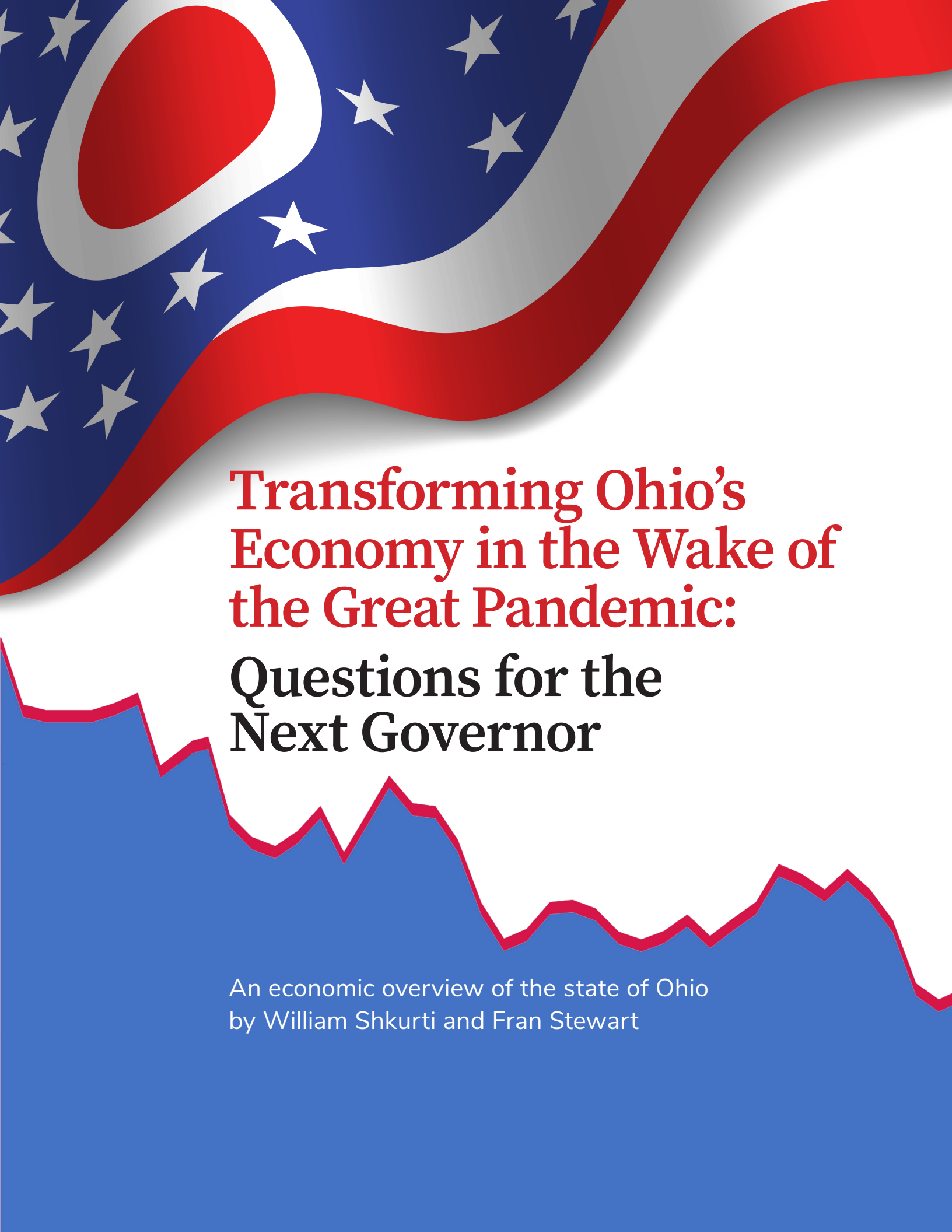


The background of the cover features a stylized American flag in the upper left corner, with its stars and stripes flowing across the top. Below the flag, a blue area contains a red line graph that fluctuates, representing economic data. The main title is centered in the white space between the flag and the graph.

# **Transforming Ohio's Economy in the Wake of the Great Pandemic: Questions for the Next Governor**

An economic overview of the state of Ohio  
by William Shkurti and Fran Stewart

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The findings, conclusions, and recommendations expressed in this report are the product of research conducted by the authors and do not represent the views of either the John Glenn College of Public Affairs or The Ohio State University.

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# THE OHIO STATE UNIVERSITY

JOHN GLENN COLLEGE OF PUBLIC AFFAIRS

In November 2022, Ohioans will elect a new governor. The governor and the voters who elect her or him will need to grapple with challenges to Ohio's future, many of which are rooted in the state's past.

In 2018 we authored a three-part report called *Toward a New Ohio*. It was intended to help inform the gubernatorial candidates and Ohio voters on important policy choices that lie ahead. The report provided historical context for the state's economic performance, examined concerns regarding future growth and identified key questions facing the next governor and other state elected officials.

In that document, we traced the performance of Ohio's economy over the past half century — a time when the state's economic standing declined compared to the nation overall, in large part due to the loss of high-paying manufacturing jobs. We looked at the role foreign and domestic competition and automation had played in this decline, as well as the impact of manufacturing job losses on local economies.

We also looked at changes in the nature of Ohio's workforce over this period and challenges that presented. We paid particular attention to the projected skill demands of Ohio employers and how they matched up with the skills Ohio workers possess.

We concluded with a review of initiatives by Ohio governors over the past 50 years to accelerate growth of the state's economy and a discussion of policy questions that we believed the new governor should be prepared to address.

This report updates that analysis for the 2022 elections. It is also divided into three papers, plus an executive summary. In the first paper, we examine what has happened to Ohio's economy since our 2018 paper, which was based largely on 2016 data, through the 2020 pandemic. In

the second paper, we look at the impact of the pandemic on Ohio's economy and workforce, and we consider the issues it raises going forward. In the third paper, we conclude with a series of questions for the candidates for governor and other state elected officials.

Although there are a number of important issues facing the next governor of Ohio, in this report we focus on those directly affecting Ohio's economy. As this document was going to press, the state of Ohio and the Intel Corp. announced a significant investment to build two computer chip factories in Central Ohio. We are preparing a supplemental analysis of what this might mean for Ohio's economy. We plan to release it concurrently with the full report in March.

We would like to thank Trevor Brown, dean of the John Glenn College of Public Affairs, for his ongoing support of this project. We also want to acknowledge our Ohio State colleagues Herb Asher, Ned Hill, Ben Kanzeg, Jim Landers and Brian Perera, as well as retired Columbus Dispatch editor Mike Curtin, for their advice and encouragement. Byron Archer, Bureau Chief of the Office of Labor Market Information for the state of Ohio, along with Lewis Horner and Elizabeth Rathburn of his staff, provided valuable assistance in accessing and interpreting the labor market information data base. Lisa Frericks, Erin Trueman and Joan Wall of the Glenn College staff provided critical assistance in the production of this report.

This paper reflects the views of the authors and does not represent the position of the John Glenn College of Public Affairs, The Ohio State University or anyone other than the authors. Any errors of omission or commission are solely ours.

Bill Shkurti and Fran Stewart  
December 31, 2021

# Transforming Ohio's Economy in the Wake of the Great Pandemic: Questions for the Next Governor

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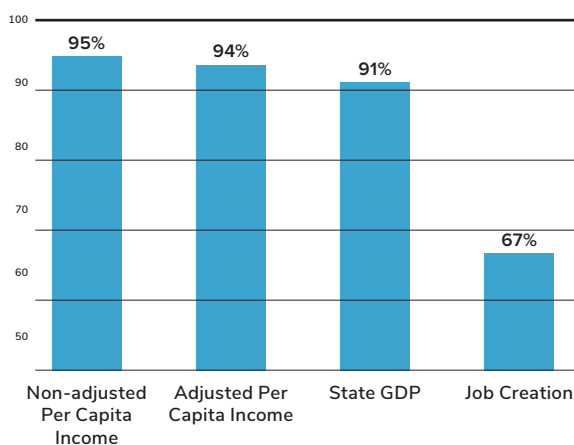
# Transforming Ohio's Economy in the Wake of the Great Pandemic: Questions for the Next Governor

## Executive Summary

In our 2018 report, *Toward a New Ohio: Questions Every Candidate Should Answer*, we pointed out that, while Ohio's economy has continued to grow, that growth has trailed the national average since the late 1960s. We traced that decline to the loss of good-paying manufacturing jobs primarily to automation, but also to foreign and domestic competition. In this 2022 update, we look at the last four years in two parts: before the pandemic began in the U.S. in 2020 and since.

Prior to the pandemic, Ohio's economy continued to grow but also continued to lag the nation as a whole. The chart below shows Ohio's performance compared to the national average on four key indicators of economic growth in the 10 years leading up to the pandemic in 2020.

**Ohio growth as a percentage of U.S. average, 2009-2019**



Source: See Table 1.4 on page 10.

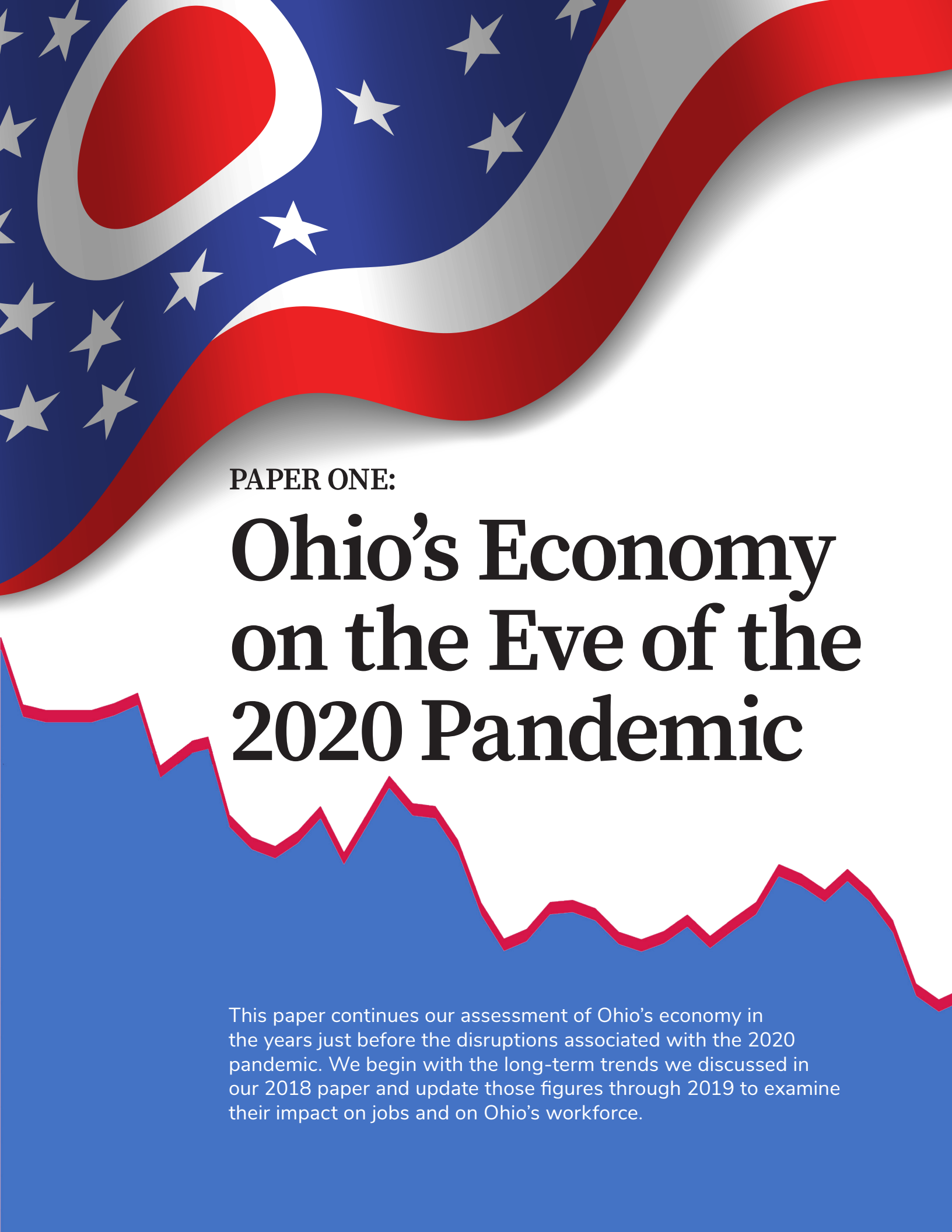
Economic activity in Ohio has rebounded significantly since the steep job losses during the pandemic-induced shutdown in spring 2020. In fact, by some measures, the state's economy has performed slightly better than the nation as a whole. However, several issues have emerged or intensified during this period that are likely to challenge state officials in the years ahead.

