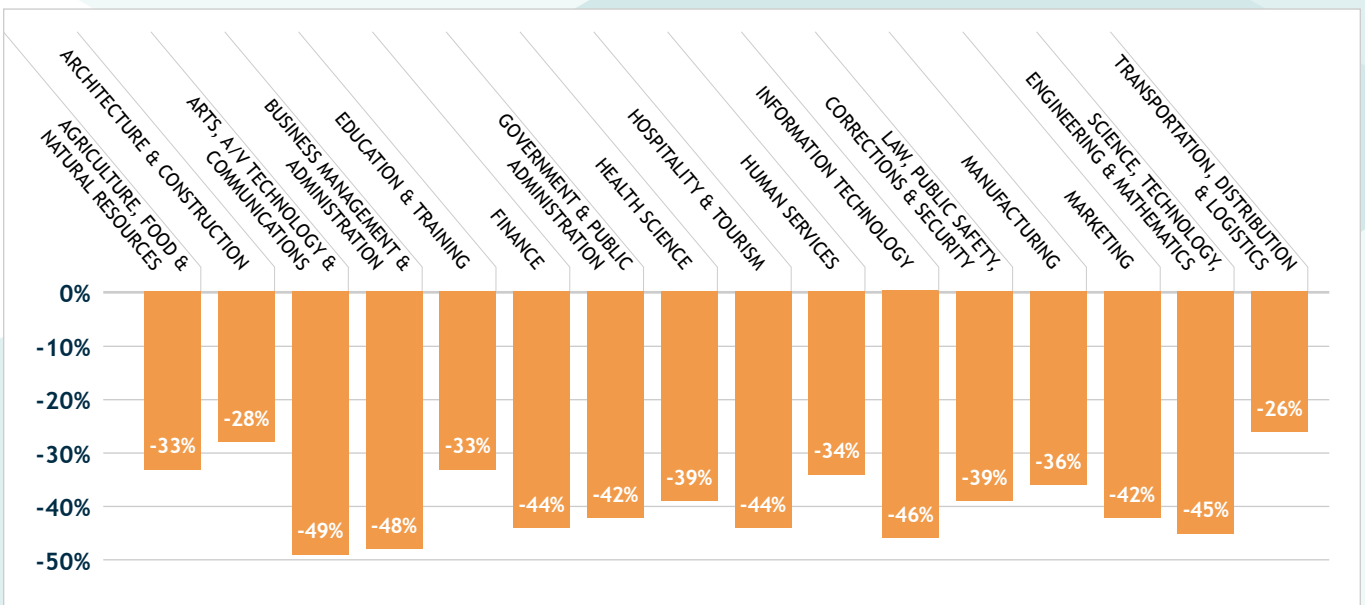
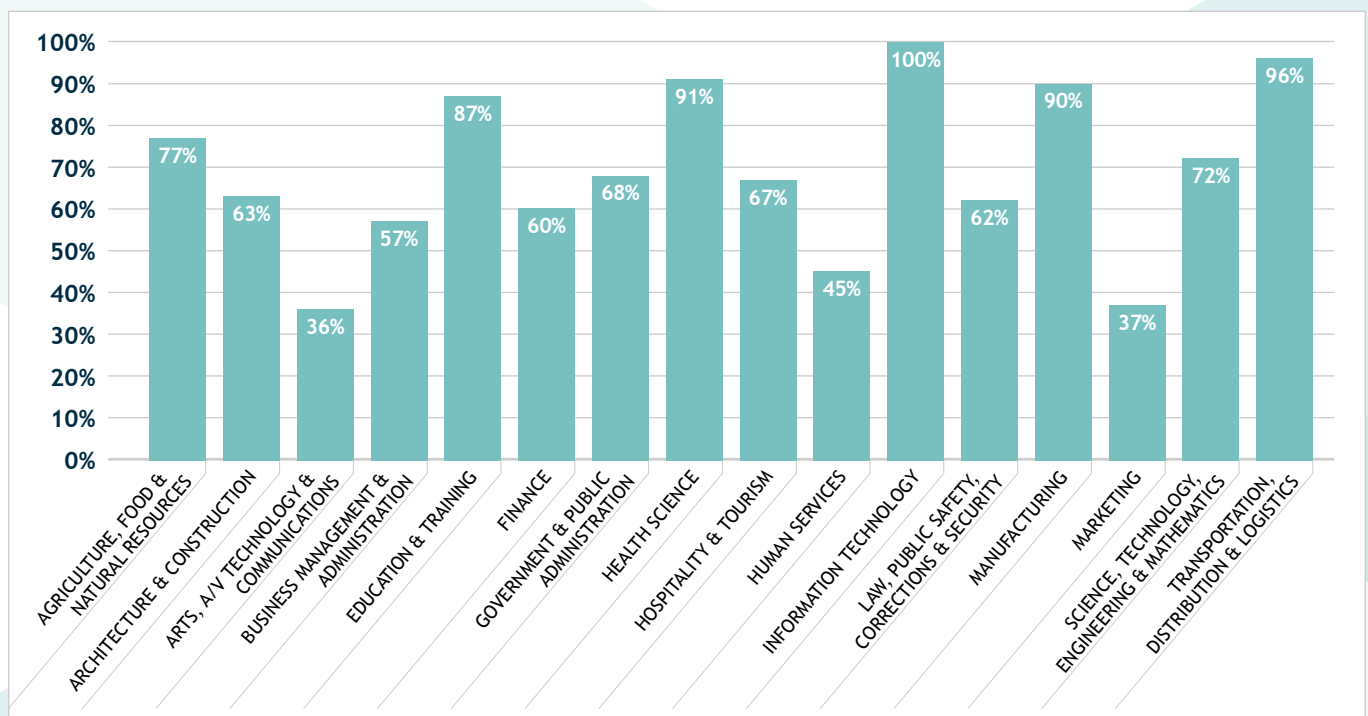# FINDINGS BY KEY OCCUPATIONAL FACTORS

Affecting Growth and Recovery During and After COVID-19

👮 CRITICAL WORKER DESIGNATION

At the start of the pandemic, many states issued stay-at-home orders with exemptions only for Critical Workers.[10] Workers in these occupations were generally able to continue working while workers in other occupations were furloughed or laid off at higher rates. Many of these Critical occupations experienced smaller declines in employment during the early months of the pandemic. Additionally, it is likely that these occupations would be less affected than others in terms of demand if there are future waves of the virus.

The chart below displays the share of Critical Workers in each career cluster. The career clusters with the highest percentage of Critical Workers —all at over 85% — are *Education & Training, Health Science, Information Technology, Manufacturing* and *Transportation, Distribution & Logistics*. Conversely, *Arts, A/V Technology & Communications, Human Services* and *Marketing* all had less than 50% of their workforces designated as Critical Workers.

PERCENT OF WORKFORCE CONSIDERED CRITICAL BY CAREER CLUSTER

| Career Cluster	Percent
AGRICULTURE, FOOD & NATURAL RESOURCES	77%
ARCHITECTURE & CONSTRUCTION	63%
ARTS, A/V TECHNOLOGY & COMMUNICATIONS	36%
BUSINESS MANAGEMENT & ADMINISTRATION	57%
EDUCATION & TRAINING	87%
FINANCE	60%
GOVERNMENT & PUBLIC ADMINISTRATION	68%
HEALTH SCIENCE	91%
HOSPITALITY & TOURISM	67%
HUMAN SERVICES	45%
INFORMATION TECHNOLOGY	100%
LAW, PUBLIC SAFETY, CORRECTIONS & SECURITY	62%
MANUFACTURING	90%
MARKETING	37%
SCIENCE, TECHNOLOGY, ENGINEERING & MATHEMATICS	72%
TRANSPORTATION, DISTRIBUTION & LOGISTICS	96%

10 Although this list attempts to capture the federal suggestions, states may have defined critical occupations differently, so it is potentially not an exhaustive list of all occupations deemed critical by each state.

Below, we highlight two career clusters, *Transportation, Distribution & Logistics* and *Arts, A/V Technology & Communications*, to show the different relative sizes of the three largest Critical occupations within each cluster. *Transportation, Distribution & Logistics* has one of the highest percentages of Critical Workers, at 96%, with the top three occupations comprising 48% of the total workforce within that cluster. In contrast, the three largest Critical occupations in *Arts, A/V Technology & Communications* make up only 24% of the total workforce within that cluster, leading to the lowest cluster percentage of Critical Workers at 36%.

SHARE OF EMPLOYMENT FOR
THREE LARGEST CRITICAL OCCUPATIONS

96%
CRITICAL WORKERS

TRANSPORTATION, DISTRIBUTION & LOGISTICS
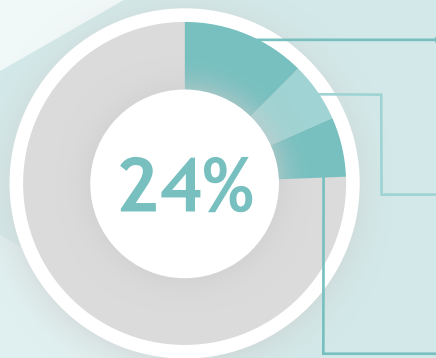
48%
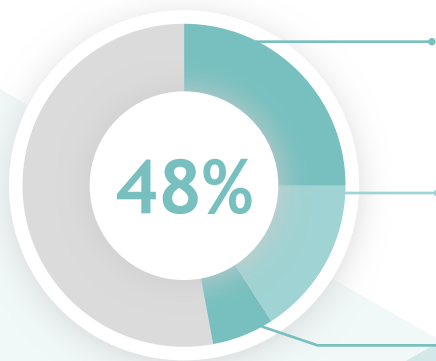
25% Laborers and Freight, Stock, and Material Movers, Hand

15% Heavy and Tractor-Trailer Drivers

8% Light Truck or Delivery Services Drivers

36%
CRITICAL WORKERS

ARTS, A/V TECHNOLOGY & COMMUNICATIONS

24%

12% Telecommunications Equipment Installers and Repairers, Except Line Installers

6% Producers and Directors

**6%** Telecommunications Line Installers and Repairers

🫂 PHYSICAL PROXIMITY SCORE

The Physical Proximity score for an occupation is a measure of how close workers must be to other people to successfully complete their job. As a result, workers in jobs with a higher Physical Proximity score are generally at higher risk of transmission of COVID-19. This increased risk now associated with occupations with high Physical Proximity scores may change the value proposition for those who are considering entering or maintaining employment in these fields.

