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EXECUTIVE SUMMARY

As the 21st century economy takes shape, Ohio continues to struggle with regional and national deindustrialization and the global transition to a more digital, future-oriented economy. Labor and manufacturing markets have been changing for decades, spurred more recently by China’s economic and geopolitical rise, and Ohio public policy has largely failed to make the necessary adjustments to keep pace. Battered by automation, shifting technologies, and foreign labor markets, once-dynamic, industrial Ohio cities have suffered even more than many other rust-belt cities as “old economy” employers pulled up stakes and “new economy” industries declined to take their place.¹ To reverse the trend and return Ohio to economic prosperity and leadership, public policy must adapt.

Ohio’s persistent failure to adjust public policy to changing market conditions has left the state unprepared to thrive or even compete in a global, 21st century economy. Failing to adequately train, educate, upskill, and reskill workers, for example, has deterred new companies and emerging sectors from opening operations in Ohio. That same failure has broadened a skills gap between the skills employers need and the skills employees offer. The upskill and reskill failure has also created a skills gap between old economy and new economy workers, one that has been exacerbated by the prolonged response to Covid-19. The 2020 pandemic accelerated the rising digital economy, with online commerce and remote telework arrangements gaining momentum—an acceleration that threatens to leave Ohio’s economy and workforce even further behind.²

These policy missteps can and must be corrected for Ohio to regain its economic footing and achieve long-term economic success. Accordingly, state policymakers should make policy adjustments in three key policy areas: worker training and education, occupational regulation, and globalization.

First, Ohio should reform education policy to better prepare young workers for the new economy, and upskill and reskill its existing labor force to meet the needs and expectations of employers. Unfortunately, many state and federal job retraining programs have been notorious failures—either serving as cloaked corporate welfare or simply ineffectively equipping workers with the needed skills to re-enter the labor market. Ohio should expand available high school skills training and

¹ James Pethokoukis, **We’ve Had the ‘China Trade Shock.’ What Now? A Long-read Q&A with Gordon Hanson**, AEIdeas blog post, January 18, 2017.

² Walter Frick, **The Next Phase of Remote Work Will Be Even More Disruptive**, World Economic Forum, November 5, 2021.

coursework to include more computer science and adopt model computer science curriculum standards statewide.³ Post-high school education funding should reflect outcome-driven metrics such as loan repayment rates, debt-to-earnings ratios, degree completion, and post-graduation employment. Ohio should explore shifting funding toward worker retraining grants to empower prospective students to spend higher education funding how they see fit. And micro-credentials and other alternatives to traditional four-year degrees should be made more affordable and available.

Second, Ohio should make occupational regulatory reforms to attract new businesses and lower existing barriers to employment. The state's outmoded occupational licensing regime, for example, artificially drains the available labor pool for employers and prevents workers—especially licensed professionals from other states—from earning a living in Ohio doing what they are trained to do. Such restrictions ultimately stymie economic growth, discourage new businesses and employers from operating or expanding in Ohio, and they should be rewritten.

Finally, Ohio policymakers should do more to reap the benefits of globalization. Tax and regulatory reforms can entice foreign investment and manufacturing firms to revitalize and repurpose Ohio factories and warehouses. International firms tend to pay higher wages and commit to improvements that drive even greater economic growth. As Ohio upskills and reskills its existing labor force, state policymakers should also work with federal agencies to bring high-skilled immigrants to Ohio. Skilled immigrant labor will help spur Ohio's anemic population growth, spark long-term growth in technology, and provide short-term relief for businesses battling labor shortages. Ohio policy should adapt to build a larger, more skilled, flexible, and innovative workforce that will prove attractive to new economy employers in the long run.

Policymakers must first recognize the longstanding problems underlying Ohio's economic struggles and the state's failure to adequately adjust to shifting market conditions, and then make sound policy decisions specifically designed to correct those mistakes and meet the new economic challenges of the 21st century.

³ Ohio Revised Code **Sec. 3301.079**, 2021; and Ohio Department of Education, **Frequently Asked Questions for Computer Science** (Last visited December 7, 2021).

TWO PROBLEMS

Problem 1: A Failure to Adjust Public Policy to Changing Market Conditions

Ohio has failed to make necessary public policy adjustments to manage changing economic conditions. From 1969 to 2009, Ohio lost approximately 750,000 middle class manufacturing jobs due in part to automation, competition with other states, and international trade, which accounted for up to a third of the total losses.⁴ Since 1997, the U.S. economy outpaced Ohio's economy across all industries in general and the state's stagnant manufacturing sector in particular. (See Figure 1.) Ohio, like much of the deindustrialized Midwest, watched its "manufacturers relocate[] to the South in droves to take advantage of lower taxes and 'Right-to-Work' laws."⁵ Then came China and its meteoric economic rise in the early 2000s to further disrupt and exacerbate U.S. economic, manufacturing, and labor market conditions.⁶ And still, Ohio policies fail to keep pace.

The so-called "China Shock" that quickly ushered in competitive Chinese manufacturing firms at the turn of the 21st century surprised a Midwestern manufacturing sector that struggled to compete and proved slow to adapt.⁷ China's ascendance dispelled the common 20th century perception of a dynamic national labor market in which displaced workers quickly found new jobs. Instead of dynamic transition, the rust-belt and Appalachian regions like southern Ohio, for example, remained economically sedentary as labor conditions deteriorated and job openings moved to other parts of the state and country.⁸ Some estimates peg American manufacturing job loss due to China Shock at a mere half a million jobs,⁹ but economists David Autor, David Dorn, and Gordon Hanson estimate that

⁴ William Shkurti and Fran Stewart, *The Decline of Ohio*, Toward a New Ohio paper series, John Glenn College of Public Affairs, 2018 ; and Salmon Ahmed, Karan Bhatia, Wendy Cutler, et al., *U.S. Foreign Policy for the Middle Class: Perspectives From Ohio*, Carnegie Endowment for International Peace and The Ohio State University John Glenn College of Public Affairs, December 10, 2018.

⁵ Samuel Hammond, *On Workforce Investment*, American Compass Moving the Chains Series, June 9, 2020; and David Autor, *Policies Toward Trade, Outsourcing, and Foreign Investment*, Peterson Institute for International Economics presentation, October 17, 2019.

⁶ James Pethokoukis, *We've Had the 'China Trade Shock.' What Now? A Long-read Q&A with Gordon Hanson*, AEIdeas blog post, January 18, 2017.

⁷ *Ibid.*

⁸ *Ibid.*

⁹ Lorenzo Caliendo, Maximiliano A. Dvorkin, and Fernando Parro, "Trade and Labor Market Dynamics: General Equilibrium Analysis of the China Trade Shock," *Econometrica* Volume 87, Issue 3 (May 20, 2019) p. 741-835.

import growth from China likely took a heavier toll, costing the country between 1.2 million and 2.4 million jobs between 1999 and 2011,¹⁰ with one-quarter of those losses in manufacturing.¹¹ Offering another view, international trade economist Douglas Irwin believes that Chinese imports may have caused about 20 percent of involuntary job displacement in America’s manufacturing sector.¹²

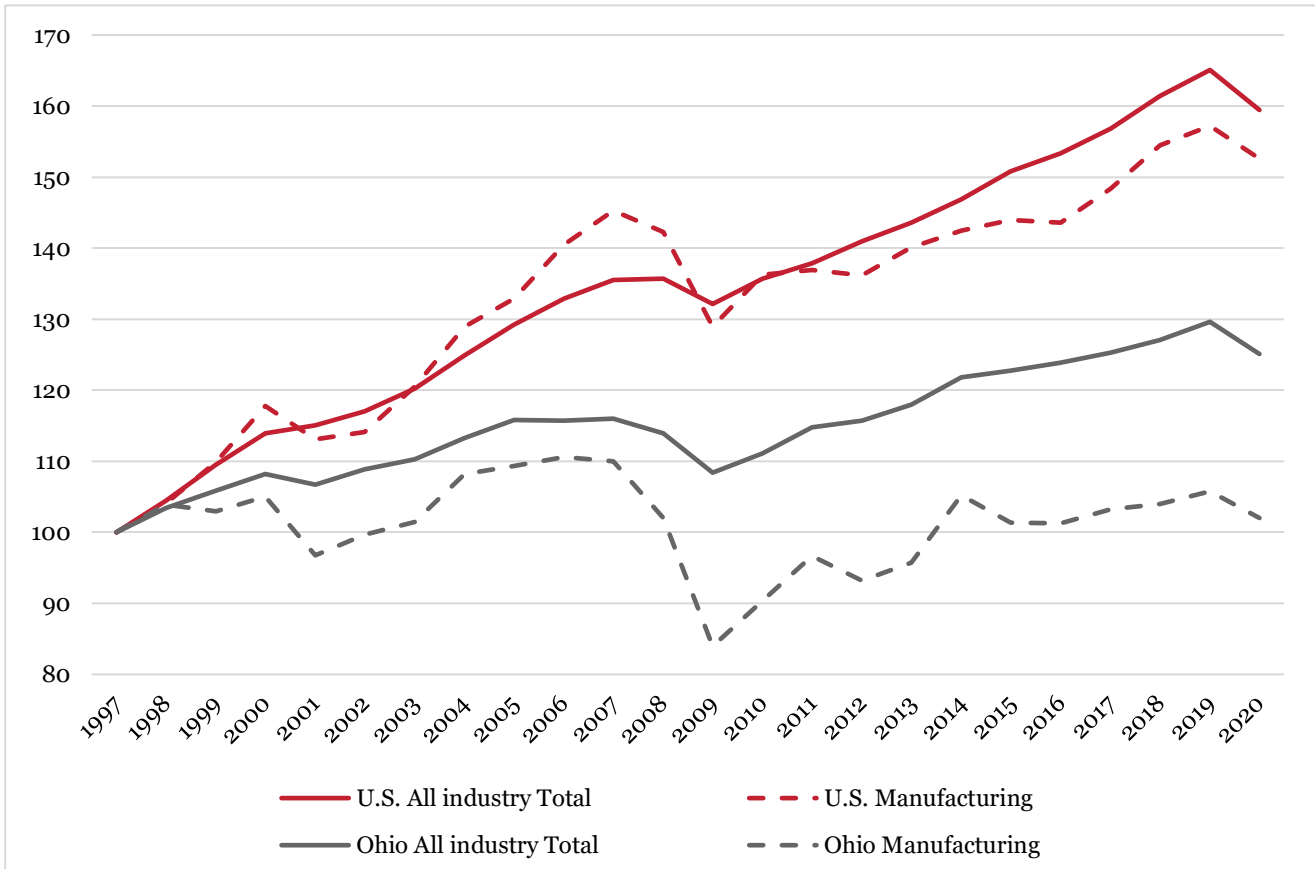
In Ohio, China’s economic rise to power likely expedited a labor market transition already underway, and highlighted deficiencies in Ohio’s own economic policies that had already been pushing its manufacturing sector out the door for decades. Ohio’s aggregate economy has not even kept pace with U.S. manufacturing and the broader U.S. economy. (See Figure 1.) The nation’s aggregate economy and its manufacturing sector are producing more goods with fewer workers, but Ohio’s corresponding sectors have performed much less admirably. Ohio’s Gross Domestic Product growth has lagged the nation’s, and the state’s manufacturing industry has been nearly stagnant with declining employment. (See Figure 2.) The China Shock likely played a part in Ohio’s persistent economic struggles, but a broad spectrum of misguided policies—from education to tax and regulatory regimes—have impeded Ohio’s necessary adjustment to changing economic conditions. China’s economic development may have hit specific low-wage or manufacturing-dependent regions of Ohio particularly hard, but uncompetitive state tax policies have burdened Ohio businesses and made producing goods more difficult long before China’s rise. And other poor policy choices, including local zoning laws, occupational licensing regulations, criminal justice impositions, and education failures, have made overdue economic adjustments more difficult.