The pandemic has brought many challenges for Ohio and other states, but it also may offer new opportunities. These include:

- *Changing workplace*—The growth of remote work may allow Ohio to attract high-skill workers from other states, but work from home also may adversely affect central business districts of the state's major metro areas.
- *Worker shortages*—The unprecedented availability of more jobs than workers to fill them gives workers more bargaining power, but skill shortages in key areas may threaten economic growth.
- *Supply chain bottlenecks*—The pandemic's disruption to global supply chains also threatens economic growth, but it may provide Ohio manufacturers and distribution centers opportunities to capture additional business.
- *Forgotten Ohio*—The shakeout from the pandemic could leave those who have historically lagged in wealth and income even farther behind, but it may also open up other opportunities.
- *Resilience*—How well-prepared is Ohio to address the next unpleasant surprise, whether it is a public health crisis, economic crisis, natural disaster, or some combination of all of them?

We have folded these issues and others into four general areas of questions for the next governor:

1. **Good-Paying Jobs** — How well do you think Ohio is doing in producing good-paying jobs? If not well, why and what would you do to change things?
2. **Trained Workers** — Do you think Ohio is doing enough to make sure its workers can meet the skill demands of good-paying jobs of the future? If not, what would you change? How would you define success?
3. **Forgotten Ohio** — Do you think Ohio is doing enough to ensure equal opportunity for all its citizens to share in the fruits of their labor? If not, why and what would you change? How would you define success in either case?
4. **Ohio in the World** — What are the most important national and international policy issues affecting Ohioans that need to be addressed at the federal level?



PAPER ONE:

# Ohio's Economy on the Eve of the 2020 Pandemic

This paper continues our assessment of Ohio's economy in the years just before the disruptions associated with the 2020 pandemic. We begin with the long-term trends we discussed in our 2018 paper and update those figures through 2019 to examine their impact on jobs and on Ohio's workforce.

# Ohio's economy on the eve of the 2020 pandemic

## Ohio's Relative Decline

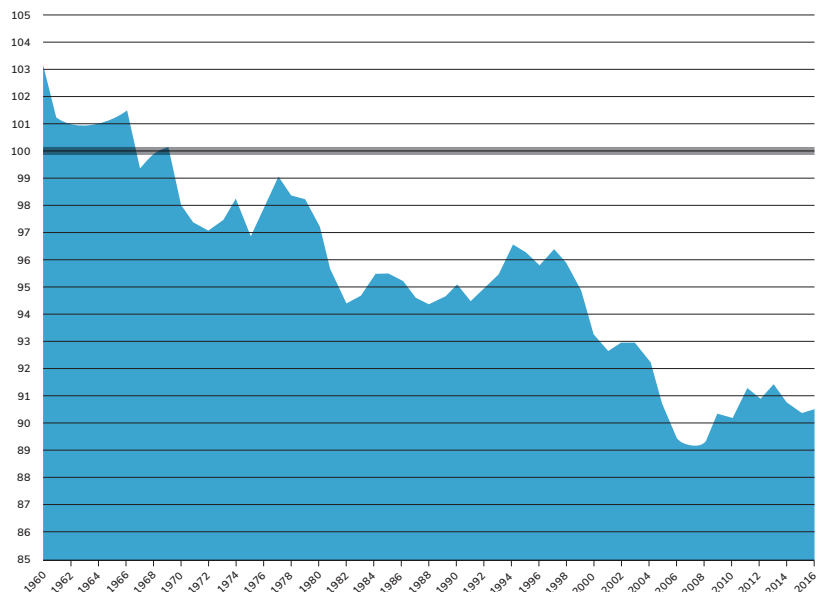
In our 2018 report, we explored the relative decline of average incomes in the state of Ohio from the early 1950s to the present. While incomes grew, that growth regularly trailed the national average for half a century. As recently as 1969, Ohio workers earned above the national average. Since then, they have earned less, and the gap has gotten wider. By 2016, the average Ohioan earned 9% less (\$4,678) than the average

American. So from a shining example of a prosperous middle-class economy, many parts of Ohio have exhibited signs of stagnation and job loss.<sup>1</sup>

We traced this decline to the loss of thousands (700,000 to be exact) of well-paying manufacturing jobs, as well as a failure to attract more high-paying technology and service jobs. The two charts below illustrate the decline of manufacturing jobs and the impact on Ohio's economy.

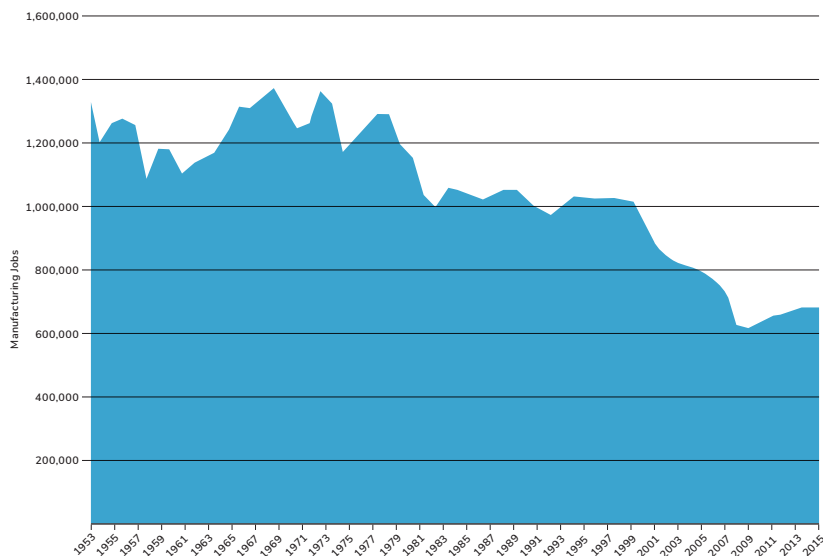
**Figure 1.1. Ratio of Ohio Per Capita Income to U.S. Average, 1960-2016**

Source: U.S. Bureau of Economic Analysis, "SAINC1, Personal Income Summary," updated as of September 24, 2020, at [bea.gov/itable](http://bea.gov/itable).



**Figure 1.2. Number of Manufacturing Jobs in Ohio, 1953-2015**

Sources: Figures prior to 1990 are from Bureau of Labor Statistics, "Employment in Non-Agricultural Establishments by Industry by State," in U.S. Census Bureau, *Statistical Abstract of the U.S.* (various years) and post-1990, Ohio Bureau of Labor Market Information, "Current Employment Query," at [ohiolmi.com](http://ohiolmi.com).



We identified national and global economic shifts that we thought were the forces behind this decline. We identified increased competition, first from other states and then from other countries, but we found the primary culprit to be automation. Automation helped make Ohio workers more competitive but allowed goods to be produced with fewer of them. We found that the typical Ohio factory produced twice as much in 2014 as it did in 1967 but with half as many workers.

## The Decline Updated

In this section, we update our 2018 analysis with four more years of data (2015-2019) to see what, if anything, changed. We also add some new measures of economic performance to see if they shed any additional light on the long-term trends we identified.

## Per Capita Income

The table below tracks personal per capita income in Ohio compared to the country overall for the most recent five years that data are available. Table 1.1 shows a continued relative decline. The percentages of change appear small, but, when the deficit is multiplied by more than 11.7 million Ohioans, the relative decline in income is quite significant. For example, Ohio's per capita personal income in 2019 was \$50,201, compared to the national average of \$56,047. The difference is 10%, or \$5,846 per person. That means, aggregated across the state, Ohioans have \$68 billion less that they can spend on themselves, their families and their communities.

**Table 1.1. Personal Per Capita Income in Ohio vs. U.S., 2015-2019**

| Year      | 2015     | 2016     | 2017     | 2018     | 2019     |
|-----------|----------|----------|----------|----------|----------|
| Ohio PCI  | \$44,641 | \$45,452 | \$46,999 | \$48,778 | \$50,201 |
| % of U.S. | 91       | 91       | 91       | 90       | 90       |

Source: Bureau of Economic Analysis, "SAINC1 Personal Income Summary," updated as of September 23, 2021, at [bea.gov/itable](https://bea.gov/itable).

As a way of providing more context, we applied the same analysis to neighboring states. As can be seen in Table 1.2, Ohio remains better off than all neighboring states except Pennsylvania. Pennsylvania is the only state listed in Table 1.2 that did not decline relative to the U.S. average.

This suggests a regional problem. As we pointed out in 2018, the western part of Pennsylvania includes areas that are very similar to Ohio, but the northeastern corner of the state is part of New York's megaregion, and the Philadelphia region is extremely prosperous.

**Table 1.2. Per Capita Personal Income as a Percent of U.S. Average, 2015-2019\***

| State         | 2015 | 2016 | 2017  | 2018 | 2019 |
|---------------|------|------|-------|------|------|
| Ohio          | 91   | 91   | 91    | 90   | 90   |
| Pennsylvania  | 103  | 104  | 102.5 | 103  | 103  |
| Michigan      | 89   | 90   | 89    | 88   | 88   |
| Indiana       | 87.5 | 88   | 87    | 87   | 87   |
| Kentucky      | 80.5 | 80   | 79    | 78   | 78   |
| West Virginia | 77   | 75   | 76    | 76.5 | 76   |

Source: BEA, "SAINC1 Personal Income Summary," updated as of September 23, 2021, at [bea.gov/data/itable](https://bea.gov/data/itable).

\* These numbers were revised subsequent to 2018 and may differ from those published by us in the 2018 paper.

## The Other Side of the Coin

After our 2018 study came out, some readers suggested that a better measure of Ohio's relative economic position would be to adjust per capita personal income for cost of living. They pointed out that many places with high per capita income were also very expensive to live in (for example, California).

We thought the argument had merit and were able to find some comparisons that factored in cost of living. For example, the U.S. Bureau of Economic Analysis has published per capita income adjusted for cost of living since 2008. The results for the most recent five years of available data are shown in Table 1.3.

**Table 1.3. Ohio Personal Per Capita Income Adjusted for Cost of Living, 2015-2019 (National Average Equals 100)**

| Year                   | 2015     | 2016     | 2017     | 2018     | 2019     |
|------------------------|----------|----------|----------|----------|----------|
| Ohio Per Capita Income | \$46,935 | \$47,219 | \$48,291 | \$48,585 | \$49,079 |
| Index (% of U.S. Avg)  | 99       | 99       | 99       | 97       | 96       |

Source: BEA, "SARPI Real Personal Income by State," updated as of December 14, 2021, at [bea.gov/itable](https://bea.gov/itable).

This comparison shows Ohio in a somewhat better light. Per capita income adjusted for cost of living is slightly below the national average, although the difference has grown since 2017.

The cost-of-living adjustments include a significant component for housing costs. The BEA adjustment for Ohio housing costs in 2019 was 0.73. In other words, housing costs in Ohio are 27% below the national average.<sup>2</sup> That means a housing dollar in Ohio goes a lot further than in many other places. While affordable housing is great for Ohioans seeking to buy a home, it does not reflect a thriving economy. Housing prices in Ohio are relatively low because supply is greater than demand in many communities where population and economic growth are stagnant.