The impact of Physical Proximity on occupational demand is influenced by the Critical Worker designation. For Critical Workers in high-proximity jobs this may mean higher likelihood of risk of illness, although employment itself may be less affected. Non-Critical Workers in high-proximity jobs generally returned to work at a later date and at a much slower pace than jobs with lower Physical Proximity scores, typically to limit spread and to ensure sufficient safety measures were in place.

The chart below displays the Physical Proximity scores for all 16 career clusters. *Health Science* and *Human Services* have the highest Physical Proximity scores while *Agriculture, Food & Natural Resources* and *Science, Technology, Engineering & Mathematics* have the lowest Physical Proximity scores.

PHYSICAL PROXIMITY SCORE BY CAREER CLUSTER
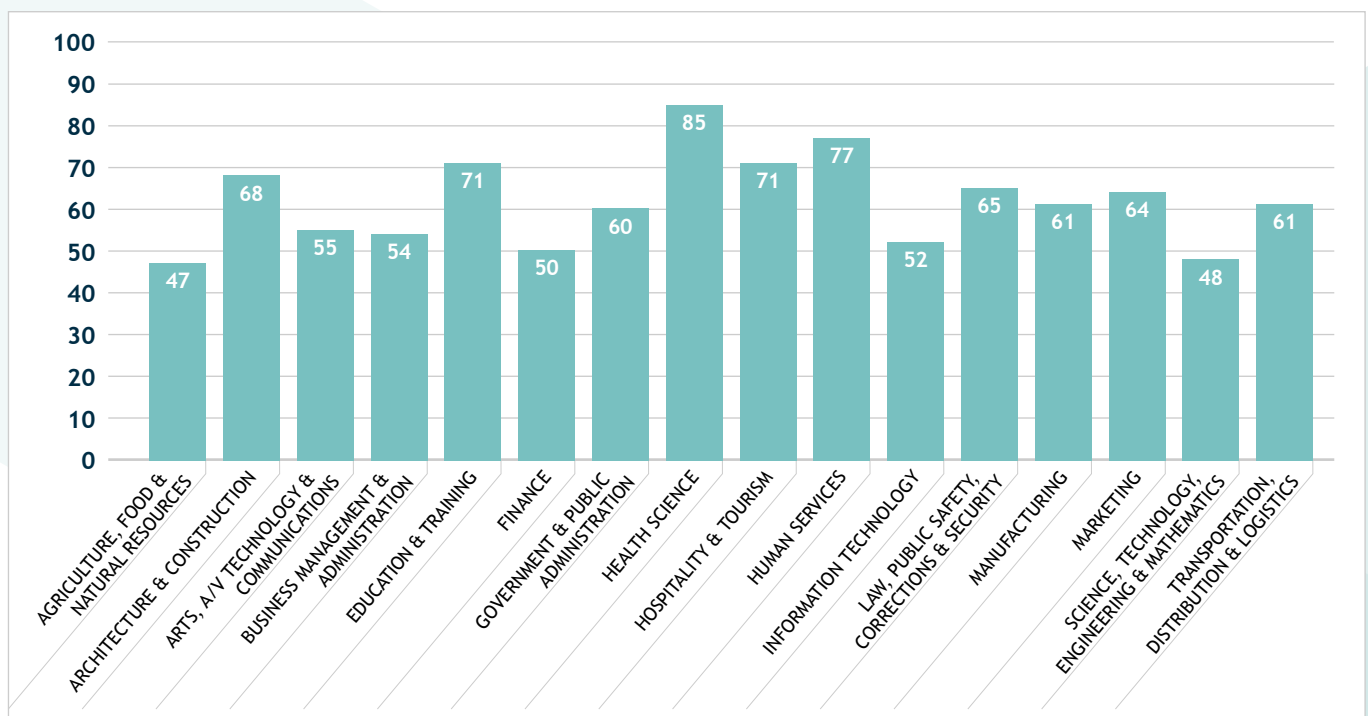
The graphic below provides examples of occupations in clusters at each end of the Physical Proximity spectrum: *Health Science* (the highest overall cluster score) and *Science, Technology, Engineering & Mathematics* (the second lowest overall cluster score). The occupations selected reflect the two highest and two lowest Physical Proximity scores, demonstrating the range of the scores across occupations within each cluster.

PHYSICAL PROXIMITY SCORE BY OCCUPATION	HEALTH SCIENCE	100 Dental Hygienists	100 Physical Therapists	42 Medical Transcriptionists	38 Epidemiologists
	SCIENCE, TECHNOLOGY, ENGINEERING & MATHEMATICS	61 Microbiologists	59 Anthropologists and Archeologists	31 Economists	30 Petroleum Engineers

AUTOMATION RISK SCORE

Automation Risk is a measure of the likelihood that human capital within a job will be replaced by computer-controlled equipment. In general, lower-skill occupations are often at higher risk of automation. As a result of COVID-19, it is possible that the desire to limit human interaction and temper the spread of the virus will lead firms to automate more quickly than they would have otherwise. This may lead to lower employment and less growth in occupations with high Automation Risk scores, and may change the value proposition for those who are considering entering or maintaining employment in these fields.

AUTOMATION RISK SCORE BY CAREER CLUSTER
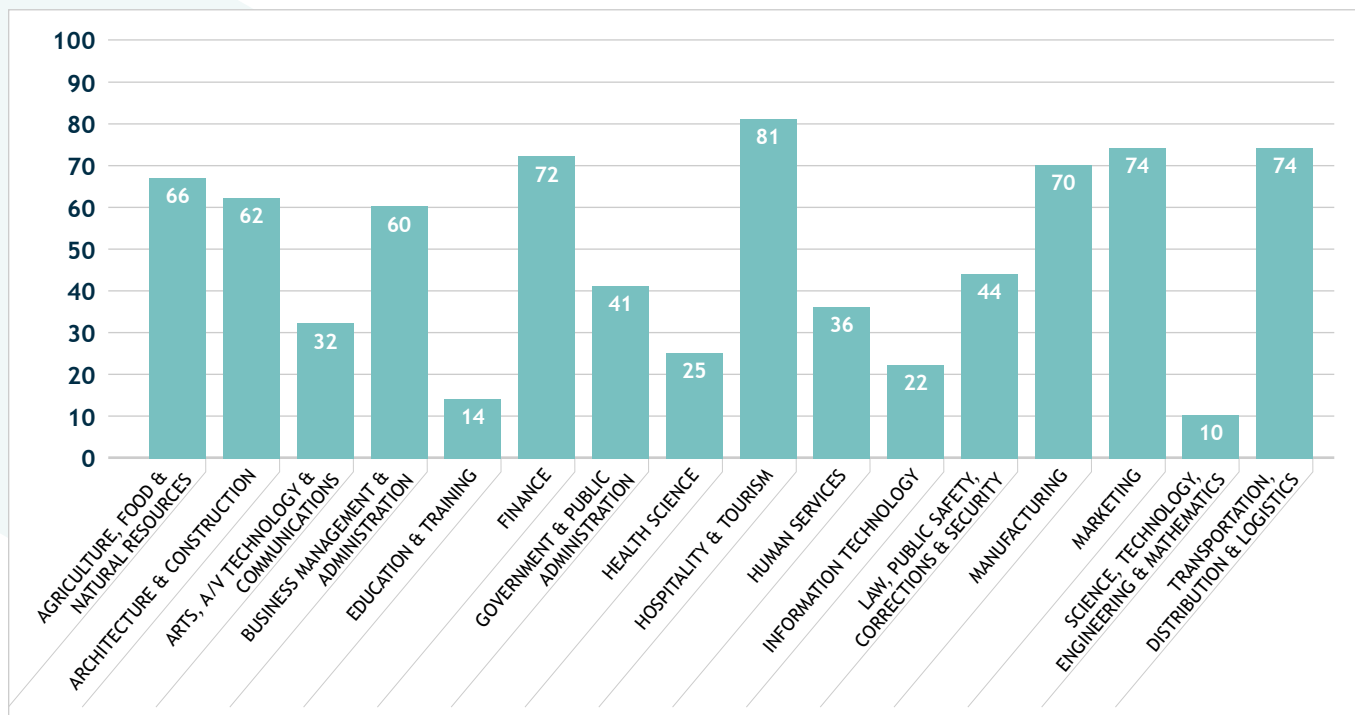
The chart above shows the Automation Risk scores by career cluster, with *Hospitality & Tourism* having the highest average score of 81 and *Education & Training* having one of the lowest scores of 14. The graphic below displays the occupations that have at least 1% of cluster employment and the highest and lowest Automation Risk scores within these clusters.

AUTOMATION RISK SCORES BY OCCUPATION	HOSPITALITY AND TOURISM	97 Hosts and Hostesses, Restaurant, Lounge and Coffee Shop	96 Cooks, Restaurant	8 Food Service Managers	1 Recreation Workers
	EDUCATION AND TRAINING	65 Librarians	56 Teacher Assistants	1 Elementary School Teachers	1 Instructional Coordinators

FINDINGS BY CAREER CLUSTER

This section examines the impact of COVID-19 by career cluster and includes a closer look at demand for occupations and credentials within each cluster. We focus on eight career clusters. Each cluster includes a factsheet and an analysis.

These clusters were selected based on

① *the size of the overall employment market*

② *effects on demand based on the occupational factors outlined above*

③ *the highest number of credentials earned by students in K-12*

ABOUT THE CAREER CLUSTER FACTSHEET

Each factsheet contains details about the cluster in general and the impact of COVID-19, specifically, including:

OVERVIEW

PERCENT OF OVERALL POSTINGS

The percent of overall job postings in the week of March 2, 2020 that were represented by occupations in the cluster.

MINIMUM EDUCATION REQUIREMENT DISTRIBUTION

The distribution of minimum education requirements in job postings in these categories: High School, Associate's Degree, Bachelor's Degree, Bachelor's Degree +.

TOP 5 CREDENTIALS EARNED IN CAREER CLUSTER

The five credentials in the career cluster with the highest attainment by K-12 students.

COVID-19 CLUSTER IMPACT

CHANGE IN POSTINGS

The percent change in postings during the COVID-19 time period between the week of March 2 and the weeks of May 11, May 18 and May 25.

