



Toledo Talent Alignment Strategy

Report 2: Supply-Demand Gap Analysis

January 2019

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01

Introduction

About the Toledo Talent Alignment Strategy

The Toledo Regional Chamber is championing the Toledo Talent Alignment Strategy in partnership with the Lucas County Workforce Development Board. The purpose of this Strategy is to ensure education and workforce development efforts are aligned with the needs of employers and to coordinate existing education and workforce development initiatives currently underway throughout the region. Ultimately, the project aims to create the next generation workforce that the Toledo region will need to propel its economy forward.

The strategic planning process is an initiative from the Toledo Regional Chamber of Commerce, with engagement from key funding partners.

CAEL and Avalanche Consulting were engaged to facilitate and prepare the Strategy, to include the following:

Report 1: Talent Analysis will determine the makeup of the region's labor force and identify the industries and occupations that are thriving. This report serves to construct a baseline analysis of the Toledo Region's demographics and an analysis of the trends in the workforce and education infrastructure pipeline, including the supply of graduates' in the Toledo region.

Report 2: Supply-Demand Gap Analysis will identify what skills the workforce currently has, what skills employers need, and how to fill in gaps in the workforce pipeline. This report will review the growing industry and occupation clusters and provide a comprehensive inventory of all education and training assets in the region. Using this inventory, this report will include a supply, demand and program gap analysis as it relates to gaps in humans and educational programs.

Report 3: Talent Alignment Strategy will provide recommendations on how to align and improve the region's talent pipeline. The strategy will include high level goals for developing, retaining, and attracting talent within the region. These goals will include several strategy recommendations for action, tactics to be deployed across the region and talent development systems, as well as a high level implementation plan to guide strategic activity.

Supplement Research Reports will include a Labor Shed Analysis of commuter impacts on available workforce and Occupational Profiles with line-item data on employment, forecasted jobs, and wage levels for individual occupations in target clusters.

Stakeholder Input will take place throughout this process. Focus groups and interviews will be facilitated with stakeholders in the region. A Steering Committee consisting of industry, education, and workforce leaders from throughout the Toledo Region will serve as advisors to the project.



Project Partners and Funders

The Toledo Regional Chamber is championing the Toledo Talent Alignment Strategy in partnership with the Lucas County Workforce Development Board. The project was facilitated and developed by CAEL and Avalanche Consulting, Inc.



Toledo Regional Chamber of Commerce

The Toledo Regional Chamber of Commerce, serving a membership of over 2,300 businesses, fosters economic growth and prosperity in the Toledo Region by **ADVOCATING** for a thriving business environment, **LEADING** the charge to attract and retain talent in the region and **CONNECTING** business with resources and opportunities for growth. Our member businesses range in size from small, one-person, operations to large corporations employing thousands. The membership is supported by the Chamber's certified and professional staff, which carries out the organization's initiatives. A volunteer Board of Trustees, representing a cross-section of the business community, guides these initiatives which are determined by our 2019-2021 Strategic Plan.



Lucas County Workforce Development Board

Delivers innovative workforce solutions to businesses and job seekers to accelerate regional economic growth and individual prosperity. Their vision is to create a region with economic prosperity through a diverse, trained, career-ready workforce that addresses the current and future needs of individuals and businesses.



City of Toledo

The City of Toledo is located in the county seat of Lucas County, Ohio at the western end of Lake Erie, bordering the state of Michigan. The first of many glass manufacturers arrived in the 1880s, earning Toledo its nickname as The Glass City.



Inspiring and Connecting Thoughtful Giving

Toledo Community Foundation

The Community Foundation serve the Toledo region, including Northwest Ohio and southeast Michigan. Since 1973, the Foundation has worked with individuals, families, and businesses and assisted them in making effective choices that match their philanthropic interest and needs while creating a better community for generations to come.



Wood County Economic Development Commission

In 1993, private sector business leaders approached the Wood County Commissioners with the idea of a public/private partnership to grow the tax base and employment of Wood County. The WCEDC takes the message of the County onto the worldwide stage through participation in Trade Missions and other events.

Project Partners and Funders



The University of Toledo

The University of Toledo is a student-centered, public metropolitan research university with 20,500 students. Established in 1872, the University has the third-largest public university operating budget in the state and is accredited by the Higher Learning Commission.



Bowling Green State University

Bowling Green State University is one of the top public universities nationwide with a strong commitment to first-year programs that lead to success. Founded in 1910, the university enrolls just over 19,000 students and provides experiences that enhances lives and prepares students for lifelong career growth.



Toledo Lucas County Port Authority

The Port Authority's business focuses on transportation and development. The business is shaped by the Port Authority's mission to move people and cargo through the region while employing innovative programs to stimulate development in the region.



Fulton County Economic Development Corporation

The Fulton County Economic Corporation works with companies of any size and in various industries to support their efforts to grow, invest, and hire in Fulton County. Their teams work in Business Development, Community Outreach and Workforce Development and Education.



Penta Career Center

Penta Career Center is a Career and Technical Education (CTE) school that provides industry-recognized certifications to high school students and adults. Penta provides courses a total of 16 school districts across the northwest Ohio region.



Owens Community College

Owens Community College is a comprehensive community college established in 1965 to provide educational opportunities and training to the residents of Toledo. Their mission is to foster student and community success by providing high quality and affordable education that leads to rewarding careers, personal growth, and regional economic strength.



Technical Team



CAEL (Council for Adult and Experiential Learning)

CAEL is a national, non-profit organization whose mission is to put meaningful learning, credentials and work within reach for every community. Since its founding in 1974, CAEL has been providing colleges and universities, companies, economic development organizations, labor organizations, and state and local governments with the tools and strategies they need for creating practical and effective lifelong learning solutions to address long-term skills needs.



Avalanche Consulting, Inc.

Avalanche Consulting is the nation's premier economic development strategist. Avalanche is deeply driven to make a positive impact and seek clients who are equally inspired to energize their economies. Headquartered in Austin, Avalanche was established in 2005 and its team has a combined 80+ years of experience working with more than 150 cities, counties, and regions across the country.

Steering Committee Members

The Toledo Talent Alignment Strategy project partners and consulting team sincerely thank the members of Toledo Talent's Steering Committee for helping inform and guide the development of this strategy. Members include:

Dr. Cecelia Adams, City of Toledo
Deborah Bubp, Hylant
Keith Burwell, Toledo Community Foundation
Lena Ciminillo, The Andersons, Inc.
Catherine Crosby, City of Toledo
Rashad Delph, Dana, Inc.
Andrea Domachowski, Lourdes University
Dr. Romules Durant, Toledo Public Schools
Ed Ewers, Penta Career Center
Martha Gebers, Wood County/Sauder Woodworking
Wade Gottshalk, Wood County
Wendy Gramza, Toledo Regional Chamber of Commerce
Andrea Gurscik, First Solar
Stacy Hammer, Manpower
Cindy Hurst, Lourdes University
Amy Kelley, Libbey Glass
Nicole Langenderfer, ProMedica
Joe Luzar, Lucas County Workforce Development Board
Ron Matter, Penta Career Center

Diane Miller, University of Toledo
Russell Mills, Bowling Green State University
Pam Mohler, Associated General Contractors
Angela Nowak, Mercy Hospitals
Timothy Richissin, SSOE
Carolyn Rodenhauser, Regional Growth Partnership/JobsOhio
Tonia Saunders, Lucas County Workforce Development Board
Jeff Schaaf, Toledo Regional Chamber of Commerce
Adam Schlatter, O-I
Denise Smith, Owens Community College
Steven Stockdale, Buckeye Broadband
Paul Toth, Toledo Lucas County Port Authority
Michael Veh, Lucas County
Courtney Wagner, Owens Corning
Tom Walsh, Toledo Regional Chamber of Commerce
Jennifer Wuertz, SSOE
Sarah Zibbel, Libbey Glass

About the Supply-Demand Gap Analysis

This report, the Supply-Demand Gap Analysis, shows how well labor demand (local job postings) in the Toledo region is served by the output of local post-secondary graduates (degree completions). In this analysis, we identify occupations with current and future potential shortages – or at least those where the supply of local graduates is insufficient to meet projected employer needs. Unless existing trends are reversed, these occupations will require the attraction of labor from other parts of the multi-state region and the US. Each occupation group is described in terms of being in balance with graduate output, over-supplying the market, or under-supplying.

Occupations are organized according to their competency, or focus area, that often aligns with specific target industries (i.e. a Production competency serves the Advanced Manufacturing industry). Demand is measured by the forecasted job openings in occupations due to new job creation and replacement needs due to workers retiring or exiting a specific occupation. Supply is measured by the output of graduates from training providers and colleges. While local graduates are not the only source for new workers, graduates are a significant source of new workers and one that can be directly affected through local economic and workforce development programs.

Within the Supply-Demand Gap Analysis, we include an Education Infrastructure Assessment. This analysis provides a regional 50k foot overview of the education and training that is aligned to key growth sectors and available regionally. More information on this methodology can be found in the next section of this report.

Why is this analysis important?

This analysis is important in understanding the current makeup of the region's graduate output and how directly it is responding to the labor market demand in the Toledo region. As it relates to talent retention, it is crucial to understand whether or not available programming and graduates produced are in line with the type of talent that the local labor market is demanding.

How can you use this information?

This information can be used to educate and inform a wide variety of audiences, detailed below:

- For Economic Developers: Provides a greater understanding of regional education and training to support current and new businesses
- For Education & Training Stakeholders: To drive program expansion and coordination
- For Higher Education: To use as guidance for program creation and alignment
- For Workforce Development: Provides a regional picture on postsecondary credential offerings/institutions and programs to include on the Eligible Training Provider List
- For Funders/Partners: Provides a regional overview on the system to make better connections on funded initiatives
- For Employers: To drive recruitment, retention, and attraction of talent locally



02

Data Analysis

About the Data Analysis & Methodology

The first step to determine the needs of the Toledo Region's future workforce is to understand the condition of the current workforce. To get a full picture of the workforce flows in and out of the Toledo region, this analysis includes the Toledo metro counties of Fulton, Lucas, and Wood as well as the surrounding counties identified in the map below. To illustrate how well each of your industries of focus are being served, the consulting team conducted ten focus groups (~ 60 participants) and 15 individual stakeholder interviews with representatives from workforce and economic development, higher education & training, and employers. This data enables us to better understand how to capitalize on the strengths of the current workforce, and how to best address areas of future need. More detail on the methodology and sources are included on the following pages.

Supply & Demand Gap Analysis includes:

- An analysis of educational institution graduate output as it relates to regional job demand in the region based on institutional completions and annual job openings
- An overview of occupations by industry that are experiencing severe shortages, shortages, in balance, and are in surplus
- An in-depth analysis of the number of programs in each industry by institution type and focus area

Education Infrastructure Analysis includes:

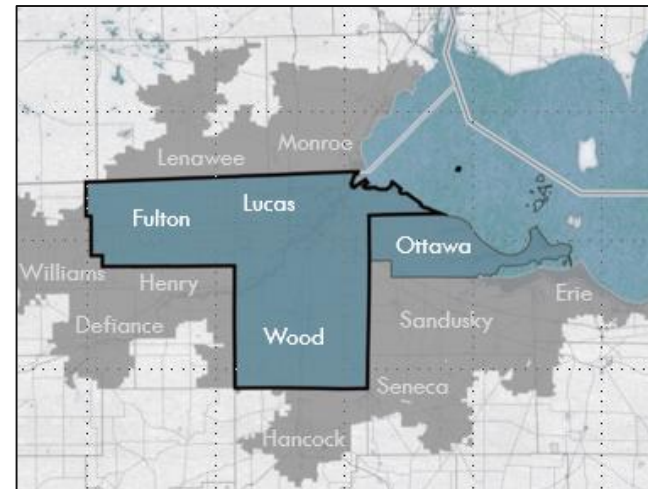
- Provides an in-depth analysis of 1,217 education programs for the 4 industries of focus in the Toledo region
- Programs by institution type – public, private, 2-year, 4 year, vocational, K-12 district, and for-profit institutions
- Programs by institution and credential (or focus area) level – Certificate, Associates, Bachelors, Masters, etc.
- Proportion of programs by Credential Level (or focus area)
- Number of programs by industry and credential (focus area)

Industries of Focus

The following industries were determined based on high job demand and prevalence in the Toledo region. The graphic below details the specific sub-sectors within each industry. The report digs in-depth within each of these industries to identify supply and demand gaps for occupations within these industries.