### Additional Measures

To round out this comparison, we looked at two other measures of economic growth. One was *Site Selection* magazine's rankings of business climate and of new projects per capita. The *Site Selection* rankings are highly regarded among economic development professionals and show that, between 2015 and 2019, Ohio consistently ranked among the top five states in business climate and among the top three in new projects per capita. In fact, Ohio finished first in this category in 2019.<sup>3</sup>

Unfortunately, these and other rankings have not translated into robust job growth. For example, Ohio added 171,000 jobs between 2015 and 2019. This translates to an increase of just 3.2%, only half the 6.4% increase in the country as a whole over the same period.<sup>4</sup>

Another commonly used measure is gross domestic product, the value of all the goods and services produced in the state, as calculated by the U.S. Bureau of Economic Analysis. Between 2015 and 2019, Ohio's GDP grew by 14.1%. For all states, GDP growth in this period averaged 17.5%, or about 20% higher.

### Longer Term Trends Summarized

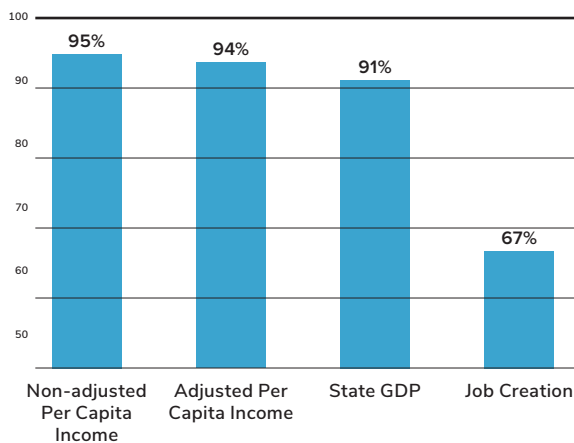
Table 1.4 summarizes Ohio's relative economic standing using the four measures described above. The table compares Ohio to the national average from 2009 to 2019. We chose this 10-year period because it is long enough to reflect long-term trends but does not include the distortions of the 2008 Great Recession and the 2020 pandemic. As Table 1.4 makes clear, Ohio is closest to mirroring the 10-year national trend in income growth per capita, but the state lost ground on all four measures over the decade, especially in job creation.

**Table 1.4. Ohio vs. the U.S. Average, 2009-2019**

| Economic Measure   | Ohio % Growth | U.S. % Growth | Ohio/U.S. |
|--------------------|---------------|---------------|-----------|
| Per Capita Income  | +40.4         | +42.4         | 95        |
| Adjusted PC Income | +20.5         | +21.9         | 94        |
| State GDP          | +43.7         | +47.6         | 91        |
| Job Creation       | +10.1         | +15.1         | 67        |

Sources: BEA, "SAINC1, Personal Income Summary by State," updated September 23, 2021; "SARPI, Real Personal Income by State," updated December 14, 2021; "SAGDP1, Gross Domestic Product by State," October 1, 2021; BLS, "Employees in Nonfarm Establishments," from Census Bureau, *Statistical Abstract of the United States*, 2011, Table 630, and *Proquest Statistical Abstract of the United States*, 2020 online edition, Table 664.

Figure 1.3 presents the results of Table 1.4 in graphic form. It again shows Ohio lagging the national average in terms of growth in all four indicators.

**Ohio growth as a percentage of U.S. average, 2009-2019**

## Suspect Update

In our 2018 analysis, we examined the role of three potential contributors to the loss of 700,000 manufacturing jobs in Ohio over the last half century: domestic competition, foreign competition and automation. We concluded that

all contributed, but the lion's share (60%-70%) can be attributed to automation. We observed that Ohio was producing twice the added value of goods it did 50 years ago, but with half as many workers.

These trends are long-term and not likely to change much from year to year or over four years, but four more years of data do give us the opportunity to see whether trends are continuing to unfold as expected or whether there might be some early indications of change.

## Domestic Competition

We concluded that the loss of manufacturing jobs to other states, particularly in the South and West, cost Ohio manufacturing jobs in the 1967-1990 period. Ohio's share of U.S. manufacturing employment stood at 7.3% in 1967, dropped to 5.3% by 1990 and has remained near that level since then.<sup>5</sup>

Even though manufacturing employment has stabilized, the productivity of Ohio factories as measured by value added compared to the nation overall has steadily declined. The table below shows that Ohio factories remained above the national average for more than 40 years before beginning to decline in the 2000s. This does not mean Ohio workers have become lazy; instead,

**Table 1.5. Value Added per Employee in Manufacturing in Ohio as a Percent of the U.S. Average, Selected Years, 1958-2019**

| Year  | 1958 | 1967 | 1977 | 1987 | 1997 | 2008 | 2015 | 2019 |
|-------|------|------|------|------|------|------|------|------|
| Index | 108  | 108  | 108  | 106  | 106  | 93   | 92   | 90   |

Source: Bureau of Census, "Annual Survey of Manufacturers-Summary by State," various years from *Statistical Abstract of the United States*, 1965, 1985, 1994, 2007 and 2011; *Proquest Statistical Abstract of the U.S. online edition*, 2013, 2016 and 2021; "General Summary," 1997 *Economic Census Manufacturing*, June 2001, at [census.gov/library/publications/economic\\_census\\_1997\\_manufacturing-reports](https://www.census.gov/library/publications/economic_census_1997_manufacturing-reports).

it most likely reflects growth of newer high-value manufacturing, such as pharmaceuticals, petrochemical refining and precision instruments, in places such as California and Texas.<sup>6</sup>

At the same time, the wage premium for production workers in Ohio manufacturing has declined and may have disappeared for good. As recently as 2005, Ohio manufacturing workers earned an average premium of as much as 15% more than the national average. Ohio's manufacturing wage premium has shrunk since 2005 and appears to have eroded even further in recent years. 2019 marked the first year ever that the average pay for a worker in Ohio's manufacturing industry (\$21.72 per hour) was less than similar workers across the country.<sup>7</sup> Ohio's manufacturing jobs still tend to be good jobs. They often pay more than \$40,000 a year, but they do not lift average per capita income in the way Ohio manufacturing jobs did as recently as 15 years ago due to their declining share of total employment and a declining wage premium compared to other states.

## Foreign Trade

Foreign competition, particularly from China, has generated a great deal of debate over the past several years. In our previous report, we concluded that foreign trade imbalances cost Ohio between 62,000 and 243,000 manufacturing jobs since the early 1980s, with about half of that loss attributed to China.

The underlying dynamics has not changed much since 2016. The U.S. foreign trade imbalance in goods was larger in 2019 (\$864 billion) than it had been in 2016 (\$751 billion), while the imbalance with China grew slightly (\$331 billion vs. \$344 billion).<sup>8</sup>

One of the reasons these numbers are hard to change is the complexity of the various relationships. Many aspects of trade benefit Ohio. For example, between 2016 and 2019, the value of Ohio-made exported goods increased by nearly 8%, from \$49 billion to \$53 billion, while the dollar value of domestic shipments declined.<sup>9</sup> Moreover, from 2015 to 2018, the number of jobs at foreign-owned affiliates in Ohio increased by 139,000, or 18%, when state employment overall increased by only 2.5%.<sup>10</sup>

In addition, foreign trade includes not only finished goods, but also materials used by

factories to make finished products that are sold both at home and abroad. For example, a tariff on steel can help Ohio steelmakers while also hurting Ohio automakers. These trading relationships also often involve countries other than China. Canada is Ohio's largest trading partner, not China, and in that relationship, Ohio enjoys a positive trade balance.<sup>11</sup>

## Automation

Although automation remains the greatest source of pressure on the number of manufacturing jobs, the past four years provide a muddled picture of automation's impact. Nationally, manufacturing productivity appears to have tapered off, but results vary by industry.<sup>12</sup> Yet, it is reasonably certain that the march toward automation will continue. This likelihood has fueled a growing concern regarding the state's and nation's ability to produce workers with the digital skills needed in an increasingly technologically advanced manufacturing environment. We examine this issue in greater depth in the section on Ohio's changing workforce.

## Local Impact

Our 2018 paper looked at the impact of these broad trends on local communities. Comparing Ohio's six largest counties to the national average, we found that per capita personal income had declined for five of them from 1970 to 2015, with Hamilton County being the lone exception. Those figures are reproduced below, along with updated comparisons through 2019. Table 1.6 shows that the relative gradual decline continued for every county, again with the exception of Hamilton, which remained stable at above the national average, and with Summit, which increased slightly.

The relative decline in per capita income for Franklin County is especially surprising, given the area's diverse economy and reputation as a Midwest high-tech hot spot. One possible explanation is the migration of higher-paying jobs to the surrounding counties. For example, Delaware County, which borders Franklin County to the north, is now Ohio's wealthiest. But per capita income for the Columbus metropolitan area, which includes Franklin, Delaware and eight other surrounding counties, shows a similar relative decline.

**Table 1.6. Per Capita Income for Ohio's Six Largest Counties Compared to the National Average, Selected Years (National Average = 100)**

| County     | 1970 | 2015 | Difference<br>1970-2015 | 2019 | Difference<br>2015-2019 |
|------------|------|------|-------------------------|------|-------------------------|
| Cuyahoga   | 115  | 101  | -14                     | 100  | -1                      |
| Franklin   | 102  | 98   | -4                      | 92   | -6                      |
| Hamilton   | 108  | 110  | +2                      | 110  | 0                       |
| Lucas      | 104  | 87   | -17                     | 85   | -2                      |
| Montgomery | 112  | 87   | -25                     | 86   | -1                      |
| Summit     | 102  | 95   | -7                      | 96   | 1                       |

Sources: BEA, "CAINC1, Personal Income Summary," updated November 16, 2021, at [bea.gov/itable](https://bea.gov/itable).

We completed a similar analysis that adjusted the data for the cost of living, using U.S. Bureau of Economic Research metropolitan area cost-of-living data. The adjustment was not available on a county-by-county basis but was available for the metropolitan areas that include the six counties listed above, as well as surrounding suburban counties. Table 1.7 shows how Ohio's metro areas compared to the national average in real, or-inflation-adjusted, terms. Only Cleveland-Elyria showed improvement relative to the national average. Cleveland's favorable comparisons can be traced in part to lower housing costs, which run 20% below the national average.<sup>13</sup>

Although these numbers are not particularly encouraging, Ohio communities have done well in *Site Selection* magazine's annual ratings. Five Ohio metro areas finished in the top 10 for number of expansion projects in their respective population categories in 2019: Cincinnati,

Columbus, Dayton, Toledo and Lima.<sup>14</sup> In addition, Ohio has dominated the rankings of micropolitan areas (areas with populations of between 10,000 and 49,999). Four northern Ohio communities made the Top 10 for 2020: Findlay, Tiffin, Fremont and Wooster. Findlay has topped the list for seven years.<sup>15</sup>

It is important to remember that the relationship between these rankings and economic prosperity is tenuous at best. But the rankings do indicate that these communities have a better chance of attracting interest from companies considering expansion than communities that are not as highly ranked.

We also wanted to examine the urban-rural divide. How big is it? In what direction is it moving? We compared average per capita income for Ohio's most-affluent counties in 2019 with that of Ohio's least-affluent counties in 2019 and four years earlier in 2015. In 2015, the five top counties in terms of per capita income from highest to lowest were: Delaware, Geauga, Hamilton, Warren and Medina. The bottom five from poorest to least poor were Noble, Hardin, Monroe, Vinton and Morgan. In 2015, Ohio's five poorest counties had an average annual per capita income of \$29,435, or 50.8% of the \$57,913 average of its five wealthiest counties.<sup>16</sup>

Four years later, these same five least-wealthy counties had an average annual per capita income of \$33,666, compared to \$65,338 for the five wealthiest counties, or an average of 51%. That disparity is unlikely to go away anytime soon. In fact, the pandemic may have exacerbated both geographic and racial inequities. We explore these and other effects of the pandemic in our second paper.