¹⁰ David H. Autor, David Dorn, and Gordon H. Hanson, “**The China Shock: Learning from Labor-Market Adjustment to Large Changes in Trade**,” *Annual Review of Economics* Volume 8, Number 1 (October 2016): 205–40, p. 228; and Alan Reynolds, **Did The U.S. Lose 2.4 Million Jobs from China Imports?**, Cato at Liberty blog, September 15, 2016.

¹¹ David H. Autor, David Dorn, and Gordon H. Hanson, “**The China Syndrome: Local Labor Market Effects of Import Competition in the United States**,” *American Economic Review* Volume 103, Number 6 (October 2013): 2121–68.

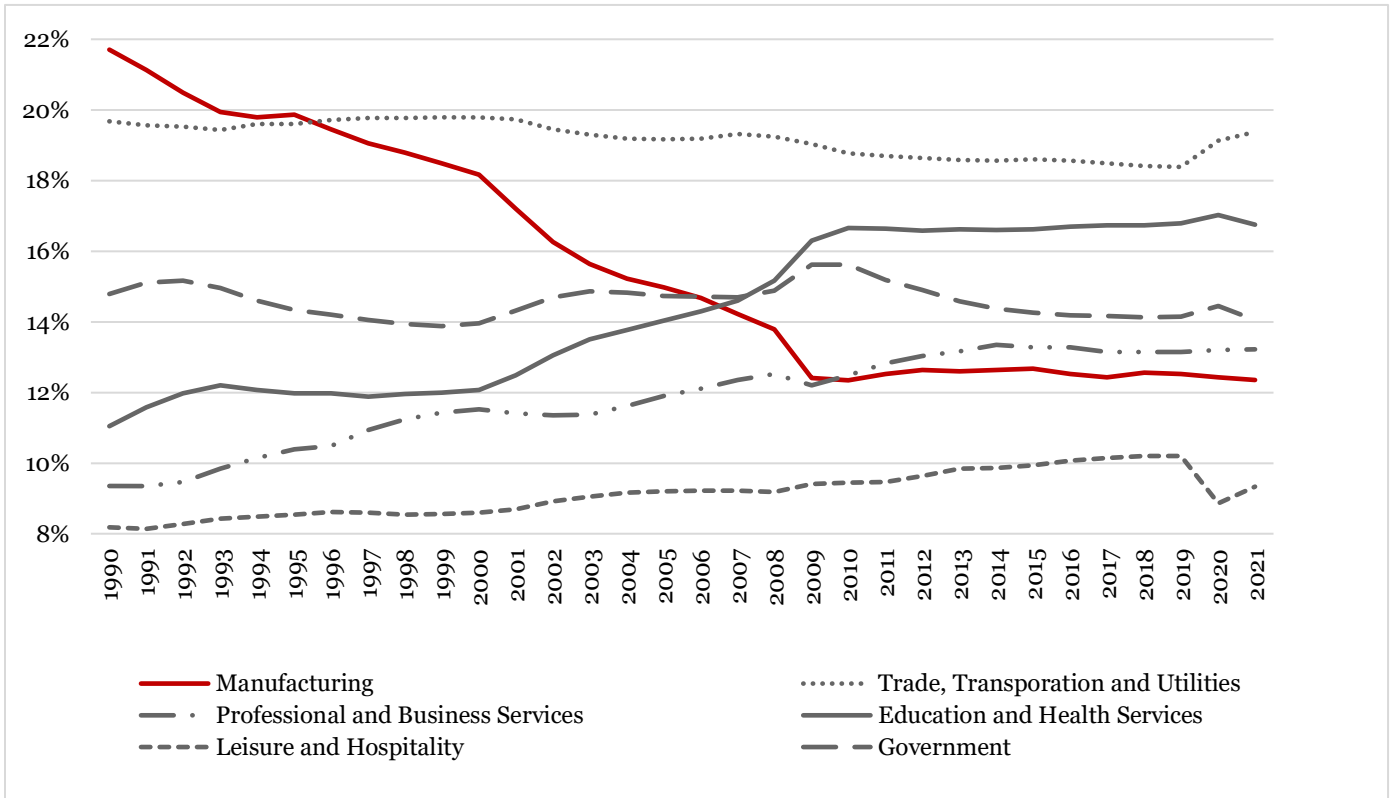
¹² Douglas A. Irwin, *Clashing over Commerce: A History of US Trade Policy* (Chicago: The University of Chicago Press, 2017), p. 668.

**Figure 1: Real GDP and Real Manufacturing GDP in Ohio and the U.S.
(Indexed to 1997 Values)¹³**



¹³ Source: **U.S. Bureau of Economic Analysis** data (last visited March 8, 2022).

Figure 2: Ohio Jobs as a Percentage of Nonfarm Employment¹⁴



Consider, for example, the disparate cases of Youngstown, Ohio and Greenville, South Carolina. Youngstown was once a paragon of steel production until a string of steel mill closures in the 1970s. The nearby General Motors Lordstown plant in Youngstown’s Mahoning Valley helped offset some of these losses, but it too struggled—hemorrhaging more than 10,000 employees by 2018 from its peak of 12,000 workers in 1985.¹⁵ Despite government subsidies, protective tariffs, various market interventions designed to limit competition, and ample political attention at every level, General Motors still closed the Lordstown plant, devastating the last of its remaining 1,500 employees and the entire community along with them.¹⁶ Comparing Youngstown’s failures to Greenville’s successes, the Cato Institute’s Scott Lincicome observed that “[i]n Youngstown’s case, at least, all those federal

¹⁴ Source: [U.S. Bureau of Labor Statistics](#) (last visited March 8, 2022).

¹⁵ Scott Lincicome, [A Tale of Two Cities: Youngstown, Greenville, and the Limits of Federal Assistance](#), *The Dispatch*, June 23, 2021; Shawn Donnan, [Biden’s Plans Face Youngstown Test that Defeated Trump and Obama](#), *Bloomberg Markets*, updated May 25, 2021; Adam Gabbatt, [‘It’s Devastating’. End of GM in Ohio Town as Trump Fails to Bring Back Midwest Jobs](#), *The Guardian*, August 23, 2019; and Robert Schoenberger, [GM Bringing Back 1,200 Autoworkers at Lordstown Plant](#), *Cleveland.com*, February 23, 2010.

¹⁶*Ibid.*

promises may actually be making things worse—discouraging the community and its residents from undertaking the painful-but-necessary adjustment that places like Greenville undertook years ago to become successful today *and* be poised for even greater success in the future.”¹⁷ Unlike Youngstown, Greenville has gone all-in on advanced manufacturing, technology, and the future of work by opening its arms to foreign businesses; and local community colleges teamed with universities to form collaboratives to bring skills to workers needed by nearby high-skill advanced manufacturing businesses.¹⁸

Foreign stalwarts Michelin, BMW, and TD Bank have been prominent employers in Greenville for decades, but the city has recently attracted new employers in manufacturing, technology, and finance.¹⁹ More than 120 automobile manufacturers operate in the Greenville area and the electric vehicle maker Proterra has joined them.²⁰ In 2020, Atlanta-based data center builder and operator, DC BLOX, chose Greenville for its fifth location.²¹ Multiple employers across diverse sectors have made Greenville economically vibrant—especially compared to Youngstown. The Greenville area’s per-capita personal incomes are higher than Youngstown’s. Greenville employers pay workers more than \$5000 more per year on average. And Greenville’s unemployment rate is 1.4 percent lower than unemployment in the Youngstown area.²² Neither region has overcome the inertia of falling worldwide manufacturing employment over the past half-century, but the Greenville area’s manufacturing employment has increased 12.5 percent since 2011, while Youngstown’s has fallen more than 25 percent.²³

Youngstown and Greenville are not the only examples of divergent approaches to changing economic conditions. In 2018, the Brookings Institution categorically rated 70 older industrial cities as strong, emerging, stabilizing, and vulnerable. Of those 70 cities, 40 of them had strong or emerging economic performance between

¹⁷ *Ibid.*

¹⁸ Nanette Byrnes, **Learning to Prosper in a Factory Town**, *MIT Technology Review*, October 18, 2016; and Craig Torres and Catarina Saraiva, **The New Startup South**, *Bloomberg Markets*, June 21, 2018.

