

Aligning Opportunities in Northeast Ohio

A Resource to Aid in Addressing the Demand and Supply
Imbalance in the Region's Workforce

2020 Report



PREPARED BY **Team NEO**



IN PARTNERSHIP WITH **Delta Dental**



WITH GENEROUS SUPPORT BY



SHERWIN-WILLIAMS.



About Aligning Opportunities

The Aligning Opportunities annual report identifies the supply and demand misalignment within Northeast Ohio's talent pipeline, specifically within the in-demand, high-growth fields of health care, IT and manufacturing.

In 2017, the Cleveland Foundation commissioned Team NEO to expand past work to understand the regional talent pipeline compared to demand. The purpose of our research and analysis is to inform and help accelerate talent development policy in the region. That policy will provide skilled talent critical to growing key wealth generating sectors in the economy and, at the same time, provide opportunities for good careers and incomes for the residents in Northeast Ohio.

The 2018 edition of Aligning Opportunities in Northeast Ohio included two new indicators (entry-level demand and entry-level alignment) critical to accurate analysis of the talent supply and demand alignment. This edition also includes a deep dive into three occupation groups with the highest demand: computer/IT, health care and manufacturing. The Sherwin-Williams Company provided generous support for the development of this report.

Since 2019, Team NEO has partnered with Delta Dental to increase awareness of Aligning Opportunities among the business and higher-education communities. We engage key decision-makers in meaningful discussions about resolving the talent supply and equity gap, and providing students with greater awareness of, and access to, in-demand careers.

In 2020, Team NEO expanded insights into the supply-demand imbalance in our region's workforce with the release of [Misaligned Opportunities](#) – a new supplement to the annual report that reveals data reflecting how opportunities to flourish have not been equal for all members of our community. The report, prepared in partnership with Delta Dental and with generous support from

College Now of Greater Cleveland and Lumina Foundation, includes a robust dataset aimed at better defining workforce participation disparities in Northeast Ohio, particularly among persons of color, using metrics like educational attainment, entrepreneurship and racial proportionality of in-demand occupations.

More about Team NEO talent insights and the executive summary of the 2020 edition of Aligning Opportunities can be found at this link

aligningopportunities.teamneo.org.



Report Overview

Section	Focus	Major Takeaway
Labor Trends	Provides regional workforce data - education attainment levels, equity disparities, commuting patterns, employment distribution across occupation and industry, and graduate retention.	By 2025, 65 percent of Ohio jobs will require a postsecondary credential. In 2018, 55 percent of Northeast Ohio residents, 25 years and older, have attended some college (includes certificate earners) or earned a postsecondary degree.
Job Demand	Describes 94 professional and technical occupations using six key variables: 2019 demand; 2019 entry-level demand; 2019 jobs; median annual salary; family-sustaining wage, 2019 – 2024 % job growth and risk of automation.	There remain many openings in in-demand occupations that provide a family sustaining wage in Northeast Ohio. Unfortunately, the jobs too often go unfilled.
Talent Supply	Reviews student completion data at the postsecondary level (sub-baccalaureate, baccalaureate and graduate).	Regional postsecondary institutions are producing too few students with the credentials (i.e. certificates and degrees) needed in many high-demand technical fields (e.g., only 3.7% of all certificates and associate degrees and only 3.5% of all bachelor's and master's degrees awarded in 2018 were in Computer & Information Science).
Demand/Supply Alignment	Aligns data produced on demand across key	There is substantial misalignment between

	occupational areas with data on credential output from postsecondary institutions in the region.	the demand for workers and the supply of appropriately credentialed workers in key areas including IT, health care, manufacturing, and finance and business services.
Misaligned Opportunities	Analyzes data surrounding racial inequities in the talent development space in Northeast Ohio.	Northeast Ohio's minority populations are severely disconnected from opportunities for advancement. As a region, we must develop strategies to connect underserved communities to greater economic participation.
Implications	Implications of the research are listed at the conclusion of the report.	Although there are significant opportunities to better align supply and demand, it will require a systemic effort.

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Labor Force Trends

This section provides data related to Northeast Ohio's workforce including job-related educational demand, education attainment levels, commuting patterns, industry and occupational employment data, and graduate retention.

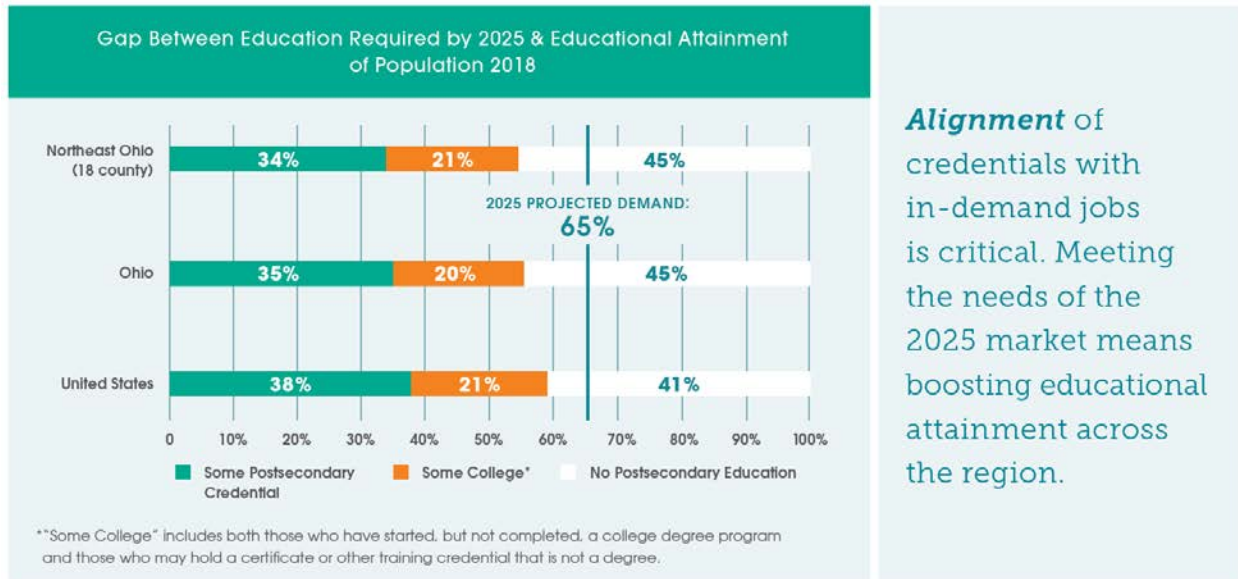
Key observations include:

- The demand for skilled and educated talent is increasing. By 2025, most jobs in Ohio will require some type of postsecondary credential.
- Only 55 percent of adults in Northeast Ohio have the required education or skill level to meet the demand predicted by 2025. A 10 percent growth is necessary to achieve the 2025 projected demand of 65 percent.
- Data show that residents with higher levels of education – from a one-year credential to a two-year degree to a baccalaureate degree – are more likely to be employed and earn more money.
- Residents in Northeast Ohio often travel across county lines for jobs, 44% work in a different county than they live.
- Employment is spread across many occupational groupings and industry sectors.
- Between 2001 and 2018, the population in Northeast Ohio dropped by 155,000 to 4.278 million and the labor force dropped by 146,000 to 2.111 million.
- If Northeast Ohio grew retention by 57% annually, the region could retain 3,130 more BA+ grads.

Educational Attainment

By 2025, 65% of Ohio's workforce will need to have a 2- or 4-year degree, or certified marketable skill. Today the level of educational attainment in Northeast Ohio falls well short of that mark, with only 34% of the region's population having received a postsecondary credential, and another 21% having some training but no degree or certificate to show for it (figure 1).

Figure 1: Gap Between Education Required by 2025 and Education Attainment of Population in 2019

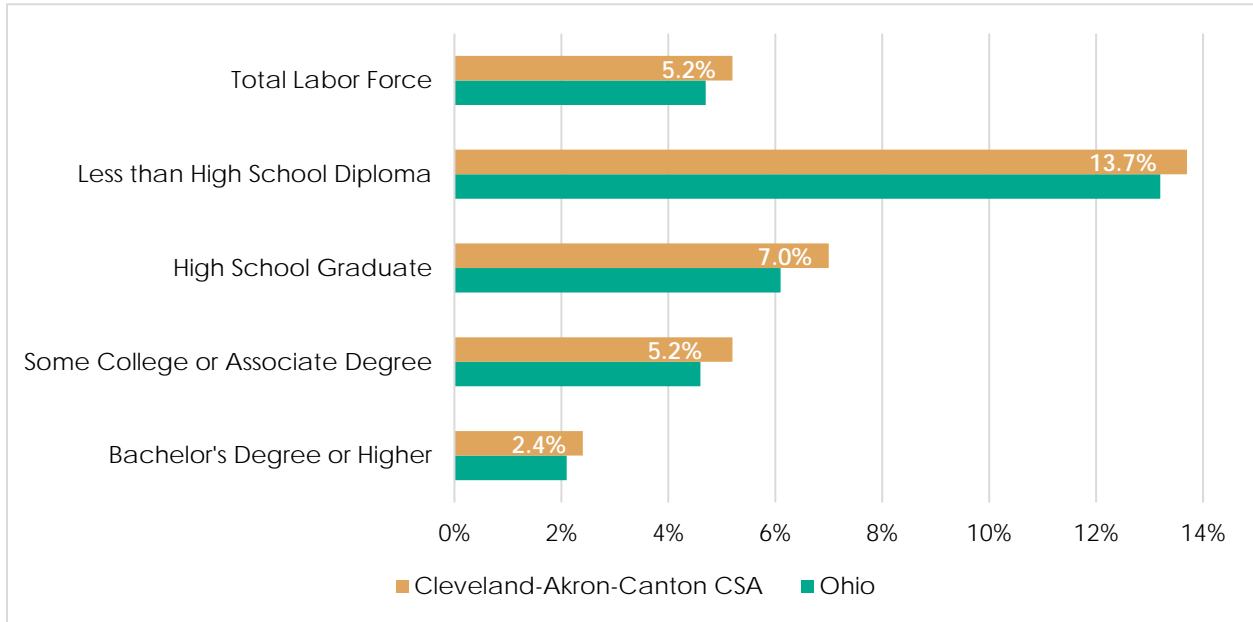


Source: ACS 2014-2018; EMSI. Population 25 years and over

The challenge at hand is two-fold: 1) encourage another 10 percent of the population to receive some level of postsecondary credential and 2) nudge the population with some college to complete their credential. Although postsecondary educational attainment has grown 1% since the 2017 Aligning Opportunities report, a more aggressive pace is necessary if the region is to meet its 65% goal by 2025.

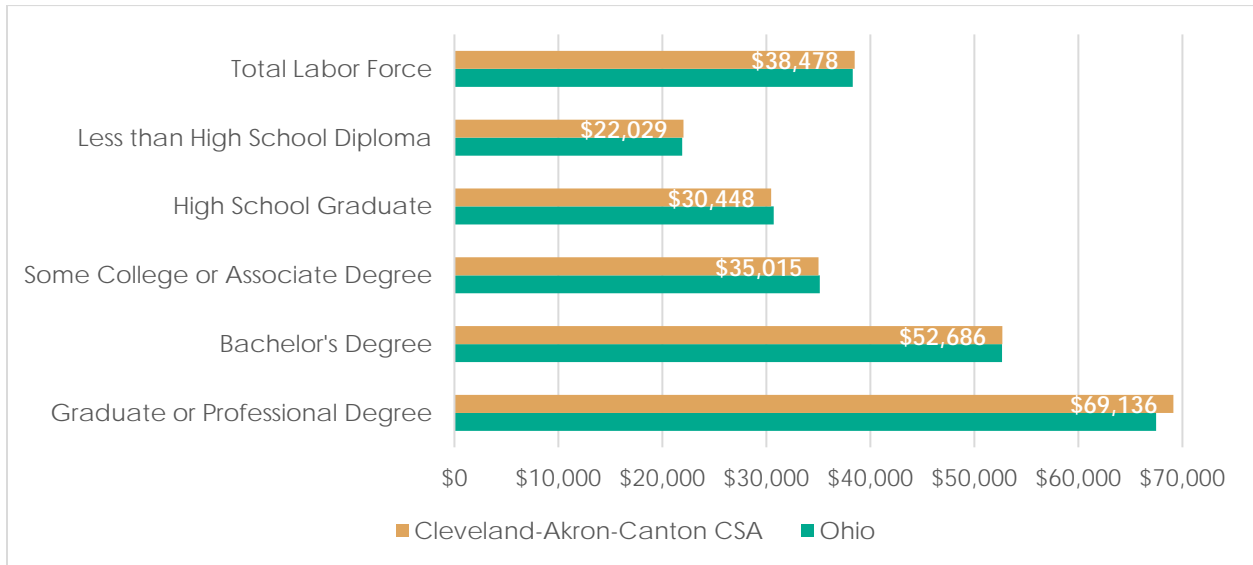
Educational attainment is tied to jobs and income. Regional residents with higher levels of education have lower unemployment rates and higher median salaries as seen in figures 2 and 3.