**Table 1.7. Per Capita Income Adjusted for Cost of Living in Ohio's Six Largest Metropolitan Areas, 2015-2019 (National Average = 100)**

| Metro Area       | 2015 | 2019 | Difference |
|------------------|------|------|------------|
| Cleveland-Elyria | 104  | 105  | +1         |
| Cincinnati OH-KY | 109  | 106  | -3         |
| Columbus         | 103  | 98   | -5         |
| Toledo           | 96   | 93   | -3         |
| Dayton           | 96   | 95   | -1         |
| Akron            | 98   | 98   | 0          |

Source: BEA, "MARPI, Real Personal Income by MSA," updated December 14, 2021, at [bea.gov/itable](https://bea.gov/itable).

## Jobs for Ohio

### Lordstown: A Harbinger?

In November 2018, General Motors announced it was closing its Lordstown production facility for good. The facility had employed 14,000 workers as recently as 1985, but employment had steadily dwindled to just 1,500. GM blamed the closing on lack of demand for its compact Chevy Cruze, which was the only vehicle being built at the Lordstown facility. Workers and union representatives felt betrayed and were joined by local, state and national elected officials from both parties who called on GM to reconsider.<sup>17</sup>

The company did not reconsider although it agreed to a series of mitigations. Foremost among them was a commitment to build a new electric battery plant next to the old factory site. The new plant would be a joint venture with Korean firm LG Chem and would make batteries for electric cars. The battery plant is expected to employ 1,100 workers when it opens in early 2022. GM also agreed to refund \$40 million of the \$60 million in state tax credits it received in 2008 when it promised to retain 3,700 jobs in Lordstown through 2028. Finally, the company agreed to assist a startup venture called Lordstown Motors in refurbishing part of the old plant to build electric trucks.<sup>18</sup>

This case highlights the conflicting demands facing all the parties involved. Faced with competitive pressures, a private employer looks to reduce expenses. Workers and communities that depend on that employer for their livelihoods and resources feel threatened, particularly if they have been battered by previous dislocations. Elected officials face competitive pressures to do something, usually in the form of some sort of taxpayer assistance to the employer. All of these conflicting interests are permeated with politics at a time when politics is becoming increasingly polarized.

The Lordstown Motors truck startup has had more than its share of problems, including low cash flow, leadership changes and a pending federal investigation.<sup>19</sup> In September, Lordstown Motors announced its intention to sell many of its assets to Foxconn, the Taiwanese electronics manufacturer. The deal could provide Lordstown Motors with an influx of needed cash, but questions remain, including concerns

over Foxconn falling far short of its promised investment. Foxconn had promised a \$10 billion investment to create 13,000 good-paying jobs producing flat-panel screens at an assembly plant in Wisconsin, but reality fell way short of the company's promises. Critics worry the same thing might happen at Lordstown Motors.<sup>20</sup>

Meanwhile, the GM-LG Chem battery plant appears to be proceeding on schedule. If the battery plant succeeds, this case may turn out better than others, but there are other signs that the problem for Ohio workers and communities is not going away. In March 2021, the United Auto Workers accused Ford Motor of reneging on a deal to add jobs to its Avon Lake plant and of sending the anticipated Ohio jobs to Mexico.<sup>21</sup> The substance of the UAW's charges has yet to be sorted out, but the labor union's accusations signal the wariness learned from decades of losses. Then in November 2021 Tenneco announced it was permanently closing its shock absorber plant in Dayton, costing that hard-hit community another 650 jobs.<sup>22</sup>

### Taxes, Spending and Jobs

Appropriate levels of taxes and spending generate a lot of discussion when it comes to job-creation strategies. Tax levels that are too high, some argue, discourage private investment that leads to job growth. Others argue that low levels of state support limit public investment in education and infrastructure necessary to support job growth.<sup>23</sup>

Ohio ranks at or below the national average in terms of overall taxes and spending, but its levels of both are higher than most of its neighboring states. An analysis by Ohio's nonpartisan Legislative Service Commission found that Ohio's state and local taxes per capita were 9% below the national average, but they were higher than all neighboring states with the exception of Pennsylvania.<sup>24</sup> In comparing state and local government spending per capita, the Tax Policy Center found the same pattern. Ohio's spending is 3% below the national average, but it is still higher than any neighboring state except Pennsylvania.<sup>25</sup>

The Tax Foundation does an annual comparison of business taxes. Its analysis ranked Ohio 11th among all states in terms of tax burden, higher than any neighboring state, including Pennsylvania. But the Tax Foundation

itself pointed out that, while overall comparisons may prompt welcome conversations about tax levels, they are of limited usefulness because an individual business does not pay an average; a firm's taxes depend on a multitude of other factors based on specific characteristics.<sup>26</sup>

In an effort to address this issue, the Tax Foundation publishes an annual volume called *Location Matters: The State Tax Costs on Business* in conjunction with KPMG accounting. Economists on the Tax Foundation staff create 16 model firms representing different industries at different levels of maturity. The accountants at KPMG then compute the effective tax rate these firms would pay in each of the 50 states. These calculations take into account things such as exemptions and incentives for various activities that determine the effective rates. The 2021 results for Ohio are presented in Table 1.8.

Table 1.8 provides a number of insights into Ohio's business development strategy. It shows major differences in effective tax rates by type of firm. In two cases — a new data center and a new distribution center — Ohio boasts the lowest taxes in the country. In three other cases — both new and existing capital-intensive manufacturing and new labor-intensive manufacturing — Ohio's rate is among the five lowest states in the country. Advanced manufacturing and logistics are two of JobsOhio's

nine priority clusters. Conversely, Ohio's taxes on an existing tech center or an existing research and development firm would rank it among the top third of all states. Interestingly, none of the 16 sample firm types (including both mature and new) listed in Table 1.8 would pay the 11th highest average rate for state and local taxes in the country, which is where Ohio ranked in the Tax Foundation's business tax index. This raises legitimate questions about the usefulness of an overall index as a predictor of individual business decisions.

In addition, Ohio's beneficial tax strategy toward data centers and distribution facilities has attracted its share of critics. One criticism is that a good portion of these incentives go to highly profitable corporate giants, such as Amazon, that are destroying other Ohio businesses. Another criticism is that data centers consume a lot of space and a lot of incentives but produce few high-paying jobs. Defenders of these incentives argue that data centers may produce fewer jobs, but the jobs they do provide are the high-paying tech jobs Ohio needs. They argue that distribution centers provide jobs that pay above minimum wage for workers without college degrees, which are job opportunities Ohio also needs. Supporters maintain that these centers allow the state to establish relationships that could attract additional investments.<sup>27</sup>

**Table 1.8. Effective Business Tax Rate in Ohio for Selected Businesses, 2021**

| <b>Firm Type</b>                | <b>Mature Firm Rank</b> | <b>Mature Firm Tax Rate</b> | <b>New Firm Rank</b> | <b>New Firm Tax Rate</b> |
|---------------------------------|-------------------------|-----------------------------|----------------------|--------------------------|
| Corporate HQ                    | 27                      | 16.7%                       | 27                   | 16.6%                    |
| R&D Firm                        | 34                      | 13.6                        | 23                   | 13.4                     |
| Tech Center                     | 35                      | 13.6                        | 27                   | 17.1                     |
| Data Center                     | 17                      | 7.5                         | 1                    | 2.1                      |
| Shared Services Center          | 27                      | 22.5                        | 14                   | 21.2                     |
| Distribution Center             | 28                      | 37.3                        | 1                    | 15.4                     |
| Capital-Intensive Manufacturing | 4                       | 6.3                         | 3                    | 3.7                      |
| Labor-Intensive Manufacturing   | 14                      | 8.3                         | 5                    | 5.0                      |

Source: Jared Walczak et al., "Table of Effective Tax Rates in Ohio," *Location Matters* 2021, Tax Foundation, May 5, 2021, at [taxfoundation.org](https://taxfoundation.org).

## Applied Research and Technology Commercialization

In our 2018 paper, we noted the critical role of applied research in boosting Ohio's economy. We quoted an Ohio Board of Regents (since renamed the Ohio Department of Higher Education) task force report lamenting the state's "third-tier" status in terms of technology commercialization.<sup>28</sup>

The term "third-tier state" referred to Ohio's standing in the Milken Institute State Technology and Science Index. This index evaluates each state based on five subindexes, including workforce capability and access to venture capital. Milken divides the 50 states into five tiers of about 10 states each, based on the numerical index. The third tier, where Ohio has placed consistently since 2010, is about average. It includes some economic powerhouses, such as Georgia and Texas, and neighboring states Michigan and Indiana. Pennsylvania is the only neighboring state to have placed above tier three. It is in tier two. Tier one includes states such as Massachusetts, Colorado and California.<sup>29</sup> The middle tier rating for Ohio is not inconsistent with other measures of its research success, such as patents, academic research dollars and business spending for applied research.<sup>30</sup>

Since 2002, the state of Ohio has allocated more than \$2 billion to the Third Frontier program, which was designed specifically to strengthen Ohio's performance in research commercialization. The program has likely contributed to keeping Ohio competitive, but it has not been enough to advance Ohio beyond the middle tier.<sup>31</sup>

In 2018, the Ohio Department of Higher Education announced a partnership with Ohio universities to promote commercialization through the Ohio Innovation Exchange.<sup>32</sup> Time will show how well this initiative improves Ohio's standing in this area.

Clearly, if the state's goal is to create more high-paying jobs, commercial spinoffs from applied research will need to grow in volume and impact in Ohio. How much of a

difference government can make and under what circumstances is subject to debate. For example, a 2021 comparative case study by MIT political scientist Ben Armstrong concluded that Pittsburgh rebounded from the loss of manufacturing jobs much more robustly than Cleveland because industrial policies in Pittsburgh put universities in charge of shaping the region's economic development objectives. Instead of Pittsburgh's focus on transformation, Cleveland focused on incremental change in support of the local business community. This assertion sparked a lively debate that included our colleague Ned Hill, who argued that Pittsburgh had historical endowments and visionary leadership that Cleveland lacked.<sup>33</sup>

## Workers for Ohio

In our second 2018 paper, we took a look at changes in Ohio's labor force. We described how it had shifted over the past 50 years from being predominantly goods-producing to more service-providing. We also described how Ohio workers were increasingly well-educated, but gaps remained between the skills of Ohio's workers and the needs of its employers. In this section, we update that analysis with more recent data to see where Ohio stood just prior to the 2020 pandemic.

## Changing Job Market

In 1969, manufacturing accounted for one-third of Ohio jobs, the most of any single industry sector. By 2016, manufacturing employment had declined to less than 14% of total state employment and had dropped to fifth among sectors in terms of the number of jobs. Table 1.9 traces what happened between 2016 and 2019. The total number of jobs by sector (in thousands) in 2019 is displayed in the second column. The change in employment numbers since 2016 is in the third column, and the change in Ohio's share in a sector's employment compared to the national average from 2016 to 2019 is in the final column.

**Table 1.9. Ohio Employment by Industry Sector, 2016-2019**

| <b>Industry</b>                    | <b>2019<br/>Employment<br/>(1,000s)</b> | <b>Change Since<br/>2016<br/>(1,000s)</b> | <b>Ratio Ohio<br/>to U.S.,<br/>2016</b> | <b>Ratio Ohio to<br/>U.S., 2019</b> | <b>Change<br/>in Ratio,<br/>2016-2019</b> |
|------------------------------------|-----------------------------------------|-------------------------------------------|-----------------------------------------|-------------------------------------|-------------------------------------------|
| Trade, Transportation, & Utilities | 1,025                                   | +4                                        | 98                                      | 99                                  | +1                                        |
| Education & Health                 | 940                                     | +16                                       | 108                                     | 105                                 | -3                                        |
| Government                         | 786                                     | +10                                       | 90                                      | 92                                  | +2                                        |
| Professional & Business Services   | 735                                     | +13                                       | 95                                      | 94                                  | -1                                        |
| Manufacturing                      | 701                                     | +15                                       | 147                                     | 147                                 | 0                                         |
| Leisure & Hospitality              | 569                                     | +18                                       | 90                                      | 94                                  | +4                                        |
| Financial Activities               | 310                                     | +10                                       | 96                                      | 96                                  | 0                                         |
| Other Services                     | 213                                     | 0                                         | 100                                     | 97                                  | -3                                        |
| Construction                       | 226                                     | +20                                       | 83                                      | 80                                  | -3                                        |
| Information                        | 70                                      | -2                                        | 68                                      | 68                                  | 0                                         |
| Total                              | 5,587                                   | +106                                      | NA                                      | NA                                  | NA                                        |

Note: Total includes Logging and Mining, which is not shown separately.