Defining Region for the Analysis

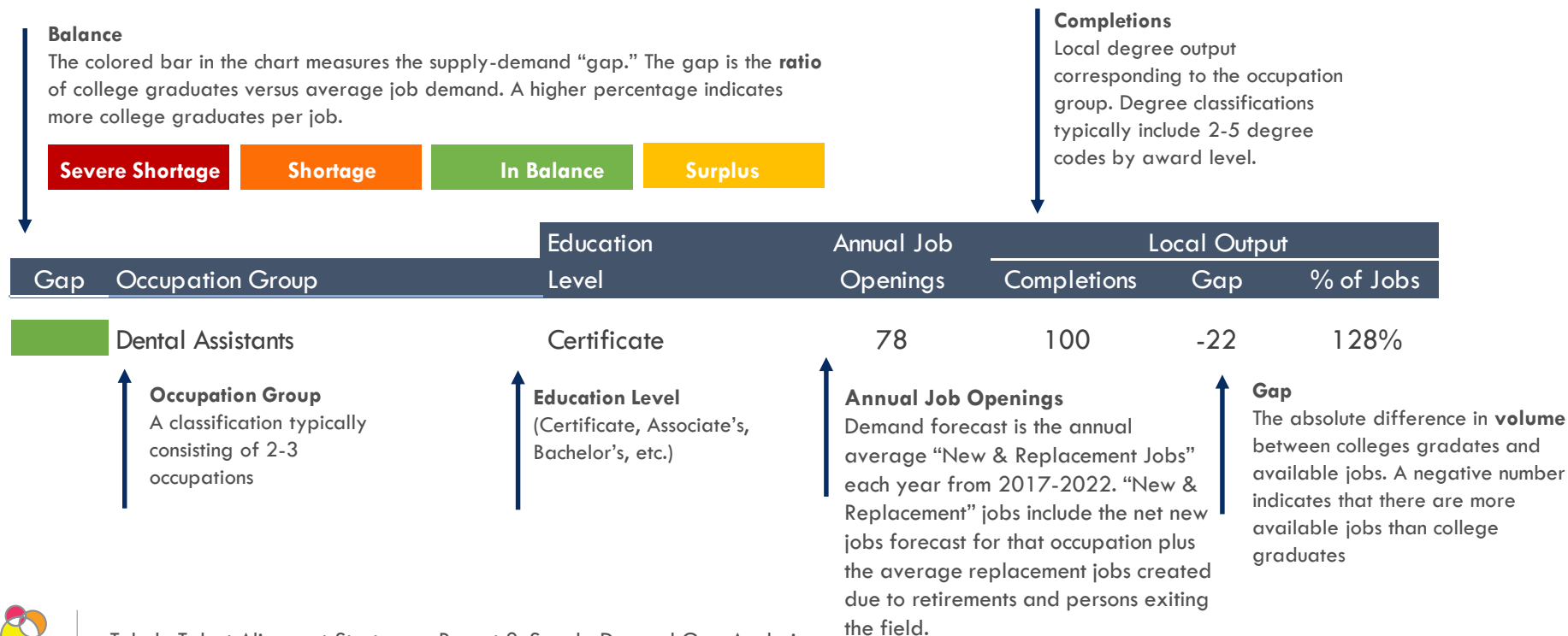


In the analysis, data will cover the Toledo metro region including Lucas, Fulton, Ottawa, and Wood as well as the surrounding labor shed counties of Sandusky, Lenawee, Hancock, and Monroe, Michigan.

Gap Data Methodology and Sources

Avalanche has developed a process to analyze the future pipeline of workers and college students in a way similar to industry cluster analysis. We have built and manage the entire database of post-secondary credential completions for 7,500 educational institutions in the US. Data is maintained from 2000-2016, the latest year of complete, finalized data. This data is collected by the US Department of Education as part of its IPEDS program (Integrated Postsecondary Education Data System). Each institution is required to submit their completions data to their state education agency, which packages the data and submits it to the US Department of Education for final analysis and publication. To complete the gap analysis, we match demand back to the supply of post-secondary graduates in related fields. Matching a post-secondary credential to a specific occupation can sometimes prove difficult. Some broad degrees in Liberal Arts could serve any number of competencies, such as Education or Business, for example. Technical degrees are easier to link to specific occupations (e.g., linking Mechanical Engineering degrees with the Mechanical Engineering occupation). We have designed our taxonomies to maximize the overlap between supply and demand.

Like the NAICS coding system, there are thousands of codes used for degree majors. To bridge degree codes (CIP) to occupation codes (SOC), Avalanche creates smaller skills groups of usually 2-5 occupations and 4-5 degrees. Unlike other supply-demand taxonomies in use today, our taxonomy extends to matching degrees and occupations at each education level (Certificates, Associates, Bachelor's, Master's and PhD). This prevents matching a Bachelor's graduate in Psychology, for example, with any mental health occupations, which require at least a Master's degree to get licensed to work. The example below shows the data that are used in the gap calculations:



Gap Data Methodology, cont'd

Detail on how each occupational cluster was assessed per graduate production included below.

Severe Shortage	Shortage	In Balance	Surplus	Unknown
<20%	20<80%	100-150%	>150%	Insufficient Data
<20% of job demand is met by the local supply of graduates.		100-150% of job demand is met by graduate supply. But, since the Toledo region does not retain its Millennial graduates, an upper threshold of 150% is used to indicate over-supply.		A gap condition is “unknown” when the output of local graduates is hard to determine to due lack of data, usually for non-credit programs or for-profit education providers, which are not required to submit their data to the US Department of Education. Unknowns are usually indicated for short-term certificates such as Home Health Aides or Office Management certificates.

Education Infrastructure Data:

In addition to the Gap Data analysis a full review of all education and training offered within the region was included to provide a full understanding of the Education system programming (secondary and post-secondary programs) which support skill development for the four Industries of Focus (Advanced Manufacturing, Healthcare, Professional Services & Back Office and Transportation & Logistics. Program offerings from secondary career and technical (CTE) programs to industry certifications, associate degrees, and through to doctorate level programs were inventoried and assessed to determine how well aligned the current system infrastructure is to support industry demands in key sectors. This data was gathered from public sources, course catalogs and institutional web presence for 52 regional institutions offering programs within one of the four industries of focus areas. Select detail on this inventory is included in each industry section and the full inventory is included in the Appendix of this report.

03

Key Findings

Summary of Key Findings

The Supply and Demand Gap Analysis was informed by several points of both quantitative and qualitative data. The summary of findings listed below are detailed with supporting data on the following sections of this report. The qualitative feedback included was gathered through three meetings with the Toledo Talent Alignment Steering Committee and with critical input provided from other regional leadership through two trips into the region during this phase of the Strategy development process. These findings, and the subsequent data provided in this report, lay the foundation and set a direction for the regional Talent Alignment Strategy.

Key findings include:

Demand (Industry and Occupational Growth) Outpaces Supply (Talent Production) in Key Areas. Economy is growing and diversifying presenting workforce challenges. Specifically, Advanced Manufacturing, one of the major industry sectors growing the economy, employers are experiencing a challenge finding enough talent to fulfill their entry to mid-level positions. In this industry there are roughly 3,000 job openings per year – 2,500 of which are for Certificate-level positions (meaning low skilled to semi-skilled positions) with only 1,000 graduates identified. Meeting demand with regional talent is likely to be a challenge in the Transportation and Logistics sector within entry level positions - minimal data is available to confirm talent supply in typical education programs preparing workers for these careers. As the Transportation and Logistics continues to grow it will become increasingly imperative to ensure these occupational demands are being met with local supply and the education offerings match skill needs at the entry, mid and more senior levels critical to the success of these businesses and functions.

Entry and Mid-Level Positions Present a Real Challenge. Entering a career and progressing through it requires support from the employer and an aligned education and training system to ensure skills are developed along the pathway. Many employers, especially within the Advanced Manufacturing and Healthcare fields, indicated that initially hiring at the entry level is not as challenging as retaining these employees – this creates a deficit for both the entry and mid-level positions. Some businesses have developed internal pathway programs to begin to alleviate these challenges and incentivize longevity within the company and the career field, however, many of these efforts are in their infancy. It is important to incentive and scale these approaches so more workers can earn while they learn more skills and employers reap the benefit of a more stable incumbent worker pipeline.

Talent Surplus Point to Retention Challenges. Several talent surpluses have been identified within the data sets – meaning too many graduates are being produced relative to the employment demand in the regional economy. Some examples include: Engineering specialties, Medical & Health Service Managers, Supply Chain Managers & Analysts, Computer System Analysts & Web Developers. However, some of these surplus data points are in direct contradiction to employer realities. For example, in the Healthcare field data illustrates Registered Nurses are produced at twice the rate demanded by industry growth (757 graduates for 374 job openings). Feedback from employers' points to the exact opposite scenario – one in which they cannot fill these positions based on the current talent pool available. This points to a challenge in either retaining these graduates in the region or potentially a mismatch in skills they have developed within their programs of study and the skills required by the regional employers.



Summary of Key Findings, cont'd

Career Messaging to Drive Education Choices. Understanding where employment opportunities are and will likely be in the future is critical to effective education planning. In many of the industries key to the Toledo regional economy the data suggest certain opportunities for realignment and redirection from one education field to a closely related one which would result in higher employability in areas of need. For example, in Advanced Manufacturing data indicates an oversupply of talent related to the welding focus area whereas the closely aligned general machinist field is experience a severe shortage in the talent pool. In Healthcare, there are many non-direct medical positions currently experiencing shortages such as vet assistants, medical and clinical lab technicians and dental careers which could potential be addressed by shifting some talent in the oversupplied fields in direct patient care to better meet industry needs. Finally, Information Technology positions related to software development and network administration are not adequately supplied regionally, however, learners pursuing education in computer systems and web development where there is much lower demand could be advised to consider those slight career redirections which would potentially result in more stable and local employment.

Education Pathways Aligned to Career Pathways. To support continued, stackable and progressive skill development as required by the mid-career and senior-level positions in each industry sector, it is important to ensure regional academic programs reflect the nature of the occupational pathways and articulate from one credential to the next. This will allow for a more seamless transition for workers to progress through career pathways in Advanced Manufacturing where skilled trades can build to more traditional engineering functions and in Professional Services positions where more administrative focused positions could transition into harder to fill careers in financial legal areas. Ensuring that there is a stackable credential and degree pathway for these key areas where higher level degrees are necessary for career progression simultaneously address skill gaps within the labor market, allow employers to access a labor pool and education system addressing skill needs aligned to their career pathways and create more long term, sustainable career options for Toledo region residents.

04

Supply & Demand Gap Analysis

About This Report

The subsequent pages include data analysis on the Supply & Demand Gap Analysis broken down by the four industries of focus: Advanced Manufacturing, Healthcare, Transportation & Logistics, and Professional Services & Operational Support. For each industry, the report breaks down how well job demand is served by local graduates and programs and further broken down by focus area and credential area across the industry. Narrative analysis includes insights from both the data and input received from Toledo stakeholders within education, workforce, and economic development.