Figure 2: Unemployment Rate by Education



Source: U.S. Census Bureau, 2014-2018 American Community Survey 5-Year Estimates. Civilian population ages 25+

Figure 3: Median Salary by Education

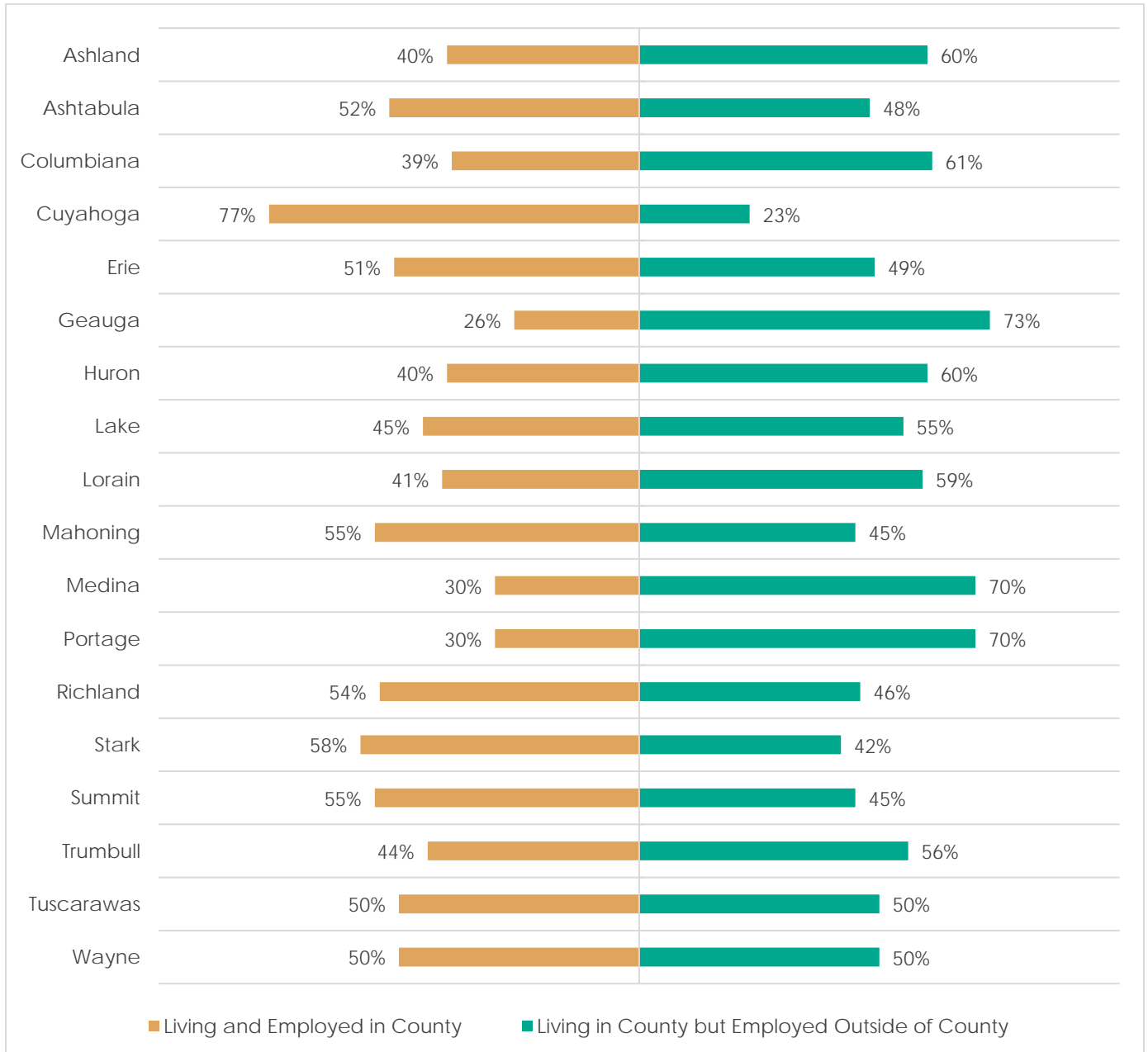


Source: U.S. Census Bureau, 2014-2018 American Community Survey 5-Year Estimates. Civilian population ages 25+

Commuting Patterns

Residents in Northeast Ohio often travel across county lines for jobs. About 44 percent of Northeast Ohio residents work in a different county than they live.

Figure 4: Northeast Ohio Worker Commuting Pattern by County, 2017

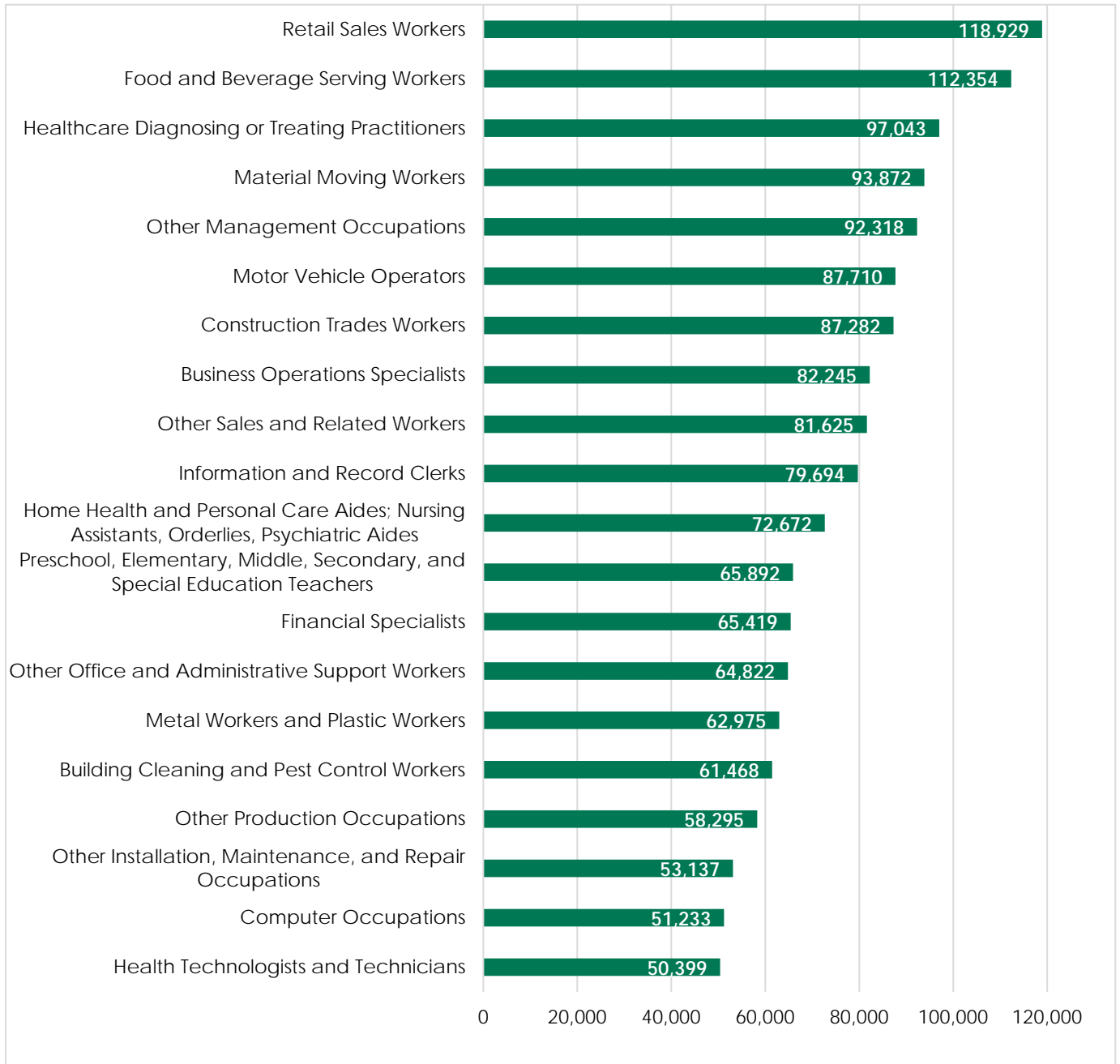


Source: U.S. Census Bureau, OnTheMap and LEHD Origin-Destination Employment Statistics (2017)

Employment Trends

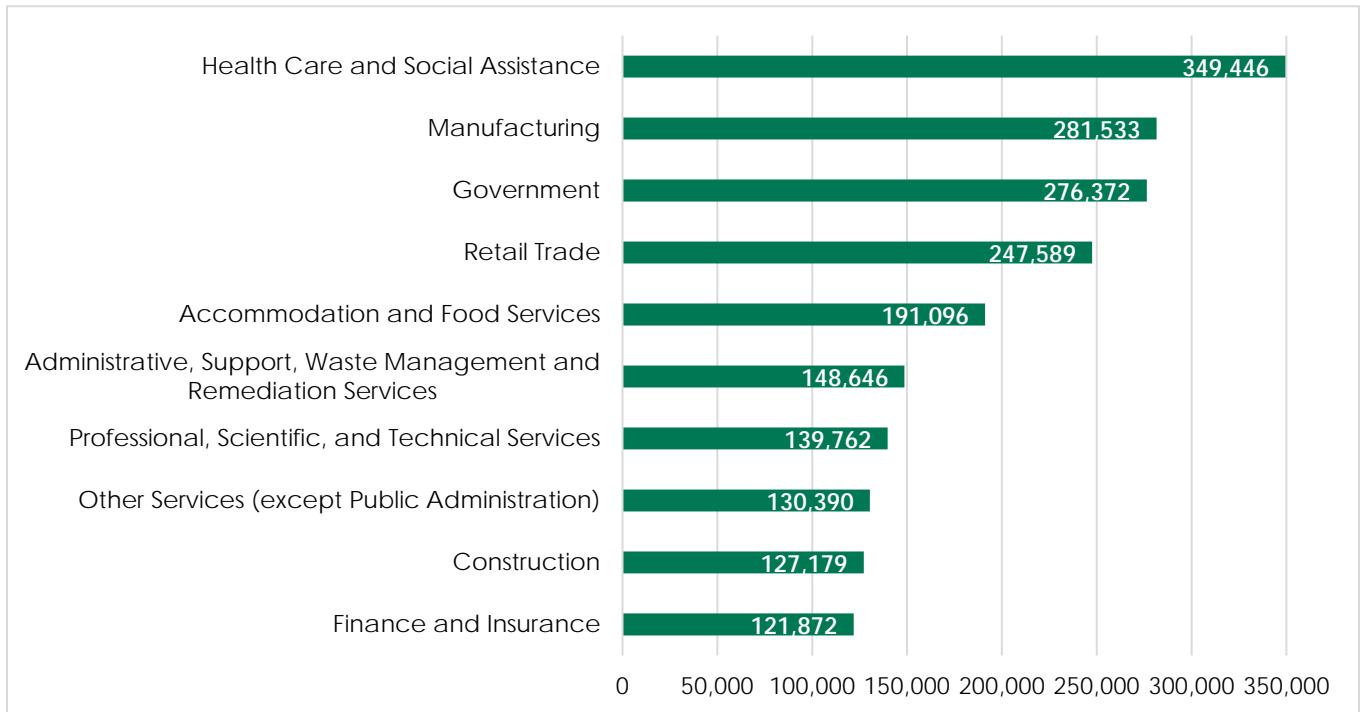
Employment opportunity is spread across occupation and industry in Northeast Ohio.

Figure 5: Top Jobs by Occupation, Northeast Ohio, 2019



Source: U.S. Bureau of Labor Statistics (BLS), Quarterly Census of Employment and Wages (QCEW) Employees, Non-QCEW Employees, Non-QCEW Employees & Self-Employed - Emsi 2020 Class of Worker, Data are for NEO 18 County region

Figure 6: Top Jobs by Sector, Northeast Ohio, 2019



Source: U.S. Bureau of Labor Statistics (BLS), Quarterly Census of Employment and Wages (QCEW) Employees, Non-QCEW Employees, Non-QCEW Employees & Self-Employed - Emsi 2020 Class of Worker, Data are for NEO 18 County region

Graduate Pipeline & Retention

Northeast Ohio produces 20% fewer graduates than the national average. Additionally, Northeast Ohio retains less than 47% of its graduates. This translates to only 14,608 graduates annually. To close the talent gap, it is imperative to increase the pipeline of credentials awarded and connect graduates to jobs within Northeast Ohio. Work-based learning experiences, such as internships or apprenticeships that lead to on-the-job skills development or full-time employment, are one solution for increasing retention.

Every market has nuances that contribute to the retention rate and its overall impact on the ability to develop talent. Competing effectively against larger markets with a strong labor pool will require increasing the number of credentials awarded as well as improving retention rates as shown in figure 7.

Figure 7: Northeast Ohio Retention Projections

If Northeast Ohio **grew retention to 57% annually**, the region could retain:



SOURCE: EMSI 2019

NOTE: Graduate retention is based on 2017 BA+ graduates.