Sources: Bureau of Labor Statistics, "Employees in Non-Farm Establishments by State and Industry, 2016 and 2019," at *Proquest Statistical Abstract of the U.S. Online Edition 2017*, Table 635, and *Edition 2021*, Table 664.

Ohio's manufacturing and education and health industries are the only two where Ohio's share of employment exceeded the national average. Ohio held its own in manufacturing in this period (adding 15,000 jobs), but it lagged somewhat in education and health, even though that sector added 16,000 jobs in the state. The sectors where Ohio is most underrepresented compared to the U.S. as a whole were construction and information, both of which are high-paying industries. Although Ohio added more jobs in construction than any other sector (+20,000), the growth rate lagged the nation's increase. Conversely, Ohio grew most rapidly compared to the nation in the leisure and hospitality sector, which includes fewer high-paying jobs compared to other sectors. This would help explain why income growth in Ohio during our period of interest continued to lag the national average.

One additional point: Ohio added 106,000 jobs in this period. This growth rate of just under 2% was only about half the national growth rate over the same period.

The shifting growth rates by sector and shifting demands within each sector continue to affect the demand for skills, which is the subject of the remainder of this section.

## Education Level

In our 2018 paper, we pointed out that the changing economy in Ohio and across the nation requires a larger share of the population continuing their education beyond high school. Historically, Ohio has done well compared to the rest of the nation in getting students through high school but has lagged in the share of the adult workforce with higher levels of education attainment. It could be that a smaller proportion of Ohio's high school graduates continue their education, or that those who do continue migrate out of the state at higher rates than do others. Four years ago we also pointed out that Ohio had slowly begun to close the post-high-school achievement gap. That trend has continued over the past four years, as Table 1.10 shows.

**Table 1.10. Educational Attainment of Ohio's Population 25 and Older, 2010, 2015 and 2019, Compared to U.S. as a Whole**

| Category            | Percent of Ohioans, 2010 | Ohio Ratio to U.S., 2010 | Percent of Ohioans, 2015 | Ohio Ratio to U.S., 2015 | Percent of Ohioans, 2019 | Ohio Ratio to U.S., 2019 |
|---------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| High School Diploma | 88.1                     | 103                      | 89.7                     | 103                      | 90.8                     | 102                      |
| Bachelor's Degree   | 24.6                     | 87                       | 26.8                     | 88                       | 29.3                     | 89                       |
| Advanced Degree     | 8.9                      | 86                       | 10.0                     | 86                       | 11.1                     | 87                       |

Source: Census Bureau, American Community Survey, "Educational Attainment by State," in *Proquest Statistical Abstract of the U.S. Online Edition 2021*, Table 265.

Table 1.10 measures educational attainment in the traditional way. However, it is increasingly clear that an important segment of job readiness comes from training after high school that falls short of a bachelor's degree. This so-called "mid-level" training continues to be a topic of growing importance that needs to be addressed.

### Mid-Level Training and the Skills Gap

In the years leading up to the 2020 pandemic, the U.S. economy, Ohio included, came closer than any time since the Second World War to reaching full employment. By the late 2010s, the number of job openings and the number of people looking for jobs were nearly equal. However, many jobs remained unfilled because employers thought workers lacked the necessary skills to fill them. The shortage of workers with what were described as "middle skills," meaning training beyond high school but less than a four-year college degree, seemed particularly acute, especially in advanced manufacturing.<sup>34</sup>

In our 2018 paper, we pointed out that understanding this phenomenon was elusive because of the varying ways different experts define and measure the demand for middle skills. We also pointed out that many independent experts questioned whether the skills gap existed at all.<sup>35</sup> We expressed a hope that the Workforce Innovation and Opportunity Act passed by Congress in 2014, the establishment of the Ohio Governor's Office of Workforce Transformation in 2012, and the new partnership between the state of Ohio and the National Skills Coalition in 2015 offered an opportunity to better address this issue. Four additional years of data allow us the opportunity to explore whether a clearer picture of the challenge and the needed response has emerged. Unfortunately, the picture is not

as clear as we might have hoped, even before the impact of the 2020 pandemic.

The best starting point for this reexamination is the Ohio Bureau of Labor Market Information's latest projections for workforce skill needs. These figures have been collected for many years through a survey of Ohio employers under guidelines established by the U.S. Department of Labor to assure a reasonable level of consistency and accuracy in reporting. The credentials associated with specific job categories are based on national averages, not Ohio-specific data, but they are the best numbers available.

Table 1.11 displays the agency's latest estimates for the 10-year period 2018-2028. These projections were issued in 2019 and do not attempt to estimate the impact of the pandemic, which we will discuss later.

The left-hand column reflects the three traditional categories of educational credentials associated with job readiness: a bachelor's degree or higher, schooling or training beyond high school but less than a bachelor's degree, and a high school diploma or less. We have chosen the term "credentials" instead of skills because it is much more concrete. Skills such as communication or leadership can vary widely from person to person. A credential, as in a high school diploma or a bachelor's degree, is much clearer and widely understood.

These categories are displayed in three different ways: composition of current (2018) workforce of 5.8 million Ohioans; projected credentials needed to fill an estimated 683,000 vacancies created annually in both new and existing jobs between 2018 and 2028; and projected credentials needed to fill an estimated 140,000 net new jobs annually between 2018 and 2028.

**Table 1.11. Actual and Projected Education Credentials of Ohio Workers, 2018-2028**

| Education Category                                 | Current, 2018 | Total Openings, 2018-28 | Net New Jobs, 2018-2028 |
|----------------------------------------------------|---------------|-------------------------|-------------------------|
| Bachelor's degree or higher                        | 25%           | 18%                     | 59%                     |
| Post-high-school training but less than bachelor's | 11            | 10                      | 17                      |
| High school diploma or less                        | 64            | 71                      | 25                      |

Note: Totals may not add to 100 due to rounding.

Sources: Ohio Bureau of Labor Market Information, *2028 Ohio Job Outlook: Employment Projection, 2018-2028*, Columbus: Ohio Jobs and Family Services 2019, at [ohiolmi.com](http://ohiolmi.com).

This table raises a number of interesting questions:

- The projected credential needs vary greatly depending on how the market is defined. If it's *all* openings (vacant existing jobs plus new jobs), the credential needs are very different (and much lower) than if the focus is on new jobs only.
- While filling these higher-paying "new" jobs is very important for growing the state's economy, their numbers are relatively small compared to those needed to fill vacancies created by turnover in already-existing jobs. If these projections are anywhere near correct, the need for filling vacancies in existing jobs will be more than four times greater

than for filling newly created jobs (683,000 vacancies in existing jobs annually versus 140,000 new openings).

- If these projections are correct, the overall skill needs of the workforce over the next 10 years will go down, not up, with total openings for both college graduates and workers possessing training beyond high school actually declining, which doesn't seem quite right, given other evidence, such as Table 1.12 below.

Another way to look at this challenge is to compare the actual job count by education level in 2014 with 2018, which is done in the table below.

**Table 1.12. Ohio Employment by Typical Education Credential, 2014 and 2018 (in 1,000s)**

| Category                               | 2014  | 2018  | # Difference | % Difference |
|----------------------------------------|-------|-------|--------------|--------------|
| Doctorate/Professional                 | 141   | 147   | +6           | +4           |
| Master's Degree                        | 86    | 90    | +4           | +5           |
| Bachelor's Degree                      | 1,147 | 1,206 | +59          | +5           |
| Subtotal                               | 1,374 | 1,443 | +69          | +5           |
| Associate Degree                       | 132   | 128   | -4           | -3           |
| Nondegree Certificate                  | 375   | 400   | +25          | +7           |
| Some College, No Degree or Certificate | 126   | 134   | +8           | +6           |
| Subtotal                               | 633   | 662   | +29          | +5           |
| HS Diploma or Equivalent               | 2,137 | 2,387 | +250         | +12          |
| No HS Completion                       | 1,501 | 1,346 | -155         | -10          |
| Subtotal                               | 3,638 | 3,733 | +95          | +3           |
| Grand Total                            | 5,645 | 5,838 | +193         | +3           |

Sources: Ohio Bureau of Labor Market Information, *2024 Ohio Jobs Outlook, 16* and *2028 Ohio Jobs Outlook, 16*, at [ohiolmi.com](http://ohiolmi.com).

These numbers present a somewhat different picture, which seems a little more credible in light of what else we know. It shows a gradual upgrade taking place pretty much across the board. The only anomaly is the decline in jobs requiring associate degrees, but that may be explained in part by the growth in certifications (such as apprenticeships), more employers preferring job candidates with some college experience, or more students who start college but don't finish. It also shows that the bulk of jobs to be filled will require only a high school diploma, although jobs requiring advanced training beyond high school will continue to grow.

As with all figures, these merit some caution. Although they are based on actual data rather than projections, the past is no guarantee of the future. As with the projections discussed earlier, these numbers will be affected by job losses related to the COVID-19 pandemic. Also, the employment data are aggregate totals across broad categories and may mask shortages in certain areas. Finally, there is a chicken-and-egg issue. Does the relatively steady but slow growth reflect the actual demand, or does it reflect a lack of growth because of the lack of more highly educated employees? Nowhere has this debate been more intense than over the issue of so-called "middle" skills.

## Opportunity Jobs

The Federal Reserve Bank of Cleveland has been doing research into the disconnect between the development side and the supply side of workforce skills since at least 2014. In 2019, it updated its review of what it calls "opportunity occupations." These are jobs that pay above-average wages (higher than \$18 an hour) but do not require a four-year degree.

The 2019 analysis of the nation's 121 largest metropolitan areas revealed that opportunity occupations accounted for an average of 22% of all employment, but the share differed by region. Ohio was found to be in a particularly strong position. Of the 121 areas reviewed, six were in Ohio. All the Ohio areas rated above average in terms of the share of employment in opportunity occupations. Metropolitan Toledo ranked No. 1, with 34% of regional employment in opportunity occupations. Four of the remaining five (Cleveland 30%, Cincinnati 29%,

Dayton 28% and Akron 28%) ranked among the top 20 metropolitan areas. Columbus, at 25%, was 47th.<sup>36</sup> This may also help explain why Ohio has traditionally lagged the nation in the portion of high school students who go on to complete a bachelor's degree or higher because of the greater availability of well-paying opportunity jobs, even outside of manufacturing.