The following sections of this report aim to analyze four specific data points to better understand how well each industry of focus is currently being served by the Toledo region's education and training system and the volume of academic graduates completing credentials and degrees aligned to their occupational areas of growth. Each section, for the industries of focus as mentioned above will include:

- Industry demand by occupational group and credential level required for each occupation. Size of employment demand (job openings and occupational growth) is represented by the bubble size on the Gap and Program Overview page for each industry. Additionally, the degree to which each level of occupation is being current met by talent supply (representing education and training graduates) is color coded to represent whether there is a severe shortage, shortage, balance or surplus of talent (people) production.
- Talent output of Toledo's educational system by focus area within the industry of focus. Education Infrastructure detail is included for each sector breaking down focus area, credential, credential by focus area, and type of institution. This analysis is performed to determine where there's a concentration of competency development, areas where there are potential misalignment in types of programs as they relate to the labor market, areas in which more, and more developed career pathways could be created and/or determining the level of accessibility – both generally and financially – for Toledo's citizens.
- Employer and other stakeholder feedback to determine pain points at different levels and understand the reality between data and reality when it comes to recruitment, retention, and skills alignment with labor market demands.

All of these data points combined paint a clearer, more comprehensive view of the reality in which Toledo's labor market and education infrastructure are operating in and where thoughtful and intentional intervention could bring about a positive change in the larger Toledo region.



Supply & Demand Gap Analysis: Advanced Manufacturing

Advanced Manufacturing Key Takeaways

There is significant current and projected demand for entry-level manufacturing careers in the Toledo region, however, based on both examination of current student output and direct feedback from regional employer's demand is outpacing talent supply. On the higher, technical skill areas within Engineering the data, in some cases, points to an oversupply of talent – largely accounted for by significant Bachelor and Master level programs at two major universities in the region. Based on input from the education community and regional employers, many Engineering students leave the Toledo region following graduation and recruitment of positions within the Toledo labor market is conducted not just locally but regionally and nationally to find the top talent available. While there are some areas of talent overproduced within Engineering it is clear from the data the current and future projected need is within entry and middle skill positions. Regional education offerings directly align to these occupational clusters and represent a significant share of the programming available in support of this industry of focus.

The following pages will show a high-level overview of top findings of employment growth trends (demand), student output (supply), regional education and training program offerings (education system) and regional employer and educator insight.

What you can do with this data:

Use this information to drive initial conversations regarding the Northwest Ohio Manufacturing Association sector partnership. Determine where additional programs should be developed to better address a larger talent supply or skill gap within this sector.

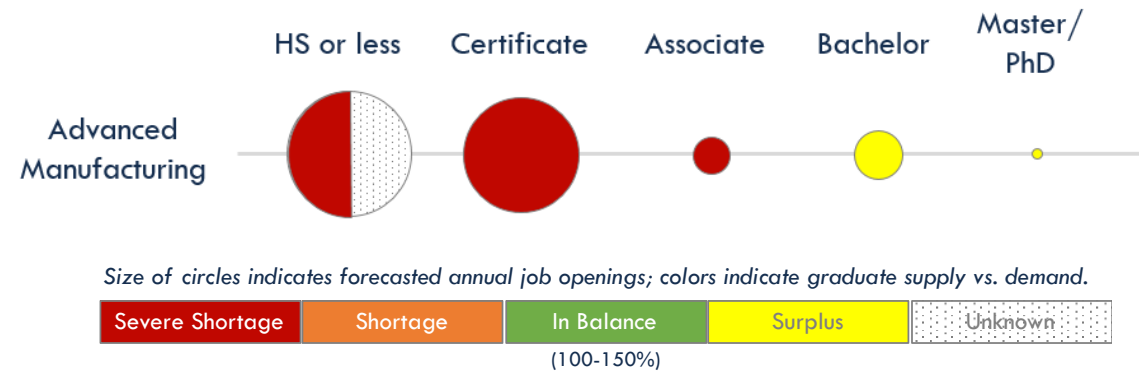
Assess program capacity and whether new programs should be developed to better address regional demand. The data shows us that much of the programming is at the certificate level, aligned to regional demand, however talent supply is falling significantly short of meeting projected employment growth in Skilled Trades and Maintenance & Repair technology areas.

Use this data to promote career choices. Entry and mid-level occupations in Advanced Manufacturing are significant, strong and growing in the region. Regionally message the need for these positions and their connection to a long and sustainable career in, in many cases, very well compensated occupations.

Full detail on the demand, supply and education programming included in the Appendix of this report.

Advanced Manufacturing Gap and Program Overview

How well is job demand served by local graduates and programs?



Large Demand for Unskilled and Semi-Skilled

In the Toledo region, there is a strong job demand for entry-level workers (about 3,000 job openings per year), typically requiring a high school degree. Employers report of extreme difficulty filling these positions, indicating a severe shortage in workers.

Certificate-level positions are large, with 2,500 openings per year and less than 1,000 graduates identified in programs across the region. Shortages are severe primarily due to the lack of maintenance and repair graduates. Associate-level positions are in less of a shortage, with fewer job openings (250) and 130 graduates. Some positions might be oversupplied, such as Drafters.

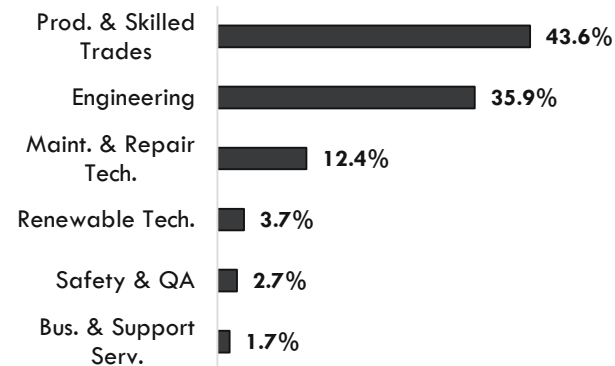
Bachelor's-level job openings are comprised primarily of engineers (380), with most engineering positions oversupplied by local graduates. No positions require a master's level or higher.

Educational System - Focus Area and Credentials

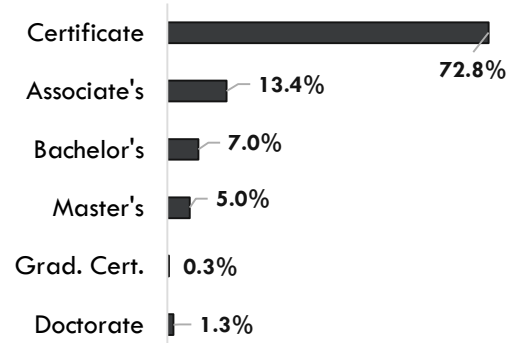
Within the Toledo region's education and training system for Advanced Manufacturing, the most widely available credential is a Certificate at 72.8%, followed by an Associate's degree at 13.4%. Over 85% of the full suite of education and training in support of Advanced Manufacturing skills is reasonably aligned to where most of the employment base and project growth exists.

However, as noted through several employer conversations, these certificate and associate level positions – largely focused on skilled trades, maintenance and repair, are the hardest to fill and sustain within their talent pipelines. Essentially, while significant education resources are supporting skill development at the right employment level demand of skilled workers is well outpacing talent supply.

Focus Area



Credentials



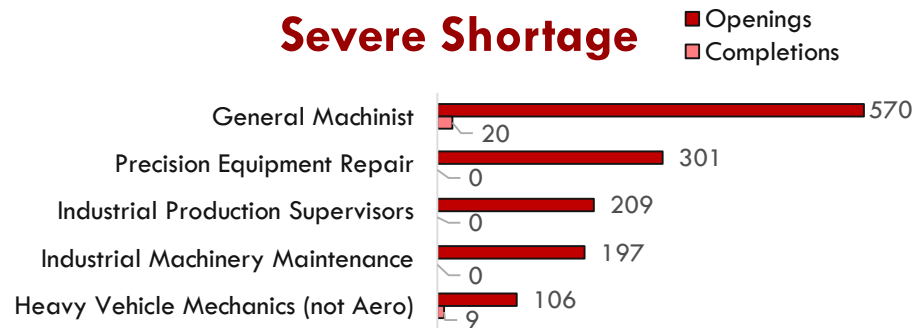
Focus Area and Credential charts indicate % of education and training programs offered within the Toledo region as aligned to each targeted Industry.



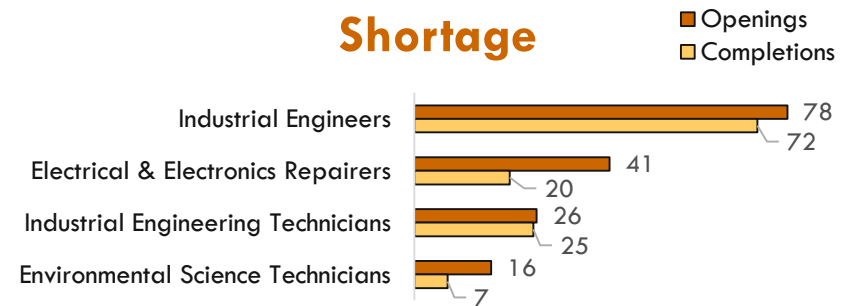
Advanced Manufacturing Detail – Occupational Gaps

How well is job demand served by local graduates and programs?

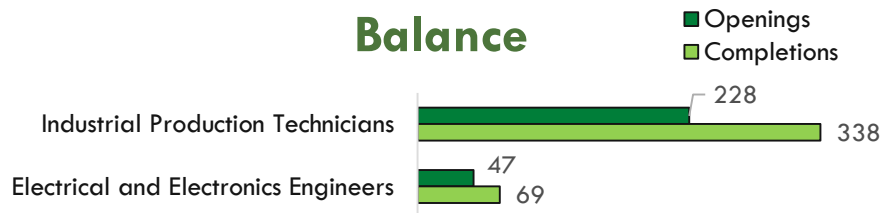
Severe Shortage



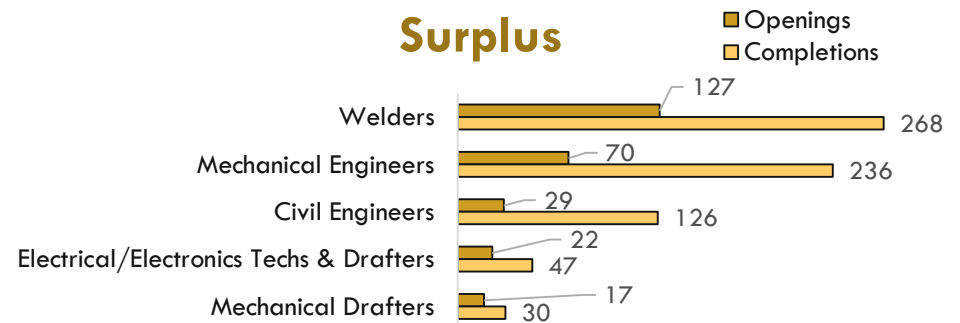
Shortage



Balance



Surplus



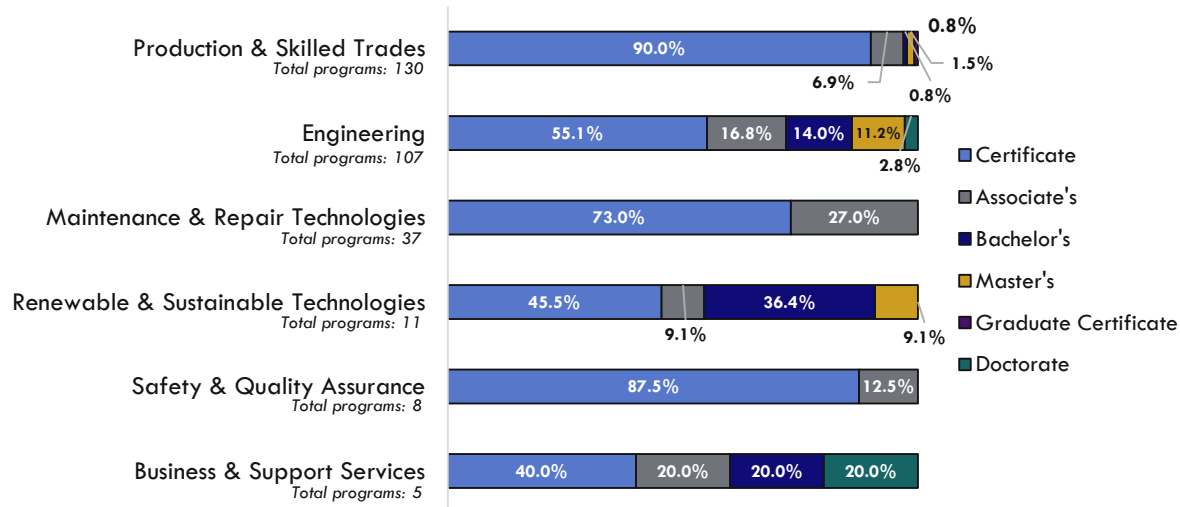
For semi-skilled or skilled positions, the largest shortages in Advanced Manufacturing are in Machinists and various industrial repair and maintenance positions. Also in severe shortage are Heavy Vehicle Mechanics. Less severe shortages exist for Industrial Engineers, Electrical Repairers, and Technicians. Employer interview support these findings – that filling entry-level unskilled positions is very difficult, and that there is a lack of maintenance workers to manage equipment. Most employers indicate that finding Engineers is not a problem, as they typically recruit nationally.