TOP PERFORMING STATES

The three states with the most positive/least negative percent changes in demand during the COVID-19 period.

LOWEST PERFORMING STATES

The three states with the most negative percent changes in demand during the COVID-19 period.

KEY OCCUPATIONAL FACTORS

CLUSTER AVERAGE	AUTOMATION RISK SCORE	PHYSICAL PROXIMITY SCORE	PERCENT CRITICAL WORKERS
	A weighted average of occupational Automation Risk scores within a cluster.	A weighted average of occupational Physical Proximity scores within a cluster.	The share of workers within the cluster who were classified as Critical Workers according to the Department of Homeland Security guidance.

COVID-19 OCCUPATIONAL IMPACT

MOST STABLE	The three occupations with the most positive/least negative percent changes in demand during the COVID-19 period.
LEAST STABLE	The three occupations with the most negative percent changes in demand during the COVID-19 period.
LARGEST	The three largest occupations as determined by the share of employment within a cluster in that occupation in 2018.

For each occupation in these groupings, we present data on employment, median salary and scores on key occupational factors. We only consider occupations that had at least 500 job postings in the week of March 2, 2020.

ABOUT THE CAREER CLUSTER ANALYSIS

In these sections, we discuss some of the major findings from the factsheets and occupational impact tables as well as additional trends within the cluster, calling out cluster occupations with interesting results and specific credentials or licensed occupations as relevant.

ARCHITECTURE & CONSTRUCTION

OVERVIEW

PERCENT OF OVERALL POSTINGS

3%
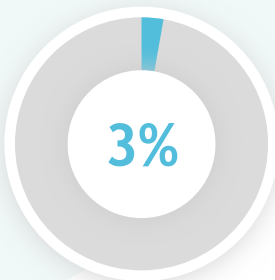
MINIMUM EDUCATION REQUIREMENT DISTRIBUTION

53% High School

4% Associate's

42% Bachelor's

1% Bachelor's Plus

TOP 5 CREDENTIALS EARNED IN CAREER CLUSTER
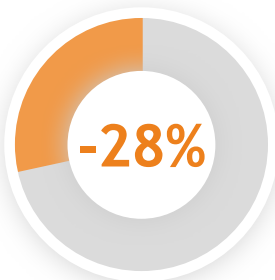
NCCER – Core Curriculum

NCCER – Carpentry

Autodesk Certified User

NCCER – Electrical
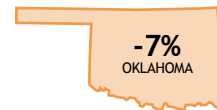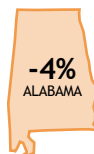
NCCER – Masonry

COVID-19 CLUSTER IMPACT

CHANGE IN POSTINGS

-28%

TOP PERFORMING STATES

-4% ALABAMA

-7% OKLAHOMA

-11% INDIANA

LOWEST PERFORMING STATES

-45% IOWA

-40% MINNESOTA

-39% MISSOURI
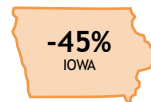
COVID-19 OCCUPATIONAL IMPACT

	OCCUPATION	PERCENT CHANGE IN JOB POSTINGS	PERCENTAGE OF CLUSTER EMPLOYMENT	MEDIAN SALARY
LEAST STABLE	Architects, Except Landscape & Naval	-54%	1%	$80,750
	Civil Engineers	-50%	3%	$87,060
	Construction Managers	-42%	3%	$95,260
MOST STABLE	Plumbers, Pipefitters & Steamfitters	+5%	5%	$55,160
	Carpenters	-2%	8%	$48,330
	Construction Laborers	-15%	11%	$36,860
LARGEST	Construction Laborers	-15%	11%	$36,860
	Landscaping & Groundskeeping Workers	-29%	10%	$30,440
	Carpenters	-2%	8%	$48,330

ARCHITECTURE & CONSTRUCTION

KEY OCCUPATIONAL FACTORS

	AUTOMATION RISK SCORE (out of 100)	PHYSICAL PROXIMITY SCORE (out of 100)	CRITICAL WORKER DESIGNATION
CLUSTER AVERAGE	62	68	63%

COVID-19 OCCUPATIONAL IMPACT

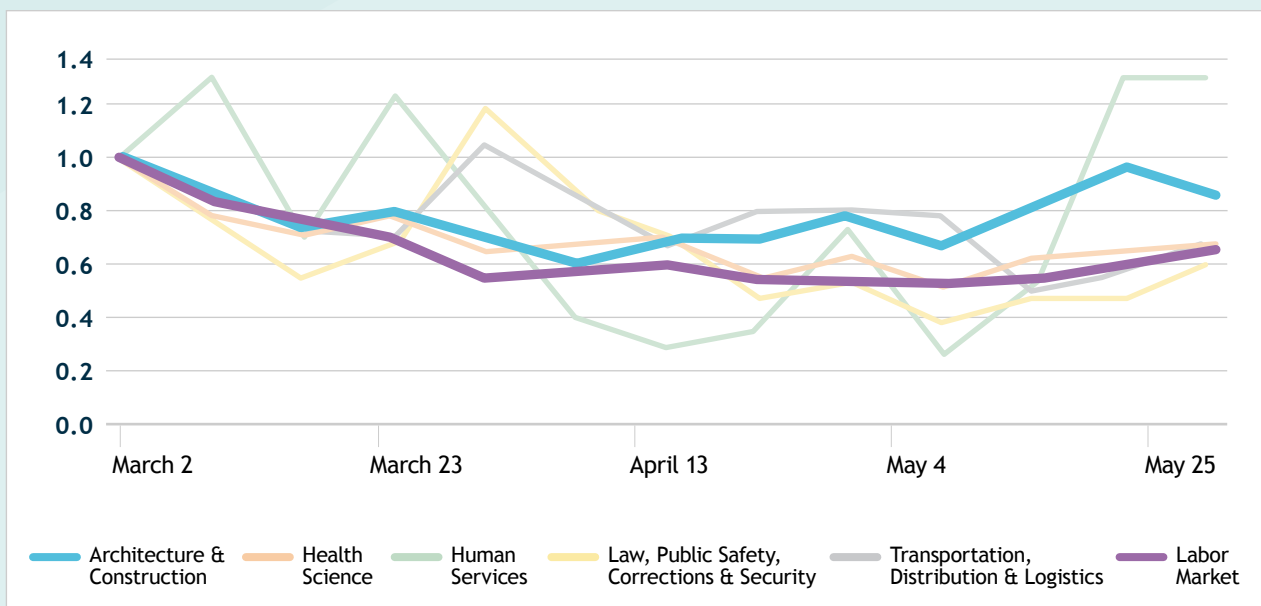|		AUTOMATION RISK SCORE	PHYSICAL PROXIMITY SCORE	CRITICAL WORKER DESIGNATION
LEAST STABLE OCCUPATION	Architects, Except Landscape & Naval	2	53	✘
	Civil Engineers	2	47	✔
	Construction Managers	7	50	✔
MOST STABLE OCCUPATION	Plumbers, Pipefitters & Steamfitters	35	67	✔
	Carpenters	72	80	✔
	Construction Laborers	88	73	✔
LARGEST OCCUPATION	Construction Laborers	88	73	✔
	Landscaping & Groundskeeping Workers	95	76	✘
	Carpenters	72	80	✔

ANALYSIS

The *Architecture & Construction* career cluster outperformed the overall labor market during the COVID-19 time period, with the second smallest decline in job postings of any career cluster. Plumbers did particularly well and experienced a 5% growth in postings along with the occupations of Carpenters, Construction Laborers and Electricians, which all declined less than 22%. In contrast, occupations such as Civil Engineers, Construction Managers and Interior Designers experienced decreases in postings between 42% and 59%. Jobs that were identified as least stable seem to be those with higher salaries. Also notable is the fact that 53% of jobs in this field require only a high school degree. Despite this lower barrier to entry, the three largest occupations in this cluster all have average salaries above the living wage of $30,000.[11]

11 We assume a 40-hour work week and 50 weeks/year to calculate living annual wage based on median hourly wage of $15, see page 25 of *A National Landscape of High School Student Credential Attainment Compared to Workforce Demand* at https://www.credentialsmatter.org/resources.html for more information.

ARCHITECTURE & CONSTRUCTION

ANALYSIS

INDEXED U.S. JOB POSTINGS FOR LICENSED OCCUPATIONS BY CAREER CLUSTER

Legend: Architecture & Construction, Health Science, Human Services, Law, Public Safety, Corrections & Security, Transportation, Distribution & Logistics, Labor Market

The above graph displays the total job postings for licensed occupations aggregated at the career cluster level along with a labor market trend line as a benchmark, all indexed to 1 at the beginning of the COVID-19 time period. It shows that at the end of the analysis period, the licensed occupations in *Architecture & Construction*, Electricians and Plumbers, outperformed the labor market and licensed occupations in almost all other clusters. These licensed occupations also experienced very little volatility, steadily outperforming the market over the COVID-19 time period. This contrasts with the licensed occupations in the *Human Services* cluster, which had the highest indexed number of postings at the end of May but experienced repeated large drops monthly.