Job Demand

This section details information about 94 professional and technical occupational groups. This is an expansion of the 46 key professional and technical occupational originally identified by FutureWorks in 2014. In the tables that follow, we analyzed these groups using the following key variables:

- **Total Demand 2019.** Total Demand 2019 (Demand 2019) is a calculation of projected annual job openings (Bureau of Labor Statistics) & real-time job postings (Burning Glass Labor Insight) for occupations in the 18-county region of Northeast Ohio.
- **Entry-Level Demand 2019.** Entry-Level Demand 2019 (Entry Demand 2019) is derived using the same calculation as Total Demand 2019, but only includes job postings that list less than five years of experience, and do not include the keywords “Chief”, “Senior”, “Director,” or “Vice President.”
- **2019 Jobs.** This is a 2019 calculation of the total number of jobs in the region from EMSI’s jobs data based primarily on the Quarterly Census on Employment and Wages (QCEW) from the U.S. Bureau of Labor Statistics (BLS) and the Bureau of Economic Analysis (BEA).
- **Median Annual Earnings.** Median Annual Earnings is the earnings midpoint of the workers in that occupation.
- **Family Sustaining Wage.** According to a national Living Wage Calculator developed by Amy K. Glasmeier at Massachusetts Institute of Technology, the hourly wage that an individual in Cuyahoga County must earn to support his/her family of four is \$24.55 as of September 2020. Our update calculates if the mean wage of each occupational group “meets” the family sustaining wage standard (within 10 percent of the county average), is “below” the county wage standard (more than 10 percent below the county average) or is “above” the county wage standard (more than 10 percent above the county average). We chose to use the

Cuyahoga county family sustaining wage for consistency, but it is important to recognize the localized differences in the region.

- **Projected Growth 2019-2024.** Team NEO used EMSI's BLS projections of job growth from 2019 to 2024 to calculate if each occupational group is projected to have "high" growth (above 2 percent), "moderate" growth (0-2 percent), or "low" growth (less than 0 percent).
- **Risk of Automation.** This is a Burning Glass variable describing the probability of computerization for an occupation within the next 20 years. It is based on the seminal Oxford University study on automation. High risk of automation is the top quartile of scores. Medium risk of automation is the third quartile of scores. Low risk is the bottom two quartile of scores.

Note: The forecasts and measures of demand are from EMSI's model of U.S. Bureau of Labor Statistics data and Burning Glass Labor Insight real-time job postings. These projections should be supplemented by locally available analyses of the occupations when appropriate.

Figure 8: Job Demand, Northeast Ohio 2019

SOC	Occupational Group (3-Digit SOC)	Demand 2019	Entry-Level Demand 2019	Jobs 2019	Median Annual Earnings	Family Sustaining Wage*	Projected Growth 2019-2024	Risk of Automation
11-1000	Top Executives	2,996	1,926	27,302	\$95,999	Above	High	Low
11-2000	Advertising, Marketing, Promotions, Public Relations, and Sales Managers	3,537	1,411	7,355	\$115,175	Above	High	Low
11-3000	Operations Specialties Managers	5,177	2,898	25,972	\$106,459	Above	High	Low
11-9000	Other Management Occupations	12,763	5,879	45,711	\$69,735	Above	Moderate	Low
13-1000	Business Operations Specialists	11,645	7,576	68,609	\$63,281	Above	Moderate	Medium
13-2000	Financial Specialists	6,372	3,736	37,424	\$66,444	Above	Moderate	High
15-1200	Computer Occupations	17,947	8,220	47,392	\$72,594	Above	High	Low
15-2000	Mathematical Science Occupations	733	356	1,762	\$78,756	Above	High	Low
17-1000	Architects, Surveyors, and Cartographers	311	157	2,113	\$70,354	Above	Moderate	Low
17-2000	Engineers	4,620	2,481	21,160	\$82,289	Above	Moderate	Low
17-3000	Drafters, Engineering Technicians, and Mapping Technicians	3,068	1,608	8,097	\$56,212	Above	Moderate	Medium
19-1000	Life Scientists	514	324	2,891	\$63,846	Above	High	Low
19-2000	Physical Scientists	401	239	2,474	\$72,378	Above	Moderate	Low
19-3000	Social Scientists and Related Workers	506	251	3,102	\$72,412	Above	High	Low
19-4000	Life, Physical, and Social Science Technicians	931	602	5,017	\$46,674	Meets	Moderate	Medium
21-1000	Counselors, Social Workers, and Other Community and Social Service Specialists	4,244	3,049	33,031	\$43,990	Below	High	Low

SOC	Occupational Group (3-Digit SOC)	Demand 2019	Entry-Level Demand 2019	Jobs 2019	Median Annual Earnings	Family Sustaining Wage*	Projected Growth 2019-2024	Risk of Automation
21-2000	Religious Workers	521	453	6,845	\$44,332	Below	Moderate	Low
23-1000	Lawyers, Judges, and Related Workers	835	503	11,049	\$99,017	Above	Low	Low
23-2000	Legal Support Workers	941	690	6,011	\$45,572	Below	Low	High
25-1000	Postsecondary Teachers	1,753	981	14,781	\$72,533	Above	High	Low
25-2000	Preschool, Elementary, Middle, Secondary, and Special Education Teachers	5,054	3,161	65,228	\$60,803	Above	Low	Low
25-3000	Other Teachers and Instructors	1,407	835	11,671	\$32,024	Below	High	Low
25-4000	Librarians, Curators, and Archivists	352	310	3,953	\$39,157	Below	Moderate	Medium
25-9000	Other Educational Instruction and Library Occupations	1,699	1,266	19,302	\$28,907	Below	Moderate	Low
27-1000	Art and Design Workers	2,534	1,153	9,857	\$37,599	Below	Moderate	Low
27-2000	Entertainers and Performers, Sports and Related Workers	1,313	854	9,569	\$33,368	Below	Moderate	Low
27-3000	Media and Communication Workers	1,244	837	8,064	\$48,444	Meets	Moderate	Low
27-4000	Media and Communication Equipment Workers	435	281	3,026	\$41,381	Below	Low	Medium
29-1000	Healthcare Diagnosing or Treating Practitioners	20,083	9,849	90,566	\$75,985	Above	High	Low
29-2000	Health Technologists and Technicians	9,510	5,405	49,480	\$43,256	Below	Moderate	Low
29-9000	Other Healthcare Practitioners and Technical Occupations	583	425	3,046	\$62,386	Above	High	Low

SOC	Occupational Group (3-Digit SOC)	Demand 2019	Entry-Level Demand 2019	Jobs 2019	Median Annual Earnings	Family Sustaining Wage*	Projected Growth 2019-2024	Risk of Automation
31-1100	Home Health and Personal Care Aides; and Nursing Assistants, Orderlies, and Psychiatric Aides	7,595	5,639	65,569	\$24,123	Below	High	Low
31-2000	Occupational Therapy and Physical Therapist Assistants and Aides	746	479	5,072	\$57,914	Above	High	Low
31-9000	Other Healthcare Support Occupations	3,890	2,470	21,243	\$34,369	Below	High	Medium
33-1000	Supervisors of Protective Service Workers	197	168	2,883	\$70,794	Above	Low	Low
33-2000	Firefighting and Prevention Workers	302	276	7,136	\$46,024	Meets	Moderate	Low
33-3000	Law Enforcement Workers	1,003	770	16,035	\$54,081	Meets	Low	Medium
33-9000	Other Protective Service Workers	3,226	2,026	20,243	\$27,640	Below	Low	Medium
35-1000	Supervisors of Food Preparation and Serving Workers	2,968	1,858	15,624	\$29,825	Below	High	Medium
35-2000	Cooks and Food Preparation Workers	5,605	4,093	42,450	\$24,153	Below	High	High
35-3000	Food and Beverage Serving Workers	16,119	11,843	111,207	\$20,042	Below	High	High
35-9000	Other Food Preparation and Serving Related Workers	3,276	1,821	15,821	\$20,333	Below	High	High
37-1000	Supervisors of Building and Grounds Cleaning and Maintenance Workers	622	399	3,576	\$40,767	Below	Moderate	High
37-2000	Building Cleaning and Pest Control Workers	7,412	4,256	50,882	\$24,672	Below	Moderate	Medium
37-3000	Grounds Maintenance Workers	1,993	1,524	18,758	\$28,797	Below	Moderate	High

SOC	Occupational Group (3-Digit SOC)	Demand 2019	Entry-Level Demand 2019	Jobs 2019	Median Annual Earnings	Family Sustaining Wage*	Projected Growth 2019-2024	Risk of Automation
39-1000	Supervisors of Personal Care and Service Workers	234	174	2,929	\$34,438	Below	High	Low
39-2000	Animal Care and Service Workers	710	468	3,911	\$22,142	Below	High	Medium
39-3000	Entertainment Attendants and Related Workers	1,398	970	7,163	\$20,232	Below	Moderate	High
39-4000	Funeral Service Workers	140	136	1,781	\$33,053	Below	Low	Low
39-5000	Personal Appearance Workers	1,615	1,022	14,828	\$22,330	Below	Low	Medium
39-6000	Baggage Porters, Bellhops, and Concierges	199	85	550	\$25,157	Below	High	Medium
39-7000	Tour and Travel Guides	68	51	465	\$21,063	Below	High	Medium
39-9000	Other Personal Care and Service Workers	5,190	2,553	24,986	\$23,227	Below	Moderate	Low
41-1000	Supervisors of Sales Workers	5,919	3,602	21,166	\$39,413	Below	Low	Low
41-2000	Retail Sales Workers	17,878	11,978	110,746	\$22,877	Below	Low	High
41-3000	Sales Representatives, Services	5,238	3,479	32,691	\$53,136	Meets	High	Medium
41-4000	Sales Representatives, Wholesale and Manufacturing	8,756	3,926	27,619	\$61,223	Above	Low	Medium
41-9000	Other Sales and Related Workers	2,847	1,680	15,395	\$29,660	Below	Low	High
43-1000	Supervisors of Office and Administrative Support Workers	1,972	1,347	17,123	\$54,643	Meets	Low	Low
43-2000	Communications Equipment Operators	131	114	1,152	\$30,699	Below	Low	High
43-3000	Financial Clerks	6,094	4,531	42,522	\$36,625	Below	Low	High
43-4000	Information and Record Clerks	13,603	8,879	76,687	\$33,287	Below	Low	High

SOC	Occupational Group (3-Digit SOC)	Demand 2019	Entry-Level Demand 2019	Jobs 2019	Median Annual Earnings	Family Sustaining Wage*	Projected Growth 2019-2024	Risk of Automation
43-5000	Material Recording, Scheduling, Dispatching, and Distributing Workers	5,837	3,709	37,774	\$39,492	Below	Low	High
43-6000	Secretaries and Administrative Assistants	6,132	4,182	47,648	\$37,005	Below	Low	High
43-9000	Other Office and Administrative Support Workers	5,657	4,426	61,753	\$34,033	Below	Low	High
45-1000	Supervisors of Farming, Fishing, and Forestry Workers	43	36	325	\$45,892	Below	High	Medium
45-2000	Agricultural Workers	671	623	5,955	\$28,931	Below	High	High
45-3000	Fishing and Hunting Workers	16	14	79	\$34,587	Below	High	Medium
45-4000	Forest, Conservation, and Logging Workers	112	69	288	\$35,132	Below	Low	Medium
47-1000	Supervisors of Construction and Extraction Workers	561	474	6,675	\$60,838	Above	High	Low
47-2000	Construction Trades Workers	6,387	5,238	68,938	\$46,883	Meets	High	Medium
47-3000	Helpers, Construction Trades	216	182	1,589	\$33,400	Below	High	Medium
47-4000	Other Construction and Related Workers	674	551	6,431	\$45,025	Below	Moderate	Medium
47-5000	Extraction Workers	241	175	1,712	\$43,862	Below	High	Medium
49-1000	Supervisors of Installation, Maintenance, and Repair Workers	1,062	639	5,893	\$64,698	Above	Moderate	Low
49-2000	Electrical and Electronic Equipment Mechanics, Installers, and Repairers	778	536	6,930	\$45,795	Below	Low	Medium

SOC	Occupational Group (3-Digit SOC)	Demand 2019	Entry-Level Demand 2019	Jobs 2019	Median Annual Earnings	Family Sustaining Wage*	Projected Growth 2019-2024	Risk of Automation
49-3000	Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	3,583	2,049	23,813	\$40,231	Below	Moderate	Medium
49-9000	Other Installation, Maintenance, and Repair Occupations	7,302	4,650	48,433	\$43,751	Below	Moderate	Medium
51-1000	Supervisors of Production Workers	1,452	1,077	13,052	\$59,143	Above	Low	Low
51-2000	Assemblers and Fabricators	3,545	2,747	36,189	\$33,702	Below	Low	High
51-3000	Food Processing Workers	1,451	965	10,967	\$27,165	Below	Moderate	High
51-4000	Metal Workers and Plastic Workers	6,644	5,400	61,951	\$36,934	Below	Low	High
51-5100	Printing Workers	506	391	4,895	\$36,148	Below	Low	High
51-6000	Textile, Apparel, and Furnishings Workers	1,091	640	6,918	\$24,263	Below	Low	High
51-7000	Woodworkers	345	300	3,914	\$35,062	Below	High	High
51-8000	Plant and System Operators	362	278	3,727	\$58,349	Above	Low	Medium
51-9000	Other Production Occupations	7,294	5,083	55,733	\$35,359	Below	Low	High
53-1000	Supervisors of Transportation and Material Moving Workers	777	645	5,561	\$52,450	Meets	High	Low
53-2000	Air Transportation Workers	168	146	2,341	\$112,512	Above	Low	Low
53-3000	Motor Vehicle Operators	11,735	7,435	63,852	\$35,049	Below	Moderate	Medium
53-4000	Rail Transportation Workers	132	116	1,391	\$61,645	Above	Low	High
53-5000	Water Transportation Workers	73	45	524	\$49,154	Meets	Low	Low
53-6000	Other Transportation Workers	774	462	3,678	\$23,066	Below	Moderate	High
53-7000	Material Moving Workers	10,989	8,030	88,816	\$28,408	Below	Moderate	High

Source: Burning Glass Labor Insight, Emsi 2020, Team Northeast Ohio Calculations

*Family Sustaining Wage is based on a wage calculation of a family of four (two adults and two children) with only one working adult.