## The Skills Gap and Advanced Manufacturing

The skills gap in advanced manufacturing has been at the epicenter of the worker shortage debate. Because manufacturing is such a critical part of Ohio's competitive advantage, we felt a deeper dive was warranted. The debate gained added impetus in 2018 when Deloitte, in conjunction with the Manufacturing Institute (a nonprofit workforce and training organization supported by U.S. manufacturers), released a study projecting that only about half of the 4.6 million manufacturing jobs expected to be open nationwide between 2018 and 2028 could be filled because of a shortage of sufficiently trained workers. If Ohio's share of this shortfall was equal to Ohio's share of U.S. manufacturing employment (5.3%), that would mean 127,000 unfilled jobs in the Buckeye State alone.<sup>37</sup>

A year later, the Georgetown Center on Education and the Workforce issued a report concluding that upgraded technology meant that good jobs in manufacturing increasingly went to workers with training beyond high school. They estimated that one-third of all manufacturing jobs now require a bachelor's degree, plus another quarter require training beyond high school. They also estimated that, in the North Central Region, which includes Ohio, employment in the manufacturing sector alone accounted for between 25% and 30% of "good jobs," meaning jobs paying at least \$17 an hour (\$35,000 a year) plus benefits for workers under age 45 and at least \$22 an hour (or \$45,000 per year) plus benefits for workers who are 45 and over.<sup>38</sup>

The National Skills Coalition maintains that Ohio already has enough workers with bachelor's degrees or higher and enough workers with high school diplomas to meet the education requirements of in-demand jobs, but the state falls short in terms of workers with what are defined as mid-level skills.<sup>39</sup>

Ohio manufacturers have been quick to reinforce this message. In October 2018, Cincinnati-area manufacturers announced a monthlong campaign to attract students to a career path to fill what was described as hundreds of open manufacturing jobs in the region. A year later, the president of the Ohio Manufacturers' Association and president of the Manufacturing Advocacy and Growth Network of Northeast Ohio highlighted that between 1,500 and 2,000 manufacturing jobs go unfilled every year in Cuyahoga County alone. They also announced a five-part plan in cooperation with state officials to address these shortages.<sup>40</sup>

Although the skills shortage in manufacturing may be real, the magnitude is more difficult to nail down. This can be seen by taking a more detailed look at what middle skills mean and how Ohio compares to the rest of the country.

Mid-level skills are usually defined in terms of three categories of educational credentials: associate degrees, apprenticeships and certificates, and some college but no degree. The Census Bureau's annual American Community Survey allows us to compare Ohio with the rest of the nation regarding the share of the population age 25 and older in 2015 and 2019 holding an associate degree or having some college experience. Table 1.13 shows that Ohio remained above the national average for the share of its adult population earning associate degrees and went from below the national average for adults

with some college experience in 2015 to above average in 2019.

Census data are useful for tracking adult workers with associate degrees and some college education, but they do not provide information on apprenticeships and other certificate programs. The Ohio Bureau of Labor Market Information does include nondegree awards in its estimates of employment by typical education level. Table 1.14 provides estimates of Ohio workers with middle-skill training for 2014 and 2018.

Table 1.14 shows that nondegree awards are the largest and fastest-growing component of Ohio's middle-skill job supply. We are unable to compare the Ohio data to other states. However, the federal government does collect information on federally registered apprenticeship programs for the 50 states.

The federal data show that Ohio had 15,748 active federally registered apprenticeships in 2015, fourth most among the states, behind California, New York and Virginia. By 2019, that figure had grown to 20,869, an increase of 33%, and Ohio remained fourth among the states, but the leaders had changed to California, Michigan and South Carolina. Table 1.15 shows Ohio compared to its neighboring states. It's important to remember these are not all apprentice and certificate programs, only apprenticeships that are federally registered. They are not just manufacturing-related, but include programs

**Table 1.13. Educational Attainment for Ohio Population 25+, 2015 and 2019**

| Category         | Ohio 2015 | Ratio to U.S. | Ohio 2019 | Ratio to U.S. |
|------------------|-----------|---------------|-----------|---------------|
| Associate Degree | 8.2%      | 101           | 8.7%      | 102           |
| Some College     | 20.7%     | 98            | 20.4%     | 101           |

Source: Census Bureau, American Community Survey, "Educational Attainment," Table S1501, at census.gov.

**Table 1.14. Typical Education Level of Ohio Middle-Skill Jobs, 2014 and 2018**

| Category              | 2014    | 2018    |
|-----------------------|---------|---------|
| Associate Degree      | 131,860 | 127,678 |
| Nondegree Certificate | 375,390 | 400,319 |
| Some College          | 125,980 | 133,818 |
| Total                 | 633,230 | 661,815 |

Sources: Ohio Bureau of Labor Market Information, "Employment by Typical Education Levels," *Ohio Jobs Outlook 2024*, 15, and *Ohio Jobs Outlook 2028*, 16.

in other fields, such as construction, health care and hospitality. Table 1.15 also only shows those people currently enrolled in a federally registered apprenticeship program, not all of the people who have completed one.

These data limitations notwithstanding, this comparison provides some insight as to where Ohio stands regarding this important component of mid-level skill job supply. Table 1.15 shows Ohio in a strong position but makes clear that other states are improving as well. The federal Office of Apprenticeship maintains that graduates of federally registered programs earn an average of \$70,000 a year (or more than \$33 an hour) on completion, or \$300,000 more over a lifetime compared to peers who don't complete the program.<sup>41</sup> Earnings like that are what Ohio needs to help boost the per capita income of its residents.

The Governor's Office of Workforce Transformation has made the development of mid-level skills a priority. In 2019, it initiated a program called Tech Cred, which provides state support to Ohio businesses for short-term credentialed training that upgrades employees' technical skills. The agency reported meeting its goal of funding more than 15,000 credentials in the first year of the program.<sup>42</sup>

It is fair to say that, since 2018, we have seen some evidence that Ohio needs to upgrade the skills of its workers to meet changing demands for talent. But it is also fair to say that there remains a lack of evidence on the magnitude of the gap. Compounding this challenge are additional market factors we identified in 2018 that are still with us today.

## Jobs of the Future

The final workforce-related issue we addressed in our 2018 paper was the lack of high-wage jobs. We pointed out that, of the 10 jobs Ohio's Bureau of Labor Market Information projected to have the highest number of openings between 2014 and 2024, only one, registered nurses, was expected to pay more than \$15 an hour. Registered nurses earn an average hourly wage of \$29.46. The most common openings were expected in food preparation and service and came with an average hourly wage of \$8.94, prior to the pandemic.

Ohio's LMI updated its forecast in 2020 to cover the period 2018-2028. The outlook has not improved much. Only three of the 10 jobs with the projected largest number of openings paid more than \$15 an hour. General office clerk pays an average hourly wage of \$16.49, and customer service representative pays, on average, \$16.70 an hour. The only one of the top 10 jobs where workers tended to earn more than \$40,000 annually was heavy truck driver, with an average hourly wage of \$21.66. The job projected to see the largest number of openings was again food service and preparation workers, paying just \$9.53 an hour.<sup>43</sup>

## More Rankings

Earlier in this paper, we pointed out that various rankings of business climate have not demonstrated a clear relationship to economic performance. Nevertheless, we did include them because they have some credence in the

**Table 1.15. Participants in Federally Recognized Apprenticeship Programs, Ohio and Surrounding States, 2019**

| State         | Participants | Percent Growth from 2015 | Percent of the 2019 Labor Force |
|---------------|--------------|--------------------------|---------------------------------|
| Michigan      | 21,075       | +79                      | 4.8                             |
| Ohio          | 20,869       | +33                      | 3.7                             |
| Pennsylvania  | 18,174       | +46                      | 3.0                             |
| Indiana       | 17,605       | +56                      | 5.6                             |
| West Virginia | 4,369        | -25                      | 6.1                             |
| Kentucky      | 3,967        | +26                      | 2.1                             |

Source: Department of Labor, Office of Education and Training, "Data," at [dol.gov/agencies/apprenticeships/about/statistics](https://dol.gov/agencies/apprenticeships/about/statistics).

development community. It also allows our readers to make their own determination. We have taken a similar approach to workforce readiness.

*Site Selection* published its first generation of what it calls “Regional Workforce Development” rankings for 2018. The rankings are a composite of rankings from five other organizations. *Site Selection* explained that it had not yet had a chance to develop its own rankings using its experts but thought it was important to begin the process. Publication editors did not feel comfortable in releasing a set of national rankings, so they limited their rankings to U.S. Census Regions. Ohio is in the East North Central region along with Indiana, Michigan, Wisconsin and Illinois. Ohio finished fourth out of the five states in 2018, second in 2019 and third in 2020.<sup>44</sup>

The Ball State Center for Business and Economic Research has been producing a Manufacturing Scorecard since 2008 that has included a ranking for “Human Capital.” The scorecard has consistently ranked Ohio’s human capital at a C or C-, near the lower middle of the pack. This ranking is based primarily on U.S. Census data on educational attainment and has remained at C or C- for 10 years.<sup>45</sup>

## Labor Force Participation

In 2018, we pointed out that, for a state like Ohio, where population is not growing, making sure as many people who can work are working is crucial to continued economic growth. Yet, the Ohio Bureau of Labor Market Information released a report warning that the number of prime working age Ohioans (25-64) would shrink and not reach the 2015 level again until 2025.<sup>46</sup> Thankfully, that prediction did not prove accurate. The strong job market through the end of 2019 attracted more people into the workforce so that Ohio’s labor force participation rate actually increased between 2016 and 2019.<sup>47</sup> That said, Ohio’s unexpected labor force gains are no reason to be complacent.

The U.S. Bureau of Labor Statistics also projects that the nation’s labor force participation rate will decline over the next decade because of an aging workforce. The economic downturn associated with the Great Pandemic is likely to make the situation even worse.<sup>48</sup> We discuss this in greater detail in Paper Two.

## Dependency Ratio

Demographers use a term called “dependency ratio” to assess the ability of a given population to support those who are not employed. The ratio is calculated by dividing the dependent population (those under age 18 and over 65) by the working-age population (those between the ages of 18 and 64). The theory is that the lower the ratio of the number of dependents to workers, the better for economic growth.<sup>49</sup> In 2019, the average dependency ratio for the United States was 63.2, which means there were 63 dependents for every 100 Americans of working age. Ohio’s ratio was 65.5, or nearly 4% higher. Four percent may not seem like a lot, but on a base of 6 million, that translates into nearly a quarter million fewer workers, while the number of dependents continues to grow.<sup>50</sup>

This is not to say children and older people are bad for Ohio; they contribute in many ways both economically and socially. What the higher dependency ratio means, though, is that Ohio needs to do all it can to make sure all its residents who can work are doing so in order to support those who cannot.

## Lost Workers

When there were more workers than jobs, the size of the labor force was less of an issue. But in the years leading up to the pandemic of 2020, the balance began to shift. Under these circumstances, a growing labor force increased in importance as a necessary condition for a growing economy. Because Ohio has not benefitted as much from population growth as some other states, the state must ensure that as many of its working-age residents are contributing gainfully to the workforce as possible. That includes people who are unemployed or underemployed because of a criminal record or drug addiction.

Between 500,000 and 600,000 ex-felons live in Ohio; many of the formerly incarcerated can’t get jobs or can’t get good jobs because of their past (often drug-related) mistakes.<sup>51</sup> Certainly, some felons released from prison may not be employable, but a sizable share of former inmates have paid their debts to society and deserve a chance at a decent job. Successful placements benefit the individual job holders, as well as their families and their communities.

Prior to the 2020 pandemic, the biggest public health challenge facing Ohio and the nation was the rising rate of opioid addiction. A 2017 OSU study estimated that between 92,000 and 170,000 Ohioans were abusing or dependent on opioids in 2015.<sup>52</sup> Ohio and West Virginia led the nation in reported deaths due to overdoses per thousand residents in 2017.

National, state and local officials have embarked on a number of steps to address the problem, including limits on prescriptions and increased support for recovery services. These efforts appear to have had some effect. In 2018, the national rate of death due to overdose dropped for the first time in eight years, and Ohio fell from second to fifth among the states in terms of overdose deaths per thousand.<sup>53</sup> However, it appears that rates of death due to overdose have shot back up since the beginning of the pandemic, which we discuss in our next paper.

## Conclusions

In this paper, we have explored the path of Ohio's economy since the release of our first assessment in 2018 (which was based on 2016 data) to the onset of the pandemic in early 2020. It is important to remember that the arc of relative decline in per capita income and loss of manufacturing jobs was part of a 50-year cycle and not likely to reverse itself in three or four years. What the last three or four years can tell us, however, is whether there is any evidence to suggest that trends have become more favorable, less favorable or are continuing as they were. The record is mixed.