¹⁹ Scott Lincicome, **A Tale of Two Cities: Youngstown, Greenville, and the Limits of Federal Assistance**, *The Dispatch*, June 23, 2021.

²⁰ Justin Baer, **The Breakout Cities on the Forefront of American’s Economic Recovery**, *The Wall Street Journal*, May 9, 2021.

²¹ *Ibid.*

²² U.S. Bureau of Labor Statistics, Economy at a Glance, **Greenville-Mauldin-Easley, SC** (Last visited February 23, 2022); U.S. Bureau of Labor Statistics, Economy at a Glance, **Youngstown-Warren-Boardman, OH-PA** (Last visited February 23, 2022); and Bureau of Economic Analysis, **CAINC30 Economic Profile** (last visited February 22, 2022).

²³ *Ibid.*

2000 and 2016.²⁴ Nine of the 70 cities are in Ohio—none of them were rated strong; two—Cincinnati and Canton—were emerging; and seven were either stabilizing or vulnerable.²⁵ Although more than half of the ranked older industrial cities across the United States were rated strong or emerging, less than a quarter of Ohio’s older industrial cities could say the same. An inauspicious showing.

Ohio’s once-industrial towns need meaningful policy reforms to adjust to their post-industrial environment. Labor market deregulation and occupational licensing reform are good places to start, as are tax reforms that reduce financial burdens on businesses and wage-earners. Education reform at every level can be used to better prepare workers for today’s jobs and economy, offering more choices and enhancing job skills that can attract employers to Ohio cities.

North Carolina, for example, reformed its tax code and slashed personal and corporate taxes, helping towns like Hickory, North Carolina transition from industrial mills to more future-oriented sectors like transportation logistics.²⁶ Within the manufacturing sector, North Carolina has shifted from relying on food and tobacco manufacturing to rapidly growing computer and electronics manufacturing, repurposing once-vacant mills in Hickory to support global logistics companies such as Transportation Insight.²⁷ Shifting from furniture and textiles manufacturing to fiber cable production, Hickory produced 40 percent of the world’s fiberoptic cable by 2000 and boasts two multinational fiber-optic cable corporations, CommScope and Corning Optical Communications.²⁸ Across the country, other cities—like Des Moines, Iowa and Provo, Utah—have leveraged their geography, talented workforces, and internet access for remote work to draw new businesses and commerce, while also improving their residencies, walkability, and infrastructure.²⁹ Like many Ohio cities, Des Moines and Provo still house “old-line” industries, but have now mixed in high-tech jobs along with their banking and manufacturing employers.

²⁴ Alan Berube and Cecile Murray, *Renewing America’s Economic Promise Through Older Industrial Cities*, Metropolitan Policy Program at Brookings, April 2018, p. 34; and Scott Lincicome, *A Tale of Two Cities: Youngstown, Greenville, and the Limits of Federal Assistance*, *The Dispatch*, June 23, 2021.

²⁵ *Ibid.*

²⁶ Eric Cunningham, *No, Wall Street Journal, Chinese Imports Didn’t Kill My Hometown*, *The Federalist*, August 16, 2016.

²⁷ U.S. Bureau of Economic Analysis, Regional Data, *Real GDP in Chain Dollars* (Last visited February 23, 2022); and Eric Cunningham, *No, Wall Street Journal, Chinese Imports Didn’t Kill My Hometown*, *The Federalist*, August 16, 2016.

²⁸ *Ibid.*

²⁹ Justin Baer, *The Breakout Cities on the Forefront of America’s Economic Recovery*, *Wall Street Journal*, May 9, 2021.

Each of these cities adjusted to new economic realities in their own way, but two common themes run through their stories of economic revivals: flexibility to adjust to changing market conditions and access to talented labor pools. While many Ohio cities have not kept pace with the rest of the country, cities in North Carolina, South Carolina, Iowa, and Utah have effectively adjusted to changing economic conditions and thrived. If Ohio policymakers will retool the state's labor market and tax policy, court worldwide talent, open doors to international investment, and make overdue changes to the educational system and incentives, the state can climb out of chronic deindustrialization and join the modern era of technological innovation.

Problem 2: The Skills Gaps

Part of Ohio's failure to adjust to changing economic conditions has been its inability to foster and promote public policies and market incentives that will help upskill, reskill, and generally equip workers with the skillsets demanded by employers. This failure has created a skills mismatch—one that leaves behind workers with outdated skills and costs them the benefits of on-the-job training. Reasons for the skillset mismatch between employers and employees abound. Among a list of reasons for the persistence of the skills gap, the Mercatus Center's Michael Farren noted three common causes to the House Small Business Committee: 1) a coordination problem between employers' needs and workers' training; 2) a lack of qualified applicants; and 3) a lack of soft skills, such as reading and writing, among other labor market mismatching issues.³⁰ Surveying scholars on worker retraining programs, *The Atlantic* reported that worker reskilling programs are “too divorced from employers' needs, too unrelated to workers' interests, too light-touch, and too limited in their reach, among other flaws.”³¹ The proliferation of unsuccessful workforce training programs at the federal and state levels may also contribute by “crowding-out” private-sector efforts to invest in workers.³² And, of course, it has always been exceedingly difficult to retrain workers for jobs and occupations that no one can reasonably predict. Equipping workers with broad-based skills and prioritizing quick methods of skill attainment for changing employer needs in the present and the near future is much easier than trying to match workers with jobs that do not yet exist. As Adam Thierer of the Mercatus Center observed, “an ‘expert’ writing in the early 1980s about the job

³⁰ Michael D. Farren, Mercatus Center, Testimony Before the United States House Small Business Committee, Subcommittee on Economic Growth, Tax, and Capital Access Examining the Small Business Labor Market, “**Bridging the Skills Gap**,” September 7, 2017

³¹ Lola Fadulu, **Why is the U.S. So Bad at Worker Retraining?**, *The Atlantic*, January 4, 2018.

³² Matthew D. Mitchell, **Helping Displaced Workers Without Corporate Welfare**, The Bridge at the Mercatus Center, May 2, 2018.

needs of the future didn't even have the vocabulary to describe or understand the jobs of the technological era we now live in" and that "our better hope lies in creating an innovation culture that is open to new types of ideas, jobs, and entrepreneurialism."³³

The skillset mismatch does not only hurt employees, but employers too, depriving them of the labor talent needed to grow their businesses. A February 2020 McKinsey survey found 87 percent of companies are experiencing skills gaps or expect them within a few years.³⁴ The Ohio manufacturing report surveying more than 670 Ohio companies from November 2019 to January 2020 found that 57 percent of manufacturing companies reported the skilled labor shortage was slowing their business growth.³⁵ Importantly, this dynamic highlights that the manufacturing industry is still demanding new employees—with an increasingly more advanced skillset—even as the industry's total number of employed individuals declines.

Similar skillset changes are occurring beyond manufacturing and in more "white collar" industries too, as technology advances spur more remote work arrangements and a burgeoning digital economy emerges. The coronavirus pandemic catalyzed these rapid changes in the U.S. labor market, with many employers responding to the pandemic by offering remote work alternatives to the traditional office environment. An April 2021 National Bureau of Economic Research (NBER) working paper predicts that although only five percent of full workdays were performed remotely before the pandemic, that number will rise to 20 percent even after the pandemic ends.³⁶ A two-part survey from Upwork reveals the company increased its projections for full-time remote work by nearly five percentage points in the next five years, climbing from nearly 23 percent to 28 percent.³⁷ As workforces move online, employers have responded by upskilling their employees to new digital economy realities by equipping them with skills to develop apps, building websites, and otherwise marketing to Americans spending more time online.³⁸ Nevertheless, Prudential's May 2021 Pulse Survey found that

³³ Adam Thierer, **The Challenge of Retraining Workers for an Uncertain Future**, The Technology Liberation Front blog, July 18, 2018.

³⁴ McKinsey & Company survey, **Beyond Hiring: How Companies Are Reskilling to Address Talent Gaps**, February 12, 2020.

³⁵ MAGNET and Ohio Manufacturing Extension Partnership, **2020 Ohio Manufacturing Report: Technology Talent and Transformation**.

³⁶ Jose Maria Barrero, Nicholas Bloom, Steven J. Davis, **Why Working from Home Will Stick**, National Bureau of Economic Research working paper 28731, April 2021.

³⁷ Dr. Adam Ozimek, **Future Workforce Report 2021: How Remote Work is Changing Business Forever**, Upwork, September 28, 2021.

³⁸ Sarah Franklin, **The Pandemic Widened the Skills Gap and the Tech Industry Must Step Up**, *Forbes*, December 3, 2020.

nearly half of respondent workers will need to learn new skills in the next year to do their job.³⁹

In addition to the skills gap between employer and employee, the new digital economy is also exacerbating another kind of skills gap—the one between upskilled workers being prepared for the new economy and lower-skilled workers who are not. This skills gap predates the 2020 pandemic, but it has widened significantly as job losses swell in low-skill occupations and employer upskilling efforts and resources flow to more highly-skilled or -educated workers who maintained their jobs during recent market transitions and turbulence.⁴⁰ By disproportionately affecting workers in sectors that require less formal education such as leisure and hospitality, the coronavirus pandemic and the responses to it further disadvantaged workers without college degrees already left behind by automation and globalization. Although 52 percent of workers participated in upskilling between September 2020 and September 2021, those with a bachelor's degree were 50 percent more likely (66 percent vs. 44 percent) to have upskilled than those with only a high school diploma.⁴¹

Meanwhile, job openings continue to rise even as the skills gap widens. The National Federation of Independent Business (NFIB) jobs report for 2021 found, for example, that 50 percent of businesses report job openings they cannot fill, well above the 33 percent of businesses reported in NFIB's 2019 survey.⁴² Unsurprisingly, the pandemic increased the job opening rates in every sector between 2019 and 2021, with job openings across the economy rising 2.7 percentage points, or nearly 85 percent, over the last two decades. (See Figure 3.) Even as employers increase hiring,⁴³ such high job opening rates across all industries signal labor shortages across the U.S. economy, and Ohio remains down

³⁹ **Pulse of the American Worker Survey: Post-Pandemic Work & Life**, Prudential's Pulse of the American Worker Survey conducted by Morning Consult, May 2021.