EDUCATION & TRAINING

OVERVIEW

PERCENT OF OVERALL POSTINGS

4%
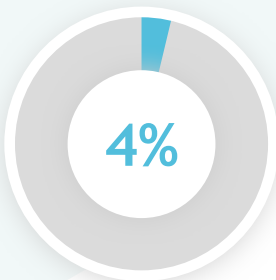
MINIMUM EDUCATION REQUIREMENT DISTRIBUTION

24% High School
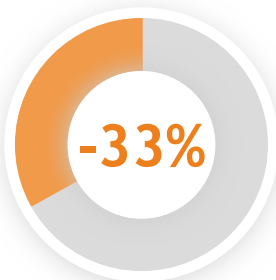
8% Associate's

47% Bachelor's

21% Bachelor's Plus

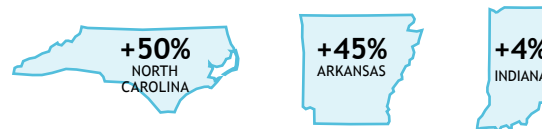### TOP 5 CREDENTIALS EARNED IN CAREER CLUSTER

NOCTI Job Ready Assessment – Early Childhood Education and Care (Basic)

AAFCS Pre-PAC – Early Childhood Education

Child Development Associate Credential

AAFCS Pre-PAC – Education Fundamentals

ETS ParaPro Assessment
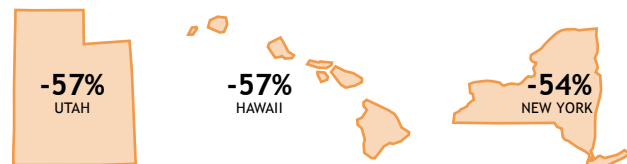
COVID-19 CLUSTER IMPACT

CHANGE IN POSTINGS

-33%

TOP PERFORMING STATES

+50% NORTH CAROLINA

+45% ARKANSAS

+4% INDIANA

LOWEST PERFORMING STATES

-57% UTAH

-57% HAWAII

-54% NEW YORK

COVID-19 OCCUPATIONAL IMPACT

	OCCUPATION	PERCENT CHANGE IN JOB POSTINGS	PERCENTAGE OF CLUSTER EMPLOYMENT	MEDIAN SALARY
LEAST STABLE	Interpreters & Translators	-81%	1%	$51,830
	Educational, Guidance, School & Vocational Counselors	-53%	3%	$57,040
	Education Administrators, Postsecondary	-51%	2%	$95,410
MOST STABLE	Special Education Teachers, All Other	+13%	0.4%	$61,190
	Middle School Teachers, Except Special Education & CTE	+5%	7%	$59,660
	Secondary School Teachers, Except Special Education & CTE	0%	12%	$61,600
LARGEST	Elementary School Teachers, Except Special Education	-2%	16%	$59,670
	Teacher Assistants	-46%	15%	$27,920
	Secondary School Teachers, Except Special Education and CTE	0%	12%	$61,600

EDUCATION & TRAINING

KEY OCCUPATIONAL FACTORS

	AUTOMATION RISK SCORE (out of 100)	PHYSICAL PROXIMITY SCORE (out of 100)	CRITICAL WORKER DESIGNATION
CLUSTER AVERAGE	14	71	87%

COVID-19 OCCUPATIONAL IMPACT

		AUTOMATION RISK SCORE	PHYSICAL PROXIMITY SCORE	CRITICAL WORKER DESIGNATION
LEAST STABLE OCCUPATION	Interpreters & Translators	38	66	✗
	Educational, Guidance, School & Vocational Counselors	1	64	✗
	Education Administrators, Postsecondary	1	38	✓
MOST STABLE OCCUPATION	Special Education Teachers, All Other	1	90	✓
	Middle School Teachers, Except Special Education & CTE	17	70	✓
	Secondary School Teachers, Except Special Education & CTE	1	70	✓
LARGEST OCCUPATION	Elementary School Teachers, Except Special Education	0.4	79	✓
	Teacher Assistants	56	88	✓
	Secondary School Teachers, Except Special Education and CTE	1	70	✓

ANALYSIS

Education & Training is another well-performing cluster, with an overall average decline of 33%.[12] This career cluster also has a very high percentage of critical workers (87%) and a very low Automation Risk score (14). Although this cluster currently has a high Physical Proximity score, this may change as additional distance and remote learning opportunities develop. Interestingly, postings either grew or stayed relatively constant at each of the Elementary, Middle and Secondary school levels: Middle School Teacher postings grew by 5%, Secondary School Teacher postings remained constant, Elementary School Teachers fell only 2%, and Education Administrators in Elementary and Secondary schools only fell 8%. In stark contrast, postings for positions at preschools fell in large numbers, with Preschool Teacher and Preschool Education Administrator postings both falling 50% and Special Education Preschool Teacher postings falling 42%.

The occupations in this field tend to command higher wages; however, many of these positions also require higher levels of education. A full 68% of positions in this cluster require a minimum of a bachelor's degree.

12 This may be due in part to seasonality, because the end of the school year often brings an increase in postings as districts plan for the upcoming fall.

HEALTH SCIENCE

OVERVIEW

PERCENT OF OVERALL POSTINGS

15%

MINIMUM EDUCATION REQUIREMENT DISTRIBUTION

31% High School

26% Associate's

29% Bachelor's

14% Bachelor's Plus

TOP 5 CREDENTIALS EARNED IN CAREER CLUSTER

Certified Nursing Assistant
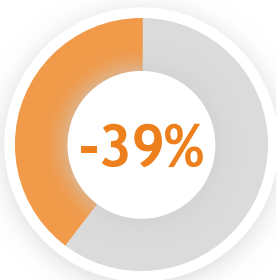
EMT/Paramedic License

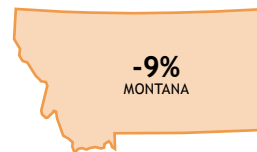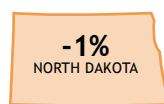Certified Clinical Medical Assistant

Certified EEG/EKG/ECG Technician

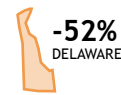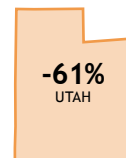Certified Phlebotomy Technician

COVID-19 CLUSTER IMPACT

CHANGE IN POSTINGS

-39%

TOP PERFORMING STATES

-1% NORTH DAKOTA

-9% MONTANA

-15% ALABAMA

LOWEST PERFORMING STATES

-65% LOUISIANA

-61% UTAH

-52% DELAWARE

COVID-19 OCCUPATIONAL IMPACT

	OCCUPATION	PERCENT CHANGE IN JOB POSTINGS	PERCENTAGE OF CLUSTER EMPLOYMENT	MEDIAN SALARY
LEAST STABLE	Physical Therapists	-62%	2%	$89,440
	Diagnostic Medical Sonographers	-61%	0.50%	$74,320
	Dentists, General	-60%	1%	$155,600
MOST STABLE	Veterinarians[13]	+4%	0.50%	$95,460
	Family & General Practitioners	-6%	1%	$205,590
	Home Health Aides	-10%	6%	$25,280
LARGEST	Registered Nurses	-39%	23%	$73,300
	Nursing Assistants	-30%	11%	$29,660
	Home Health Aides	-10%	6%	$25,280

HEALTH SCIENCE

KEY OCCUPATIONAL FACTORS

	AUTOMATION RISK SCORE (out of 100)	PHYSICAL PROXIMITY SCORE (out of 100)	CRITICAL WORKER DESIGNATION
CLUSTER AVERAGE	25	85	91%

COVID-19 OCCUPATIONAL IMPACT

		AUTOMATION RISK SCORE	PHYSICAL PROXIMITY SCORE	CRITICAL WORKER DESIGNATION
LEAST STABLE OCCUPATION	Physical Therapists	2	100	✓
	Diagnostic Medical Sonographers	35	95	✗
	Dentists, General	0.4	99	✓
MOST STABLE OCCUPATION	Veterinarians[13]	4	91	✓
	Family & General Practitioners	0.4	91	✓
	Home Health Aides	39	84	✓
LARGEST OCCUPATION	Registered Nurses	1	88	✓
	Nursing Assistants	43	91	✓
	Home Health Aides	39	84	✓

ANALYSIS

Along with a very low Automation Risk score, 91% of the *Health Science* workforce is designated as a Critical Worker, indicating stronger prospects for employment and resilience during future crises. *Health Science* occupations experienced wide variations in percent decline in job postings during the COVID-19 time period. The average decline for the career cluster was 39%. Family & General Practitioners and COVID-19 related treatment providers, such as Respiratory Therapists showed stronger demand with declines between 6 and 33%, while supplementary health service providers, such as Physical Therapists (-62%), Pharmacists (-60%) and Occupational Therapists (-55%) had larger declines.

For the popular credential of Certified Nursing Assistant, there was a smaller than average decline of 30% in postings. However, the low median salary of $29,660 makes it a weaker career choice in terms of income. The credentials of Licensed Practical Nurse and Licensed Vocational Nurse have a higher median salary of $40,810, and also had a smaller than average decline at 36%.

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13 CTE programs may differ in how they categorize occupations into career clusters. Some programs place Veterinarians in the *Agriculture, Food & Natural Resources* career cluster while others place them in the *Health Science* career cluster.

HOSPITALITY & TOURISM

OVERVIEW

PERCENT OF OVERALL POSTINGS

9%
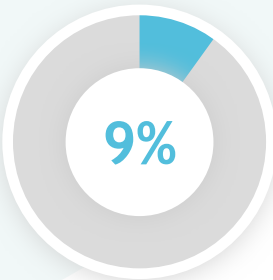
MINIMUM EDUCATION REQUIREMENT DISTRIBUTION

87% High School

4% Associate's

8% Bachelor's

1% Bachelor's Plus

TOP 5 CREDENTIALS EARNED IN CAREER CLUSTER

ServSafe Certification (Manager/Food Handler/Allergens/Alcohol)
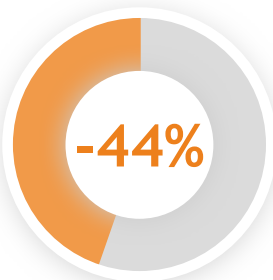
Certified Guest Service Professional

ProStart National Certificate of Achievement

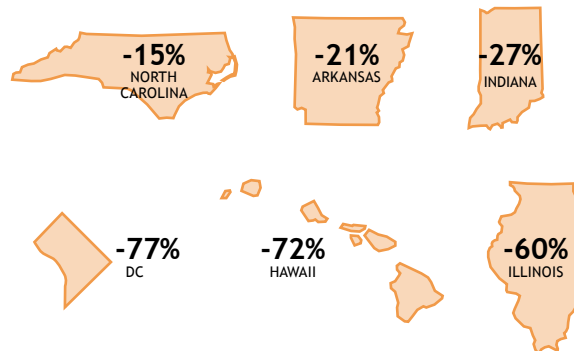NOCTI Job Ready Assessment Culinary Arts Level 2 Cook

