

# FAST FORWARD: THE FUTURE OF SMART WORK IN CENTRAL OHIO

2020

EXECUTIVE SUMMARY

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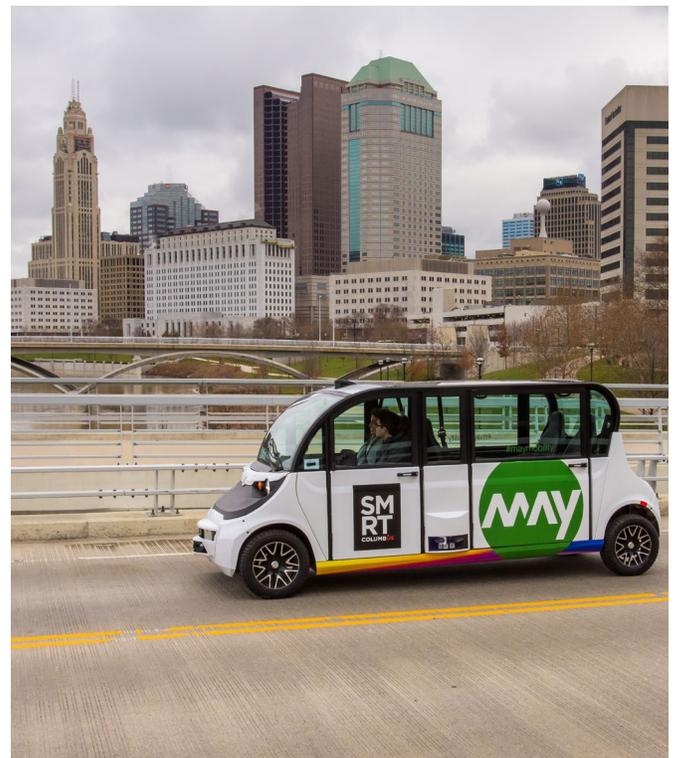


# Executive Summary

## A Smart City Needs a Smart Workforce

In 2015, the U.S. Department of Transportation (USDOT) awarded Columbus a \$40 million grant as the winner of the first-ever Smart City Challenge. Through this award and an accompanying \$10 million grant from the Paul G. Allen Family Foundation, Columbus has worked to understand and demonstrate what it means to become a smart city in a time when technology disruption is transforming work and the environment. Industry and technology disruptions — exacerbated by the COVID-19 pandemic — are rapidly changing everything about our lives and forever changing the nature of work. This study seeks to better understand those disruptions and outline recommendations for how the region's workforce development ecosystem may prepare the local workforce for change to promote regional prosperity.

In recent years, Columbus has changed in substantial ways. As recently as 2019, population in the 11-county Columbus Region of 2.1 million residents was expected to grow by a million more residents by 2050. Columbus is a young city, and also a highly economically segregated metropolis. The older downtown has been replaced by a vibrant center city. Neighborhoods are adding a range of new housing options and becoming more interconnected through improvements in transportation, technology, and significant investments in a range of business and government entities. New (and established) companies have become economic drivers, with high and increasing employment concentrations. Columbus' drivers span a wide range of industries, such as warehousing and storage, scientific research and development services, general medical and surgical hospitals, and activities related to credit intermediation. Emerging industries, such as shared mobility systems and couriers and express delivery services, are also emerging to provide residents with new solutions.