⁴⁰ Jonathan Rothwell, **The American Upskilling Study Shows Workers Want Skills Training**, Amazon, September 9, 2021; and Orphe Divoungue, **Twitter Post**, December 27, 2021.

⁴¹ *Ibid*; and **The American Upskilling Study: Empowering Workers for the Jobs of Tomorrow**, Gallup and Amazon, 2021, p. 8

⁴² National Federation of Independent Business, **New NFIB Jobs Report: Staggering 50 percent of Small Business Owners Report Job Openings They Can't Fill**, NFIB press release, September 2, 2021; and National Federation of Independent Business, **Job Creation Sprints Ahead in December**, December 16, 2019.

⁴³ Bureau of Labor Statistics, **Job Openings and Labor Turnover Survey** (Last visited March 4, 2022).

roughly 170,000 private-sector jobs from its pre-pandemic level—another sign that its economic recovery remains fragile even as Ohio’s job market heats up.⁴⁴

Figure 3: Select Year Job-Opening Rates in the U.S. by Industry⁴⁵

U.S. INDUSTRY	2001	2019	2021
Total Non-farm	3.2	4.5	6.2
Manufacturing	1.9	3.3	6.2
Leisure and Hospitality	4.3	5.7	9.0
Construction	2.6	4.1	4.4
Retail Trade	2.9	4.8	6.2
Professional and Business Activity	4.3	5.6	7.4
Education and Health Services	4.7	5.1	6.9
Financial Activities	3.0	4.1	4.5

As Glassdoor chief economist Daniel Zhao notes, “[u]nlike past recessions, the U.S. has largely skipped the phase of the recovery where employers have a large pool of unemployed workers to hire from.”⁴⁶ Typically, recessions increase the supply of the unemployed, which allows employers to demand a higher skill-level of potential hires.⁴⁷ But job openings in Ohio currently sit at a record high as workers separate from employers to seek better jobs or lifestyles and take advantage of a tight labor market. (See Figure 4.) This phenomenon has altered the traditional timeline of employment- and skill-acquisition. Instead of requiring valuable knowledge, qualifications, and skillsets before hiring, employers must hire relatively unqualified workers and train or upskill them themselves.

The expanding gaps between employer-needs and employee-skills, and under-skilled and up-skilled workers, present policy challenges and opportunities. First, Ohio should do no harm. Whereas over-subsidizing certain sectors of higher education can pull workers out of the labor force, deter upskilling by employers, and lead to malinvestment, reforming occupational licensing rules would allow

⁴⁴ **The Buckeye Institute: More Holiday Cheer with a Strong November Jobs Report**, The Buckeye Institute press release, December 17, 2021; and **The Buckeye Institute: Ohio’s Job Market Ends 2021 with a Bang**, The Buckeye Institute press release, January 21, 2022

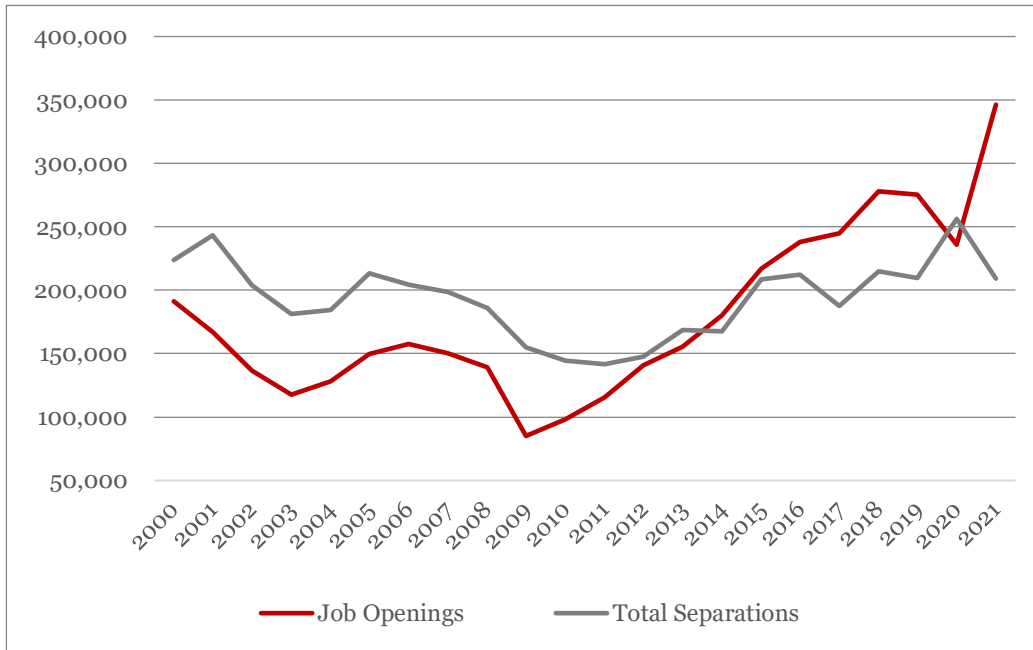
⁴⁵ Source: Author’s calculations from **Job Openings and Labor Turnover Survey** (Last visited March 4, 2022). Note: Job opening rate calculated as the simple average of the job opening rates for all the months in that year. December 2021 job opening rates are preliminary.

⁴⁶ Daniel Zhao, **Glassdoor Workplace Trends for 2022**, Glassdoor Economic Research, December 8, 2021.

⁴⁷ Alicia Sasser Modestino, Daniel Shoag, and Joshua Balance, **“Upskilling: Do Workers Demand Greater Skill When Workers Are Plentiful,”** *The Review of Economics and Statistics*, Volume 102, Issue 4 (October 2020): 793-805.

labor to meet employer needs. Second, to help close the skills gaps, policymakers should further pursue reforms that reduce financial and regulatory burdens on businesses and make it easier for workers to acquire the on-the-job training and skills needed to work and compete in a 21st century economy.

Figure 4: Average Job Openings and Separations in Ohio⁴⁸



⁴⁸ Source: **Job Openings and Labor Turnover Survey** (Last visited March 4, 2022).
 Note: December 2021 job opening rates are preliminary.

THREE SOLUTIONS

To address the economic and skills gaps problems exacerbated by the China Shock and the emergence of the 21st century's digital economy, Ohio lawmakers should take a three-pronged approach to make the state more economically competitive: 1) upskill and reskill Ohio's workforce through education reform; 2) revise Ohio's outdated occupational licensing code; and 3) harness the benefits of globalization.

Equipping workers with appropriate skills starts early. Ohio should require all public high schools to offer students foundational computer sciences courses, and then adopt regulatory reforms that will make it easier for qualified professionals to teach computer science classes. The state should inject more competition for funding between post-secondary institutions by conditioning state money on results-driven metrics like loan repayment rates, debt as a percentage of earnings, and job placement. It should expand micro-credentialing programs modeled after its successful TechCred program to help in-demand workers and industries. Ohio should also reform its occupational licensing code to foster and utilize workforce talent without needlessly barring qualified workers from earning a living. Finally, other state-level reforms, including right-to-work laws, tax reform, and coordinated high-skill immigration policies can and should be pursued to attract foreign direct investment to Ohio. A more skilled labor pool and a more flexible regulatory regime that capitalizes on more of the benefits of globalization will help Ohio adapt to market forces and the new economy of the 21st century, and make the state more economically competitive.

Solution 1: Education Reforms to Upskill and Reskill Ohio's Workforce

More Computer Science Classes in K-12 Education

In an increasingly online, digital economy, computer skills have become attractive to employers.⁴⁹ Although many employers place a premium on college graduates with degrees in computer science or related fields, other technology-centric employers seek workers without bachelor's degrees but with computer skills that can help them complete necessary business tasks.⁵⁰ Some employers have already

⁴⁹ Ian Hecker, Shayne Spaulding, and Daniel Kuhn, *Digital Skills and Older Workers: Supporting Success in Training and Employment in a Digital World*, Urban Institute, September 2021.

⁵⁰ Eric Rosenbaum, *Liberal Arts Degree? No Degree at All? You Are the Perfect Candidate for a Tech Job*, CNBC, September 26, 2019.

begun training their workforces to meet the new digital economy realities,⁵¹ but more can and should be done at the high school level to equip the future workforce with valuable computer- and computer science-skills.

Ohio ranks poorly in this respect. According to the State Committee on Computer Science,⁵² Ohio lags its peers in nearly all relevant computer science metrics in secondary and post-secondary education. Ohio ranks 31st in high schools offering computer science (well behind the state’s neighbors), 37th in computer science graduates in post-secondary education, 44th in the growth of computer science graduates, and the gap between computer science degree completion and job openings is expected to widen by more than 11,000 every year over the next decade.⁵³ Less than four percent of Ohio high school students are enrolled in foundational computer science classes as defined by the 2021 State of Computer Science Education Report.⁵⁴ And Ohio public school districts are not required to use the computer science standards laid out in the State Board of Education’s model curriculum.⁵⁵ All of that needs to change.