Industrial Production Technicians appear to be in-balance, with over 300 local graduates to fill about 230 job openings. Electric Engineers also appear to be in-balance.

Surpluses have been identified for Welders, which produce about twice as many graduates (270) as job openings (130). Mechanical and Civil Engineers are also vastly oversupplied for the local market, which indicates that most of the graduates will leave the region. Drafting graduates appear to oversupply the market, which may indicate they will have difficulty finding jobs upon graduation.

Advanced Manufacturing Detail – Focus Area by Credential & Institution Type

Focus Area by Credentials

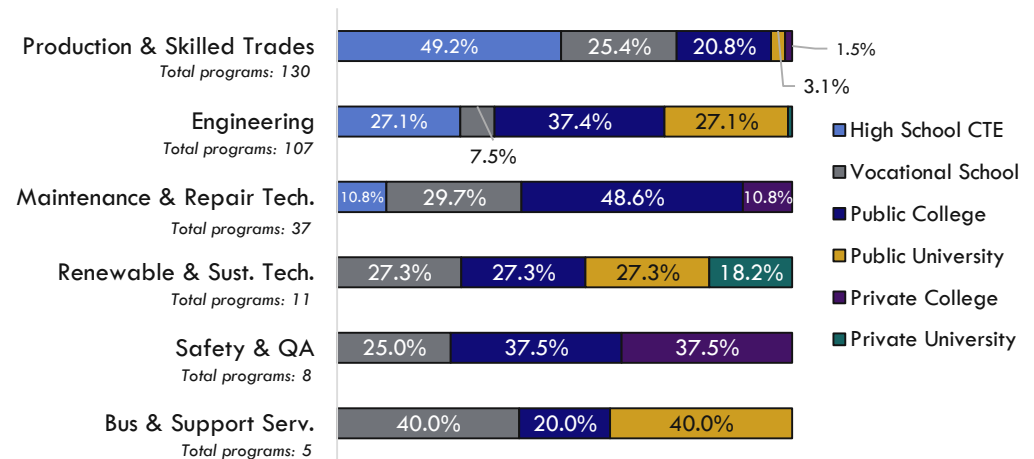


Focus Area by Credentials: The chart to the left details the percentage of programs by credential level for each focus area. Overall, Production & Skilled Trades has the highest amount of total programs and is dominated by Certificate level programming followed by Maintenance & Repair Technologies and Safety & Quality Assurance – tracking against where highest projected demand of employment will be in terms of education credential required and projected occupational growth. However, as previously noted, demand is well outpacing supply indicating programs are not at capacity (meaning not graduating as many students as they could) or more programs are needed, in general, to meet regional demand.

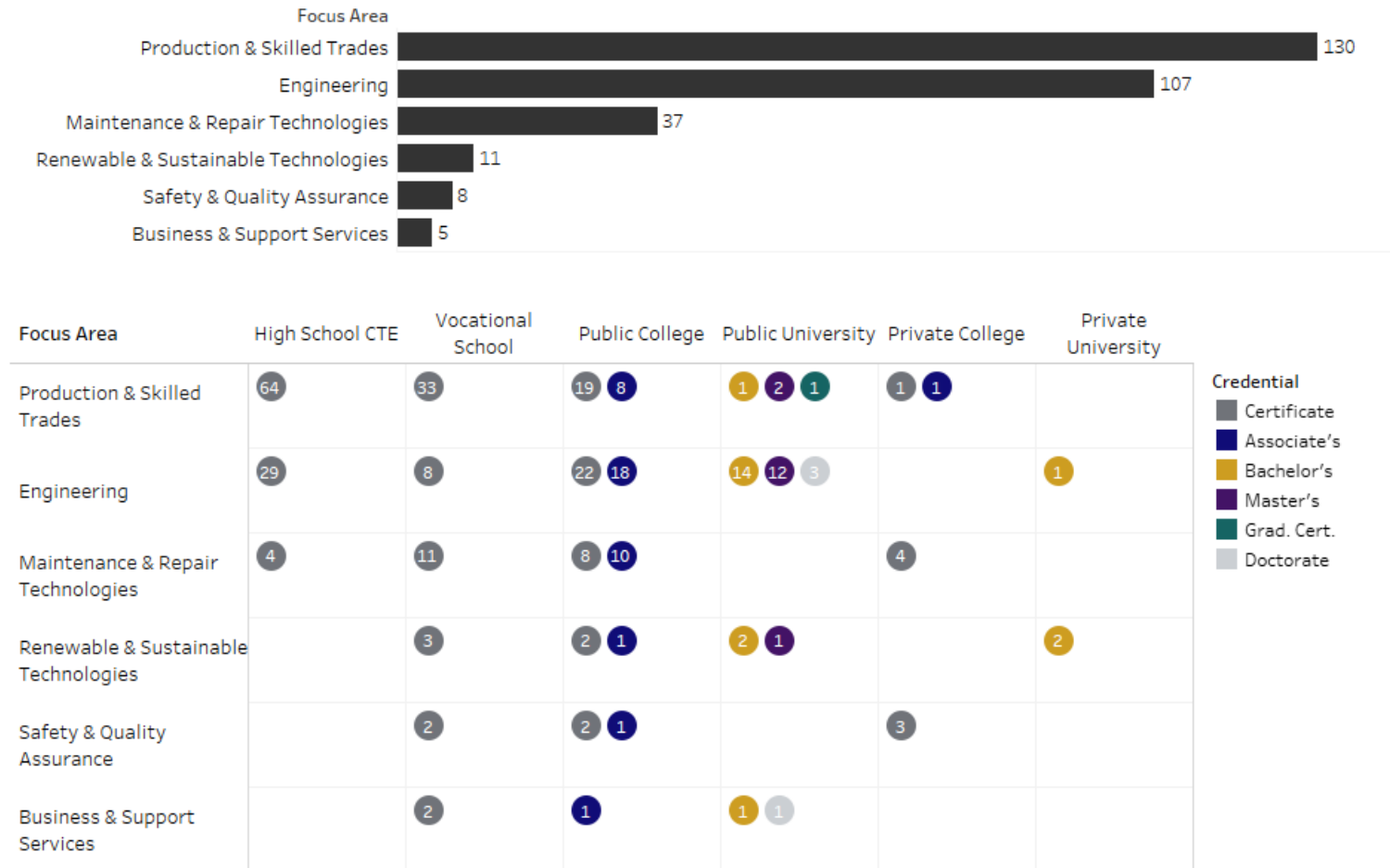
* Values represent number of programs; competencies ranked in descending order by total number of programs

Focus Area by Institution Type: The chart to the right details the percentage of institution type that provides programs in identified focus areas. Within the Toledo region, approximately 96% of institutions that provide programming in Advanced Manufacturing are public. This is an important when considering how accessible these programs are for interested students and can more easily lead to a sustainable career pathway. Overall, Production & Skilled Trades are distributed, representing a clear educational pathway from entry to higher level opportunities in the industry. Within Engineering, there are far fewer opportunities for Certificate level programs and a much heavier focus on upper-level credentials in colleges and universities.

Focus Area by Institution Type



Advanced Manufacturing Detail



The above data sets drill down further into the data presented on the previous page. This details the volume of programs offered in support of various focus areas within the industry, by credential and per type of institution. Within Advanced Manufacturing, the pathway pipeline significantly narrows at the baccalaureate level for many programs – meaning there are significant opportunities for a stackable credential pathway from Certificate to Associates, however, minimal support for continued skill development (except for Engineering) into the higher credential levels. While this progression of programs tracks to current projected growth and employer hiring pain points (at the Certificate and Associate's degree levels), it will be important to validate with industry whether middle-skill and higher degreed positions are being met by regional offerings. Full detail on program offerings included in the Appendix.

* Values represent number of programs





Supply & Demand Gap Analysis: Healthcare/Medical

Healthcare/Medical Key Takeaways

Healthcare is a large and growing major industry in the Toledo region. There is significant current and projected demand for entry and mid-level healthcare careers in the Toledo region, however, based on examination of current student output, in much of the industry – supply is outpacing demand. Direct feedback from regional employers painted varying scenarios— many had difficulty filling mid-level skill locally. Retention was also a prevailing issue, with many citing they had issues retaining entry-level positions such as CNA's and Home Health Aides. For the more advanced skill areas within the industry, Toledo is oversupplying talent – largely accounted for by significant Bachelor and Master level programs at two major Universities in the region. However, based on input from the education community and regional employers, data suggests that many advanced level healthcare students leave the Toledo region following graduation. This is an issue because the data is misaligned with employer feedback – while the educational system is sufficiently providing entry and mid-level credentials, those that obtain these credentials are not retained in the region. Recruitment of higher-level positions within the Toledo labor market is conducted not just locally but regionally and nationally to find the top talent available. While there are some areas of talent overproduced within the advanced levels, it is clear from the data the current and future projected need is within entry and middle skill positions. Regional education offerings directly align to these occupational clusters and represent a significant share of the programming available in support of this industry of focus.

What you can do with this data:

Use this information to engage with educators (from K-12 and vocational schools to higher education) on curriculum development and program capacity to create new programs that align with regional demand. The data shows that there are a significant number of certificate and higher-level offerings, but adjustments can be made to specify the types of program offerings to improve alignment with Toledo's labor market demand.

Work with educators to develop a clear career pathway from assistant-level positions through home health and nursing aide positions in order to bolster retention and motivation to continue on individuals' chosen career path.

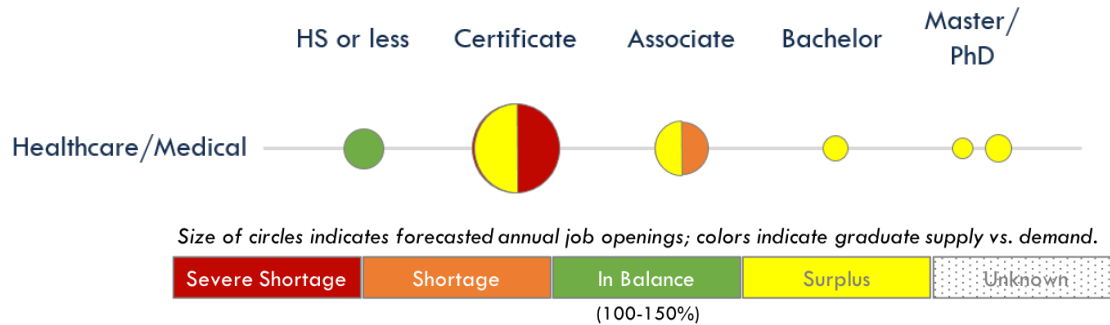
Determine scalability of internal pathway programs within industry employers to retain talent in the lower and mid-level pipeline

Work to identify more opportunities to get individuals connected to the job market and take advantage of student supply in high-demand focus areas.