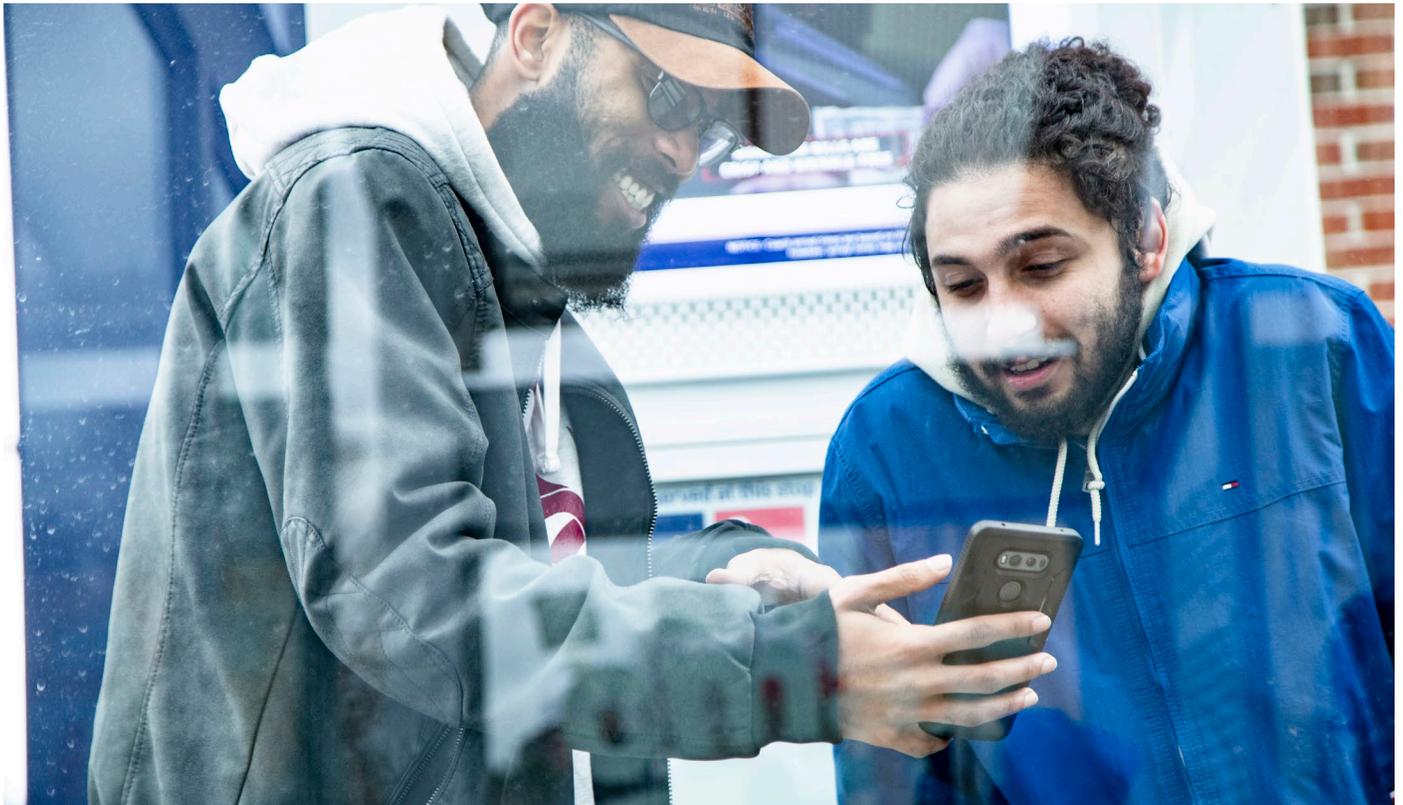
## Disruption Brought About by Industry Innovation and a Global Pandemic

It is safe to say that the industries studied in this report prior to the COVID-19 pandemic have been fundamentally disrupted by the outbreak and resulting economic downturn. In the short term, some of the industries, such as general medical and surgical hospitals and motor vehicle parts manufacturing, have been depressed. These changes are vastly a result of contractions in consumer demand, the decline in the availability of materials or labor, and the imposed stay-at-home orders and business shutdowns. You cannot make cars if there are no workers in the factories or parts in the supply chain (Picher, 2020), and you may choose not to make more cars due to diminished demand.

Over the last several decades, the national and global economy has shifted to a service-based economy. In the future, it is the demand for services that will change the economy. Demand in the U.S. depends primarily on consumer spending, so any contraction in the U.S. economy will be driven more by individual spending. Families will not buy refrigerators or eat out if they are unemployed and without resources — or anticipate fewer resources in the uncertain future.

Knowing what will happen to labor demand and to the industry and occupational structure of the workforce depends on these larger structural changes. In recent years, employers have been frantically searching for technologically skilled workers. We do know that roughly three-quarters of total employment in Ohio are in occupations that are “critical,” meaning they are essential to the infrastructure needed to fight the pandemic (Cook, 2020). Despite the abundance of critical workers, over 1.3 million Ohio workers lost their jobs between March and May 2020. Unemployment has dramatically affected workers in industries such as construction, accommodation, and food services (OERC, 2020).

The expected impact of COVID-19 is that automation and the introduction of more technology in the workplace will happen more quickly than originally projected, and that communities of color will be disproportionately impacted by lack of access to health and technology resources. Recommendations from this report that speak to the need to close skill gaps and deliver education and credentials will take on a new urgency.



## Workers in a Data-Driven World

The Smart Cities movement is a great opportunity for communities to better understand and influence the changing roles of technology and work. Technology will continue to produce massive shifts in companies, and dizzying changes in the kinds of work we are all expected to do. Economic changes will continue to occur, and the technology that is most critical to our future economic success is yet to be defined.

Despite sustained regional economic growth over the last 10 years, there are demographic changes that must be navigated to promote prosperity for all residents in central Ohio. Ohio's labor force is shrinking. It is also getting older on average, leading to the potential retirements of significant numbers of highly skilled and productive workers. Labor force participation rates are decreasing for individuals with low levels of education.