Talent Supply

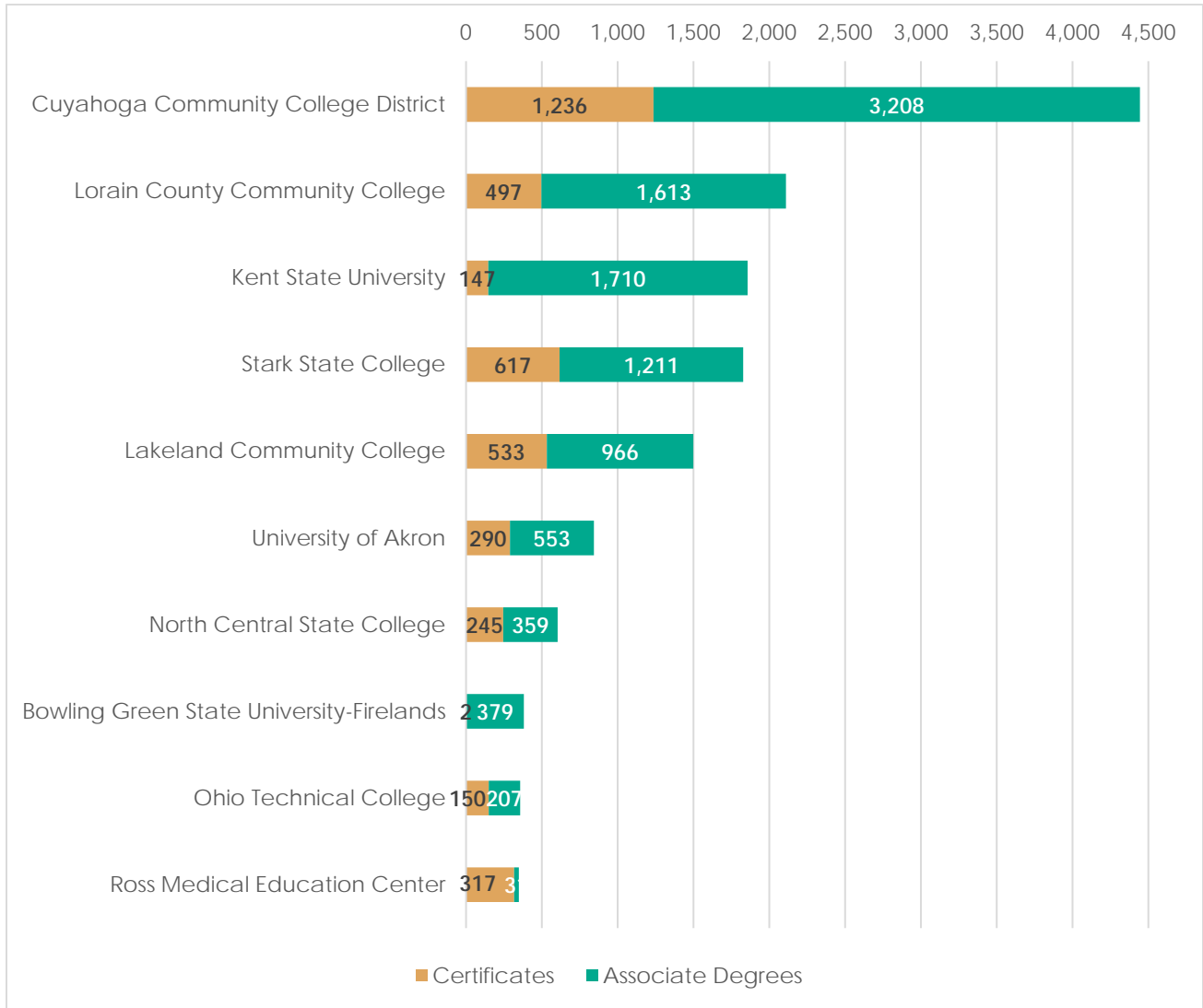
The most significant sources of technically skilled talent are educational institutions at the secondary level (grades 9-12 & career and technical education [CTE]) and postsecondary level (sub-baccalaureate, baccalaureate, and graduate). While other sources of talent (e.g., workforce training & education programs and in-migration to the area by skilled individuals) are also important, the educational institutions that serve area residents and educate large numbers of new and experienced workers comprise, by far, the largest component of a talent supply system.

Talent Supply—Postsecondary Level (Sub-baccalaureate)

More than 100,000 students are currently enrolled in area institutions that offer sub-baccalaureate programs leading to potential Associate Degrees or academic certificates. The following tables and charts present field of study and 2018 completion data from the U.S. Department of Education's Integrated Postsecondary Education Data System for institutions within the 18 counties of Northeast Ohio. Our key observations include:

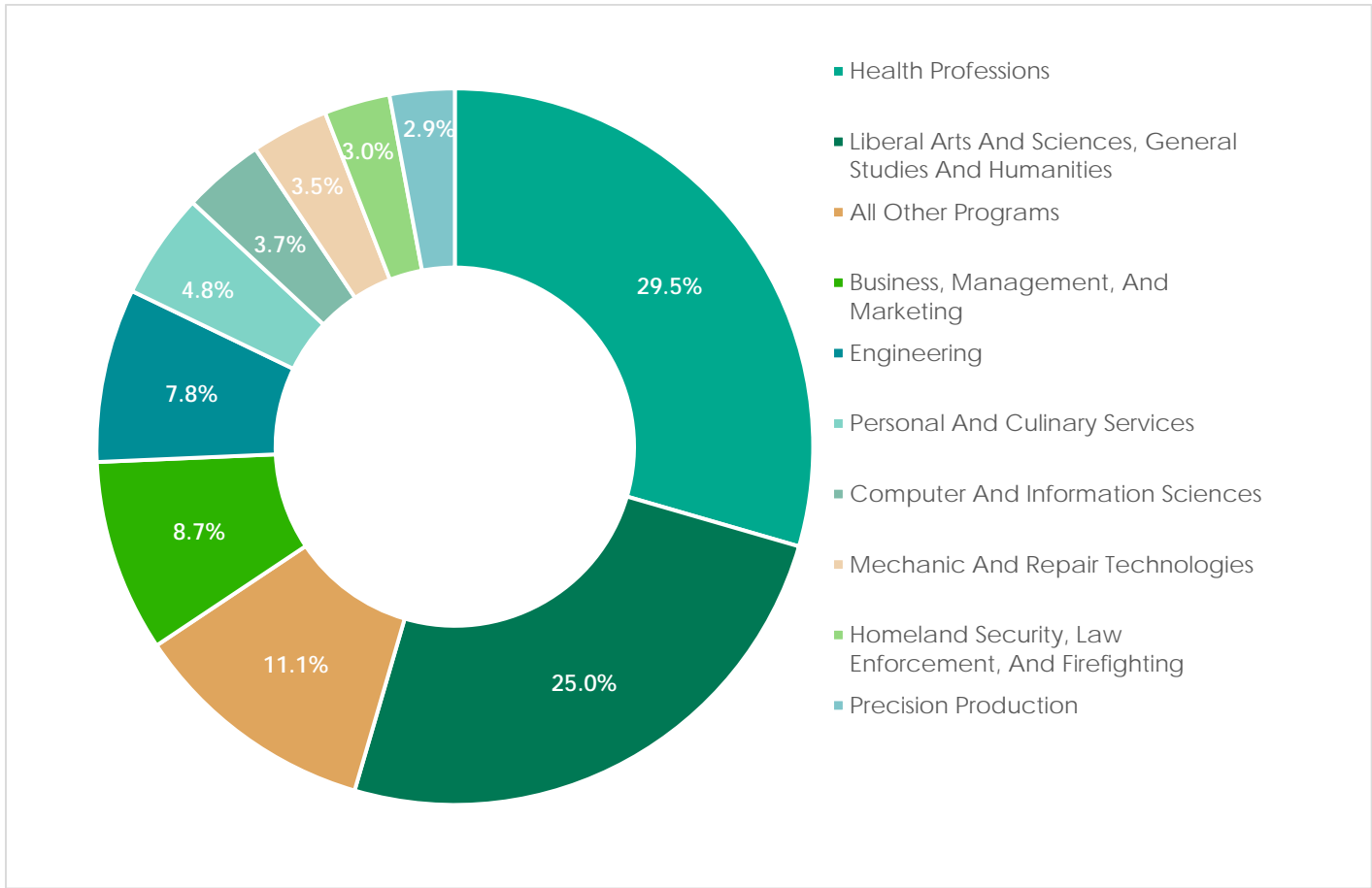
- Completions in programs offered by private, for-profit institutions have declined in the region over recent years, and with additional closures of some of these institutions, we can expect this trend to continue.
- Students attaining sub-baccalaureate credentials from institutions in Northeast Ohio focus on just a few program areas – Health, Liberal Arts & Sciences, and Business, Management & Marketing. Over 86% of all associate degrees awarded in 2018 in the region were in just five program areas.

Figure 9: Associate Degree and Certificate Production by Institution (2018)



Source: Integrated Postsecondary Data System (IPEDS) completions for the 2017-2018 academic year
 Associate Degrees, Total N = 11,805; Certificates, Total N = 8,842

Figure 10: Associate Degrees and Certificates by Field (2018)



Source: Integrated Postsecondary Data System (IPEDS) completions for the 2017-2018 academic year

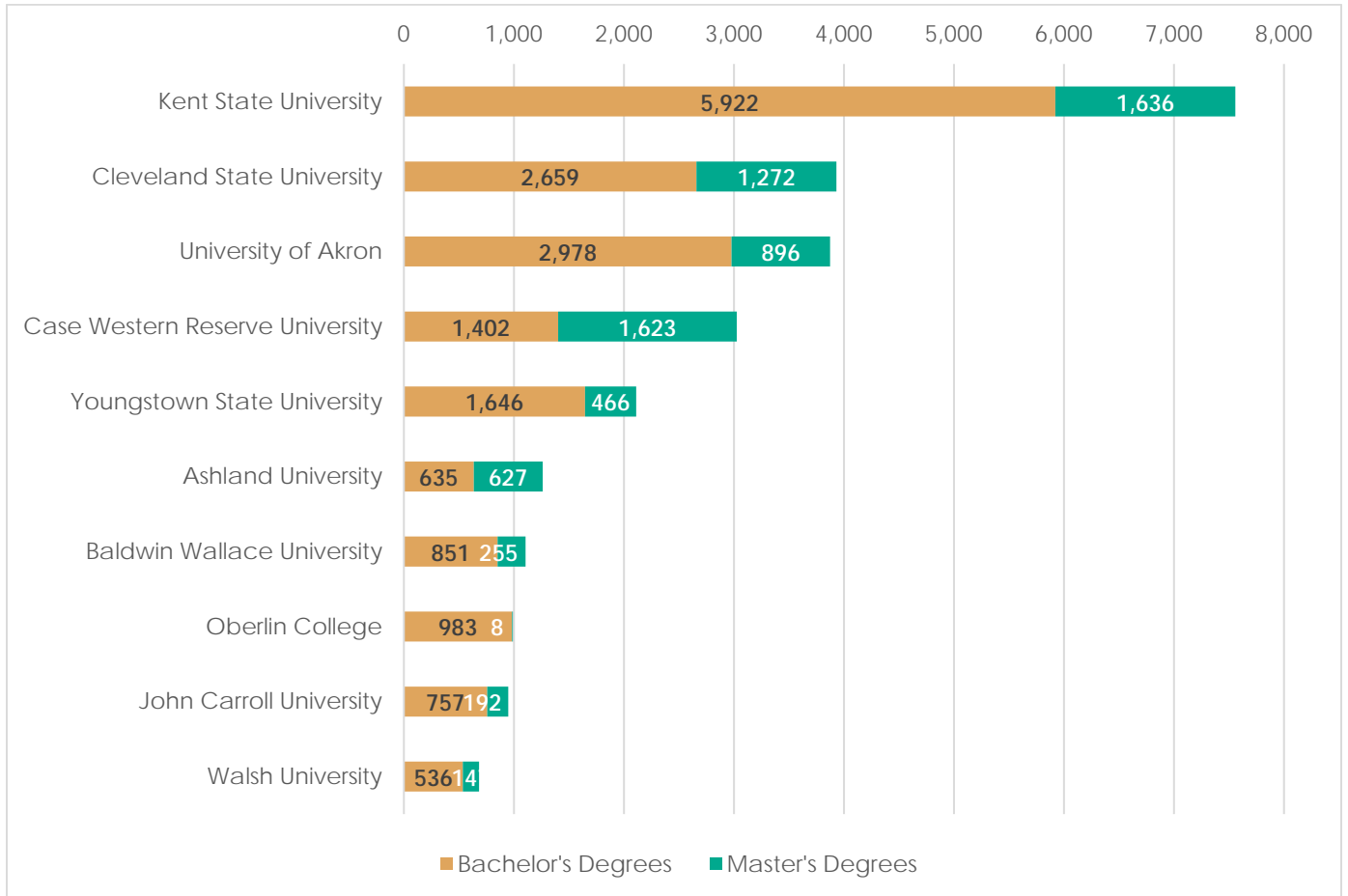
Talent Supply—Postsecondary Level (Baccalaureate & Graduate)