Although half of Ohio high schools already offer computer science courses,⁵⁶ the state should require all public-school districts to offer high school students at least one foundational computer science course before graduating. To adequately staff schools with teachers capable of effectively teaching the subject under such a mandate,⁵⁷ Ohio will need to change its qualification requirements to teach computer science. Currently, those requirements are too restrictive and onerous—

⁵¹ Sarah Franklin, **The Pandemic Widened the Skills Gap and the Tech Industry Must Step Up**, *Forbes*, December 3, 2020.

⁵² The State Committee on Computer Science was established in Ohio’s most recent state operating budget, HB 110. See, **State Committee on Computer Science Seeks Ohioans’ Ideas to Make Ohio a National Leader in Computer Science Education**, Ohio Department of Higher Education news release, November 23, 2021.

⁵³ Dr. Katie Hendrickson, Liz Gauthier, Magie Osario Glennon, et al, **2021 State of Computer Science Education Report**, Code.org, ECEP Alliance, CSTA, 2021; and Committee Facilitator Kelly Gaier Evans – Battelle, Chair Mike Duffey, Ohio Department of Higher Education, and Vice Chair John Wiseman, Ohio Department of Education, **State Committee on Computer Science Organizational Meeting Presentation**, November 17, 2021.

⁵⁴ *Ibid.*

⁵⁵ Ohio Revised Code **Sec. 3301.079**, 2021; and Ohio Department of Education, **Frequently Asked Questions for Computer Science** (Last visited December 7, 2021); and Ohio Department of Education, **Model Curriculum for Computer Science** (last visited January 12, 2022).

⁵⁶ Committee Facilitator Kelly Gaier Evans – Battelle, Chair Mike Duffey, Ohio Department of Higher Education, and Vice Chair John Wiseman, Ohio Department of Education, **State Committee on Computer Science Organizational Meeting Presentation**, November 17, 2021.

⁵⁷ Jeremy P. Kelley, **K-12 Schools May See New Computer Science Mandate**, *Dayton Daily News*, June 14, 2021; and Jessica Poiner, **An Overview of the Computer Science Provisions in the State Budget**, Thomas B. Fordham Institute, May 4, 2021.

artificially limiting the number of qualified teachers. Except for several limited carveouts, in order to teach computer science courses in Ohio, teachers need an educator license in computer science, or must hold a license endorsement in computer technology and pass a content examination.⁵⁸ Fortunately, a temporary exemption allows licensed teachers to teach computer science courses if they have also completed an approved professional development program.⁵⁹ Ohio should make permanent and expand that exemption so that professionals with computer science experience can get an expedited certificate or temporary license. Unfortunately, teachers that use this exemption may only teach computer science courses in the school that employed them while completing the development program.⁶⁰ Restricting qualified teachers from teaching computer skills in other school districts is a poor policy that needlessly limits the supply of computer science teachers. That policy needs to change so that qualified teachers can teach more students across school districts valuable labor market skills.

Community Colleges and Reforming Ohio's Post-High School Education Spending

Economists estimate that nearly one million adults will need post-secondary training to support Ohio's economy, so state lawmakers must do more to ensure that high school graduates can obtain useful and affordable options to further their schooling.⁶¹ That starts by properly balancing community college education and traditional bachelor's degrees.

Community colleges offer students a valuable, cost-effective alternative to expensive four-year degrees. In fiscal year 2022, Ohio students paid an average tuition of \$5,085 for community college education, compared to \$6,172 at four-year university regional campuses, and \$10,217 at university main campuses.⁶² That community colleges also offer younger students steppingstones to a traditional college education and other options for career advancement is well-documented.⁶³ Less discussed, however, is that community colleges provide a

⁵⁸ Ohio Legislative Service Commission Office of Research and Drafting, **Bill Analysis of House Bill 170**, 132nd General Assembly; and Ohio Legislative Service Commission Office of Research and Drafting, **Bill Analysis of House Bill 110**, 134th General Assembly.

⁵⁹ *Ibid.*

⁶⁰ *Ibid.*

⁶¹ Ohio Department of Higher Education, **Ohio Attainment: 2019 Annual Report**.

⁶² Ohio Higher Ed, Department of Education, **Data and Reports | Tuition and Financial Aid**, Fall 2021 Annual Survey of Student Charges.

⁶³ Greg R. Lawson, research fellow, The Buckeye Institute, Testimony Before the Ohio Senate Workforce and Higher Education Committee, "**Building a Better Higher Education System**," June 2, 2021.

safety net for older professionals looking for a career change or new job skills in a rapidly evolving labor market. Thus, community colleges provide great value to those that lost their jobs to trade, foreign and out-of-state competition, automation, or the coronavirus pandemic. According to an Opportunity America survey, close to three-quarters of the 11 million community college students nationwide are older than 24, more than half are in programs preparing them for the workforce, and close to 60 percent of the 3.7 million noncredit students—students opting for pass or fail classes designed for skill acquisition—are job focused.⁶⁴ In Ohio, 44 percent of community college students are older than 24, compared to just 12 percent of students at university main campuses—likely signaling that community college students already have more labor-market experience and are looking for ways to increase their attractiveness to employers and advance their careers.⁶⁵

The pandemic has disrupted community college enrollment and funding streams. Whereas traditionally, students opt for increasing their marketable job skills through education during economic downturns,⁶⁶ the Covid-19 pandemic and a historically tight labor market have instead induced would-be students to take advantage of higher wages now and defer further education. Community colleges—responsible for reskilling many older students and filling skills gaps for workers⁶⁷—have suffered a “more than 14% total enrollment decline since fall 2019,” leaving community colleges 21 percent smaller now than in 2019, while traditional colleges have shrunk a more fiscally manageable 12 percent over the same span.⁶⁸ Such a precipitous drop in enrollment has decreased tuition revenue for community colleges just as expenses for online learning have increased.⁶⁹

State policymakers can relieve some of this temporary financial pressure by permanently funding post-high school education more effectively. First, Ohio

⁶⁴ Tamar Jacoby, **Community Colleges Are an Agile New Player in Job Training**, *The Wall Street Journal*, September 23, 2021.

⁶⁵ Ohio Department of Higher Education, **Undergraduate and Graduate Student Diversity: Fall 2020**, Ohio Public Institutions of Higher Education, June 2021.

⁶⁶ **Bridging Ohio’s Workforce Gap**, Ohio Excels in Partnership with the Complete to Compete Ohio Coalition, August 2020; and Diane Whitmore Schanzenback, **Limited Supply and Lagging Enrollment: Production Technologies and Enrollment Changes at Community Colleges during the Pandemic**, National Bureau of Economic Research Working Paper 29639, January 2022.

⁶⁷ Jon Marcus, **How a Decline in Community College Students is a Big Problem for the Economy**, *The Hechinger Report*, March 5, 2021.

⁶⁸ Sheridan Hendrix, **College Enrollment Rates Continue to Fall Nationwide, With Community Colleges Hardest Hit**, *The Columbus Dispatch*, October 26, 2021.

⁶⁹ Jon Marcus, **How a Decline in Community College Students is a Big Problem for the Economy**, *The Hechinger Report*, March 5, 2021.

should increase competition for education dollars between community colleges and traditional four-year universities by conditioning funding on results-driven metrics such as loan repayment rates,⁷⁰ debt as a percentage of earnings, post-graduation employment, and degree completion.⁷¹ Research by the Cardinal Institute ranking education programs in West Virginia by debt as a percentage of earnings has shown that of the top 50 programs, 23 awarded associate’s degrees (including nine of the top 10), 22 awarded bachelor’s degrees, and only five awarded master’s degrees.⁷² Conditioning state funding on this type of results-driven metric offers several advantages: it steers taxpayer dollars to support more stable employment post-graduation; it reduces excess student loan debt; it promotes credentials that could help ameliorate labor shortage issues by providing skills that could shrink the skills gap; and it limits wasting taxpayer dollars on schools that do not prepare graduates for gainful employment.

Second, Ohio could reallocate funding for post-high school education by shifting funding from the institutions to prospective students through workforce training grants.⁷³ Such a program would tie funding to students at designated programs—ideally influenced by results-oriented metrics—while they undergo on-the-job training and classroom instruction. The program should permit students to keep some of the additional funding if they find a program that costs less than the awarded amount.⁷⁴ Instead of making community college tuition-free, Ohio should pursue ways to inject more funding competition into higher education to lower tuition costs and improve post-graduation outcomes for students.

Finally, Ohio must reform its flawed “Pell-First” policy that deprives low-income community college students access to Ohio College Opportunity Grants (OCOG).⁷⁵ By denying students OCOG funding when a Pell Grant covers anything beyond the cost of tuition, funding for community college students is almost always blocked by their low-cost tuition while ignoring other financial barriers to community

⁷⁰ Steven Yoder, **Federal Relief Money Boosted Community Colleges, But Now It’s Going Away**, The Hechinger Report, December 12, 2021.

⁷¹ Amy Ganz, Austan Goolsbee, Glenn Hubbard, and Melissa S. Kearney, **A Policy Agenda to Develop Human Capital for the Modern Economy**, Aspen Economic Group, February 4, 2019.

⁷² Adam Kissel, **Bad Returns: West Virginia College Degrees That Fail Debt-Earnings Tests**, Cardinal Institute for West Virginia Policy, September 28, 2021.

⁷³ Oren Cass, **What If We Paid Employers to Train Workers?**, *National Review*, July 17, 2019.

⁷⁴ Valerie Volcovici, **Awaiting Trump’s Coal Comeback, Miners Reject Retraining**, Reuters, November 1, 2017.

⁷⁵ Ohio Revised Code **Sec. 3333.12**, 2021

college attendance.⁷⁶ Leveling the playing field in post-high school education requires liberalizing grant rules so that grants may be used to pursue community college education and other job training certificates.