Economic growth depends on growth in driver industries. For this study, projected employment and occupational analysis were completed for each of the 24 driver industries most applicable to smart cities. Many of the occupations with the highest demand are the most likely to be affected by automation, such as customer service representatives, material movers, truck drivers, and team assemblers. This suggests a critical need to understand the ways in which automation will disrupt existing occupations and give rise to new ones. A focus on reskilling workers in vulnerable occupations in order to best position them for emerging occupations is critical. The slow growth of the labor force (a nationwide phenomenon) will make automation even more important and cost-effective. Consequently, large-scale disruptions to work and workers are likely within the ten-year time period. COVID-19 may quicken the move towards technological improvements at work.

Although the number of new jobs created since March 2020 has dropped due to the impacts of COVID-19, there will continue to be workforce shortages in Ohio. At a time when the economy is facing unprecedented challenges, many low-income and minority residents face steep barriers to getting a good job. Basic needs have become increasingly important. As an example, access to affordable housing can limit access to employment centers for residents who have been incarcerated or have limited income. There are other changes the community will need to confront to ensure that economic growth continues and is shared among the different groups, including access to education and training.



On top of these barriers, there are massive changes underway in the demand for workers. Technological changes to work and society, which are the focus of Smart Columbus, impact workers in two fundamentally different ways. For high skill workers, technology can push them to be more productive, raising incomes and opportunity for individuals in growth fields such as data science and machine learning. For the majority of workers, however, technology can mean fewer jobs, steeper on-ramps to successful careers, and agonizing tradeoffs between workers and substitutes such as robots or algorithms.

## What Central Ohio Stakeholders Have to Say

The Columbus community weighed in over the course of this project and their insights are summarized and shared in this report. Community leaders and residents discussed the importance of the Smart Columbus initiative, current and future changes in the city, and basic needs that have to be met in conjunction with workforce development. Based on 50 interviews and focus groups held throughout the community, we can describe different points of view on the role of technology and work — both the opportunities it presents to improve day-to-day life and the potential risks of some neighborhoods being left behind.

The workforce development system will be challenged to meet the wide range of education, training, and credentialing needs within the region over the next 10 years. The community needs to expand access to many training programs, such as software development, nursing, and truck driving (CDL). In surrounding counties, employers struggle to find skilled labor to fill vacancies. However, eight of the 25 occupations with the greatest demand over the next decade require little more than a high school diploma or GED. At the same time, many of these professions are also vulnerable to technological changes that will likely impact urban communities more rapidly. In short, people will still lose jobs to automation at the low skill level, and at the high skill level, we might see more aggressive moves toward skill-intensive technology that makes some labor even more valuable.

More broadly, stakeholders shared a wide range of ideas when asked what will attract and retain talent needed to meet the future workforce demand in our region. There was consensus that the Smart Columbus initiative and its related activities are an asset to the region's brand. All stakeholder groups recognized the importance of scaling up current efforts to build strong, collaborative public-private partnerships to create career pathway programs. This is a critical strategy for expanding programs available in the region to prepare the future workforce for in-demand jobs. We learned that stakeholders believe that careers will no longer be built around the traditional model of obtaining a four-year college degree then staying on a single career path for an entire career, culminating in retirement from a single firm after 40 years. Instead, the workforce should embrace continuous learning and upskilling opportunities as workplace technologies evolve.

Finally, a key strategy identified for strengthening the region's future workforce is to provide support systems and access to opportunities for those who are disadvantaged and lack work-based benefits. This includes removing barriers created by the lack of affordable and convenient transportation, childcare, housing, healthcare, food, and other basic needs.



## Conclusion: Disruption Never Concludes

An extensive survey of best practices among workforce development system initiatives in smart cities around the world reveals that such initiatives are not very common. Of those that do exist, the strategies employed tend to focus on extending the population's digital skills, inclusion, and awareness of the public and developing their hard infrastructure in the form of educational and social facilities, and not on talent development for individuals affected by information communication technology (ICT) implementation.

The economic analysis in this study suggests that several industries that have been mainstays of central Ohio's growth for decades, such as corporate managing offices and motor vehicle manufacturing, have lagged recently in employment growth. Meanwhile, other industries, such as insurance, are achieving only average growth. Although no industry can grow at an above-average rate forever, the reasons for these shifting patterns of growth should be explored in more detail.

A number of projects in U.S. smart cities, including Columbus, are identified as having best practices related to workforce development. These smart cities provide platforms for engaging citizens and stakeholders, and for evaluating services' viability in real-life contexts. Overall, smart cities benefit widely from the development of inclusive communities that face the challenges of technological change, specifically the skills gap between future jobs and the available workforce.