AAFCS Pre-PAC – Culinary Arts

COVID-19 CLUSTER IMPACT

CHANGE IN POSTINGS

-44%

TOP PERFORMING STATES

-15% NORTH CAROLINA

-21% ARKANSAS

-27% INDIANA

LOWEST PERFORMING STATES

-77% DC

-72% HAWAII

-60% ILLINOIS

COVID-19 OCCUPATIONAL IMPACT

	OCCUPATION	PERCENT CHANGE IN JOB POSTINGS	PERCENTAGE OF CLUSTER EMPLOYMENT	MEDIAN SALARY
LEAST STABLE	Lodging Managers	-63%	0.1%	$54,430
	Recreation Workers	-59%	2%	$26,350
	Chefs & Head Cooks	-59%	1%	$51,530
MOST STABLE	Janitors & Cleaners, Except Maids & Housekeeping Cleaners	-22%	12%	$27,430
	Food Preparation Workers	-33%	4%	$24,800
	Amusement & Recreation Attendants	-35%	2%	$23,370
LARGEST	Combined Food Preparation & Serving Workers, Including Fast Food	-41%	20%	$22,740
	Waiters & Waitresses	-52%	14%	$22,890
	Janitors & Cleaners, Except Maids & Housekeeping Cleaners	-22%	12%	$27,430

HOSPITALITY & TOURISM

KEY OCCUPATIONAL FACTORS	AUTOMATION RISK SCORE (out of 100)	PHYSICAL PROXIMITY SCORE (out of 100)	CRITICAL WORKER DESIGNATION
CLUSTER AVERAGE	81	71	67%

COVID-19 OCCUPATIONAL IMPACT

		AUTOMATION RISK SCORE	PHYSICAL PROXIMITY SCORE	CRITICAL WORKER DESIGNATION
LEAST STABLE OCCUPATION	Lodging Managers	0.4	49	✗
	Recreation Workers	0.6	72	✗
	Chefs & Head Cooks	10	81	✓
MOST STABLE OCCUPATION	Janitors & Cleaners, Except Maids & Housekeeping Cleaners	66	48	✓
	Food Preparation Workers	87	69	✓
	Amusement & Recreation Attendants	72	84	✗
LARGEST OCCUPATION	Combined Food Preparation & Serving Workers, Including Fast Food	92	74	✓
	Waiters & Waitresses	94	78	✗
	Janitors & Cleaners, Except Maids & Housekeeping Cleaners	66	48	✓

ANALYSIS

Hospitality & Tourism was particularly hard hit with an overall decline in job postings of 44%. While demand for most *Hospitality & Tourism* occupations has fallen drastically, restaurant and hotel personnel have seen the largest declines with decreases of 63% for Lodging Managers and 59% for Chefs & Head Cooks. The increased emphasis on sanitation and cleaning methods is reflected by the lower decreases for Janitors & Cleaners (-22%) and Maids & Housekeeping Cleaners (-36%). Although restaurant and hotel jobs are starting to return in the initial recovery, it is likely they would be the first to disappear again if there are future waves of COVID-19. These occupations are also at high risk of future automation.

Along with the large declines in employment, occupations in *Hospitality & Tourism* tend to have very low median salaries. In fact, the three largest occupations, which make up nearly 50% of employment in the cluster all have salaries far below the living wage of $30,000. Additionally, 87% of postings require only a high school diploma.

HOSPITALITY & TOURISM

ANALYSIS

The ServSafe family of credentials is requested by employers across several hospitality occupations, including Food Service Managers (25%), Cooks, Restaurant (13%), Chefs and Head Cooks (9%), First-Line Supervisors of Food Preparation and Serving Workers (8%) and Combined Food Preparation and Serving Workers, Including Fast Food (6%). The graph below shows the total number of job postings for the labor market and the postings requesting ServSafe (both indexed to 100 on 1/14/2020). Since restaurant occupations were some of the hardest hit, there was a larger decline in postings requesting ServSafe compared to the decline in overall postings.
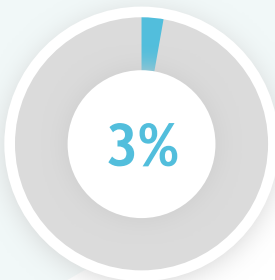
2020 INDEXED JOB POSTINGS: SERVSAFE

Legend: Indexed Total ServSafe Demand — Indexed Total Market Demand
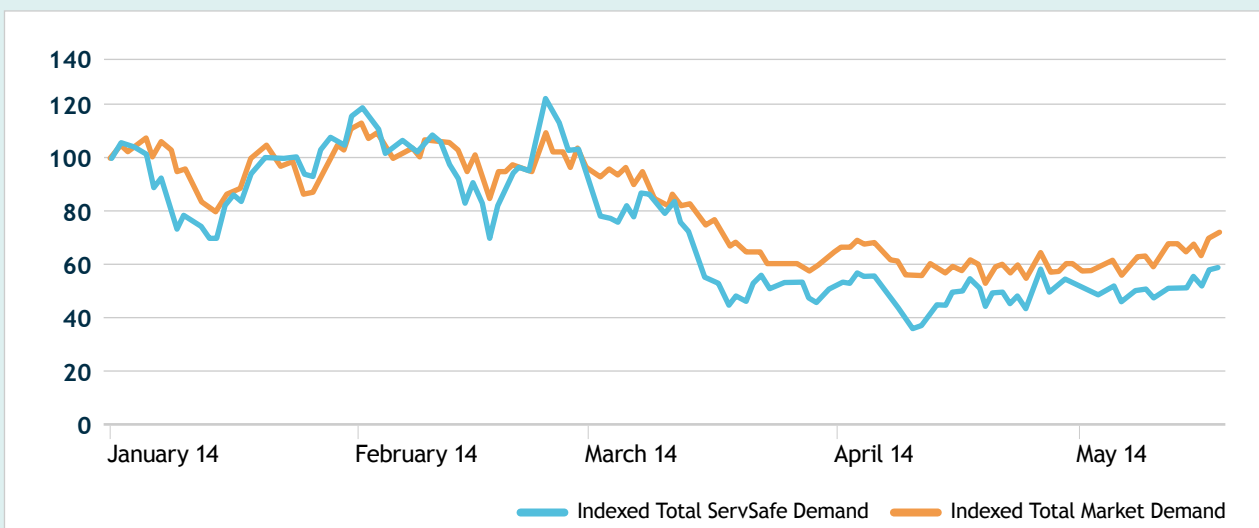
HUMAN SERVICES

OVERVIEW

PERCENT OF OVERALL POSTINGS

3%

MINIMUM EDUCATION REQUIREMENT DISTRIBUTION

38% High School

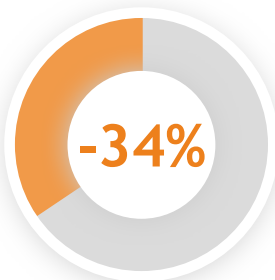**5%** Associate's

30% Bachelor's

27% Bachelor's Plus
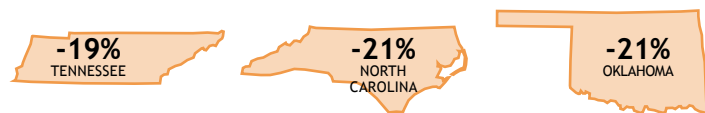
TOP 5 CREDENTIALS EARNED IN CAREER CLUSTER

Hair Stylist/Cosmetologist/Barber License

TSFA Knowledge Based Certification

AAFCS Pre-PAC Broad Field Family and Consumer Sciences

TSFA Level I High School Floral Design Certification
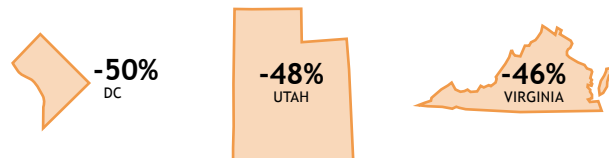
Career Essentials – Cosmetology

COVID-19 CLUSTER IMPACT

CHANGE IN POSTINGS

-34%

TOP PERFORMING STATES

-19% TENNESSEE

-21% NORTH CAROLINA

-21% OKLAHOMA

LOWEST PERFORMING STATES

-50% DC

-48% UTAH

-46% VIRGINIA

COVID-19 OCCUPATIONAL IMPACT

	OCCUPATION	PERCENT CHANGE IN JOB POSTINGS	PERCENTAGE OF CLUSTER EMPLOYMENT	MEDIAN SALARY
LEAST STABLE	Locker Room, Coatroom & Dressing Room Attendants	-63%	0.2%	$25,110
	Fitness Trainers & Aerobics Instructors	-60%	5%	$40,390
	Health Educators	-51%	1%	$55,220
MOST STABLE	Hairdressers, Hairstylists & Cosmetologists	+17%	6%	$26,090
	Personal Care Aides	-12%	35%	$25,280
	Marriage & Family Therapists	-22%	1%	$49,610
LARGEST	Personal Care Aides	-12%	35%	$25,280
	Childcare Workers	-46%	9%	$24,230
	Social & Human Services Assistants	-41%	6%	$35,060

HUMAN SERVICES

KEY OCCUPATIONAL FACTORS	AUTOMATION RISK SCORE (out of 100)	PHYSICAL PROXIMITY SCORE (out of 100)	CRITICAL WORKER DESIGNATION
CLUSTER AVERAGE	36	77	45%

COVID-19 OCCUPATIONAL IMPACT

	Occupation	Automation Risk	Physical Proximity	Critical Worker
LEAST STABLE OCCUPATION	Locker Room, Coatroom & Dressing Room Attendants	43	64	✗
	Fitness Trainers & Aerobics Instructors	9	83	✗
	Health Educators	5	64	✓
MOST STABLE OCCUPATION	Hairdressers, Hairstylists & Cosmetologists	11	92	✗
	Personal Care Aides	74	86	✗
	Marriage & Family Therapists	1	58	✗
LARGEST OCCUPATION	Personal Care Aides	74	86	✗
	Childcare Workers	8	75	✗
	Social & Human Services Assistants	13	79	✓

ANALYSIS

The *Human Services* career cluster had a 34% decline in job postings during the COVID-19 time period. Healthcare related occupations in the cluster, like Personal Care Aides and Mental Health Counselors had smaller declines between 12% and 26% while Childcare Workers, Social Workers and Fitness Trainers had declines between 45% and 60%. This could be because of a lack of public funding for things like childcare, decreased demand for childcare services as normally working parents have stayed home, temporary closure of fitness centers, and because healthcare related occupations in the *Human Services* cluster are considered more necessary.