TechCred: A Model for Labor-Market Reform

Ohio should expand micro-credentialing programs modeled after the state's TechCred program, which offers up to \$2,000 in financial assistance per credential to businesses and institutions that help employees earn technology-focused short-term degrees or job certificates.⁷⁷ Micro-credentialing programs offer many benefits, including: quick skill accumulation;⁷⁸ stackable certifications that can be used toward degrees at community colleges and universities;⁷⁹ higher pay for employer-demanded skills;⁸⁰ and flexibility to personalize instruction and learning environments.⁸¹ By offering financial assistance to businesses looking to upskill their workforces quickly, micro-credentialing programs help workers and employers adapt to a rapidly changing economy that often demands rapidly evolving skills.

Like TechCred, new micro-credentialing programs should reimburse employers and institutions for in-demand credentials and keep completion time under one year so that newly acquired skills are not quickly outdated. Ohio should experiment with new micro-credentialing programs that extend beyond technology-focused credentials so that other in-demand employers and employees may participate. At the same time, Ohio should make TechCred programs available to high schools.⁸² High school students can already count industry-recognized credentials toward their credentials,⁸³ so granting them access to the TechCred program to gain

⁷⁶ Greg R. Lawson, research fellow, The Buckeye Institute, Testimony Before the Ohio Senate Workforce and Higher Education Committee, "**Building a Better Higher Education System**," June 2, 2021.

⁷⁷ Andrew J. Kidd, **Micro-Credentialing: Not Your Grandfather's Job Training Program**, The Buckeye Institute blog, October 19, 2019; and TechCred, **Common Questions** (last visited January 13, 2022).

⁷⁸ **Micro-credentials. Small but Mighty**, American College of Education (last visited January 13, 2022).

⁷⁹ **Micro-Credentials - What They Are and Why They're Valuable**, Edalex (last visited January 13, 2022).

⁸⁰ **Where Credential Meet the Market**, ExcelinEd and Burning Glass Technologies, June 2019.

⁸¹ National Education Association, **Micro-Credentials** (Last visited February 23, 2022).

⁸² Andrew J. Kidd, **Micro-Credentialing: Not Your Grandfather's Job Training Program**, The Buckeye Institute's blog, October 9, 2019.

⁸³ **Industry-Recognized Credentials**, Ohio Department of Education (last visited January 13, 2022); and **Earning an Ohio High School Diploma for the Classes of 2018 and 2019**, Ohio Department of Education (last visited January 13, 2022).

employer-demanded skills is a natural extension. According to the Thomas B. Fordham Institute, “more than 49,000 credentials were earned by high school students during the 2017–18 school year, but fewer than 13,000 of them were considered in demand.”⁸⁴ Ohio students deserve access to programs more likely to earn them marketable and useful skills. Micro-credentialing builds bridges to associate’s and bachelor’s degrees, so access to TechCred will also help students pursue post-high school education.⁸⁵

State-level reforms and upskilling education efforts like these are necessary in part because federal retraining programs have largely failed to upskill and reskill workers dislocated by painful labor market shocks. Trade Adjustment Assistance (TAA) is a notorious example of an “ineffective”⁸⁶ federal training program that serves few people and yields problematic results.⁸⁷ A 2012 U.S. Department of Labor report found that of the 85 percent of TAA recipients who received a certificate or degree, only 37 percent were employed in the field of training four years later;⁸⁸ and a Government Accountability Office (GAO) report shows TAA misallocated training resources.⁸⁹ The federal government has also made significant efforts to administer job training programs—a largely “inconclusive” effort with 47 overlapping programs spanning nine federal agencies with little accountability.⁹⁰

Solution 2: Occupational Licensing Reform

Occupational licensing laws make labor markets rigid, stunt job growth, reduce employee mobility, and limit options for addressing labor challenges. One study estimates these laws cost Ohio more than 67,000 jobs and the United States more

⁸⁴ Jessica Poiner, **Too Many Of the “Workforce Credentials” Earned by High School Students Have No Value in the Labor Market**, Thomas B. Fordham Institute, June 6, 2019.

⁸⁵ **Micro-Credentials - What They Are and Why They're Valuable**, Edalex (last visited January 13, 2022).

⁸⁶ Sallie James, **Trade Adjustment Assistance**, Downsizing the Federal Government, May 1, 2011.

⁸⁷ Phil Levy, **Rebuilding a Bipartisan Consensus on Trade Policy**, The Chicago Council on Global Affairs, April 2019, pp. 78-80.

⁸⁸ Ruth Graham, **The Retaining Paradox**, *The New York Times Magazine*, February 23, 2017.

⁸⁹ United States Government Accountability Office, **Trade Adjustment Assistance: Reforms Have Accelerated Training Enrollment, but Implementation Challenges Remain**, Report to Committee on Finance, U.S. Senate, September 2004.

⁹⁰ United States Government Accountability Office, **Multiple Employment and Training Programs: Providing Evidence on Consolidating Services and Consolidating Administrative Structures Could Promote Efficiencies**, Report to Congressional Requesters, U.S. Senate, January 2011.

than 1.7 million jobs⁹¹—on par with national job loss estimates attributable to the China Shock.⁹²

Occupational licensing reforms that make it easier to work in Ohio—such as recognizing out-of-state licenses of qualified professionals—would increase labor market mobility so employers can staff their businesses and deliver demanded products and services.⁹³ Ohio can and should be adopting reforms to equip workers with skills demanded by employers, but rules and regulations that force workers into training that does not fit the skills they need for their jobs prove counterproductive. Ohio, for example, unnecessarily requires funeral directors to obtain a four-year Bachelor’s degree—no neighboring states require such an expensive and unrelated credential.⁹⁴ A more appropriate approach would require a high school degree, evidence of a sought Associate’s degree, and a one-year apprenticeship in the funeral trade.⁹⁵ As skills gaps expand, Ohio should be looking for opportunities to shorten the time it takes to earn qualifications for employment, quickly match workers with earnings, and help businesses find qualified workers.

Reforming occupational licensing laws gives Ohio an opportunity to make quicker labor market adjustments and ease some of the pain of a persistent skills gaps exacerbated by a prolonged pandemic response. Legislation pending (as of this writing) in the Ohio House State and Local Government Committee would remove regulations barring similarly licensed workers in other states from working in Ohio. Recognizing out-of-state licenses in a tight labor market will help employers providing in-demand services find qualified in-demand employees more quickly.⁹⁶

⁹¹ Morris M. Kleiner and Evgeny S. Vorotnikov, *At What Cost? State and National Estimates of the Economic Costs of Occupational Licensing*, Institute for Justice, November 2018.

⁹² David H. Autor, David Dorn, and Gordon H. Hanson, “**The China Shock: Learning from Labor-Market Adjustment to Large Changes in Trade**,” *Annual Review of Economics* Volume 8, Number 1 (October 2016): 205–40, p. 228; and Alan Reynolds, **Did The U.S. Lose 2.4 Million Jobs from China Imports?**, Cato at Liberty blog, September 15, 2016.

⁹³ Conor Norris and Edward Timmons, **Ohio Must Welcome Workers from Other States to Ease Current Labor Shortage**, *The Columbus Dispatch*, November 19, 2021; and Federal Reserve Bank of St. Louis, **Job Openings: Total Nonfarm** (Last visited December 3, 2021).

⁹⁴ Greg R. Lawson, **Opening Doors II: Occupational Licensing Reform in Ohio After Senate Bill 255**, Buckeye Policy Brief, November 9, 2021.

⁹⁵ *Ibid.*

⁹⁶ The Ohio Legislature, 134th General Assembly, **House Bill 203**; and Greg R. Lawson, research fellow, The Buckeye Institute, Testimony Before the Ohio House State and Local Government Committee, “**Universal License Recognition: Welcoming New Workers to Ohio**,” May 5, 2021.

Solution 3: Harnessing Globalization’s Benefits

Economic growth in a community is attributable to how much labor and capital are deployed, and how effectively they are used.⁹⁷ As a community’s population declines, so does the flexibility for its workers to specialize in tasks, produce more, exchange the fruits of their labor, and thereby increase prosperity. Ohio’s anemic population growth, therefore, has cost its citizens the economic benefits of specialization that lead to growth. Policies designed to attract new workers—from other states and other countries—are needed to spur population growth and regain economic benefits that Ohio has forfeited for decades. Those policies should include efforts to draw international investment capital, make state and local tax codes more competitive, reform occupational licensing laws, raise the skill level of the workforce, and embrace deregulation efforts to make securing investment capital easier.⁹⁸

The Benefits of Foreign Direct Investment

More than \$4.6 trillion in foreign direct investment—defined as a foreign investor owning at least 10 percent of a U.S. business—is parked in the United States, with more than 40 percent of that investment buttressing U.S. manufacturing.⁹⁹ Ohio boasts the fourth most foreign direct investment projects in the country, and foreign companies employ nearly 340,000 Ohioans.¹⁰⁰ Adding to such investment is important because foreign companies tend to provide significantly better pay; and they disproportionately account for more than five percent of all private-sector employment, 6.5 percent of U.S. GDP, 16 percent of new non-residential private sector capital investment, 17.1 percent of federal corporate federal taxes, and more than 23 percent of U.S. exports.¹⁰¹ Once here, foreign companies often work with

⁹⁷ Brink Lindsey, **Why Growth is Getting Harder**, Cato Institute Policy Analysis number 737, October 8, 2013.

⁹⁸ Daniel J. Ikenson, **The Economic Bedrock of Foreign Direct Investment**, *Forbes*, October 17, 2018; and Adis Maria Vila, **The Role of States in Attracting Foreign Direct Investment: A Case Study of Florida, South Carolina, Indiana, and Pennsylvania**, *Law and Business Review of the Americas* Volume 16, Number 2 (2010).

⁹⁹ Bureau of Economic Analysis, **Balance of Payments and Direct Investment Position Data**, Foreign Direct Investment Position in the United States on a Historical-Cost Basis (Last visited December 3, 2021).

¹⁰⁰ **Foreign Direct Investment (FDI) in Ohio**, JobsOhio (Last visited December 7, 2021); Bureau of Economic Analysis, **Data on Activities of Multinational Enterprises**, Foreign Direct Investment in the U.S., All U.S. Affiliates, Employment (Last visited December 3, 2021).