Knowledge and insights gained from stakeholder engagement activities informed key findings and policy recommendations addressing a range of workforce issues. The input further served to identify core competencies that future workers must acquire to ensure resiliency in the face of constant change resulting from technological advancements and innovation. These so-called "human skills" require an interdisciplinary approach that ensures that science, technology, engineering, and math (STEM)-based programs teach liberal arts basics, while liberal arts, humanities, and social science students are equipped with coding and data analytics skills. The future workforce does not require a focus on either STEM or non-STEM knowledge, skills and abilities — but rather both. The ability to work collaboratively in teams is increasingly critical as humans strive to ensure quality in systems that increasingly rely upon artificial intelligence, machine learning, and data analytics to make decisions and increase productivity and efficiency. The conclusion reached is that it is much less likely that machines will

replace workers altogether in most workplaces, but rather that they will provide support that will boost positive outcomes and increase quality in a manner that opens up endless possibilities for advancements. The hope is that these advancements will earn the region a reputation for being innovative and competitive, but also having strong values that strive to leave no one behind, using these advancements for the benefit of the entire community.

The results of the gap analysis completed in the second phase of this project reveal that the workforce development system must meet a wide range of education, training, and credentialing needs within the region over the next decade. Programs that deliver software development, nursing, truck driving (CDL), insurance sales representative, and medical assisting skills are needed, as well as basic training for low-skill jobs. These include job readiness and skills training for business operations specialists, front line supervisors (non-medical), and customer service representatives. In the counties surrounding Franklin County in the region, the manufacturing industry currently struggles to find the skilled labor needed to fill vacancies. Strengthening the education and training pipeline to prepare future workers is a major priority for all industry sectors considered. Innovative new public-private partnerships are showing positive outcomes and serve as promising practices for achieving this goal. Various grant funding sources are helpful for getting programs off the ground, but stakeholders recognize the need to build sustainable programs so they may thrive even after initial funding expires.

Eight of the 25 occupations expected to be in the greatest demand over the next decade require little more than a high school diploma or GED. However, the majority of these jobs are highly vulnerable to disruptions in the labor market caused by automation and technological advancements. Given the accelerated pace of labor market disruptions expected to occur from the combined effects of a pandemic and recession, as well as the exponential growth of IoT, machine learning, and artificial intelligence in the workplace, it is critical that the system connects at-risk workers with transitional resources to ensure their resilience and continued employment. Scaling up successful programs, such as career pathways, and implementing low or no-cost upskilling and reskilling options to proactively ensure that all residents in the region benefit from future opportunities, will help to ensure a strong regional workforce.

## Preparing Central Ohio's Workforce for Disruption: Policy Recommendations

This report offers policy recommendations in two areas: the education system and workforce development system. Ensuring that the overall education system improves access and achievement is a precursor for more specific advances for the workforce development system. The Workforce Development Board must grapple with difficult issues that are central to K-12 education, such as school funding and achievement, as well as complexities that arise when adults lack basic skills or have significant barriers to education. This perspective might be thought of from the lens of community improvement broadly, as opposed to just workforce development. Ensuring that workers have access to housing and can overcome barriers to employment is just as important as the narrower goal of skills development.

Based on this research, the sponsors of this study recommend the central Ohio community pursue the following recommendations.



### 1. Respond in real time.

Establish the deliberate use of education, workforce, and employment data to analyze in close-to-real-time what is happening in the economy so that the workforce system can quickly and proactively help job seekers understand what skills are needed, and help businesses know what skill sets are available in the region.

### 2. Train for the future.

Establish a continuous learning system that educates and trains for future career opportunities.

### 3. Intervene early.

Incorporate work and career exploration in curriculum as early as middle school and continuing through high school in all school districts in Franklin County. Provide exposure to high-demand occupations and key business sectors in central Ohio through required work experience and internships. Partner with employers to provide guidance and assistance in making the work experiences and internships meaningful.

### 4. Accelerate access to in-demand occupations.

Improve access to employer-identified short-term certifications and credentials that more quickly get job seekers into in-demand occupations. In addition, re-engineer credentials and post-secondary degrees to be competency-based, meaning that learning is not based on a prescribed number of hours for a course, but rather a demonstrated knowledge of skills, allowing the learner to progress at her or his own pace.

### 5. Establish “earn as you learn” opportunities and connect workers to them.

Prioritize learning and skill acquisition with work for the entry- to mid-level workforce through the establishment of apprenticeships and other earn-as-you-learn opportunities by partnering with career technical education and the community college.

### 6. Support jobseekers through to successful, quality jobs.

Further solidify the workforce system through the Workforce Development Board's Workforce Advisory Council to better coordinate job seekers through preparation for work and wrap-around services necessary to support job seekers through training and education.

***Read the full report at [smart.columbus.org](https://www.smart.columbus.org).***