Full detail on the demand, supply and education programming included in the Appendix of this report.

Healthcare/Medical Gap Analysis

How well is job demand served by local graduates and programs?



Feast or Famine - High Demand for Skilled Workers

The Toledo region has a surplus of graduates for many of the nearly 3,200 annual job openings in the Healthcare/Medical cluster and most shortages exist for occupations in low demand which lack local programming.

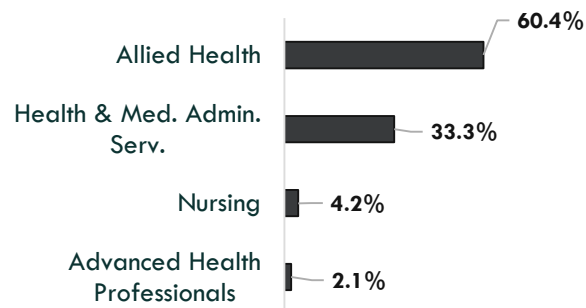
Certificate-level positions represent the largest and most diverse area of demand with nearly 1,800 openings per year in 19 different occupations. Associate-level positions are the next largest with more than 630 annual job openings. Training is very specialized at this level and as a result, supply and demand vary greatly by occupation.

Job openings decrease as the level of education increases. The shortages that do exist for the Toledo region are in specialty occupations like Veterinarians, Chiropractors, Audiologists and Optometrists.

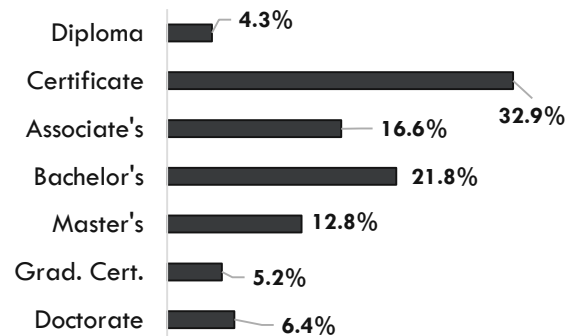
Educational System – Focus Area and Credentials

The charts to the left indicate the percentage of programs available in the industry. For industry-focused credentials, the most widely available credential is a Certificate at 32.9% followed by an Bachelor's degree at 21.8%. While this is typical of the industry, providing more options at higher-levels would be beneficial for filling in workforce gaps across the region. When speaking with employers, many had trouble filling mid-level skill locally.

Focus Area



Credentials

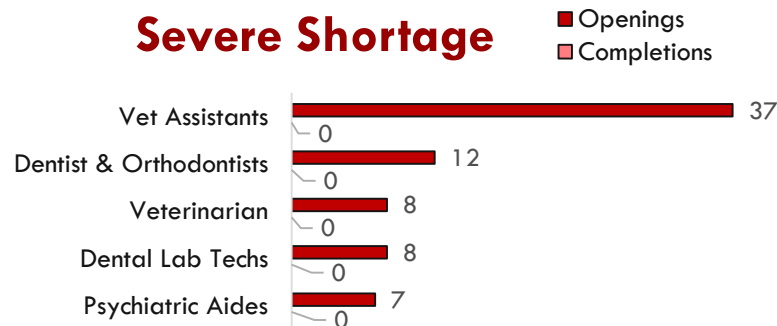


Focus Area and Credential charts indicate % of education and training programs offered within the Toledo region as aligned to each targeted Industry.

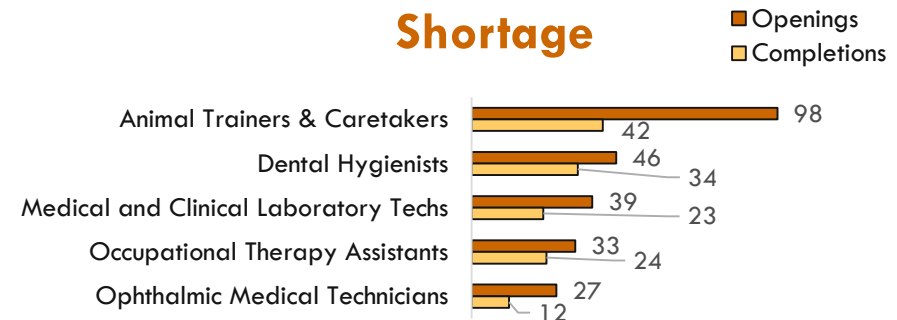
Healthcare/Medical Gap Analysis

How well is job demand served by local graduates and programs?

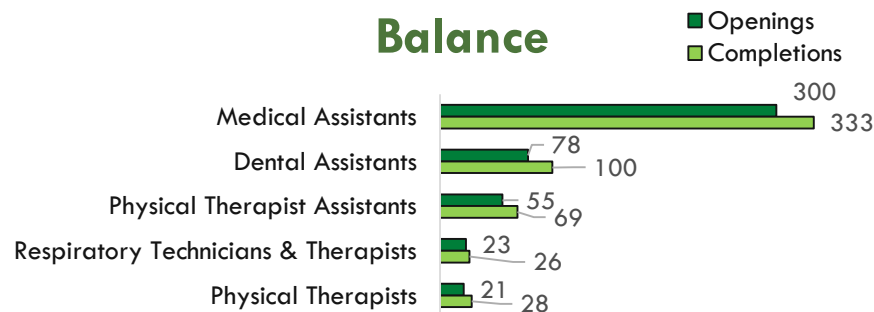
Severe Shortage



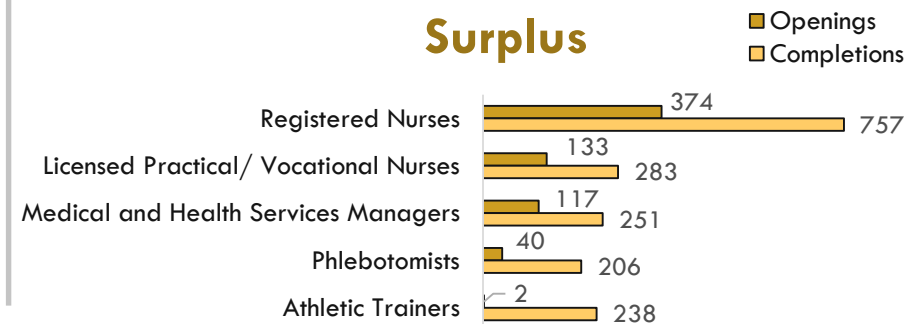
Shortage



Balance



Surplus



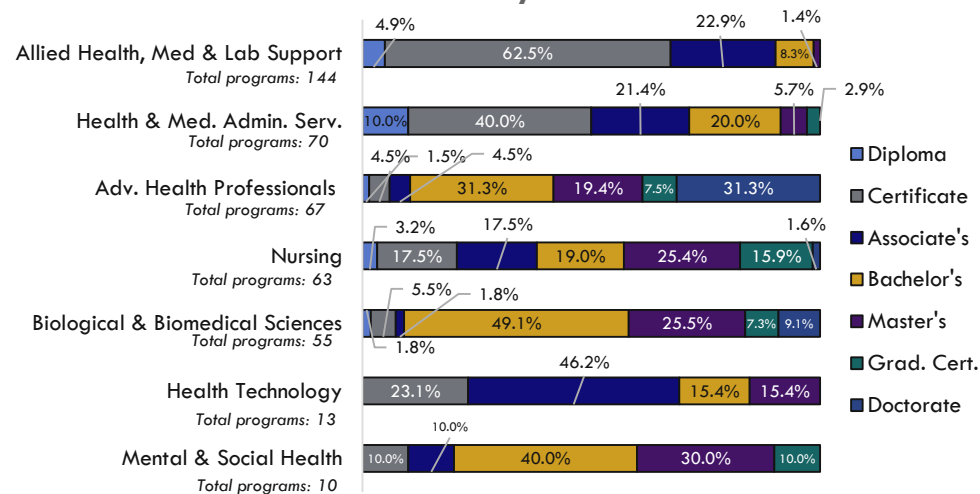
Graduates and programs in the Toledo region are in relatively large supply for the Healthcare/Medical cluster with a few exceptions. For the Healthcare/Medical cluster, the few occupations facing severe shortages are in such low demand that local gaps can be filled by graduates outside the market. The exception, Vet Assistants and Animal Trainers & Caretakers, require little to no formal training and are therefore hard to truly quantify.

Medical Assistants appear to be in-balance, with more than 330 local graduates to fill 300 job openings. Other balanced Healthcare/Medical occupations include Dental Assistants, Physical Therapy Assistants, and Physical Therapists.

The Toledo region produces a major surplus of Registered Nurses and Medical & Health Services Managers, suggesting many graduates will leave the region for employment opportunities elsewhere. The surplus of LPNs can fill employment opportunities in related occupations such as Home Health Aides or Nursing Assistants. The substantial surplus of Phlebotomists and Athletic Trainers will mean graduates will likely have trouble finding employment. Based on conversations with healthcare providers in the region, nurses are in very high demand and many cannot fill entry level positions within the industry. Some are beginning to develop internal support and training in order to articulate the long-term value of a career path in the healthcare field.

Healthcare/Medical Programs by Focus Area

Focus Area by Credential

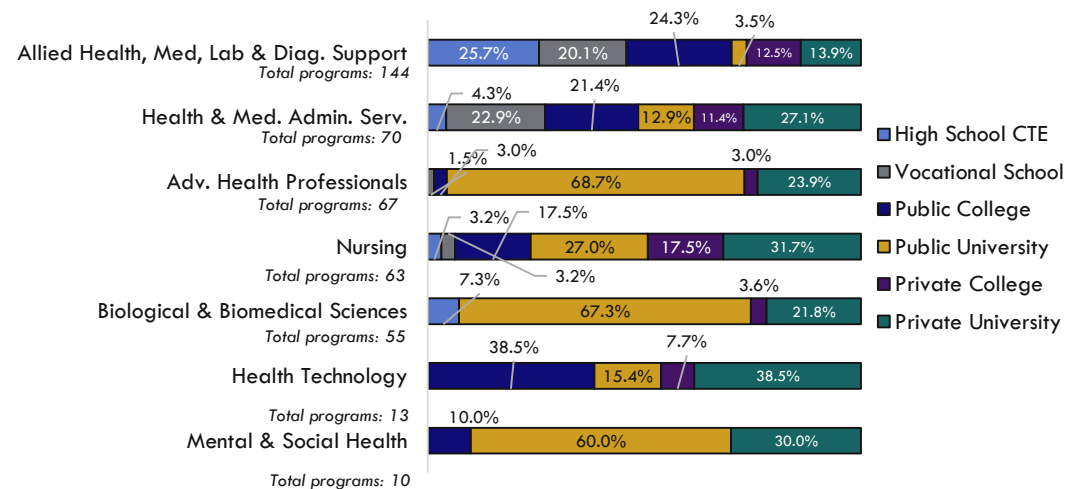


* Values represent number of programs; competencies ranked in descending order by total number of programs

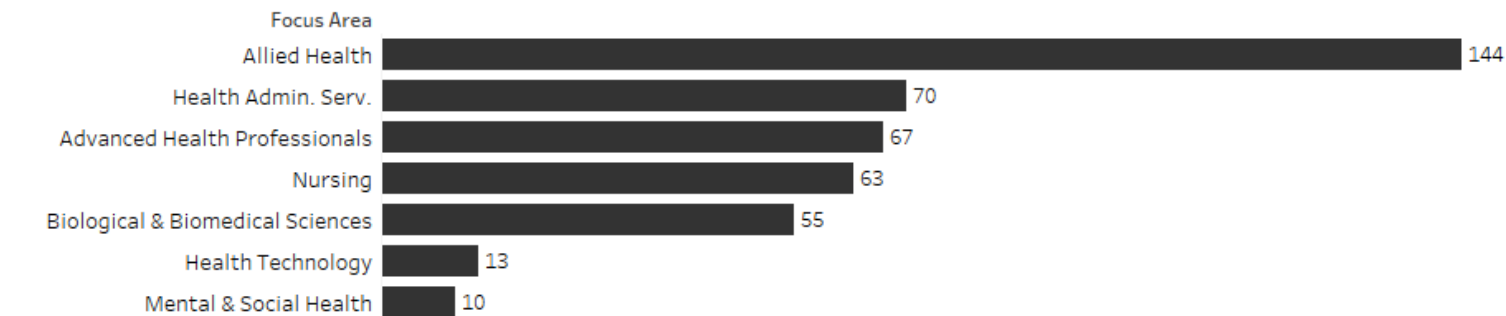
Focus Area by Credentials: High school CTE programs focus almost exclusively on Allied Health programs, with a few other programs in specialties such as Health & Medical Admin. Services and Nursing. There's a similar picture for vocational schools, but they offer more middle-skill programming within the Health & Medical Administrative services focus area.