HUMAN SERVICES

ANALYSIS

LICENSED OCCUPATIONS IN HUMAN SERVICES	PERCENT CHANGE IN JOB POSTINGS
Hairdressers, Hairstylists & Cosmetologists	+17%
Manicurists & Pedicurists	-16%
Barbers	-27%
Skincare Specialists	-36%

Licensed occupations in personal care experienced a great deal of volatility. For example, Hairdressers, Hairstylists and Cosmetologists experienced a 67% weekly drop in job postings at the end of March and a 200% weekly increase in the middle of May, coinciding with phased reopening of many states. This volatility combined with a low median salary of $26,090, far below the living wage, and increased risk due to the physical closeness required to perform these jobs makes the occupation a weaker employment choice. The same is true of other licensed occupations in *Human Services* like Barbers (median salary of $30,150) and Manicurists & Pedicurists ($25,770).

INFORMATION TECHNOLOGY

OVERVIEW

PERCENT OF OVERALL POSTINGS

9%
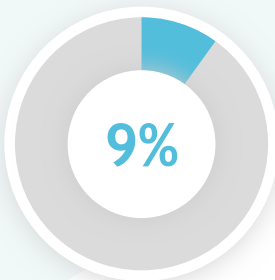
MINIMUM EDUCATION REQUIREMENT DISTRIBUTION

10% High School

5% Associate's

81% Bachelor's

4% Bachelor's Plus

TOP 5 CREDENTIALS EARNED IN CAREER CLUSTER

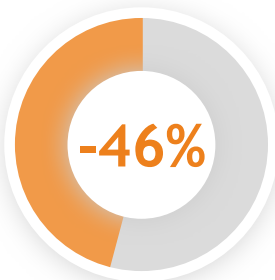Certified Internet Web Certification

Microsoft Technology Associate

ICT Cybersecurity Essentials
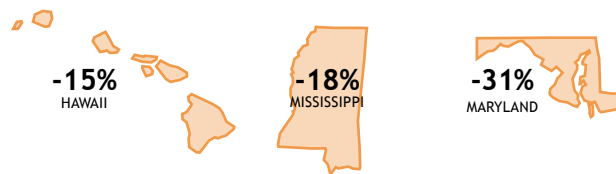
ICT Word Processing Essentials

ICT Multimedia Essential
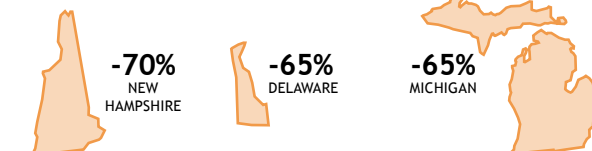
COVID-19 CLUSTER IMPACT

CHANGE IN POSTINGS

-46%

TOP PERFORMING STATES

-15% HAWAII

-18% MISSISSIPPI

-31% MARYLAND

LOWEST PERFORMING STATES

-70% NEW HAMPSHIRE

-65% DELAWARE

-65% MICHIGAN

COVID-19 OCCUPATIONAL IMPACT

	OCCUPATION	PERCENT CHANGE IN JOB POSTINGS	PERCENTAGE OF CLUSTER EMPLOYMENT	MEDIAN SALARY
LEAST STABLE	Computer Systems Analysts	-52%	14%	$90,920
	Computer User Support Specialists	-48%	15%	$52,270
	Computer Occupations, All Other	-48%	9%	$88,550
MOST STABLE	Information Security Analysts	-38%	3%	$99,730
	Computer Programmers	-38%	6%	$86,550
	Computer Network Architects	-39%	4%	$112,690
LARGEST	Software Developers, Applications	-44%	22%	$107,510
	Computer User Support Specialists	-48%	15%	$52,270
	Computer Systems Analysts	-52%	14%	$90,920

INFORMATION TECHNOLOGY

	AUTOMATION RISK SCORE (out of 100)	PHYSICAL PROXIMITY SCORE (out of 100)	CRITICAL WORKER DESIGNATION

KEY OCCUPATIONAL FACTORS

CLUSTER AVERAGE	22	52	100%

COVID-19 OCCUPATIONAL IMPACT

		AUTOMATION RISK	PHYSICAL PROXIMITY	CRITICAL WORKER
LEAST STABLE OCCUPATION	Computer Systems Analysts	1	54	✓
	Computer User Support Specialists	65	64	✓
	Computer Occupations, All Other	22	46	✓
MOST STABLE OCCUPATION	Information Security Analysts	21	52	✓
	Computer Programmers	48	39	✓
	Computer Network Architects	21	46	✓
LARGEST OCCUPATION	Software Developers, Applications	4	50	✓
	Computer User Support Specialists	65	64	✓
	Computer Systems Analysts	1	54	✓

ANALYSIS

Information Technology faced a larger than average decline of 46%. There was less variation in the declines for individual occupations across this cluster compared to some of the previously examined career clusters. That is, the difference between the declines for the most stable occupation of Information Security Analyst and least stable occupation of Computer Systems Analyst was only 14 percentage points. Although all the occupations in this cluster experienced large declines during the COVID-19 time period, the cluster has a low Physical Proximity score, reflecting the fact that many jobs can be performed remotely and a low risk of automation. Additionally, 100% of its workforce was classified as a Critical Worker. Eighty-five percent of job postings required at least a bachelor's degree and this high entry requirement is reflected in very high median salaries for the associated occupations.
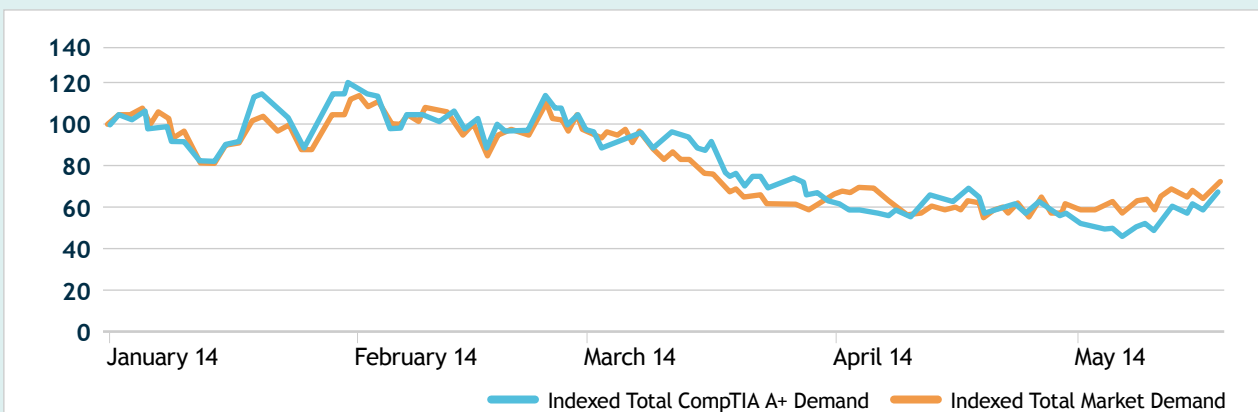
INFORMATION TECHNOLOGY

ANALYSIS

WHAT ARE POSSIBLE IMPACTS OF COVID-19 ON DEMAND FOR IT CREDENTIALS?

Two of the most demanded *Information Technology* credentials are CompTIA A+ and Cisco Certified Network Associate (CCNA).
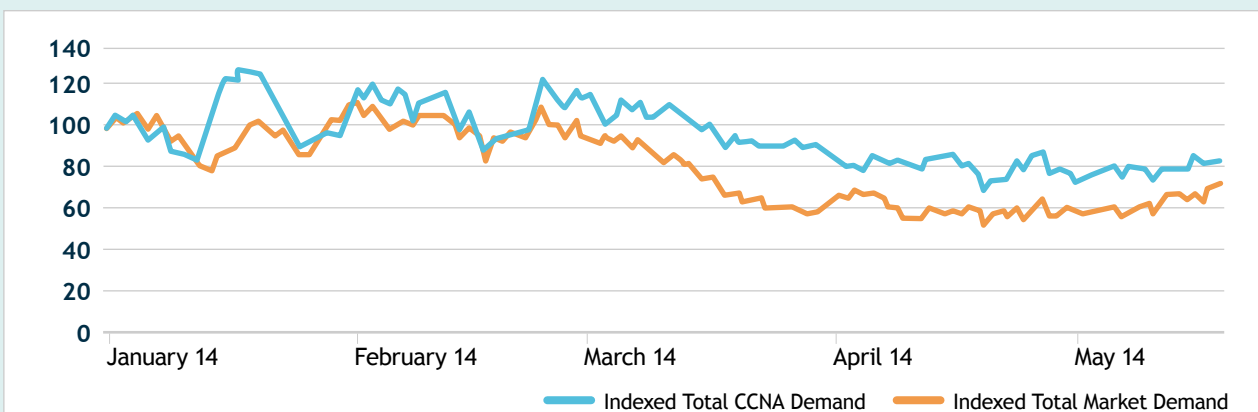
Comparing CompTIA A+ and CCNA illustrates how differences in occupations can affect overall demand for credentials. Job postings for Computer User Support Specialists comprise forty-eight percent of employer requests for CompTIA A+ credentials, significantly higher than any other occupation. Since this occupation had larger declines in postings compared to the market, CompTIA A+ was also less demanded overall. Additionally, the high Automation Risk score and Physical Proximity score of the occupation suggest this trend might continue through recovery.