Over 180,000 students are currently enrolled in area institutions that offer baccalaureate or graduate degree programs across a wide variety of fields. The following tables and charts present field of study and completion data for colleges and universities in Northeast Ohio. Data was drawn from the U.S. Department of Education’s Integrated Postsecondary Education Data System (IPEDS). Our key observations include:

- Many of the more technical fields, such as Information Technology and Engineering, produce very small numbers of Bachelor’s and Master’s degrees compared to those in Business, Health, and Education.
- For the 4-year institutions in Northeast Ohio, over 56 percent of Bachelor’s and Master’s Degree awards are in five fields including: Business, Management and

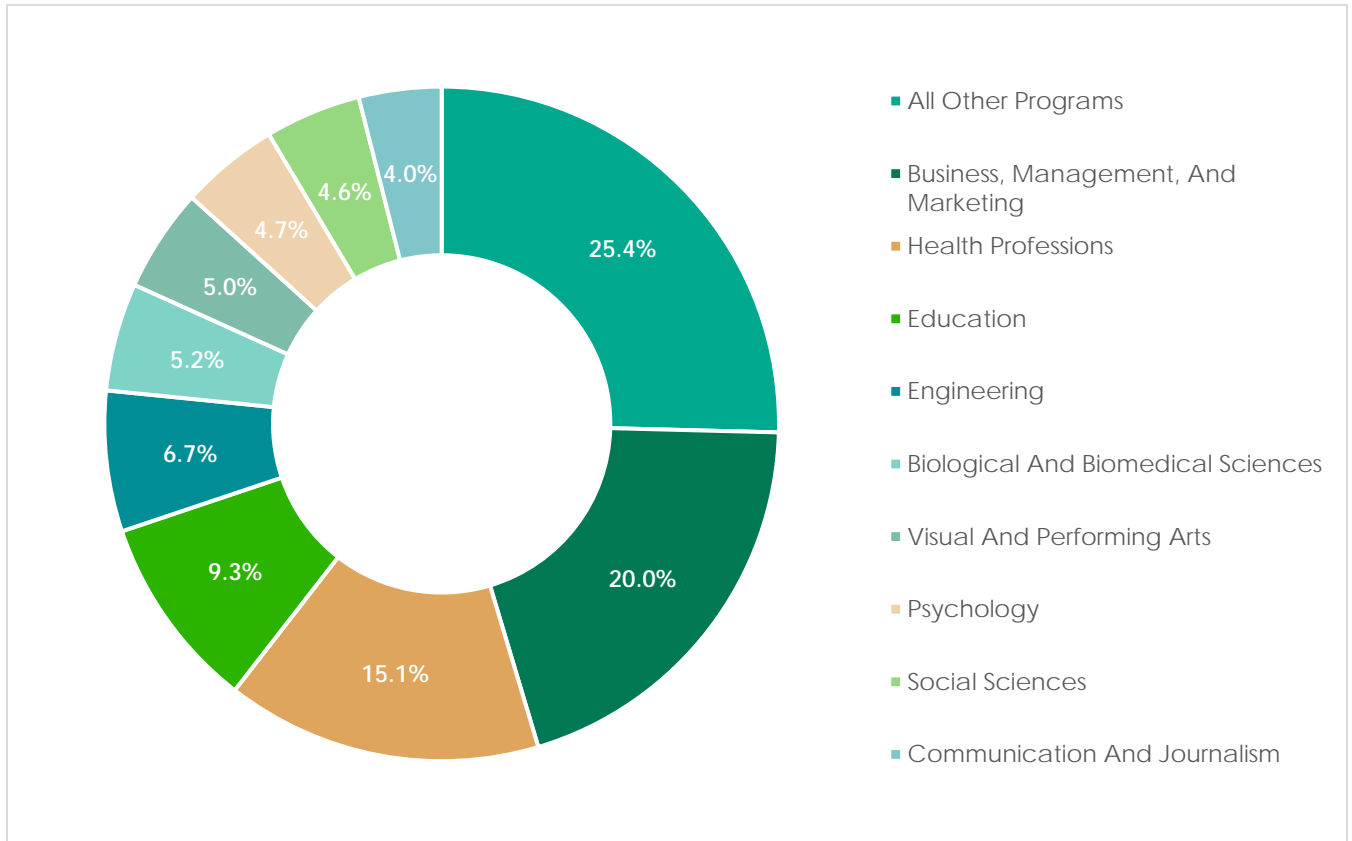
Marketing; Health Professions; Education; Engineering; Biological and Biomedical Sciences.

Figure 11: Bachelor's and Master's Degree Attainment by Institution (2018)



Source: Integrated Postsecondary Data System (IPEDS) completions for the 2017-2018 academic year
 Bachelor's Degrees, Total N = 21,098; Master's Degrees, Total N = 7,698

Figure 12: Bachelor's and Master's Degree by Field (2018)



Source: Integrated Postsecondary Data System (IPEDS) completions for the 2017-2018 academic year

Demand Supply Alignment

Our analysis of demand-supply alignment takes the data produced on demand across key occupational areas and aligns them with data on credential output from postsecondary institutions in the region. We present a “Summary Chart of Alignment” (figure 13) of our analysis of demand-supply alignment in this section. Major observations from this analysis of demand-supply alignment include:

- Alignment:
 - In all occupation groups, there is substantial misalignment between the 2019 total demand for key occupations and supply of appropriately credentialed workers. In most cases, there are hundreds to thousands of job openings above what is being produced in relevant fields from area educational institutions. In the case of Life Science Workers (such as food scientists and biologists), there is a gross oversupply of credentialed candidates for job openings (misalignment of 3,810 over).
 - The biggest misalignment between demand and supply is for Computer & IT Workers (such as software developers and computer programmers). There is far more employer demand for workers in this occupational field than there is supply of matching credentials (misalignment of 15,234 under).
 - The annual demand for Health Diagnosing & Treating Practitioners is more than the supply of credentials produced by area educational institutions (misalignment of 13,122 under).
 - The demand and supply for Health Care Therapist Aides and Support workers (such as physical therapist aides and athletic trainers) is the closest to be aligned (misalignment of 555 under).
 - Finance and business services occupations seem to be consistently misaligned, but especially Information and Record Clerks (such as

customer service representatives and loan interviewers) with a misalignment of 12,767 under. However, this occupation has a high risk of automation.

- Entry Level Alignment:
 - The misalignment gap closes substantially for many occupations when comparing entry demand with supply especially for Computer and IT Workers and Health Diagnosing and Treating Practitioners (misalignment of 4,249 versus 15,234 and 1,336 versus 13,122 respectively).
 - Health Care Therapist Aides & Support Workers, Architects & Engineering Technicians, Engineers, Financial Specialists emerge as aligned occupations when comparing entry level demand with supply.
 - There is an oversupply of Education, Life Science and Managers, Professional & Health Workers when looking at entry alignment.

Figure 13: Summary Chart of Alignment

	Occupation Group	Total Demand 2019	Entry-Level Demand 2019	Credentials Awarded 2018	Alignment	Entry-Level Alignment
IT	Computer & IT Workers	17,442	6,457	2,208	(15,234)	(4,249)
MANUFACTURING	Metal & Plastic Workers	5,979	2,546	161	(5,818)	(2,385)
	Installation, Maintenance & Repair Occupations	6,901	2,659	519	(6,382)	(2,140)
	Skilled Production Workers	9,478	5,189	1,423	(8,055)	(3,766)
HEALTH	Health Diagnosing & Treating Practitioners	19,857	8,071	6,735	(13,122)	(1,336)
	Health Technologists & Technicians	9,562	5,566	2,778	(6,784)	(2,788)
	Health Care Therapist Aides & Support Workers	1,094	338	539	(555)	201
	Nursing, Psychiatric & Home Health Aides	5,503	1,456	590	(4,913)	(866)
LIFE SCIENCES / EDUCATION / ENGINEERING	Architects & Engineering Technicians	3,383	1,436	1,828	(1,555)	392
	Education	10,406	1,919	8,209	(2,197)	6,290
	Engineers	4,661	1,925	2,177	(2,484)	252
	Life Science Workers	2,295	821	6,105	3,810	5,284
FINANCE & BUSINESS SERVICES	Financial Clerks	6,198	3,324	162	(6,036)	(3,162)
	Financial Specialists	6,260	2,541	2,118	(4,142)	(423)
	Information & Record Clerks	12,987	4,954	220	(12,767)	(4,734)
	Secretaries & Administrative Assistants	6,305	2,406	413	(5,892)	(1,993)
MANAGEMENT	Managers, Professional & Health	12,666	4,146	10,965	(1,701)	6,819
	Supervisors of Skilled Workers	4,497	2,299	190	(4,307)	(2,109)

Source: Burning Glass Labor Insight, EMSI 2020, Ohio Department of Job and Family Services, Team NEO Calculations

The “Detailed Demand Supply Alignment” chart in figure 14 shows a high-level picture of demand supply alignment across several key occupational areas and is a useful starting point for discussion with residents, institutions, philanthropic, and civic leaders in Northeast Ohio.

The data included in the chart come from multiple sources:

- The first area is annual demand. Demand data are for 2019 based on Team NEO’s calculations of EMSI’s projected job openings from the US Bureau of Labor Statistics in 2019 and Burning Glass Labor Insight’s 2019 real-time job postings. All demand data are for the 18-county Northeast Ohio region.
- The second area is credentials awarded from regional postsecondary institutions. These are credentials awarded from all institutions within the region. Data on credentials are from the U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS) for 2018. Apprenticeship data is from the Ohio Department of Job and Family Services.
- This table does not include CTE completion data.

Our demand supply model does not accurately capture every pathway to employment, i.e., apprenticeships, temp agencies, etc. The academic pathway has been our focus. The connection to some jobs we selected, like manufacturing, include many non-academic pathways. This is changing, in part, because community colleges are now attempting to link apprenticeships to degrees. According to the Ohio Department of Job and Family services, in the calendar year 2018, 125 students completed a Registered Apprenticeship program within programs that match up to our selected occupations. More details can be found in the Appendix.

Figure 14: Detailed Demand Supply Alignment

	Occupation Group	Total Demand 2019	Entry-Level Demand 2019	Apprenticeship	Certificate	Associate	Bachelor's	Graduate	Credentials Awarded 2018	Alignment	Entry Alignment
IT	Computer & IT Workers	17,442	6,457	-	394	379	949	486	2,208	(15,234)	(4,249)
MANUFACTURING	Metal & Plastic Workers	5,979	2,546	47	110	4	-	-	161	(5,818)	(2,385)
	Installation, Maintenance & Repair Occupations	6,901	2,659	66	404	49	-	-	519	(6,382)	(2,140)
	Skilled Production Workers	9,478	5,189	12	415	269	618	109	1,423	(8,055)	(3,766)
HEALTH	Health Diagnosing & Treating Practitioners	19,857	8,071	-	617	1,659	2,642	1,817	6,735	(13,122)	(1,336)
	Health Technologists & Technicians	9,562	5,566	-	1,532	769	427	50	2,778	(6,784)	(2,788)
	Health care Therapist Aides & Support Workers	1,094	338	-	33	372	118	16	539	(555)	201
	Nursing, Psychiatric & Home Health Aides	5,503	1,456	-	569	20	1	-	590	(4,913)	(866)
LIFE SCIENCES / EDUCATION / ENGINEERING	Architects & Engineering Technicians	3,383	1,436	-	673	697	303	155	1,828	(1,555)	392
	Education	10,406	1,919	-	191	3,909	2,795	1,314	8,209	(2,197)	6,290
	Engineers	4,661	1,925	-	79	84	1,429	585	2,177	(2,484)	252
	Life Science Workers	2,295	821	-	102	216	4,678	1,109	6,105	3,810	5,284
FINANCE & BUSINESS SERVICES	Financial Clerks	6,198	3,324	-	131	31	-	-	162	(6,036)	(3,162)
	Financial Specialists	6,260	2,541	-	181	243	1,299	395	2,118	(4,142)	(423)
	Information & Record Clerks	12,987	4,954	-	180	32	1	7	220	(12,767)	(4,734)
	Secretaries & Administrative Assistants	6,305	2,406	-	277	136	-	-	413	(5,892)	(1,993)
MANAGEMENT	Managers, Professional & Health	12,666	4,146	-	526	1,115	5,771	3,553	10,965	(1,701)	6,819
	Supervisors of Skilled Workers	4,497	2,299	-	75	59	56	-	190	(4,307)	(2,109)

Source: Burning Glass Labor Insight, EMSI 2019, Ohio Department of Job and Family Services, Team NEO Calculations

Top 20 Occupations

In Northeast Ohio, the most in-demand jobs are those in health care, manufacturing, computer and IT, and business fields. These jobs are featured in this report because of their impacts on Northeast Ohio's current economic climate, as well as the potential they present to help create a better economy in the future for Northeast Ohio. The following positions are good jobs offering family-sustaining wages, low risk of automation and have the most demand in 2019.