Regarding Ohio's economy:

- While Ohio's economy grew in the period leading up to the pandemic, it continued to lag the nation in per capita income growth, the most commonly used measure of economic well-being.
- If cost of living is taken into account, Ohio looks slightly better, primarily because of its relatively low housing costs.

- In terms of other commonly used measures, Ohio continues to lag the rest of the nation, particularly in job creation and overall GDP growth.
- Ohio managed to hold onto its share of manufacturing jobs, but the value-added advantage and wage premium once enjoyed by Ohio workers no longer exist.
- Automation and foreign competition continue to provide challenges.
- Great differences in wealth among Ohio communities continue, but they do not appear to have increased in this period.
- Ohio's business taxes rank relatively high overall compared to other states, but they are extremely favorable to both new and existing advanced manufacturing operations and to new distribution and data centers.
- Ohio ranks in the middle in most aspects of applied research and commercialization.

Regarding Ohio's workforce:

- The state's economy operated at near full employment leading up to the 2020 pandemic, but job growth in higher-paying fields, such as construction, education and health, and other services, lagged the nation. Ohio exceeded the nation in growth of leisure and hospitality jobs.
- Ohio still lags the nation in the share of its workers with bachelor's and advanced degrees, but it continues to make progress in closing that gap.
- The mid-level skills gap remains elusive and poorly defined, but Ohio continues to provide more workers with mid-level skill training.
- Prior to the pandemic, Ohio showed signs of progress in increasing labor force participation and decreasing opioid addiction.
- Ohio still struggles with producing high-paying jobs.

All this predates the 2020 pandemic, which has rocked the economy with major repercussions to the labor market. Its aftereffects continue to be felt. We turn to that topic for our next paper.

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PAPER TWO:

# Ohio in the New Normal

We begin this paper with a review of the impact of the pandemic on Ohio's economy and the road to recovery. We then examine a set of future challenges for the post-recovery period. These are issues that have already surfaced and are likely to remain in some form, no matter the timing or the magnitude of the post-pandemic recovery.

# Ohio in the new normal

## Onset and Recovery

On March 13, 2020, President Trump declared a national emergency in response to the spread of the novel coronavirus disease, COVID-19. At the time, many feared the ensuing shutdown of businesses and stay-at-home orders mandated by governors across most states would precipitate an economic calamity similar to the Great Depression of the 1930s. Ohio unemployment claims soared to 870,000 in April alone.<sup>1</sup>

Fortunately, the economic consequences, while devastating for many individuals and families, were not as severe as feared, in large part due to quick, bipartisan action in Congress to pass relief payments for individuals and businesses. By late spring of 2021, the economy showed signs of rebounding and has continued to improve gradually since then.<sup>2</sup>

Table 2.1 illustrates the impact of the COVID shutdown on Ohio's economy through the third quarter of 2021 as compared to the United States as a whole, using three of the four measures that are in Table 1.4. Ohio's per capita income and GDP both grew, but more slowly than the nation

as a whole. Employment has grown nationally but still remains below pre-pandemic levels in Ohio. The Bureau of Economic Research has not yet released the fourth measure (real per capita income).

Another measure of economic recovery is the "Back to Normal Index" developed by Moody Analytics and CNN. It uses 37 different indicators, such as employment, retail sales, home listings and restaurant reservations, to measure how close we have returned to pre-pandemic levels of economic activity. A score of 100 means a complete return to normal. A score of 0 means a complete failure. The low point was in April 2020 at 59 nationally. As of December 2021, the nation had recovered to 95, and Ohio stood above that at 97.<sup>3</sup>

Table 2.2 traces the impact of the pandemic on Ohio's economy by sector. The second column shows the number of people employed in March 2020, just before the spring shutdown. The middle column shows the percentage still employed a month later, a month when Ohio lost 837,000 jobs. By comparison, the largest monthly job loss in the previous recession was 46,000 from March to April 2009.

All sectors were hurt, but the Leisure and Hospitality industry got hit particularly hard, losing almost half its jobs in a month. The last column shows the number of jobs 20 months later in November 2021 as a percentage of the March 2020 figure. Overall employment in Ohio is up to 97% of where it was before the pandemic. This means that more than three-quarters of the jobs lost have been recovered. All sectors have rebounded to within a few percentage points of the March 2020 number, except for Mining and Logging, which remain further behind. One sector (Transportation, Trade and Utilities) has already exceeded pre-pandemic employment numbers, primarily the result of growth in the Transportation and Warehousing subsector.

**Table 2.1. Ohio, U.S. Change in Key Economic Measures, 2019 to 3Q 2021**

| Measure                    | Ohio   | U.S.   |
|----------------------------|--------|--------|
| Per Capita Income          | +11.2% | +12.2% |
| Gross Domestic Product     | +7.5   | +8.6   |
| Nonagricultural Employment | -4.1   | +1.9   |

Sources: BEA, "SAINC1, Personal Income Summary, updated December 17, 2021, at [bea.gov/itable](https://bea.gov/itable); BEA, "SQGDPI, Gross Domestic Product Summary," updated December 23, 2021, at [bea.gov/itable](https://bea.gov/itable); BLS, "Employees in Nonfarm Establishments," 2019 Proquest Statistical Abstract of the U.S., 2021 Online Edition, Table 664 and Ohio LMI, "Situation Indicators for Ohio and U.S. (Seasonally Adjusted)," September 2021, published October 22, 2021 at [olmi.com](https://olmi.com).

**Table 2.2. Job Losses in Ohio by Industry Sector, March 2020 through November 2021**

| Industry                          | Number of Jobs<br>March 2020<br>(thousands) | Percent of March<br>2020 Employment<br>in April 2020 | Percent of March<br>2020 Employment in<br>November 2021 |
|-----------------------------------|---------------------------------------------|------------------------------------------------------|---------------------------------------------------------|
| Transportation, Trade & Utilities | 1,032.7                                     | 88                                                   | 102                                                     |
| Education & Health                | 941.8                                       | 88                                                   | 94                                                      |
| Government                        | 788.0                                       | 95                                                   | 96                                                      |
| Professional & Business Services  | 727.2                                       | 89                                                   | 98                                                      |
| Manufacturing                     | 692.4                                       | 84                                                   | 95                                                      |
| Leisure & Hospitality             | 554.3                                       | 53                                                   | 94                                                      |
| Financial Activities              | 307.7                                       | 97                                                   | 99                                                      |
| Construction                      | 229.5                                       | 85                                                   | 97                                                      |
| Other Services                    | 205.8                                       | 69                                                   | 93                                                      |
| Information                       | 68.4                                        | 90                                                   | 95                                                      |
| Mining & Logging                  | 10.3                                        | 93                                                   | 82                                                      |
| Total                             | 5,558.1                                     | 85                                                   | 97                                                      |

Source: BLS, “Employees in Nonfarm Establishments,” Proquest Statistical Abstract of the U.S. 2021, Online Edition, Table 664 and Ohio Bureau of Labor Market Information, “Ohio Seasonally Adjusted Nonagricultural Wage and Salary Employment,” in *Current Employment Statistics*, April 16, 2021, and October 22, 2021, at [ohiolmi.com/home/CesSector](http://ohiolmi.com/home/CesSector).

These developments are encouraging, but there are troubling signs of instability as well. The threat posed by the Delta variant has been superseded by the Omicron variant, and stubborn problems with supply-chain bottlenecks, worker shortages and inflationary pressures remain.<sup>4</sup>

Some of this may resolve itself by the time the next governor takes office, but other effects on the national and state economies are likely to persist even after returning to “normal.” It’s impossible to know what shocks are on the horizon and how they will play out. What we will do in the face of uncertainty is focus on seven developments that we believe are likely to impact on Ohioans and fall within the sphere of the governor’s responsibility or influence.

These are:

- Changing workplace
- Workforce challenges
- Disruption of the supply chains
- Forgotten Ohio
- Unfinished energy business
- Federal issues
- Maintaining resilience

## Changing Workplace

During 2020, many employers encouraged employees to work from home in order to reduce the spread of COVID-19, and some workers found

that they liked this way of doing business. Some didn’t. Now, as vaccination is widely available, some employees will return to work, but others may not. No one knows for sure what “back to normal” will mean, but the consequences could be significant in terms of local income tax collections and the demand for, and value of, commercial real estate — especially for back-office and analytical jobs.<sup>5</sup> The impacts could affect municipal income tax and property tax collections by municipalities and school districts. Sales tax revenue may also decline and shift as sales decrease near areas with dense concentrations of back-office and analytical jobs and as retail purchases shift from physical stores and malls to online shopping and at-home delivery.

Ohio municipalities are more dependent on income tax revenues than municipalities in most other states. Historically, these tax collections have been credited to where taxpayers work, not where they live. The financial stakes are significant. For example, the mayor of Lima told the *Columbus Dispatch* that 71% of his general fund revenues come from his city’s income tax and 60% of that money comes from commuters who live outside the city limits.<sup>6</sup>

The Ohio General Assembly passed legislation in March 2020 that allowed municipalities to continue to collect income tax based on the location of the employer, not where employees

were working, as long as the COVID emergency is in effect.

The legislature revisited this issue with language in the biennial budget bill, allowing people who worked from home for all or part of 2021 (but not 2020) to file for a refund. How many taxpayers will actually claim the refund is not clear. Many city workers live in nearby suburbs that also levy an income tax, so they will not have much of an incentive to file the necessary paperwork.<sup>7</sup>

However, beginning in January 2022, Ohio law requires employers to start income tax withholding based on where remote workers are actually located. No one knows for sure how this will shake out. But a recent study commissioned by the Ohio Mayor's Alliance, a bipartisan coalition of 30 Ohio urban and suburban mayors, estimated potential annual revenue shortfalls from a low of 2% to a high of 17% of general fund tax revenues from this legislation.<sup>8</sup> The city of Columbus, which is more dependent on income tax revenue than most other Ohio cities, expects a loss in income tax revenue of between 6% and 15% in 2022.<sup>9</sup>

Significant long-term effects may extend beyond the reallocation of income tax revenue to the commercial viability of job-dense business districts, such as traditional central business districts and business and office parks that are near the exit ramps of major highways. CBRE, the international real estate firm, estimates that office employees will spend about 36% of their time working remotely after the pandemic, compared to 16% before. CBRE also projects at least a temporary dip in the demand for new office space as a result. This, in turn, can lead to reduced property tax collections for school districts and other entities in jurisdictions with significant concentrations of commercial space.<sup>10</sup>

Although the post-pandemic period might cause an outflow of office workers from central cities, the increased popularity of remote work may provide an opportunity to attract high-skill technology workers to lower-cost states, such as Ohio. That possibility was already attracting attention before the pandemic, with speculation that workers on the East and West Coasts might be driven to look elsewhere to live and raise a family to escape congestion and high housing costs.<sup>11</sup>

Attracting those workers from other states to Ohio was the goal of a \$50 million advertising campaign Gov. Mike DeWine included in his Fiscal Year 2022-2023 budget proposal. That proposal drew criticism from all sides of the political spectrum and was not funded.<sup>12</sup> Census data released since then have shown very little migration from the coasts to the heartland. Instead, they show migration is much more pronounced from central cities to suburban and rural towns in the same area, rather than migration from one state to another.<sup>13</sup>

That said, competition for more highly paid remote workers is likely to increase.<sup>14</sup> Many Ohio communities will still need placemaking help in order to address aging buildings and other structures and to provide or expand high-speed internet. Some states, such as North Carolina, have claimed great success at converting old factory spaces into catalysts for growth.<sup>15</sup>

Two nonprofits — Heritage Ohio and Reinvention Cities — have long been engaged in such efforts. Heritage Ohio, founded in 1989, partners with the state Office of Historic Preservation to use tax credits and other tools to help revitalize both large and small communities throughout Ohio. Reinvention Cities is a network of 16 small and medium-sized cities, including Lorain, Warren, Hamilton and Portsmouth, that focuses on redevelopment. It operates in conjunction with the Greater Ohio Policy Center, a nonprofit that has been involved in advocating for redevelopment of Ohio's urban and suburban areas since 2007.<sup>16</sup>

Gov. DeWine proposed \$200 million in the state budget to assist local communities with infrastructure development. This was not funded, nor was direct support for Heritage Ohio. Instead, the budget conference committee added \$500 million in grants to local communities for brownfield remediation and demolition of dilapidated commercial and industrial properties. The Greater Ohio Policy Center described the allocation as a "game-changing investment."<sup>17</sup> In addition, the state budget bill included a substantial investment in broadband access (described in greater detail in the Digital Divide section of this paper).