Conversely, demand for the CCNA credential outperformed the market during COVID-19. The three occupations with the largest demand for CCNA are Computer Network Architects; Computer Occupations, All Other; and Network and Computer Systems Administrators. The fact that CCNA credential is requested by occupations with lower Automation Risk scores and lower Physical Proximity scores suggests that it might continue to be more demanded by employers throughout recovery.
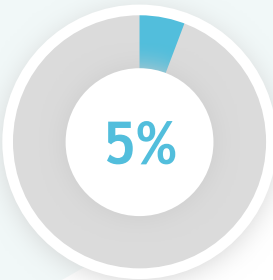
2020 INDEXED JOB POSTINGS: COMPTIA A+

Indexed Total CompTIA A+ Demand   Indexed Total Market Demand

2020 INDEXED JOB POSTINGS: CCNA

Indexed Total CCNA Demand   Indexed Total Market Demand

MANUFACTURING

OVERVIEW

PERCENT OF OVERALL POSTINGS

5%

MINIMUM EDUCATION REQUIREMENT DISTRIBUTION

73% High School

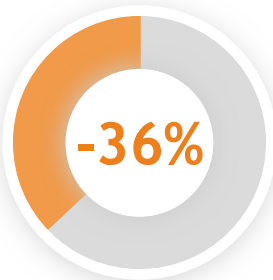**8%** Associate's

18% Bachelor's

1% Bachelor's Plus
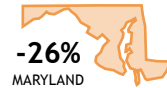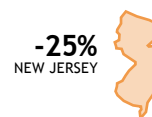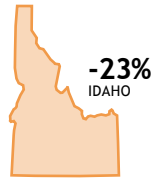
TOP 5 CREDENTIALS EARNED IN CAREER CLUSTER

AWS Certified Welder

NIMS Machining

MSSC Certified Production Technician

PLTW Introduction to Engineering Design

MACWIC Certification
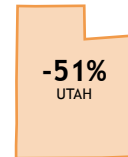
COVID-19 CLUSTER IMPACT

CHANGE IN POSTINGS

-36%

TOP PERFORMING STATES

-23% IDAHO

-25% NEW JERSEY

-26% MARYLAND

LOWEST PERFORMING STATES

-52% NEW HAMPSHIRE

-51% UTAH

-50% CONNECTICUT
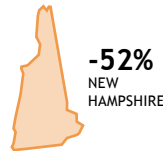
COVID-19 OCCUPATIONAL IMPACT

	OCCUPATION	PERCENT CHANGE IN JOB POSTINGS	PERCENTAGE OF CLUSTER EMPLOYMENT	MEDIAN SALARY
LEAST STABLE	Production, Planning, & Expediting Clerk	-55%	3%	$48,260
	Drafters, All Other	-54%	0.1%	$52,830
	Helpers-Production Workers	-47%	3%	$29,100
MOST STABLE	Butchers and Meat Cutters	-16%	1%	$32,500
	Production Workers, All Other	-28%	2%	$29,800
	Electrical & Electronics Engineering Technicians	-28%	1%	$65,260
LARGEST	Maintenance & Repair Workers, General	-34%	13%	$39,080
	First-Line Supervisors of Production & Operating Workers	-35%	6%	$61,310
	Inspectors, Testers, Sorters, Samplers & Weighers	-39%	5%	$39,140

MANUFACTURING

KEY OCCUPATIONAL FACTORS

	AUTOMATION RISK SCORE (out of 100)	PHYSICAL PROXIMITY SCORE (out of 100)	CRITICAL WORKER DESIGNATION
CLUSTER AVERAGE	70	61	90%

COVID-19 OCCUPATIONAL IMPACT

		AUTOMATION RISK SCORE	PHYSICAL PROXIMITY SCORE	CRITICAL WORKER DESIGNATION
LEAST STABLE OCCUPATION	Production, Planning, & Expediting Clerk	88	52	✓
	Drafters, All Other	67	49	✗
	Helpers-Production Workers	66	54	✓
MOST STABLE OCCUPATION	Butchers and Meat Cutters	93	77	✓
	Production Workers, All Other	92	58	✓
	Electrical & Electronics Engineering Technicians	84	57	✓
LARGEST OCCUPATION	Maintenance & Repair Workers, General	64	69	✓
	First-Line Supervisors of Production & Operating Workers	2	65	✓
	Inspectors, Testers, Sorters, Samplers & Weighers	98	65	✓

ANALYSIS

The *Manufacturing* career cluster had an average decline of 36%. Although the career cluster has 90% of its workers designated as Critical Workers, it also has a high Automation Risk score of 70 and 81% of postings require less than a Bachelor's degree. In spite of the low educational requirements, the three largest occupations within the cluster all had median salaries above the living wage and declines smaller than the national average: Maintenance & Repair Workers, General had a decline of 34%; First-Line Supervisors of Production & Operating Workers had a decline of 35%; and Inspectors, Testers, Sorters, Samples & Weighers had a decline of 39%.

MANUFACTURING

ANALYSIS

The most demanded *Manufacturing* credential is AWS Welding. Welders, Cutters, Solderers and Brazers occupation postings make up the majority of AWS Welding demand (28%) and 14.8% of all job postings in this occupation specifically request the credential. This number fell slightly to 13.2% in 2020. This occupation has a median salary of $42,490 and has a very high Automation Risk score of 94. As the graph below shows, postings requesting AWS Welding slightly outperformed the labor market over the COVID-19 time period.
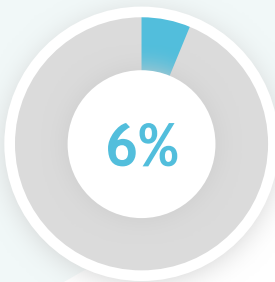
2020 INDEXED JOB POSTINGS: AWS WELDING

Legend: Indexed Total AWS Demand   Indexed Total Market Demand
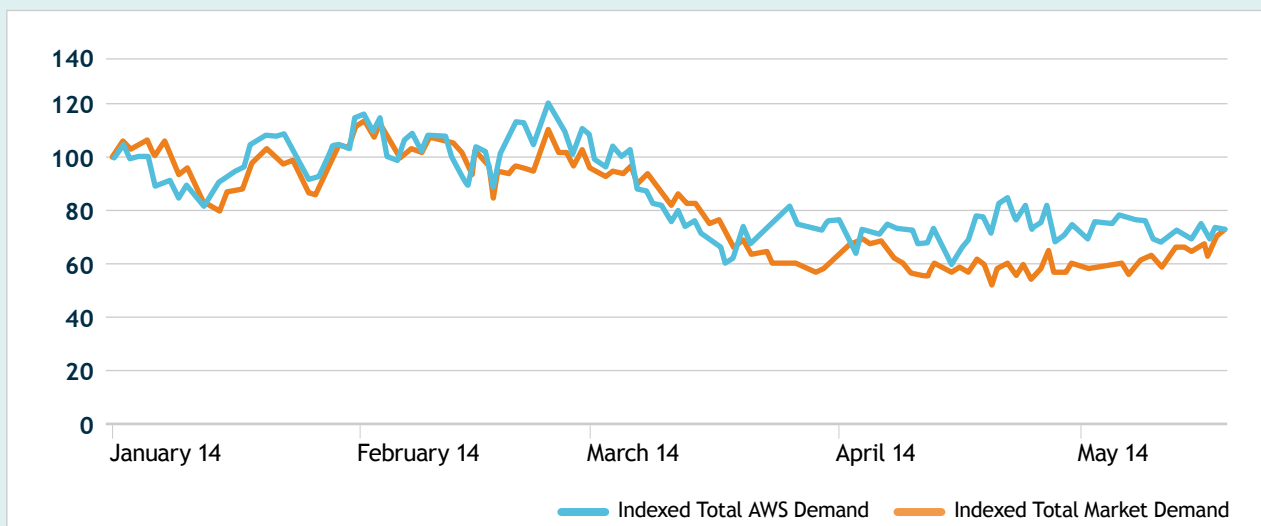
TRANSPORTATION, DISTRIBUTION & LOGISTICS

OVERVIEW

PERCENT OF OVERALL POSTINGS

6%

MINIMUM EDUCATION REQUIREMENT DISTRIBUTION

86% High School

3% Associate's

10% Bachelor's

1% Bachelor's Plus

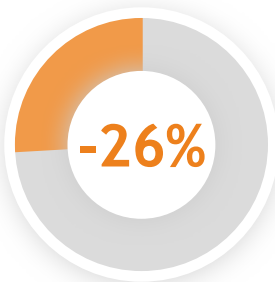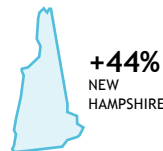| TOP 5 CREDENTIALS EARNED IN CAREER CLUSTER |
|---|
| Automotive Service Excellence Certification |
| S/P2 - Automotive Service |
| S/P2 - Collision Repair and Refinish |
| Valvoline - Motor Oil Certification |
| FAA Small UAS Remote Pilot Airman |

COVID-19 CLUSTER IMPACT

CHANGE IN POSTINGS

-26%

TOP PERFORMING STATES

+44% NEW HAMPSHIRE

+33% NEW JERSEY

+27% MASSACHUSETTS

LOWEST PERFORMING STATES
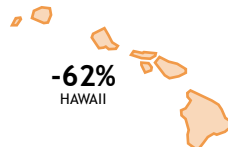
-62% HAWAII

-57% LOUISIANA

-55% KENTUCKY

COVID-19 OCCUPATIONAL IMPACT

	OCCUPATION	PERCENT CHANGE IN JOB POSTINGS	PERCENTAGE OF CLUSTER EMPLOYMENT	MEDIAN SALARY
LEAST STABLE	Taxi Drivers & Chauffeurs	-71%	2%	$31.340
	Parking Lot Attendants	-63%	1%	$25,140
	Billing & Posting Clerks	-50%	4%	$38,740
MOST STABLE	Laborers & Freight, Stock, & Material Movers, Hand	+27%	25%	$29,150
	Industrial Truck & Tractor Operators	-19%	5%	$36,200
	Transportation, Storage, & Distribution Managers	-32%	1%	$94,560
LARGEST	Laborers & Freight, Stock, & Material Movers, Hand	+27%	25%	$29,150
	Heavy & Tractor-Trailer Truck Drivers	-41%	15%	$45,260
	Light Truck or Delivery Services Drivers	-44%	8%	$34,730

TRANSPORTATION, DISTRIBUTION & LOGISTICS

KEY OCCUPATIONAL FACTORS	AUTOMATION RISK SCORE (out of 100)	PHYSICAL PROXIMITY SCORE (out of 100)	CRITICAL WORKER DESIGNATION
CLUSTER AVERAGE	74	61	96%

COVID-19 OCCUPATIONAL IMPACT

		AUTOMATION RISK SCORE	PHYSICAL PROXIMITY SCORE	CRITICAL WORKER DESIGNATION
LEAST STABLE OCCUPATION	Taxi Drivers & Chauffeurs	89	79	✘
	Parking Lot Attendants	87	73	✘
	Billing & Posting Clerks	96	59	✔
MOST STABLE OCCUPATION	Laborers & Freight, Stock, & Material Movers, Hand	85	70	✔
	Industrial Truck & Tractor Operators	93	34	✔
	Transportation, Storage, & Distribution Managers	59	47	✔
LARGEST OCCUPATION	Laborers & Freight, Stock, & Material Movers, Hand	85	70	✔
	Heavy & Tractor-Trailer Truck Drivers	79	42	✔
	Light Truck or Delivery Services Drivers	69	67	✔

ANALYSIS

The *Transportation, Distribution & Logistics* career cluster had the smallest average decline of any career cluster, falling only 26%. Many of the larger occupations making up this career cluster experienced growth during the COVID-19 time period. For example, Laborers & Freight, Stock & Material Movers, Hand, which makes up 25% of total employment in this cluster experienced an average increase of 27% in postings. This occupation has a lower than living-wage median salary of $29,510. The same is true of Packers & Packagers, Hand which had a demand growth of 84% but a median salary of only $25,910. In contrast, Cargo & Freight Agents had a growth of 89% and has a higher median salary, $43,740, making this a better choice within the cluster when looking at potential salary earnings. However, this cluster also has a high Automation Risk score of 74 and 86% of postings require only a high school diploma as an educational requirement.