Figure 15: Northeast Ohio Top 20 Occupations

Occupation Title	Median Annual Salary	Total Job Demand 2019	Total Jobs 2019	2019 - 2024 % Job Growth	Education Most Preferred	Minimum Education Required
Registered Nurses	\$66,031	10,678	46,106	4%	Bachelor's	Associate
Software Application Developers	\$79,155	5,067	10,340	10%	Bachelor's	Skills Training
Computer Occupations ¹	\$75,738	4,260	3,433	5%	Bachelor's	Skills Training
Managers, Emerging Fields ²	\$71,545	4,027	10,163	3%	Bachelor's	Bachelor's
General & Operations Managers	\$93,542	2,542	22,918	3%	Bachelor's	Bachelor's
Medical & Health Services Managers	\$90,329	2,425	5,374	5%	Bachelor's	Bachelor's
Financial Managers	\$118,813	1,747	6,994	6%	Bachelor's	Bachelor's
Management Analysts	\$77,833	1,666	8,402	6%	Bachelor's	Bachelor's
Marketing Managers	\$116,365	1,026	2,300	3%	Bachelor's	Bachelor's
Financial Analysts	\$68,847	1,005	3,192	2%	Bachelor's	Bachelor's
Physical Therapists	\$86,646	896	3,142	9%	Master's	Master's
Web Developers	\$53,560	879	1,416	7%	Bachelor's	Skills Training
Business Operations Specialists ³	\$65,215	877	11,165	3%	Bachelor's	Associate
Nurse Practitioners	\$101,541	805	2,684	10%	Master's	Master's
Database Administrators	\$78,165	715	1,165	2%	Bachelor's	Skills Training
Occupational Therapists	\$86,229	686	2,128	6%	Master's	Master's
Information Security Analysts	\$86,384	591	1,120	12%	Bachelor's	Skills Training
Human Resources Managers	\$107,945	542	169	2%	Bachelor's	Associate
Operations Research Analysts	\$77,117	511	94	11%	Bachelor's	Associate
Training & Development Specialists	\$58,192	492	408	3%	Bachelor's	Associate

SOURCE: Burning Glass Labor Insight/Jobs, EMSI 2020, Team NEO Calculations

NOTES: 1. Computer-savvy professionals working to design video games, develop computer solutions, build geospatial programs or analyze data.
 2. Managers working on organizational compliance, risk, supply chain, investments and security, often in the green economy.
 3. Business professionals working on energy audits, security assessments, international or online commerce, sustainability and disaster recovery.
 Family-sustaining wage is based on a wage calculation of a family of four (two adults and two children) with only one working adult.

Emerging Talent

Due to the importance of creating awareness for in-demand jobs and in response to the COVID-19 pandemic, Team NEO is partnering with both companies and education intermediaries to take the top 20 in-demand jobs to students through in-demand job videos. Companies that are procuring candidates to be featured as the stars of these in-demand job videos include Cleveland Clinic, The Technology House, GE Lighting (A Savant Company), Aultman Hospital, The Sherwin-Williams Company, MCPc, Swagelok and more. These videos can be part of a career preparation curriculum for our target 6th grade through undecided college student audience and allow for a virtual site visit to learn from a professional in an in-demand job. These videos follow the same general format which includes an introduction, description of education pathway, informing of what a typical workday look like and closes with advice for students interested in that career.

Additional data from the 2020 Aligning Opportunities executive summary found its way onto an emerging talent landing page which will serve as a resource for students and parents when thinking about career exploration. This data will be spread to students through educational intermediaries such as Lorain County Community College, College Now, and Junior Achievement during career preparation conversations. It will allow students to take a deeper dive into computer and IT, health care, manufacturing, and business careers to explore wages, job demand, and education for each job listed.

To view the Aligning Opportunities emerging talent landing page, please visit emergingtalent.teamneo.org.

Careers by The Numbers

As part of the analysis, we took a closer look into a few occupations in key industry groups to research top requested skills and certifications as well as report on occupation related statistics to inform emerging talent, educators, and parents of career opportunities. We have focused on four key industry groups and the occupations that comprise these industries:

- Computer and IT
- Health Care
- Manufacturing
- Business

This data is the foundation of the emerging talent webpage:

emergingtalent.teamneo.org.

Data from this section is sourced from Burning Glass Labor Insight, EMSI 2020, and Team NEO calculations. Detailed definitions of all variables can be found in the Job Demand section of the report.

Computer & IT: Overview

Demand for talent in sectors that held steady or grew during the early 2000s recession and the 2007-2009 Great Recession rely heavily on IT. For example, demand for IT talent grew in headquarters, health care, and professional, scientific and technical services sectors during recent recessions. By 2019, headquarters employment had grown 90%, health care 27% and professional, scientific and technical services 5% over 2001. More data around IT talent demand and its prevalence through the pandemic recession can be found in Team NEO's August 2020 QER: <https://teamneo.org/news/it-reports-reveal-northeast-ohios-employment-potential/>.

One solution to closing the talent gap could be loosening the requirement for a four-year degree and place a greater value on skills training. This creates the opportunity to build an apprentice strategy, with educational institutions or businesses that could help with the skills and experience gap.

Workers in this occupation group provide technical assistance to computer users; analyze data processing problems to implement and improve computer systems or develop IT solutions; create, modify, and test the code, forms, and script that allow computer applications to run; and monitor and ensure network and perform maintenance to support network availability.

Automation risk for Computer and IT workers is very low. Occupations in this sector provide a wage that is above the Family Sustaining Wage for a family of four (two adults and two children) with only one working adult. Computer and IT has a high projected job growth.

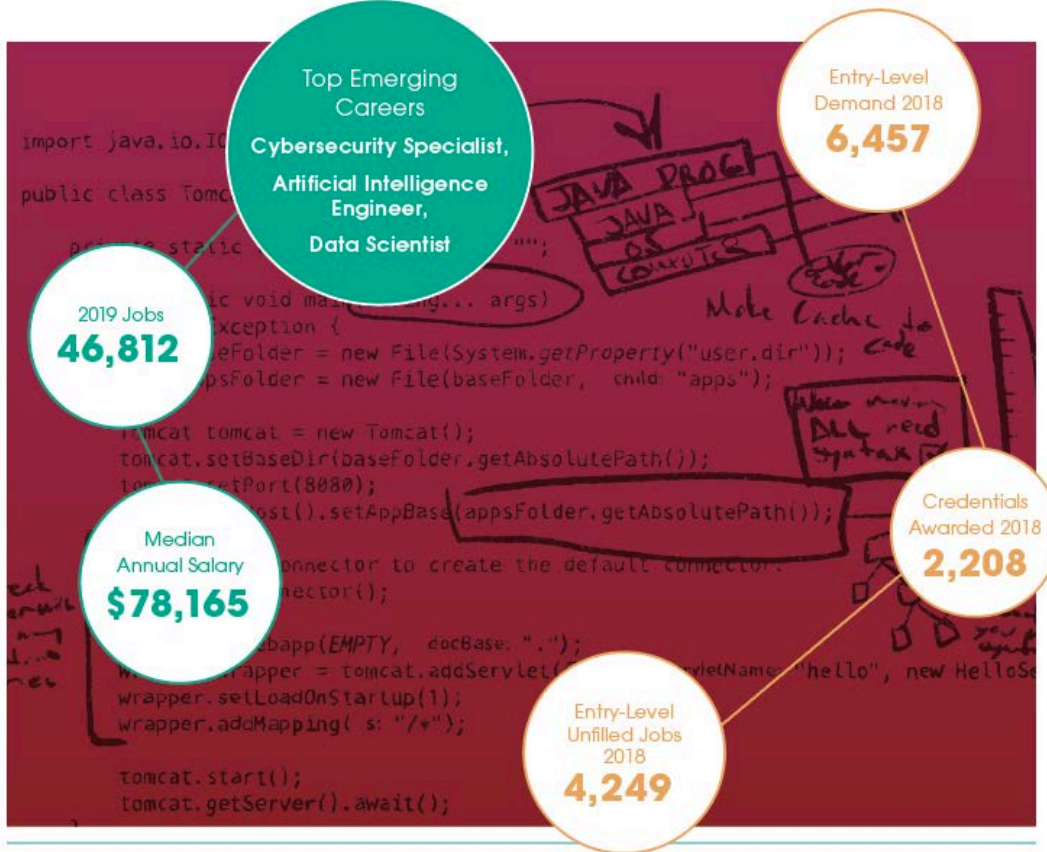
Knowledge Needed

- Engineering and Technology: computers and electronics
- Math and Science: arithmetic, algebra, geometry, calculus, or statistics
- Product and Service Development

Figure 16: Computer & IT Did You Know?



Figure 17: Computer & IT by the Numbers



Source: Burning Glass Labor Insight, EMSI 2020, Team NEO Calculations
 NOTE: SOC 15-1100

Figure 18: Computer & IT – Certifications & Skills

Top Technical Certifications

- IT Infrastructure Library (ITIL)
- Project Management Certification
- Certified Information Systems Security Professional (CISSP)
- Cisco Certified Network Associate (CCNA)
- Certified A+ Technician

Top Software & Programming Skills

- Java
- Microsoft C#
- SQL
- Linux
- Oracle

Source: Burning Glass Labor Insight

Health Care: Overview

A daunting talent gap for health care workers means Northeast Ohio may not be producing enough qualified doctors and nurses to meet the need of its aging population. Health care is one of the strongest sectors in Northeast Ohio's economy, and it employs individuals with diverse levels of education.

Additionally, within this industry there are many nuances that are exacerbating the talent gap. There is an oversupply of nurse practitioners due to the accessibility of online training but an undersupply of registered nurses causing nurse practitioners to seek employment outside the region. Similarly, last year during the health care career path forum, we heard there is an oversupply of licensed practical nurses (LPNs) but an undersupply of medical assistants which is forcing health care institutions to hire LPNs as medical assistants. Perhaps a solution could be to create better pathways for LPNs to receive upskilling to become registered nurses.

Workers in the health care industry diagnose and treat acute, episodic, or chronic illness, independently or as part of a health care team; order, perform, or interpret the results of diagnostic tests; prescribe medication; assist patients and work closely with other healthcare professionals. The industry is highly regulated, which sets up established educational pathways and credentials needed.

This section will focus on occupations within the following groups: Health Diagnosing and Treating Practitioners, Health Technologists and Technicians, Health Care Therapist Aides and Support Workers, and Nursing, Psychiatric and Home Health Aides.

Knowledge Needed

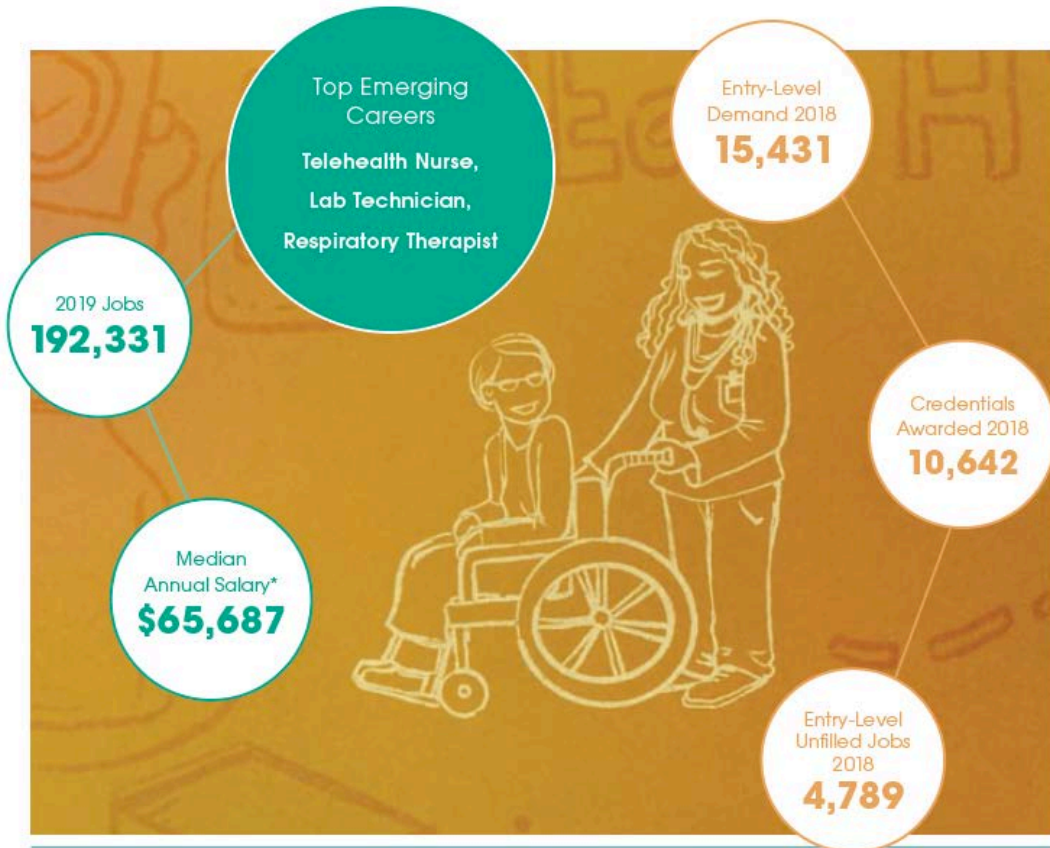
- Health: medicine, therapy and counseling
- Math and Science: psychology and biology
- Business: customer service

Figure 19: Health Care Did You Know

DID YOU KNOW?