¹⁰¹ Daniel J. Ikenson, **The Economic Bedrock of Foreign Direct Investment**, *Forbes*, October 17, 2018; and Daniel J. Ikenson, **Economic Bedrock: How International Companies Boost**

educational institutions to teach cutting-edge skills, identify industry trends, work with community colleges to tailor desirable programs, and hire graduates.¹⁰² Columbus State Community College’s electro-mechanical engineering technology program, for example, is a talent pipeline for Japan’s Honda by equipping students with high-paying, in-demand skills.¹⁰³ Fuyao Glass, a Chinese-based glass manufacturer, has partnered with Sinclair Community College to form a workforce training and recruitment program.¹⁰⁴ Such programs—part and parcel of foreign investment and partnerships—offer a roadmap for success and reasons to attract more foreign direct investment to Ohio.

To attract that foreign investment, Ohio should pursue public policies that create economic environments that foreign companies value: growing economies with skilled and adaptable workers; a strong and consistent rule of law; stable business climates with proficient infrastructure and talent pipelines; competitive tax codes; and efficient regulatory regimes that do not discourage investment capital.¹⁰⁵

First, Ohio should become a right-to-work state—allowing workers to decide whether specific unions are the right fit for them. Economic research has shown that Midwestern right-to-work states—Indiana, Kentucky, Michigan, West Virginia, and Wisconsin—have grown total and foreign manufacturing employment more quickly than in non-right-to-work states.¹⁰⁶ Although Ohio’s manufacturing employment growth rate of roughly 11 percent between 2011 and 2018 is similar to Wisconsin’s growth rate and bests West Virginia’s manufacturing employment decline, Ohio still trails the manufacturing employment growth in Indiana, Kentucky, and Michigan by between 8.5 and 15.1 percentage points. Even before losing workers to overseas competition, Ohio lost foreign investment and

America’s Economic Advantages & Build American Opportunity, Organization for International Investment, October 2018.

¹⁰² Tamar Jacoby, ***Community Colleges Are an Agile New Player in Job Training***, *The Wall Street Journal*, September 23, 2021; and Jim Jacobs, ***Adults and Community College Degrees***, *Inside Higher Ed*, October 9, 2017.

¹⁰³ EMSI Burning Glass, ***Columbus State Community College Partners with Honda to Create Engineering Technology Program***, Economic Modeling Specialists International (EMSI), February 22, 2018; and ***Electro-Mechanical Engineering Technology***, Columbus State Community College.

¹⁰⁴ ***The World’s Largest Glass Manufacturing Plant is in Ohio and Continues to Grow***, JobsOhio.

¹⁰⁵ Daniel J. Ikenson, ***The Economic Bedrock of Foreign Direct Investment***, *Forbes*, October 17, 2018; and Adis Maria Vila, ***The Role of States in Attracting Foreign Direct Investment: A Case Study of Florida, South Carolina, Indiana, and Pennsylvania***, *Law and Business Review of the Americas* Volume 16, Number 2 (2010).

¹⁰⁶ Eunbi Kim, ***The Impact of Right-to-Work Legislation on Foreign Manufacturing Employment in the United States***, *International Journal of Urban Sciences* (April 26, 2021).

the workers that come with it—to the American South.¹⁰⁷ Every state in the Southeast has boasted right-to-work status for more than half a century,¹⁰⁸ and research shows a “large, abrupt increase in manufacturing activity” in states with right-to-work laws.¹⁰⁹ Before the recession in 2007, for example, Mercedes-Benz and Hyundai chose to build cars in Alabama over Germany and Korea, and British BMW was already manufacturing in South Carolina.¹¹⁰ Axios has reported that the South has enjoyed a 17 percent increase in automobile manufacturing employment since 2001, while the Midwest has lost 29 percent.¹¹¹ Adopting right-to-work laws or other market reforms may not have overcome the powerful technological changes and productivity increases that precipitated much of Ohio’s deindustrialization, but they would have made Ohio more competitive against other U.S. states in attracting foreign investment and top international manufacturers.

Second, Ohio should repeal its commercial activities tax and simplify its income tax code. Third, state and federal officials should create a state-based visa program that prioritizes high-skilled immigrants and gives Ohio more say in the foreign workers it admits. Foreign companies favor regions with skilled labor forces, so adding high-skilled immigrant labor may attract more foreign investment and increase employment opportunities for immigrant and native workers. Fourth, as previously noted, Ohio should reform its occupational licensing structure so foreign manufacturers can more effectively source qualified personnel, and expand its micro-credentialing programs to improve its workforce talent. Foreign companies desire knowledgeable, talented, and flexible workforces; and these programs raise in-demand skill levels and their relative brevity makes them malleable, quickly meeting evolving employer needs.¹¹²

¹⁰⁷ Samuel Hammond, **On Workforce Investment**, American Compass Moving the Chains Series, June 9, 2020; and David Autor, **Policies Toward Trade, Outsourcing, and Foreign Investment**, Peterson Institute for International Economics presentation, October 17, 2019.

¹⁰⁸ National Right to Work Legal Defense Foundation, **Right to Work States** (Last visited February 23, 2022).

¹⁰⁹ Thomas J. Holmes, “**The Effect of State Policies on the Location of Manufacturing: Evidence from State Borders**,” *Journal of Political Economy* Volume 106, Number 4 (August 1998): 667-705.

¹¹⁰ Warren Brown, **The Industry Isn’t Going South, It’s Just Moved There**, *Washington Post*, April 23, 2006.

¹¹¹ Andrew Witherspoon and Courtenay Brown, **Southern States Won the Most Auto Manufacturing Jobs**, Axios, December 16, 2018.

¹¹² Adam Diersing, **Micro-credentialing: Function and Future in State Policy**, The Council of State Governments, March 10, 2021.

Immigrants and Population Growth Spur Economic Growth

As Ohio upskills and reskills its labor force by modernizing retraining services and reforming its public education system, policymakers should also build on domestic policy proposals to boost population growth. Nearly two-thirds of Ohio counties lost population over the last decade,¹¹³ and Ohio finished 2020 with more deaths than births on the year—a first in state history.¹¹⁴ Population loss hurts housing markets, local government finances, productivity, and economic dynamism. According to a recent Economic Innovation Group study, “a 1 percentage point decline in a country’s population growth rate is associated with a 2-3 percentage point decline in its startup rate over the past decade.”¹¹⁵ That does not bode well for Ohio’s economic dynamism.

Immigrants can help. Not only would more immigrants add to Ohio’s dwindling population, but immigrants provide economic energy and innovation to lethargic economies. Immigrants tend to be highly skilled and are twice as likely as native-born Americans to start new businesses and hold patents.¹¹⁶ Economists Jennifer Hunt and Marjolaine Gauthier-Loiselle found that a “1 percentage point increase in immigrant college graduates’ population share increases patents per capita by 9-18 percent.”¹¹⁷ Similarly, scholars at the Stanford Graduate School of Business found that immigrants account for 16 percent of inventors but were responsible for 30 percent of innovation since 1976.¹¹⁸ So policies that prevent high-skilled immigrants from putting their skills to use in the United States have likely had disastrous effects on the country’s technology sector—depriving American workers

¹¹³ Mark Ferenchik, Bill Bush, and Marc Kovac, **Census: Two-thirds of Ohio Counties Lose Population; Columbus Passes 900,000 Residents**, *The Columbus Dispatch*, August 12, 2021.

¹¹⁴ Max Filby, **Ohio Had More Births than Deaths in 2020, A Grim First in State History Amid Covid-19**, *The Columbus Dispatch*, October 25, 2021.

¹¹⁵ Adam Ozimek, Kenan Fikri, and John Lettieri, **From Managing Decline to Building the Future: Could a Heartland Visa Help Struggling Regions?**, Economic Innovation Group, April 2019. p. 27.

¹¹⁶ FWD.US, **The Case for Protecting Legal Immigration Against Recent Attacks**, April 2019, p. 2; and Jennifer Hunt and Marjolaine Gauthier-Loiselle, **How Much Does Immigration Boost Innovation?**, *American Economic Journal: Macroeconomics*, Volume 2 (April 2010), pp. 31-56.

¹¹⁷ Jennifer Hunt and Marjolaine Gauthier-Loiselle, **How Much Does Immigration Boost Innovation?**, *American Economic Journal: Macroeconomics* Volume 2, Number 2 (April 2010) p. 31-56.

¹¹⁸ Shai Bernstein, Rebecca Diamond, Timothy James McQuade, and Beatriz Pousada, **The Contribution of High Skilled Immigrants to Innovation in the United States**, Stanford Graduate School of Business working paper no. 3748, November 6, 2018.

of more than 230,000 technology-related jobs during the Great Recession in 2007 and 2008.¹¹⁹

Columbus, Ohio exemplifies immigration’s dynamic economic effects. According to the Brookings Institution, Columbus ranked among U.S. cities with the fastest-growing immigrant populations between 2010 and 2019.¹²⁰ Relatedly, Columbus ranked as the best city to work in the technology field in 2019,¹²¹ and the city’s general population growth of 15 percent since 2010 significantly outpaced the state’s low population growth of 2.3 percent over the same span and more than doubled the United States’ population growth of 7.4 percent.¹²² This immigration success story should not be surprising inasmuch as domestic firms respond positively to new labor supplies.