IMPLICATIONS

As states re-open, we will learn more how the COVID-19 virus effects have impacted economies and labor markets in the medium- and long-term. Not all businesses and industries will look the same after the pandemic. Some will likely experience permanent changes in working conditions, such as the number of employees working at a time and the way the job is performed to maintain social distance.

As the economy shifts, the importance of high-quality, industry-responsive education-to-workforce pathways will increase. Second and third waves of the pandemic could occur, and if that happens, continued disruption is likely.

To both prepare for this disruption and work towards economic recovery, states will need to understand the factors likely to affect future workforce needs, workplace practices and consumer behavior.

We recommend states consider the following factors and questions to understand how their career pathway and credential offerings for students may be affected by the economic impacts of the COVID-19 pandemic.

CRITICAL WORKER DESIGNATION

Being deemed a Critical Worker has insulated some workers from COVID-related job loss. While perhaps insulated from job loss, many of these critical workers are not insulated from risk of exposure to the Coronavirus or infection. Some critical occupations have not only remained stable, but have increased in demand. Key questions in determining COVID-related influence on demand for workers and credentials include:

▶ How many career pathways and credentials does my state offer that lead to critical occupations?

▶ How should students balance the trade-offs between near-term economic stability and increased risk of infection due to Critical Worker designation and associated tasks that require closer proximity to others?

▶ Are the career pathways and credentials that lead to critical jobs associated with occupations that pay a living wage of at least $30,000 and offer career advancement opportunities?

OCCUPATION	FUTURE OUTLOOK
Certified Nursing Assistant **$29,660** MEDIAN ANNUAL SALARY **Critical** DESIGNATION	Although Nursing Assistants experienced more stable demand during COVID-19 among occupations in the *Health Science* career cluster, they also carry health risk for individuals and very low median salary. Despite this stable demand, students interested in nursing pathways may seek occupations with increased credentials, such as LPN, to offset the low median salary and increased exposure to viruses.
Diagnostic Medical Sonographer **$74,320** MEDIAN ANNUAL SALARY **Non-critical** DESIGNATION	As one of the few non-critical occupations within the *Health Science* career cluster, Diagnostic Medical Sonographers had one of the largest declines in postings at 62%. However, this occupation carries a high median salary. **As patients regain comfort visiting healthcare settings, demand may return to pre-crisis levels, as the number of people overall needing sonography services is unlikely to decline, even if those services are currently being delayed or avoided.**

👥 PHYSICAL PROXIMITY

Proximity to others has been used throughout the pandemic as a measure of safety, resulting in restrictions to some businesses being open. As the need for physical proximity has becomes a greater and more universal concern in career planning, new considerations for choosing careers and credentials should include:

▶ Which career pathways and credentials does my state offer that lead to jobs requiring a high proximity to others?

▶ What are the health and economic stability risks for students preparing to enter high-proximity jobs?

▶ How are students and decision-makers informed about which career pathways and lead to higher-proximity jobs—especially in states with less-stringent proximity or personal protective restrictions?

OCCUPATION	FUTURE OUTLOOK
Skincare Specialists **$34,090** MEDIAN ANNUAL SALARY **HIGH** PHYSICAL PROXIMITY	Skincare Specialists often require close contact with clients in order to perform their jobs. Since much of the work focuses on the client's face, this adds an additional layer of risk because masks are not always practical in certain situations. Many beauty salons were ordered to close when coronavirus numbers increased, and states have varied in their reopening policies with many limiting the number of salon clients and others limiting services offered (e.g. not allowing facials). **As a result, students going into this field will be taking on health risks in addition to the economic instability currently present in the field. As a discretionary/luxury activity, consumer demand for these services may also remain depressed as long as the recession endures.**
Mental Health and Substance Abuse Social Workers **$46,650** MEDIAN ANNUAL SALARY **LOW** PHYSICAL PROXIMITY	Workers in this field can typically perform their jobs from a distance and can also use telephone and video interfaces to serve their clients. Additionally, the toll of COVID-19 on the nation's mental health suggests that demand for this field may rise. **Students interested in this occupation may face less health and economic risk than others who pursue healthcare and social assistance specialties that cannot be delivered remotely as easily.**

REMOTE WORK

The pandemic has increased employees' and companies' abilities and willingness allow employees to work remotely and has also increased worker demand for remote work. As these trends accelerate, employers should actively signal in job postings the potential for remote work so states can track which occupations are more likely to be remote and prepare students for opportunities beyond their labor market area. In the meantime, states can address the question of remote work based on current norms in the occupation.

▶ What is the likelihood of a career pathway and credential leading to an occupation that
   1) can be done effectively in a remote fashion, and
   2) whose employers allow employees to work remotely even after the pandemic has passed?

▶ How can my state prepare students for jobs where remote work is an option to remain open to opportunities that will still exist in the event of a second or third wave of COVID-19 or future health crises?

▶ Can remote work practices (like use of Zoom, time-management, effective online communication and collaboration) be incorporated into career pathways that prepare students for occupations that allow remote work, and will those skills become important components of industry-recognized credentials?

AUTOMATION RISK

The pandemic will accelerate current trends towards automation as some businesses and employers choose not to re-hire workers in favor of automating processes. Nearly all occupations are experiencing some form of automation, and education leaders should consider:

> ▶ Which career pathways and credentials does my state offer that lead to jobs at high risk of automation, and which may face more rapid shift to automation technologies coming out of this recession?

> ▶ Which career clusters have higher overall risks of automation, and how can career pathways and credentials be used to advise students toward jobs that are more likely to survive automation?

OCCUPATION	FUTURE OUTLOOK
Combined Food Preparation and Serving Workers, Including Fast Food **$22,740** MEDIAN ANNUAL SALARY **HIGH** AUTOMATION RISK	COVID-19 may lead to greater use of touchscreen or mobile ordering technology in the restaurant industry, both to cut costs and to keep consumers and employees safe. **Food Preparation and Serving Workers are at high risk of being replaced as these existing technologies gain greater use beyond fast food and fast casual restaurants and into more takeout and traditional sit-down restaurants.**
Food Service Managers **$55,320** MEDIAN ANNUAL SALARY **LOW** AUTOMATION RISK	As restaurants implement new policies to stay in compliance with COVID-19 guidelines, manager positions will become more important than ever. **Oversight of social distancing and sanitation practices along with knowledge of typical food safety regulations will play an increased role in restaurant success due to the occupation's low Automation Risk and high Physical Proximity scores.**

⊙ LICENSING AND EXPIRY HURDLES

While licensed occupations are often thought of as reliable "good" jobs, many do not pay a living wage and some require frequent re-licensing or expire. With more remote work opportunities and the potential to move to lower cost of living areas, re-licensing or expiring credentials may become more burdensome hurdles. Other credentials, especially technical and software focused credentials, may require frequent updating to stay current with the skills employers demand in the job market. Key questions for those considering occupations that require licensure include:

▶ Which career pathways and credentials does my state offer to students that will ultimately require state-based licenses?

▶ Do licensing requirements limit inter-state mobility?

▶ Which career pathways and credentials does my state offer that lead to licensure that will need to be renewed, and what are the time, cost and process burdens associated with re-licensing?

OCCUPATION	FUTURE OUTLOOK
Hairdressers, Hairstylists & Cosmetologists **$26,090** MEDIAN ANNUAL SALARY **HIGH** LICENSING AND EXPIRY HURDLES	All states require individuals in this occupation to have a license to practice, with training hours and exam requirements varying by state. Additionally, licenses need to be renewed every one to two years. **Combined with the low median wage for this occupation and the especially volatile demand throughout the COVID-19 time period, the licensing and expiry burdens make this occupation a much more limiting career choice than many others within the cluster.**
Electricians **$56,180** MEDIAN ANNUAL SALARY **HIGH** LICENSING AND EXPIRY HURDLES	Electrician license requirements vary by state and by level, with some states requiring licenses for apprenticeships while others require it only at the journeyman, master electrician or electrical contractor level. Some states have reciprocal licenses which allow work across state lines. In spite of these high hurdles, Electricians had relatively strong demand throughout the COVID-19 time period and also allow for social distancing during work. **Should COVID-19 practices endure and call for additional investments in remote work and learning infrastructure, then demand for electricians will likely grow. These factors along with the high median salary make this a stronger career choice among licensed occupations.**

RECOMMENDATIONS

In light of the previous data and analysis, we pose three suggestions.

1 **INCREASE THE USE OF LABOR MARKET DATA BY STAKEHOLDERS.**
Policymakers can identify labor market patterns in their states and provide occupational and credential demand data to districts and schools. They can also focus funding on career pathways and credentials that lead to high-wage, in-demand, relatively stable occupations as well as target budget reductions on programs that lead to low-wage, low-demand or highly volatile occupations. Education institutions can include occupation stability and volatility criteria in program approval processes, local offerings/promotion decisions and incentive methodologies.

2 **REASSESS CAREER PATHWAYS CONSIDERING THE KEY OCCUPATIONAL FACTORS DRIVING RECOVERY AFTER THE COVID-19 CRISIS.**
This includes properly assessing and communicating the potential risks and benefits associated with occupations and aligned credentials that prepare students for the "front-lines" of pandemic-related activity, including health risks and job loss risks. Additionally, it requires considering Automation Risk which may become exacerbated soon and encouraging programs that lead to occupations that aren't at risk of being automated. This assessment could also include identifying programs that may experience an increase in remote work and adding standards that support learning the skills required to be successful remotely.

3 **EMPOWER STUDENTS AND PARENTS TO USE JOB DEMAND, WAGE AND RISK INFORMATION.**
Equip families to access and understand factors related to occupational stability so they can evaluate their ability and willingness to accept various risks and benefits as they plan their careers.

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