Health care represents the industry with the most jobs and job openings in Northeast Ohio. These jobs may be either clinical or business-related.

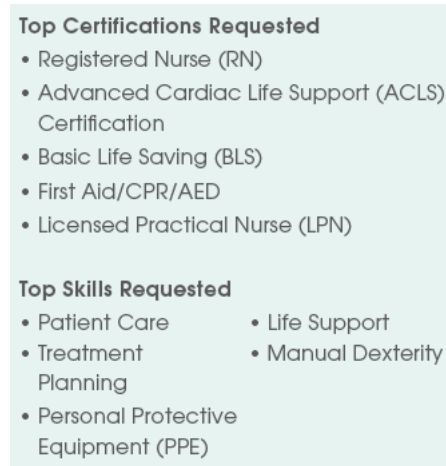
Figure 20: Health Care Careers by the Numbers



Source: Burning Glass Labor Insight, EMSI 2020, Team NEO Calculations

NOTE: SOCs: 29-1000, 29-2000, 29-9000, 31-1000, 31-2000 *Median Annual Salary reflects the median of occupation salaries at the 5-digit SOC level

Figure 21: Health Care – Certifications & Skills



Source: Burning Glass Labor Insight

Manufacturing: Overview

According to MAGNET’s 2020 survey of Northeast Ohio’s manufacturers, about 8,000 jobs, out of 46,200 job openings at Northeast Ohio manufacturers, went unfilled in 2019. Additionally, younger generations do not consider manufacturing a viable, long-term career because of perceptions it is dark, dirty, and dangerous. Regional manufacturers represent a broad variety of sectors within the industry. Chemical, fabricated metals and transportation equipment produce a combined \$17.5 billion annually. Manufacturing in total accounts for 20% of Northeast Ohio's economy, or \$42.6 billion in gross regional product. Read more about this survey here:

<https://teamneo.org/news/technology-and-productivity-advance-manufacturing/>.

Manufacturing’s significant contribution to the economy as well as future job opportunities position manufacturing as a high-demand job field. This section will focus on occupations within the following groups: Installation, Maintenance, and Repair Occupations; Metal and Plastic Workers; Skilled Production Workers; and Supervisors of Skilled Workers.

Workers in these occupations fix and maintain machines, mechanical equipment, and buildings; set up and operate a variety of machine tools to produce precision parts and instruments; lay out, machine, fit, and assemble castings and parts to metal or plastic foundry patterns, core boxes, or match plates; develop programs to control machining or processing of metal or plastic; use hand-held equipment to join or cut metal or plastic components; accomplish staff job results; and interact with customers. There is good career mobility within the industry with entry points that require a postsecondary credential less than a Bachelor's Degree.

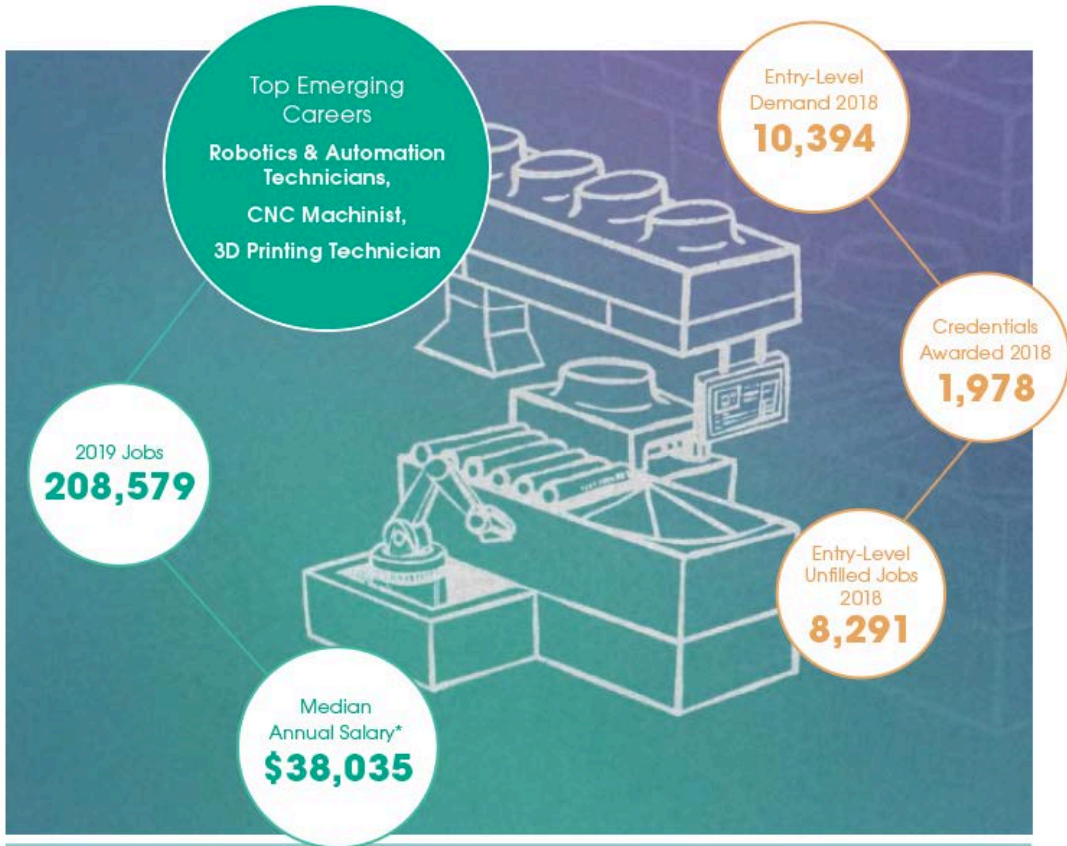
Knowledge Needed

- Engineering and Technology: mechanical, design
- Math and Science: arithmetic, algebra, geometry, calculus, or statistics, physics
- Manufactured Goods: manufacture and distribution of products
- Business: customer service, employee management

Figure 22: Manufacturing Did You Know?

DID YOU KNOW?
—
Northeast Ohio
has 278 registered
apprenticeship
programs!

Figure 23: Manufacturing Careers by the Numbers



Source: Burning Glass Labor Insight, EMSI 2020, Team NEO Calculations
 Note: SOCs: 49-2000, 49-9000, 51-2000, 51-4000, 51-8000, 51-9000 *Median Annual Salary reflects the median of occupation salaries at the 5-digit SOC level

Figure 24: Manufacturing - Certifications & Skills

- Top Certifications Requested**
- EPA CFC/HCFC Certification
 - Forklift Operator Certification
 - Welding Certification
 - CDL Class A
 - CNC Certification
- Top Skills Requested**
- Repair
 - Plumbing
 - HVAC
 - Hand Tools
 - Machinery

Source: Burning Glass Labor Insight

Misaligned Opportunities

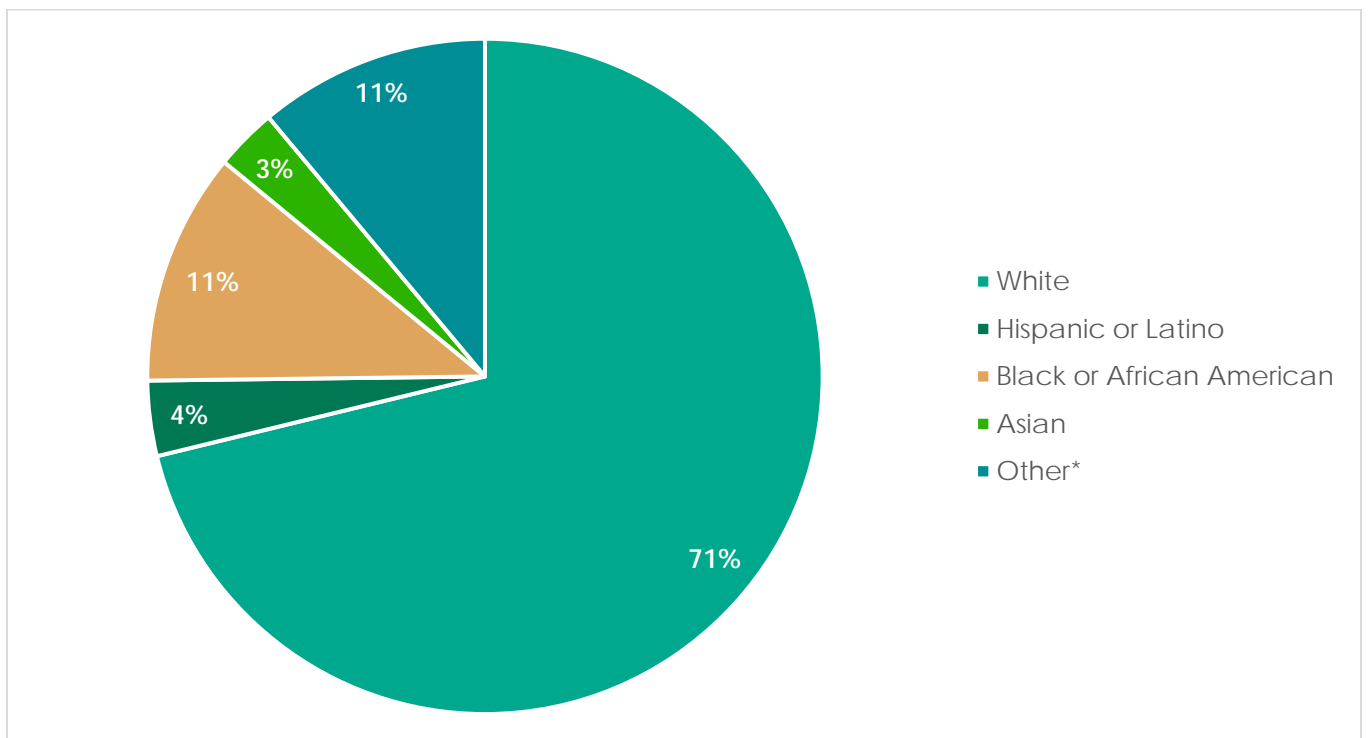
While Northeast Ohio provides many opportunities for prosperity, it is clear that economic success has not been equitable for all members of our community, particularly people of color. This year, Team NEO released the inaugural *Misaligned Opportunities* Report, a companion piece to *Aligning Opportunities* that examines how racial inequities have led to skills gap in the Northeast Ohio economy. Using metrics surrounding educational attainment, entrepreneurship, and the racial proportionality of in-demand occupations, the *Misaligned Opportunities* report seeks to inform conversations about how Northeast Ohio can become a racially equitable region. Additionally, the *Misaligned Opportunities* report highlights organizations throughout the region that are working on innovative solutions to help close the attainment gap between races.

Some of the insights from the report, which is available for download [here](#), include:

- Educational Attainment – higher levels of education often lead to higher-wage occupations and greater opportunities for advancement. However, in three in-demand fields, minorities are underrepresented across the board.
 - For example, when looking at Health Care completions, whites account for 82% of Bachelor’s degree completions in Registered Nursing, compared with under 5% for Blacks. Conversely, Blacks are overrepresented in terms of Practical & Vocational Nursing completions, which often lead to lower-paying jobs within this sector.
- Entrepreneurship – stark disparities exist in minority business enterprises and entrepreneurship in Northeast Ohio.
 - Only 15% of businesses are minority-owned.
 - MBEs account for just 6% of firms with paid employees.

- In-Demand Occupations – of the top 20 in-demand occupations in Northeast Ohio offering family-sustaining wages and a low chance of automation, minorities are vastly underrepresented.
 - 79% of Information Security Analysts in Northeast Ohio are white, while only 12% are Black.
 - Whites make up 85% of Financial Analysts, while Blacks represent only 7%.
 - Software Developers are also overwhelming white at 74% while Blacks represent only 4% of this in-demand occupation.

Figure 25: Completion in In-Demand Fields, by Race (2018)



* Other races defined as two or more races, race/ethnicity unknown or nonresident alien.

Source: Integrated Postsecondary Education Data System (IPEDS) (2018)

Note: Completions refer to the completion of a postsecondary program generating a degree, certificate, or other diploma.

Implications

The purpose of our research and analysis is to inform and help accelerate talent development policy in Northeast Ohio. That policy should provide skilled talent critical to growing key wealth generating sectors in the economy and, at the same time, provide opportunities for good careers and incomes for the residents in the region.