Focus Area by Institution Type: For public institutions, there's a more diverse spread of offerings in more advanced/specialized areas such as Nursing and Biological and Biomedical Sciences. For private institutions, there is an almost equal amount of programs proportionally throughout each of the specialty areas. The Toledo region's breakdown of institution type shows well over two thirds of the institutions are public – which indicates more affordable and accessible options for students at mid-level points on their career pathways.

Focus Area by Institution Type



Healthcare/Medical Detail



Focus Area	High School CTE	Vocational School	Public College	Public University	Private College	Private University
Allied Health	37	29	13 22	4 1	5 7 5 1	2 4 6 7 1
Health Admin. Serv.	3	16	8 7	5 3 1	4 1 1 1 1	3 7 8 1
Advanced Health Professionals		1	2	11 12 5 18	1 1	1 1 10 1 3
Nursing	2	2	3 8	1 4 6 5 1	2 3 3 2 1	6 9 5
Biological & Biomedical Sciences	1 3			16 13 4 4	1 1	10 1 1
Mental & Social Health			1	1 2 2 1		2 1
Health Technology			5	2	1	3 2

Credential

- Diploma
- Certificate
- Associate's
- Bachelor's
- Master's
- Grad. Cert.
- Doctorate

The above view drills down further into the data presented on the previous page by showing the number of programs within each focus area in Healthcare. Within this industry, there are numerous opportunities to find a pathway from high school CTE to higher education.

* Values represent number of programs;





Supply & Demand Gap Analysis: Transportation & Logistics

Transportation & Logistics Key Takeaways

When speaking with Toledo regional employers, we learned that there is a high demand for entry level positions within the Transportation & Logistics industry. By nature of the industry, employers typically do not use formal education to find and recruit employees and more often develop and grow employees internally. This, as well as other sustainable, homegrown practice, should continue to happen as the industry is projected to grow in the coming years. The industry is also a critical function that regional employers – specifically within Advanced Manufacturing – rely on. An example is that many employers which produce and process material rely on Truck Drivers and Logistics Supply Managers to distribute and ship their products to customers.

What you can do with this data:

Use this data to drive conversations about the value and essential function this industry provides to other major industries in the Toledo region.

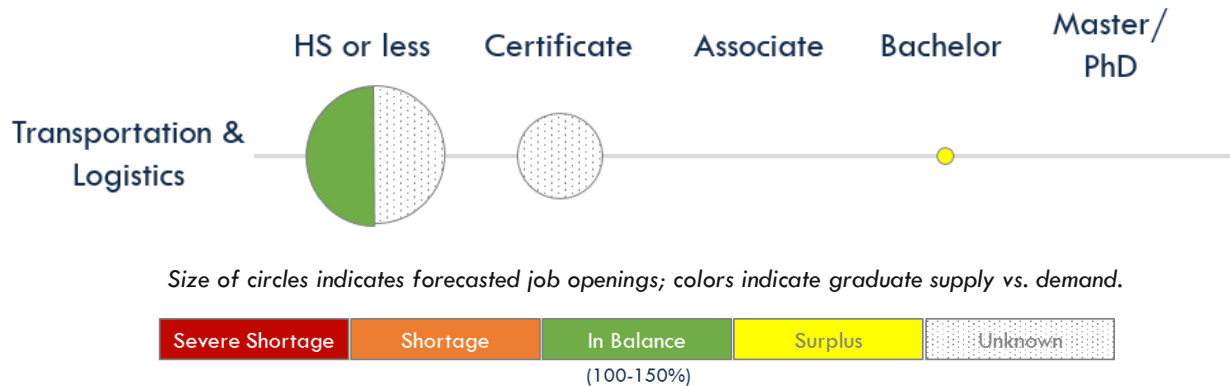
Much of the industry is dominated by sub-baccalaureate credentials, with some offerings at more advanced levels. Assess areas of oversupply and engage with educators and employers on how to articulate more lucrative career pathways and shifts into more in-demand occupations.

Consider developing incumbent worker training programs with major employers to help develop the skills of front line workers (materials movers, logistics clerk) positions and further fortify the career pathways within the industry.

Full detail on the demand, supply and education programming included in the Appendix of this report.

Transportation & Logistics Key Takeaways

How well is job demand served by local graduates and programs?

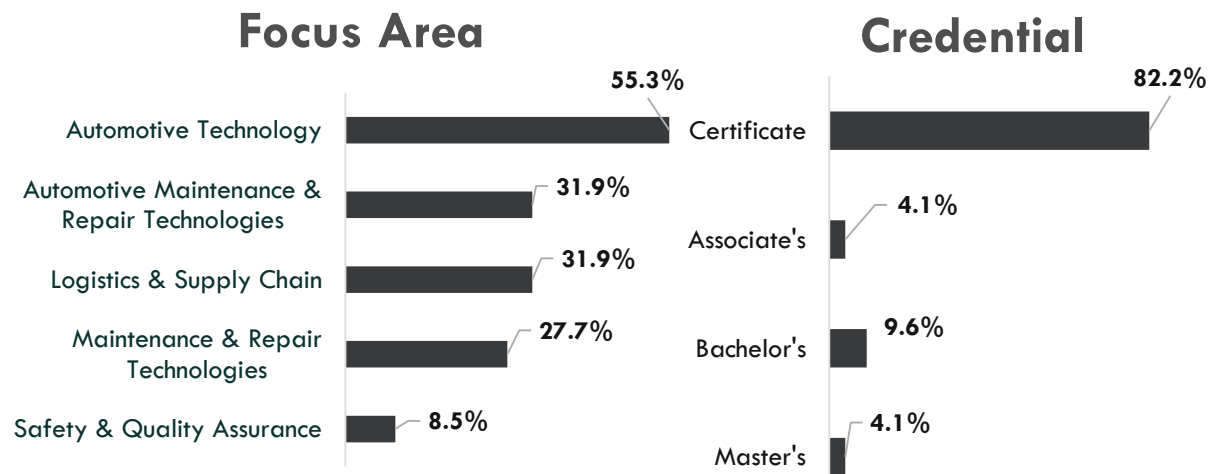


Large Demand with an Unknown Supply

A vast majority of the 4,100 annual job openings in the Logistics cluster are for unskilled or semi-skilled workers such as Packers & Material Movers and Truck & Commercial Drivers.

A very small percentage of Logistics occupations require formal education. These positions include Supply Chain Managers & Analysts, Airline Pilots, and Ship/Marine Engineers.

A surplus of Supply Chain Managers and Analysts exist in the Toledo region. Pilots and Marine Engineers, however, must be recruited from outside the region due to the high specialization of their training programs.



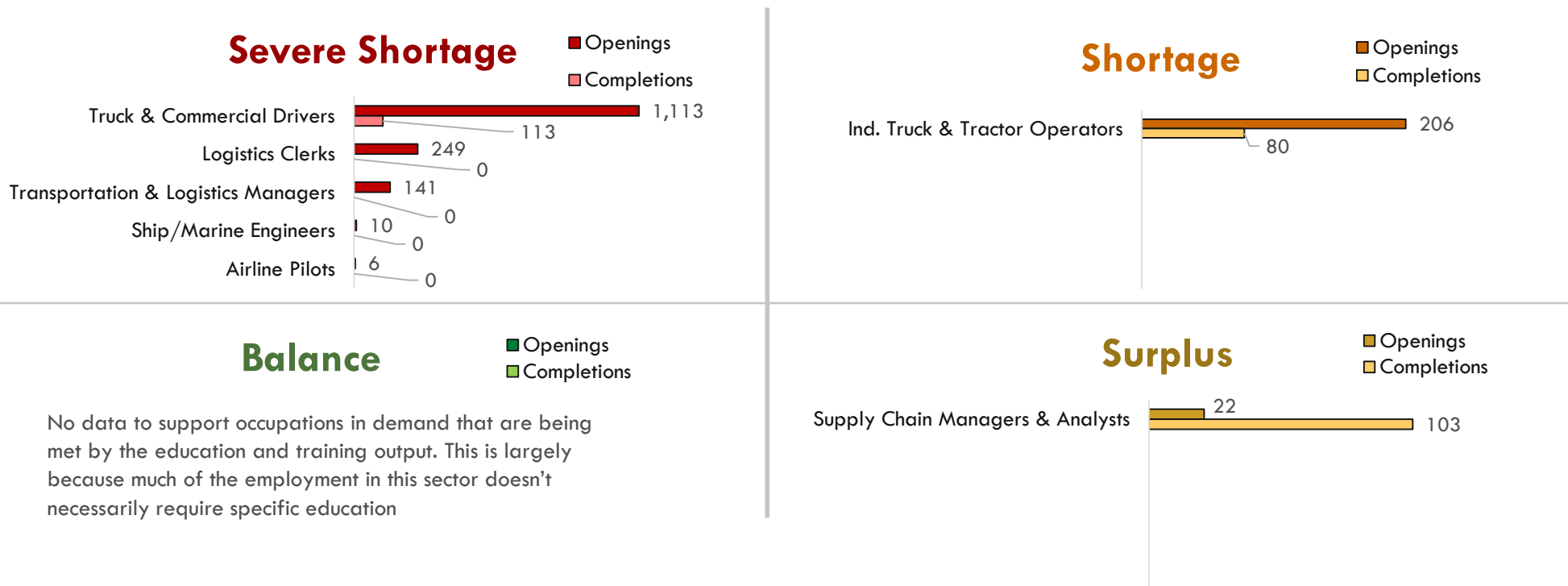
Focus Area and Credential charts indicate % of education and training programs offered within the Toledo region as aligned to each targeted Industry.

Educational System – Focus Area & Credentials

The charts to the left indicate the percentage of programs available in the industry. For industry-focused credentials, the most widely available credential is a Certificate at 82.2% followed by a Bachelor's degree at 9.6%. This breakdown matches the projected occupation demand areas. While this is typical of the industry, providing more options at higher-levels would be beneficial for filling in workforce gaps across the region.