A large supply of skilled, educated, and tech-oriented workers, likely influenced Intel’s decision to invest \$20 billion in the Columbus-area’s Licking County. As executive vice president and lead of Intel’s global manufacturing operations, Keyvan Esfarhani, explained Intel’s move, the region “has a proud heritage as an industrial and manufacturing powerhouse, it sits near the fast-growing Columbus metropolitan area, it has a robust existing infrastructure with the capacity for future growth, and a strong talent pipeline sustained by world-class educational institutions in the area.”¹²³ To accommodate a growing labor supply, existing firms tend to expand employment opportunities and adjust physical capital allocation—ultimately increasing worker productivity.¹²⁴ And with wages tied to productivity, foreign-born STEM workers increase the wages of college-educated and non-college-educated Americans.¹²⁵ Attracting more technology companies like Intel will require educational reforms that help upskill workers, while simultaneously welcoming highly skilled immigrants to fill the vacant positions created by business investment. Simply put, businesses are looking for states and regions with

¹¹⁹ Giovanni Peri, Kevin Shih, Chad Sparber, and Angie Marek Zeitlin, *Closing Economic Windows: How H-1B Visa Denials Cost U.S.-Born Tech Workers Jobs and Wages During the Great Recession*, The Partnership for a New American Economy, June 2014.

¹²⁰ Dany Bahar and Greg Wright, *Immigration As an Engine for Reviving the Middle Class in Midsized Cities*, The Brookings Institution, November 18, 2021.

¹²¹ Ben Geier, *The Best American Cities to Work in Tech in 2019*, SmartAsset, June 12, 2019.

¹²² Chandler Boese and Marc Kovac, *Columbus’ Population Now Over 900,000: 4 Number to Know From Census Data*, *The Columbus Dispatch*, August 12, 2021.

¹²³ Keyvan Esfarjani, *Vice President Explains Why Intel is Ready to Invest Up to \$100 Billion in New Ohio Sites*, *The Columbus Dispatch*, January 23, 2022.

¹²⁴ Giovanni Peri, *The Effect of Immigrants on U.S. Employment and Productivity*, Federal Reserve Bank of San Francisco Economic Letter, August 30, 2010.

¹²⁵ Giovanni Peri, Kevin Shih, and Chad Sparber, “*STEM Workers, H-1B Visas, and Productivity in US Cities*,” *Journal of Labor Economics* Volume 33, Number S1 (July 2015).

educated workers. Ohio policymakers should do more to make sure their search includes Ohio.

To build on Columbus’s success, state lawmakers should coordinate with federal officials to help high-skilled immigrants find homes in Ohio—especially in the counties that have lost population over the last decade.¹²⁶ Ohio and Washington should create a program of state-based visas that prioritize high-skilled immigrants and give Ohio more say in the foreign workers it admits. Under such a system, state officials would submit petition requests to Washington asking that immigrants with needed skills be allowed to live and work in Ohio for a specified period.¹²⁷ Once that time has elapsed, immigrants would be asked to re-apply for the program. Lawmakers should expedite the reapplication process for visa-holders still working for the original employer. Such a state-based visa process could be expanded to allow Ohio to compact with other rust-belt states so that visa-holders may work in and contribute to a larger, regional economy.

As a part of a broader state-based visas program, Ohio could also decide to sell visas to employers rather than giving them directly to high-skilled immigrants.¹²⁸ Selling or auctioning visas to labor-starved employers could ease labor shortages for businesses struggling to find workers, while raising revenue to reskill and upskill the Ohio workers. Instead of pushing away skilled talent, Ohio and the rest of the United States should look for more creative ways to keep these innovators and put their talents and training to work here.

A well-designed state-based visa program would empower state lawmakers to address local labor market issues. With the support of the governor of Utah, U.S. Representative John Curtis introduced federal legislation in 2019 that would create a state-based visa program that allows states to design their programs as they see fit.¹²⁹ Some states could give away the visas or tailor them to specific industries, while others could prioritize certain training or degrees, and still others could sell their visas to raise revenue. The design possibilities are endless. Ohio should support this kind of initiative to drive innovation, help Ohio businesses

¹²⁶ Mark Ferenchik, Bill Bush, and Marc Kovac, **Census: Two-thirds of Ohio Counties Lose Population; Columbus Passes 900,000 Residents**, *The Columbus Dispatch*, August 12, 2021.

¹²⁷ David J Bier, **Chapter 5: State-Sponsored Visas, in 12 New Immigration Ideas for the 21st Century**, Cato Institute, May 12, 2020.

¹²⁸ Korok Ray, **Confronting the Immigration Paradox**, The Center for Growth and Opportunity Policy Paper, October 12, 2021.

¹²⁹ Congressman John Curtis, **Curtis Introduces State Sponsored Immigration Program**, Congressman John Curtis press release, November 19, 2019.; and Benjamin Wood, **Utah Congressman’s Fix for Immigration Problems? Let States Create Their Own Visas Programs**, *The Salt Lake Tribune*, November 19, 2019.

struggling with labor shortages, more nimbly respond to globalization, and ultimately spur population growth.

Retaining High-Skilled STEM Graduates

The benefits of allowing high-skilled immigrants into U.S. schools and the American workforce are clear and large. Foreign students, for example, act as subsidies to domestic students, with the enrollment of 10 foreign students leading to eight additional domestic students.¹³⁰ Once enrolled, student-visa holders publish between double and quadruple the rate of their peers—and their research is likely used to launch startups that further benefit native-born Americans.¹³¹ Of American companies valued at \$1 billion or more, immigrants have started more than half and play key management or product development roles in more than 80 percent of these companies.¹³² Ideally, Washington would treat STEM degrees as visas as part of a state-based visa program to capture the outsized economic benefits of high-skilled immigrants.

But Ohio universities and non-profits need not wait for federal lawmakers to capture these benefits. An Ohio non-profit, for example, could partner with Global Entrepreneur in Residence (Global EIR) to place high-skilled foreign-born students at Ohio universities where they can teach or otherwise mentor students while working at their start-ups—thus granting these immigrants access to Ohio universities’ uncapped supply of H1-B visas that are awarded to immigrants with “highly specialized knowledge.”¹³³ Global EIR was first launched in Massachusetts in coordination with the University of Massachusetts – Boston. In the first five years of the program, the school secured 110 H-1B visas (along with follow-on visas) whose companies employed nearly one thousand people while raising more than \$520 million in venture capital funding.¹³⁴ Similar programs have since been established with the University of Michigan, along with seven other universities in

¹³⁰ Kevin Shih, “**Do International Students Crowd-out or Cross-subsidize Americans in Higher Education?**” *Journal of Public Economics* Volume 156 (December 2017): 170-184.

¹³¹ Jennifer Hunt, “**Which Immigrants Are Most Innovative and Entrepreneurial? Distinctions by Entry Visa.**” *Journal of Labor Economics* Volume 29, Number 3 (July 2011): 417-457; and Ethan Mollick, **Twitter post**, October 27, 2021, 7:00 p.m.

¹³² Stuart Anderson, ***Immigrants and Billion-dollar Companies***, National Foundation for American Policy Brief, October 2018.

¹³³ United States Department of Labor Wage and Hour Division, **H-1B Program; Evaluation of Global Entrepreneurs-in-Residence (Global EIR) Program – Pilot Phase and Development of Blueprint for Expansion as a Michigan Model for Global EIR**, Global Detroit; and **H-1B Visa CAP Exempt Status through University Affiliation**, USAVisaNow.com.

¹³⁴ *Ibid.*

Alaska, Massachusetts, Colorado, Missouri, and California.¹³⁵ With nearly 4,000 colleges and universities in the United States but only eight known partnerships,¹³⁶ Ohio universities could be part of the vanguard in helping high-skilled immigrants bring economic vibrancy to Ohio.

¹³⁵ *Ibid*; and **GlobalEIR Locations**.

¹³⁶ *Ibid*; and Josh Moody, **A Guide to the Changing Number of U.S. Universities**, *U.S. News and World Report*, April 27, 2021.

CONCLUSION

Ohio has failed to adapt to a rapidly changing new global economy accelerated by China's emergence as an economic challenger to the United States. Policy failures have weakened Ohio's labor market and exposed an underperforming economy that struggles to compete in an increasingly international arena. But prudent policy adjustments can and should be made to regain Ohio's economic footing. Strategic education reforms can train and upskill workers, preparing them for the demands of 21st century employers, and relieve short-term labor shortages suffered by Ohio businesses. Rewriting antiquated regulatory chokepoints like the state's occupational licensing regime will ease labor flow and spur economic growth across industries. And taking advantage of globalization and skilled immigrant labor can help reverse worrisome population declines, make future labor market adjustments less painful, and increase the standard of living across the state. Such reforms should be carefully designed to foster a more flexible, nimble workforce ready to compete in the emerging digital economy of tomorrow. Failing to make such necessary policy adjustments risks a stagnant Ohio economy that the 21st century leaves further and further behind.

ABOUT THE AUTHOR



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Kolas has conducted state-level tax modeling and budget research for states such as Iowa, Louisiana, New Hampshire, and North Carolina. He has authored policy papers, book chapters, blog posts, and op-eds on restoring Ohio's technology and innovation leadership, the effects of federal and state labor market policies on work, and the impact of regulations and government spending on the economy. He is the author of ***Policy Solutions for More Innovation: A Policy Primer for Emerging Technology in Ohio*** and has conducted **multiple analyses** estimating the number of state-level jobs lost to a \$15 per hour minimum wage.

Kolas has testified to legislative committees on free-market policy and privacy issues. His commentary has been published by *The Columbus Dispatch*, *Crain's Cleveland Business*, *The Lima News*, *St. Louis Post Dispatch*, *Daily Signal*, and the Foundation for Economic Education, amongst others.

Prior to joining Buckeye, Kolas was a research associate at the Herbert A. Stiefel Center for Trade Policy Studies at the Cato Institute, where his research focused on how employment is impacted by international trade, the effect of international trade taxes on state and federal government policies, and the regulatory burden imposed by government on American businesses and families.

Kolas is a native of Cincinnati and throughout his career has focused on researching Ohio-related policies. He earned his Bachelor of Science in economics and political science from **George Washington University** and holds a Master of Science in applied economics from the **University of Maryland**.

Policy Solutions for More Innovation: Modernizing Ohio's Policies to Seize New Economic Opportunities

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