Our research and analysis have made clear many high-level implications for talent development policy in the region. These implications are:

- There is significant demand in some sectors of the economy in Northeast Ohio that present opportunity for residents. Channels need to be opened into these opportunities, especially those with family sustaining wages.
- Due to historic inequities, minority groups are considerably disadvantaged when compared to their white counterparts, especially in terms of job access and opportunity. These inequities act as an economic dampener to not only these communities, but also the entire region as a whole.
- By most meaningful measures of economic progress, people of color have been disproportionately excluded from equal economic opportunity. Some of these disparities can be explained through the lack of minority credentialing for in-demand occupations.
- It is likely that due to COVID-19, many of these trends will be accelerated.
- Overall, residents of Northeast Ohio need better awareness of quality career education and training that will help them fill these jobs.
- Given the high levels of regional integration in Northeast Ohio, with people commuting across county lines for jobs, it is clear that a shared strategy is important. At the same time, local context and expertise will be vital for making changes.

- Employers need assistance finding better ways to access the talent they need. Capturing the latent talent pool in the regional labor force will help grow the economy.
- Younger students, secondary and postsecondary students, and adults should have better and more accurate information about the possible choices regarding entering professional and technical fields of study within the region.
- The region should understand why so few students complete technical programs (at the secondary and postsecondary levels), and then work to improve the education pipeline to increase the flow of local talent into regional employment.
- The current low levels of output in some programs offer an opportunity to reshape the delivery and organization of technical education in the region; this could be through rapid adoption of innovative models and practices, such as developing exemplar schools for Career and Technical Education focused on key economic sectors, or adopting innovations such as work-based learning and deep, sustained employer engagement across the system.
- Education at the secondary and postsecondary level needs to increase the output of students with credentials in high demand sectors with family sustaining wages. In particular, local districts and postsecondary institutions need to define ways to improve and offer programs in technical fields of study that attract students and get them to complete their degrees.
- Deeper employer engagement in postsecondary education is critical to improving the quality and relevancy of educational programs.
- The sharp misalignment between demand and supply in some fields is an indicator that educational institutions—at both the leadership and faculty levels--- may not have full information to understand nearby and future opportunities.

- Educators and civic leadership could use better labor market information to drive programming investments in and identify employer partnerships with educational institutions.
- The workforce development system can benefit from understanding automation potential of occupations moving forward as well as the soft skills that are in demand.
- Higher education, government and industry, need to develop flexible, cost effective educational programs that are academically accredited and developed in conjunction with industry best practices.

Aligning Opportunities Case Studies

Junior Achievement of Greater Cleveland

Junior Achievement of Greater Cleveland seeks to help young people identify, prepare for and ultimately connect with their future careers. Research compiled in the Aligning Opportunities publication was critical in helping the organization ensure it is focusing on growth sectors in Greater Cleveland. Specifically, the board of directors and staff utilized the data to create JA Inspire, a new student capstone experience launched in 2020. JA Inspire offers several hundred high school students the opportunity to interact with regional members of the corporate community representing the six sectors detailed in Team NEO's report. Junior Achievement's hope is that by creating connectivity between industry and students, the organization can serve as the leading youth economic development engine in Greater Cleveland.

For more information, visit <https://cleveland.ja.org/>.



College Now

Founded in 1967, College Now Greater Cleveland works toward increasing postsecondary educational attainment through college and career access advising, financial aid counseling, and scholarship and retention services. College Now is committed to developing Greater Cleveland's talent and working to fill the talent gap by counseling students and educating them on the pathways that will lead to in-demand careers in our region. College Now developed the Managing Advancement Programs (MAP) Database, a clearinghouse of training and education programs that helps students and adults find the best program leading to a good job. Using Aligning Opportunities as a foundation, MAP enables students to compare various programs so they can get started on a well-informed career path. College Now also supports closing the talent gap through (Re)Connect to College, which works to reenroll students who left a university without completing their degree and offers support to help those students succeed.

For more information, visit collegenowgc.org.



Appendix

Northeast Ohio Postsecondary Institutions

Allegheny Wesleyan College
Allstate Hairstyling & Barber College
Apex Academy Hair Skin Nails School of Cosmetology
Ashland County-West Holmes Career Center
Ashland University
Ashtabula County Technical and Career Campus
Auburn Career Center
Aultman College of Nursing and Health Sciences
Baldwin Wallace University
Bowling Green State University-Firelands
Brown Aveda Institute-Mentor
Brown Aveda Institute-Rocky River
Bryant & Stratton College-Akron
Bryant & Stratton College-Cleveland
Bryant & Stratton College-Parma
Bryant & Stratton College-Solon
Buckeye Joint Vocational School
Canton City Schools Adult Career and Technical Education
Casal Aveda Institute
Case Western Reserve University
Central School of Practical Nursing
Choffin Career and Technical Center
Cleveland Clinic Health System-School of Diagnostic Imaging
Cleveland Institute of Art
Cleveland Institute of Music
Cleveland State University
Columbiana County Career and Technical Center
Community Services Division-Alliance City
Community Technology Learning Center of Portage
Cuyahoga Community College District
Cuyahoga Valley Career Center
EHOVE Career Center
Elite School of Cosmetology
ETI Technical College
Firelands Regional Medical Center School of Nursing
Fortis College-Cuyahoga Falls
Gerbers Akron Beauty School
Great Lakes Truck Driving School
Hamrick School
Hannah E Mullins School of Practical Nursing
Herzing University-Akron
Hiram College
Inner State Beauty School
International Culinary Arts and Sciences Institute
John Carroll University
Kent State University at Ashtabula
Kent State University at East Liverpool
Kent State University at Geauga
Kent State University at Kent
Kent State University at Salem
Kent State University at Stark
Kent State University at Trumbull
Kent State University at Tuscarawas
LaBarberia Institute of Hair
Lake Erie College
Lakeland Community College
Lorain County Community College
Lorain County Joint Vocational School District
Madison Adult Career Center
Mahoning County Career and Technical Center
Malone University
MDT College of Health Sciences
Medina County Career Center
Miami-Jacobs Career College-Independence
National Beauty College
North Central State College
Northcoast Medical Training Academy
Northeast Ohio Medical University
Northern Career Institute
Northern Institute of Cosmetology
Notre Dame College
Oberlin College
Ohio Business College-Sandusky
Ohio Business College-Sheffield
Ohio Media School-Valley View
Ohio State University Agricultural Technical Institute
Ohio State University-Mansfield Campus
Ohio Technical College
Ohio Valley College of Technology
Paul Mitchell the School-Cleveland
Pioneer Career and Technology Center
Polaris Career Center
Portage Lakes Career Center
Rabbinical College Telshe
Raphael's School of Beauty Culture Inc-Alliance
Raphael's School of Beauty Culture Inc-Boardman
Raphael's School of Beauty Culture Inc-Brunswick
Raphael's School of Beauty Culture Inc-Niles
Remington College-Cleveland
Ross College-Canton
Ross Medical Education Center-Elyria
Ross Medical Education Center-Niles
Ross Medical Education Center-Ontario
Sandusky Career Center
South University-Cleveland
Stark State College
Stautzenberger College-Brecksville
TDDS Technical Institute
The College of Wooster
Trumbull Career & Technical Center
University of Akron Main Campus
University of Akron Wayne College
University of Mount Union
Ursuline College
Virginia Marti College of Art and Design
Walsh University
Wayne County Schools Career Center
Youngstown State University

Occupation Groups

Three-digit SOC codes that comprise the Occupation Groups used in the Demand Supply Alignment Analysis.

Occupation Groups	3-Digit SOC
Architects and Engineering Technicians	Architects, Surveyors, and Cartographers; Drafters, Engineering Technicians, and Mapping Technicians
Computer Occupations	Computer Occupations
Education	Postsecondary Teachers; Preschool, Primary, Secondary, and Special Education School Teachers; Other Teachers and Instructors; Librarians, Curators, and Archivists; Other Education, Training and Library Occupations
Engineers	Engineers
Financial Clerks	Financial Clerks
Financial Specialists	Financial Specialists
Health Diagnosing and Treating Practitioners	Health Diagnosing and Treating Practitioners
Health Technologists and Technicians	Health Technologists and Technicians
Healthcare Therapist Aides and Support Workers	Other Healthcare Practitioners and Technical Occupations; Occupational Therapy and Physical Therapist Assistants and Aides
Information and Record Clerks	Information and Record Clerks
Installation, Maintenance, and Repair Occupations	Other Installation, Maintenance, and Repair Occupations
Life Science Workers	Life Scientists; Physical Scientists; Social Scientists and Related Workers; Life, Physical, and Social Science Technicians
Managers, Professional and Health	Other Management Occupations
Metal and Plastic Workers	Metal Workers and Plastic Workers
Nursing, Psychiatric, and Home Health Aides	Nursing, Psychiatric, and Home Health Aides
Secretaries and Administrative Assistants	Secretaries and Administrative Assistants

Occupation Groups	3-Digit SOC
Skilled Production Workers	Electrical and Electronic Equipment Mechanics, Installers, and Repairers; Assemblers and Fabricators; Plant and System Operators; Other Production Occupations
Supervisors of Skilled Workers	Supervisors of Office and Administrative Support Workers; Supervisors of Installation, Maintenance, and Repair Workers; Supervisors of Production Workers

Summary for CTE Data

The Ohio Dept. of Education occasionally releases career and technical education "concentrators" data to JobsOhio on request. Concentrators are defined as students that have completed at least one course in a particular program area, **and** have achieved at least partial credit for another course in the same program area.

Region	Count
NEO	10,821
Business Services	962
Food and Agribusiness	1,390
Healthcare	1,970
Logistics and Distribution	1,015
Manufacturing and Construction	2,471
Others	1,816
Technology	1,197

Region/County/Program	Count
NEO	10,821
Ashland	153
Food and Agribusiness	84
Healthcare	11
Logistics and Distribution	20
Mfg and Construction	10
Others	28
Technology	0
Ashtabula	268
Food and Agribusiness	106
Healthcare	23
Logistics and Distribution	19
Mfg and Construction	68
Others	27
Technology	25
Columbiana	348
Business Services	11

Food and Agribusiness	86
Health Care	43
Logistics and Distribution	42
Mfg and Construction	47
Others	66
Technology	53
Cuyahoga	2,556
Business Services	329
Food and Agribusiness	150
Healthcare	555
Logistics and Distribution	218
Mfg and Construction	636
Others	463
Technology	205
Erie	330
Business Services	14
Food and Agribusiness	32
Healthcare	71

Logistics and Distribution	41
Mfg and Construction	49
Others	73
Technology	50
Huron	51
Food and Agribusiness	32
Mfg and Construction	19
Lake	555
Business Services	50
Food and Agribusiness	17
Healthcare	81
Logistics and Distribution	62
Mfg and Construction	161
Others	91
Technology	93
Lorain	563
Business Services	21
Food and Agribusiness	69
Healthcare	76
Logistics and Distribution	45
Mfg and Construction	163
Others	105
Technology	84
Mahoning	634
Food and Agribusiness	94
Healthcare	113
Logistics and Distribution	82
Mfg and Construction	128
Others	121
Technology	96
Medina	642
Business Services	24
Food and Agribusiness	84
Healthcare	152
Logistics and Distribution	73
Mfg and Construction	138
Others	41

Technology	130
Portage	475
Business Services	52
Food and Agribusiness	63
Healthcare	82
Logistics and Distribution	49
Mfg and Construction	113
Others	116
Technology	0
Richland	723
Business Services	48
Food and Agribusiness	99
Healthcare	92
Logistics and Distribution	49
Mfg and Construction	183
Others	163
Technology	89
Stark	1,582
Business Services	184
Food and Agribusiness	160
Healthcare	377
Logistics and Distribution	137
Mfg and Construction	292
Others	247
Technology	185
Summit	789
Business Services	216
Food and Agribusiness	64
Healthcare	128
Logistics and Distribution	49
Mfg and Construction	103
Others	140
Technology	89
Trumbull	348
Business Services	13
Food and Agribusiness	53
Healthcare	52

Logistics and Distribution	47
Mfg and Construction	90
Others	41
Technology	52
Tuscarawas	412
Business Services	0
Food and Agribusiness	99
Healthcare	44
Logistics and Distribution	53
Mfg and Construction	148
Others	48
Technology	20
Wayne	392
Business Services	0
Food and Agribusiness	98
Healthcare	70
Logistics and Distribution	29
Mfg and Construction	123
Others	46
Technology	26
Grand Total	10,821

CTE Data Note:

Note from ODE staff on potential for duplication of student data. "Students are reported as concentrators at the district, rather than the building level. While we can approximate the building in which they may have concentrated using their course data, providing data at the building level means students are duplicated at the district level when they take courses in more than one building within a district. In addition, students are also duplicated across districts in and across CTE programs when their CTE coursework is completed in more than on district. As a result, I would not advise aggregating the data to the county or region level without caveats regarding students counting more than once in the data. **Please footnote this potential for duplication when reproducing the data in reports or other communications.**"

Due to changes in program classifications from year to year, CTE data should not be compared or trended over time.

Apprenticeship Completions

The following number of apprentices completed a Registered Apprenticeship program during calendar year 2018.

Figure 26: Apprenticeship Completions

Program	Completions
Construction	496
Repair & Installation	76
Production	49
Total	621

Source: Ohio Department of Jobs and Family Services

To reiterate what each of these numbers represent here in Ohio:

- Full-time employment from day one of the training with progressive wages received throughout the duration of the program.
- Dually enrolled as an apprentice and student with a University System of Ohio member accumulating college credits.

- Recipient of a nationally recognized portable credential indicating the achievement of journeyperson status through the national Registered Apprenticeship system.