Transportation & Logistics Gap Analysis

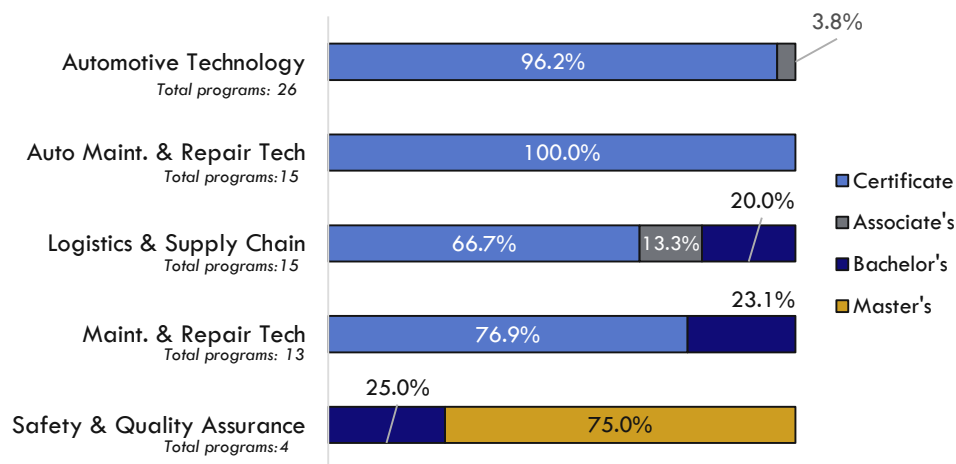
How well is job demand served by local graduates and programs?



Drivers and Operators represent the majority of job openings for the Logistics cluster. Local gaps and national data suggest a severe shortage in the supply of qualified candidates, but the exact severity is impossible to quantify given the number of private entities offering licenses and certificates in these areas. Other severe shortages exist for Ship/Marine Engineers and Airline Pilots. These positions can and should be recruited to the area given the high specialization of training and low demand for local jobs.

Supply Chain Managers & Analysts make up only a fraction of job openings in the Logistics cluster and are currently produced in surplus. With a graduate to job opening ratio of more than 4:1, a majority of these graduates will have to seek employment outside the region or in adjacent industry sectors locally in which their skills can also be transferred. Detail on occupation gaps, including credential levels is included in the Appendix.

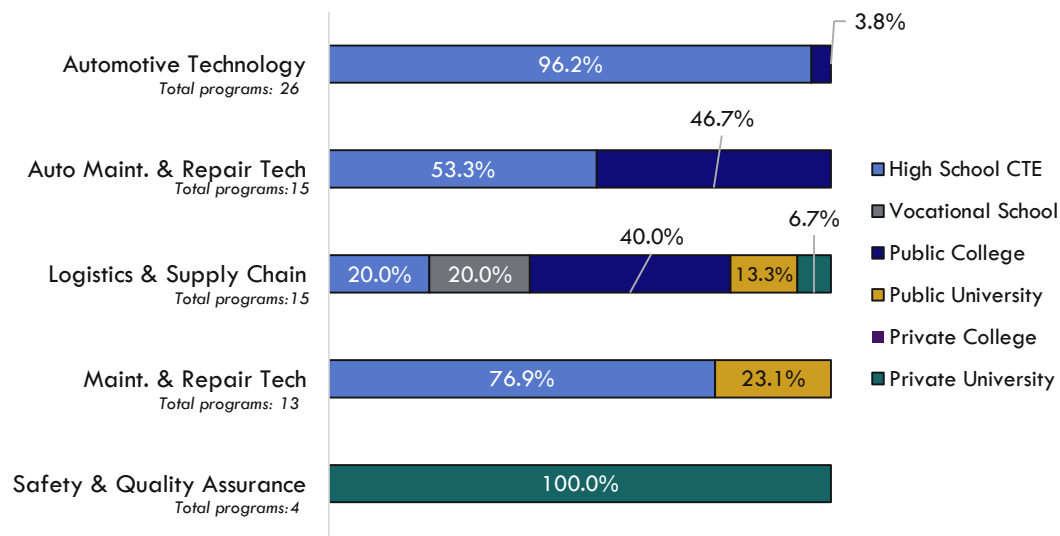
Transportation & Logistics Gap Analysis



Focus Area by Credentials In Transportation & Logistics, the credentials are dominated by certificates in every focus area except for Safety & Quality Assurance. While this is typical of the field, expanding offerings at higher credentials could address some mid-level shortages in the field such as Ship Marine Engineers and Airline Pilots.

* Values represent number of programs; competencies ranked in descending order by total number of programs

Focus Area by Institution Type When breaking focus areas down by institution type, Automotive Technology and Maintenance & Repair Technologies – the focus areas with the most programs – are dominated by high school CTE programs and public colleges or universities. For more specialized focus areas, such as Safety & Quality Assurance – all the programs are offered at only the private university level.



Transportation & Logistics Programs Focus Area



Focus Area	High School CTE	Vocational School	Public College	Public University	Private University	Credential
Automotive Technology	25		1			Certificate
Automotive Maintenance & Repair Tech.	8		7			Certificate
Logistics & Supply Chain	3	3	4	2	1	Associate's, Bachelor's
Maintenance & Repair Technologies	10			3		Bachelor's
Safety & Quality Assurance					1	Master's

The above view drills down further into the data presented on the previous page by showing the number of programs within each focus area in Transportation & Logistics. Within this industry, there are several high school CTE programs in every focus area except for Safety & Quality Assurance – in which there are very few higher-level offerings at private universities.

* Values represent number of programs;





Supply & Demand Gap Analysis: Professional Services & Operational Support

Professional Services & Operational Support Key Takeaways

The Toledo region offers numerous credentials in a wide range of focus areas for the Professional Services and Operational Support industry. Overall, there is a strong demand for these positions across the region, with many requiring formal education and other certificate-level credentials. This industry is well supported in the region, with a few misalignments in focus areas as they relate to regional job demand. Based on employer feedback however, with some higher-level positions such as cybersecurity and other advanced technical careers, are being filled by international candidates via H1B visa which represent a more expensive approach to talent recruitment. This points to a need for local development of programs in these high-tech areas and a targeted approach to retain these students within the regional labor market. Employers also report having issues finding mid-level talent in areas such as Finance and Legal.

What you can do with this data:

Engage with educators and employers about re-directing and aligning career pathways to meet regional employer demand. Examples include redirecting more creative fields such as designers to more in-demand occupations in focus areas such as software development and network administration.

Develop clear pathway communication and career awareness on the professional nature of careers at pillar companies in the region that are known for the materials they produce.

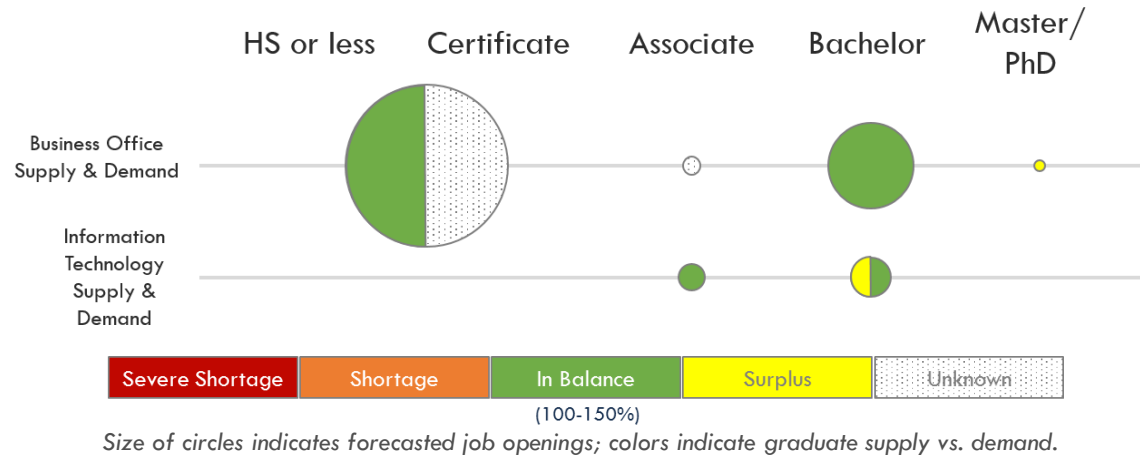
Explore further developing and scaling of leadership development academies and approaches to a regional level in order to assist smaller employers in finding talent at the mid-level.

Connect Toledo Public Schools leadership academy with thought leaders across the country in order to validate the program's approaches and offer more experiential and diverse learning opportunities for Toledo's citizens.

Full detail on the demand, supply and education programming included in the Appendix of this report.

Professional Services & Operational Support Key Takeaways

How well is job demand served by local graduates and programs?

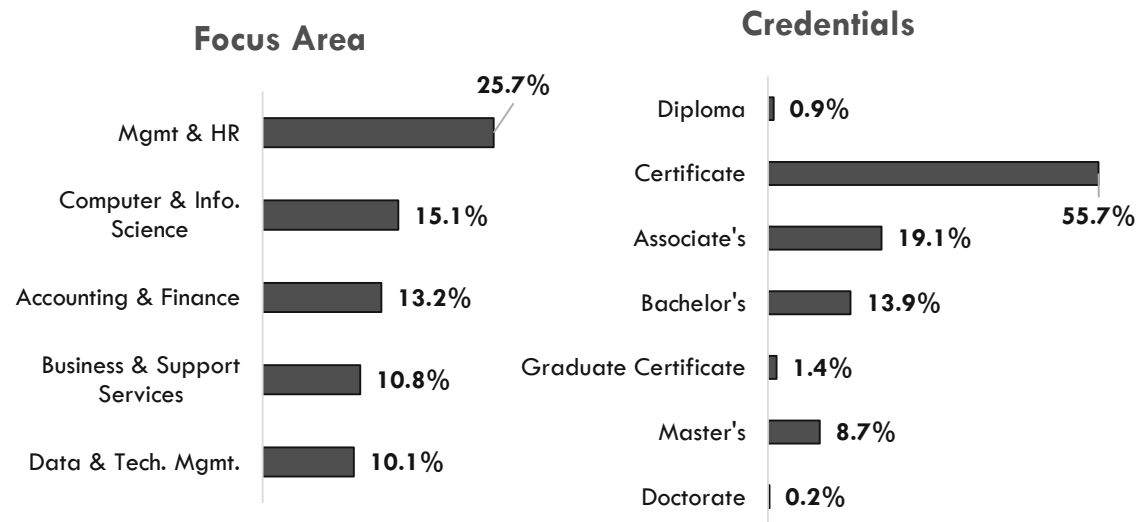


Strong Demand met with a Balanced Supply

There are more than 5,300 annual job openings in the Business/Prof/IT cluster for the Toledo region and a majority of these openings are business support roles requiring minimal formal education with some on-the-job training.

For Business/Office occupations, the desired level of education and training increases for roles in management and analysis. These job openings require a Bachelor's degree. InfoTech occupations require either an Associate's or Bachelor's degree depending on the complexity of the role.

The Business/Prof/IT cluster as a whole is well supported by local graduates even though mismatch in exact skills and programming exists at the occupational level.



Focus Area and Credential charts indicate % of education and training programs offered within the Toledo region as aligned to each targeted Industry.

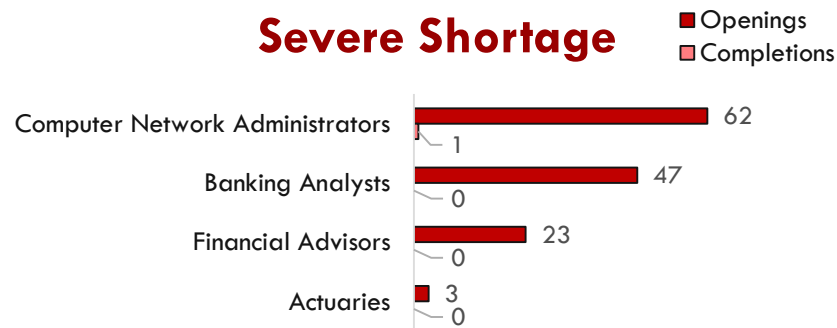
Educational System – Focus Area & Credentials

The charts to the left indicate the percentage of programs available in the industry. Within the field, the most widely available credential is a Certificate at 55.7%, followed by an Associate's degree at 19.1%. Further examination of talent needs at the Bachelor level is necessary to ensure demand is being sufficiently supplied by education offerings locally both through the type of program available and the volume of talent getting absorbed into the regional labor market.

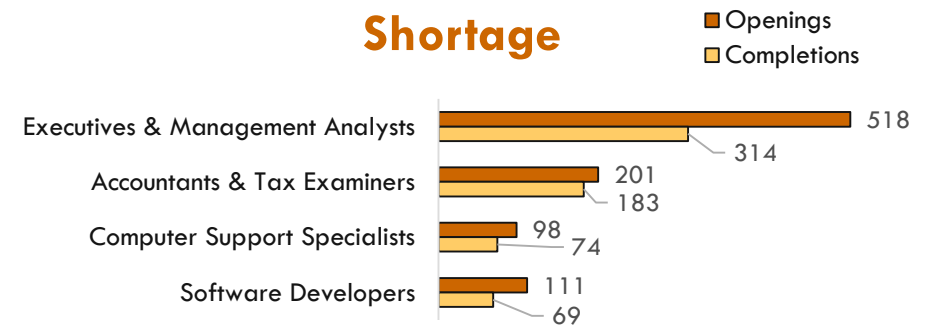
Professional Services & Operational Support Gap Analysis

How well is job demand served by local graduates and programs?

Severe Shortage



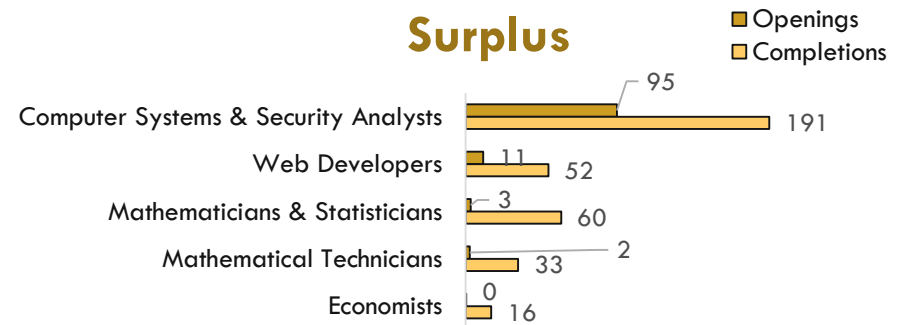
Shortage



Balance



Surplus

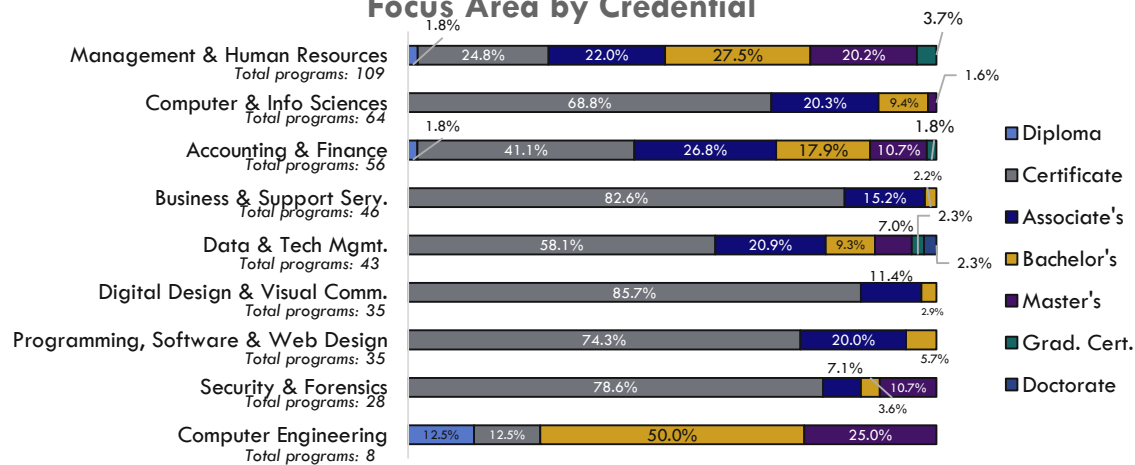


For the Business/Prof/IT clusters, the total number of local graduates is fairly balanced to the number of annual job openings. Differences do occur on the specific program and occupation level, but most of these imbalances can be corrected by the local talent supply. For example, the severe shortage in Computer Network Administrators can be overcome by the surplus in Computer Systems & Security Analysts. Likewise, the severe shortages in Banking Analysts, Financial Advisors, and Actuaries can be met by the surplus of graduates in Math-related programs or by Financial Managers & Analysts.

As mentioned above, many of the occupations with a surplus of local graduates will be recruited to fill related positions facing shortages within the cluster. Exceptions to this include Executives & Management Analysts which can be filled by more experienced local workers and Accountants which require specific training. Graduates in Web Development may have a hard time finding employment or need to acquire additional skills to support the shortage of graduates in software development.

Professional Services & Operational Support Gap Analysis

Focus Area by Credential

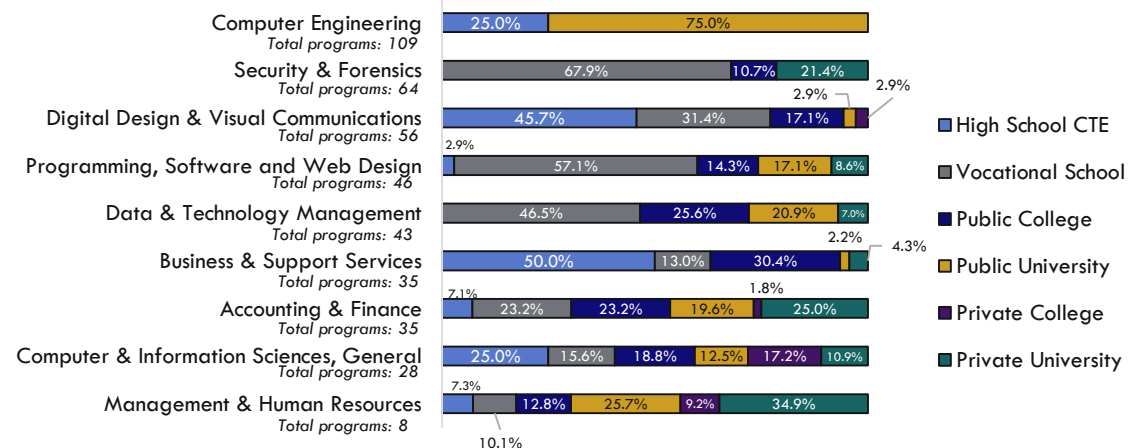


* Values represent number of programs; competencies ranked in descending order by total number of programs

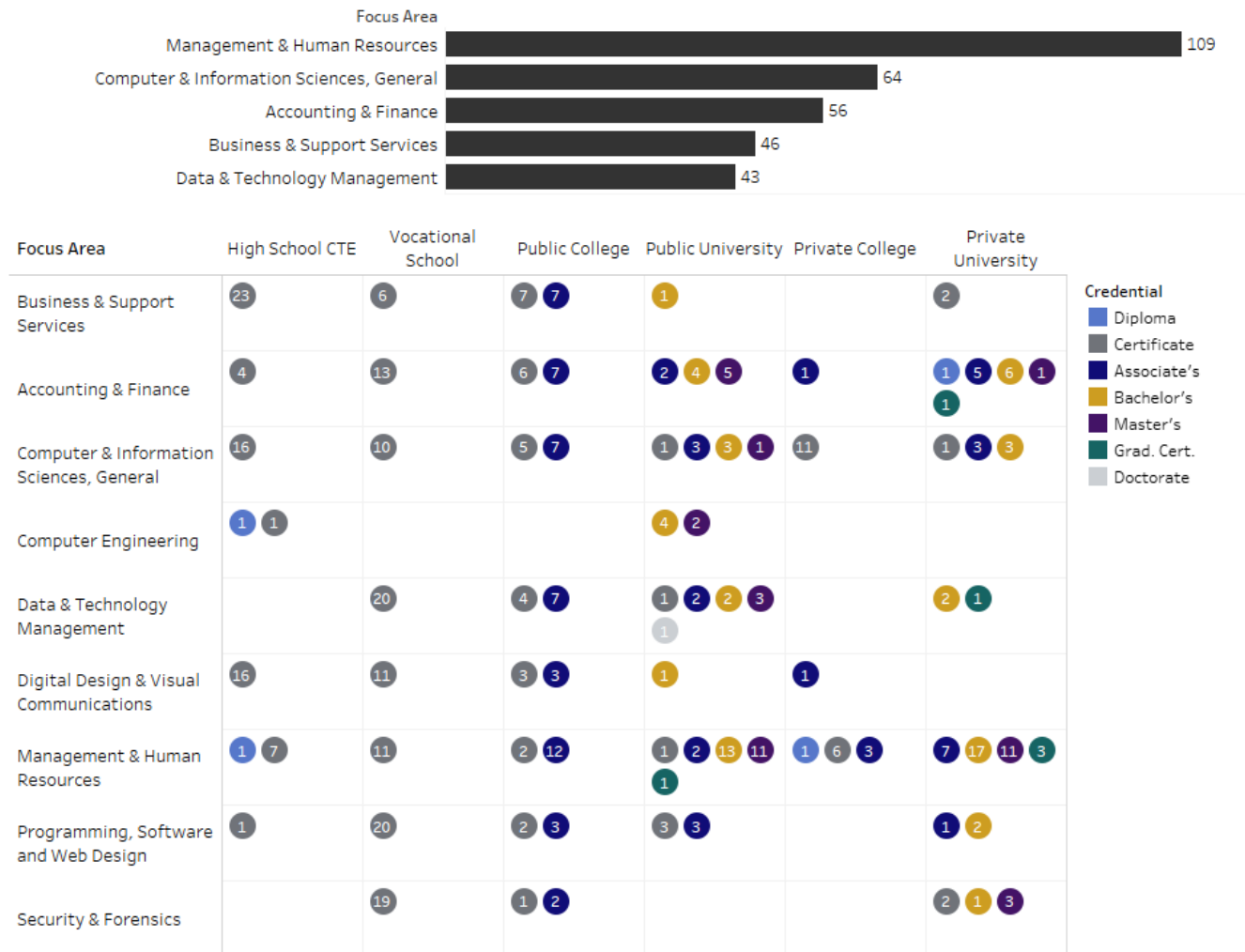
Focus Area by Credentials: High school CTE programs focus almost exclusively on Allied Health programs, with a few other programs in specialties such as Health & Medical Admin. Services and Nursing. There's a similar picture for vocational schools, but they offer more middle-skill programming within the Health & Medical Administrative services focus area.

Focus Area by Institution Type: Computer Engineering is the focus area with the most programs, and it is dominated by public institutions at 75%. However, the second largest focus area is Security & Forensics in which there are no public programs provided at the university level. For smaller focus areas, there is a more diverse spread of offerings, with some – such as Programming, Software and Web Design being offered in large part at Vocational Schools. The Toledo region's breakdown of institution type in this industry shows well over two thirds of the institutions are public – which indicates higher accessibility for students and more flexibility in programming. This information is available in the Appendix of this report.

Focus Area by Institution Type



Professional Services & Operational Support Detail



The above view drills down further into the data presented on the previous page by showing the number of programs within each focus area in Professional Services & Operational Support. In general, private universities offer a greater diversity and more programs overall in Business Support and Accounting & Finance, there are very few programs in Security and Forensics, and an overall limited amount of higher-level Master's degrees and above available.

* Values represent number of programs;