## Workforce Challenges

No aspect of the post-pandemic adjustment has attracted more speculation and more anxiety than the impact of widespread reports of worker shortages. Some commentators have argued this will lead to a “Great Reset,” empowering workers and leading to higher wages and improved working conditions. Others speculate that labor shortages will force employers to accelerate automation, which in turn will cost thousands of lower-skilled workers their jobs.<sup>18</sup>

No one knows for sure how this will turn out. Although many workplace adjustments to changing labor markets is out of the direct control of state officials, the state of Ohio is the primary funder or arranger of worker education and training through its support of public schools, community colleges and universities, and sector-led training efforts. There are steps it can take to help Ohio workers and employers adjust as needed.

The first order of business is to try to make sure the supply of skilled workers is somewhat aligned with demand. The primary focal point for this effort has been the Governor’s Office of Workforce Transformation. As we described previously, this office has stepped-up mid-level skills training, yet challenges remain. While critical skill shortages need to be addressed, the state needs to be careful not to produce people who are overqualified for the jobs available.<sup>19</sup>

The second major challenge is the size of the state’s labor force. We described in our first paper how low population growth was working against Ohio prior to the pandemic. Some fear that the pandemic has led to more retirements of skilled workers and less domestic and international migration into the state, putting even more stress on the system.<sup>20</sup>

Prior to the pandemic, participation in the labor force among people aged 16 and older remained stable at about 63% for both Ohio and the nation as a whole. Since the pandemic, participation has dropped about 1.5 percentage points for the U.S. and nearly 2 percentage points for Ohio. In Ohio, that amounts to about 180,000 more residents no longer employed or even looking for work.<sup>21</sup>

Getting those people and others back into the labor force is an important part of ensuring continued economic growth. A lack of affordable day care has been cited as one barrier that keeps many women from returning to the workforce.

Additional funds to provide support for working families with children were included in the second federal stimulus package. In addition, the 2022-2023 Ohio budget includes \$50 million to expand childcare support for low-income Ohioans.<sup>22</sup> However, both the federal and state expansions are one-time funding allocations.

Expanding legal immigration is an option for growing the workforce.<sup>23</sup> The Partnership for a New American Economy, an immigration advocacy group, has pointed to Dayton as an example of a community that used immigration to grow its economy and reverse population decline.<sup>24</sup> Afghan refugees are one potential source of legal immigrants. Gov. DeWine has already said Ohio is “very much open” to resettling refugees fleeing Afghanistan, as have mayors of some Ohio cities.<sup>25</sup>

Meanwhile, the opioid addiction problem continues to lurk as both a public health crisis and as a barrier to labor force participation. After two years of decline, death and addiction rates increased dramatically during the pandemic, reaching their highest rates in a decade during the second quarter of 2020.<sup>26</sup> The CDC reported drug overdose deaths in Ohio rose nearly 23% from February 2020 to February 2021, a grim surge, to be sure, but thankfully less than the 30% increase experienced nationally.<sup>27</sup>

Gov. DeWine created the Recovery Ohio program to address opioid addiction in 2019. Recovery Ohio and the Healthy People initiative received additional funding in the 2022-2023 budget, but it is clear the scourge of addiction will continue to be a challenge well into the term of the next governor. A \$26 billion settlement of thousands of lawsuits against three of the nation’s largest opioid distributors and a drug manufacturer was announced in mid-July. The agreement could bring an additional \$1 billion to Ohio over the next 17 years to address addiction issues and provide recovery services.<sup>28</sup>

## Disruption of Supply Chains

Even after “normal” returns in terms of pre-pandemic levels of economic growth, major disruptions and dislocations are likely to persist. One area where that is already evident is in supply chains for both consumers and industry. Over the last two decades, supply chains have been organized around the concept of just-in-time delivery, especially of manufactured goods and their components. The severe shortages in

protective gear and then computer chips have spurred discussion of “onshoring,” or a return of more domestic manufacturing activities.

## Manufacturing

As discussed earlier, Ohio has a competitive advantage in manufacturing. Ohio employs 50% more of its workforce in manufacturing than the nation as a whole. That is the equivalent of 200,000 mostly well-paying jobs.<sup>29</sup> Manufacturing will never return to the dominant position it had in the past, but these potential modifications of the supply chain may provide a unique opportunity for Ohio to leverage its position. For example, Peloton’s recently announced plan to build a new manufacturing plant near Toledo and employ 2,100 workers there has been cited by JobsOhio as the first of what the agency hopes will be many onshored facilities.<sup>30</sup> The Peloton announcement was followed two weeks later by a commitment from First Solar, America’s largest domestic solar panel maker, to build a new factory in northwest Ohio that is expected to employ 500.<sup>31</sup>

Table 2.3 shows how Ohio compares to other major manufacturing states in the value added of manufacturing output and employment. Ohio ranks just behind manufacturing giants California and Texas, but other states are nipping at our heels.

As we pointed out in our discussion of Table 1.5, Ohio’s advantage in added-value manufacturing has been steadily slipping for decades. An antidote for this is more high-value manufacturing. Even prior to the pandemic, our colleague Ned Hill, who is a professor of economic development at Ohio State’s John Glenn College of Public Affairs and a faculty member of the Ohio Manufacturing Institute, argued for an investment agenda in what he called competitive high-value manufacturing.

He described it as an intensive effort to blend advanced robots and highly skilled workers in an environment to exploit the advantages of the coming digital revolution in manufacturing. He enumerated three key ingredients for this approach: a more highly skilled, digitally oriented workforce; a management team adept not only in traditional engineering but broader skills, including leadership and team building, and intensified efforts to recruit more talented middle school and high school students through internships and other part-time work opportunities.<sup>32</sup>

We previously noted that the Governor’s Office of Workforce Transformation had already made upgrading mid-level skills a priority. The 2022-2023 budget includes additional funds requested by Gov. DeWine to provide \$25 million to reimburse Ohio employers for

**Table 2.3. Value Added of Manufacturing Output and Employment, Top Manufacturing States, 2019**

| <b>State</b>   | <b>Total 2019 Value Added (\$ billion)</b> | <b>Total 2019 Output Rank</b> | <b>Total 2019 Manufacturing Employment (thousands)</b> | <b>Total 2019 Manufacturing Employment Rank</b> |
|----------------|--------------------------------------------|-------------------------------|--------------------------------------------------------|-------------------------------------------------|
| California     | \$287                                      | 1                             | 1,120                                                  | 1                                               |
| Texas          | 239                                        | 2                             | 768                                                    | 2                                               |
| Ohio           | 131                                        | 3                             | 650                                                    | 3                                               |
| Pennsylvania   | 112                                        | 4                             | 539                                                    | 5                                               |
| Illinois       | 109                                        | 5                             | 523                                                    | 6                                               |
| Indiana        | 107                                        | 6                             | 494                                                    | 7                                               |
| Michigan       | 104                                        | 7                             | 587                                                    | 4                                               |
| North Carolina | 103                                        | 8                             | 422                                                    | 9                                               |
| Wisconsin      | 83                                         | 9                             | 461                                                    | 8                                               |
| New York       | 82                                         | 10                            | 395                                                    | 10                                              |

Source: U.S. Census Bureau, “Annual Survey of Manufacturers, Summary by State, 2019” in *Proquest Statistical Abstract of the U.S. Online Edition, 2021*, Table 1043.

costs associated with providing 40,000 workers additional job-related, technology-focused training.<sup>33</sup> Ohio has always had strong degree programs in engineering. A bigger challenge will be convincing students, parents and teachers that Ohio's factories are not the dirty, dangerous environments they used to be, but are instead good places to pursue productive careers.

## Logistics

Gains made in advanced manufacturing, however, will not, by themselves, return Ohio to the economic dominance of its past. Instead, continuing to improve manufacturing productivity should serve as part of the foundation for a diverse portfolio of employers offering good jobs. Another potential opportunity for Ohio in the post-pandemic period involves the logistics of moving goods among businesses and from businesses to customers.

At an April 2021 forum of the Columbus Metropolitan Club, Kevin Chambers, managing director for logistics and distribution, supply chain, for JobsOhio, suggested that Ohio is in a great position to benefit from continued growth in e-commerce that began before the pandemic. He argued that Ohio's central location and strong network of roads and rail lines put it in a competitive position as e-commerce continues to expand.<sup>34</sup>

Although jobs in logistics do not generally pay as well as those in advanced manufacturing, the logistics industry is an important source of job-creation in the state. However, to be successful in logistics, Ohio must take good care of its roads, bridges and railways. The most thorough third-party assessment of such infrastructure comes from the American Society of Civil Engineers (ASCE), which produces a report card for every state every four years. The report evaluates each state in 16 different categories, including roads, rails and bridges.

The most recent report for Ohio, released in February 2021, rated the state's overall infrastructure a C-, identical to the ranking for the nation as a whole and a slight uptick from four years earlier. Ohio got a grade of B for its rail network, a C+ for bridges and a D for roads, similar to many neighboring states.<sup>35</sup>

The Ohio General Assembly approved an increase in the gasoline tax and other fees in 2019 to generate at least \$865 million annually of additional investment in the state's

roads and bridges. This was not as much as recommended by the governor or the ASCE, but it is a significant step forward. The bipartisan federal infrastructure bill, enacted in November, provides additional funding. This is discussed in greater detail in a later section on federal funding.

## Business Startups

Established companies in manufacturing and logistics will likely provide many of the better-paying jobs for Ohio workers in the immediate future. But for Ohio to break out of its continuing employment and wealth decline, the state needs to do a better job of generating and attracting business startups, particularly in growing or emerging industries. Some will fail, most will be slower growing, and a few will be the elusive gazelle businesses — the fast-growing Amazons and Googles of tomorrow.

In July 2021, *Columbus Business First* released an analysis of venture capital investments in Ohio startups. The analysis found that 2020 was a record year, pandemic notwithstanding. Investments in Ohio startups totaled more than \$1 billion for the first time. Although this is good news, the analysis also found that \$1 billion was only about 1% of the national total investment in startups in 2020. Given that Ohio accounts for 3.5% of the country's population and 3.3% of its economic output, the state is attracting a disproportionately small share of startup investment.<sup>36</sup>

In our first 2022 paper, we highlighted Ohio universities as important links between applied research and technology jobs. The *Business First* report offers further evidence supporting this relationship. Of the eight Ohio startups that attracted \$50 million or more in venture capital in the first half of 2021, six were started by homegrown entrepreneurs with ties to Ohio colleges and universities: Forge Biologics' Timothy Miller (John Carroll), Lower's Dan Snyder (Ohio University), Path Robotics' Alex and Andrew Lonsberry (Case Western Reserve), Branch Financial's Steve Lekas (Kent State), Circulo's Sean Lane (Miami of Ohio) and Oculii's Lang Hong (Wright State). In addition, two of AmplifyBio's top executives, Harry Ledebur and Roy Barnewall, are Ohio State University graduates.<sup>37</sup> It is encouraging that, in addition to investments in Ohio's traditionally strong areas of advanced manufacturing and logistics, these

startups are involved in high-value industries such as pharmaceuticals and financial services.

If Ohio wants to improve its performance in entrepreneurial business development, it needs to make better use of the resources it has at hand. First, the volume of successful high-growth ventures has improved but remains low. Second, little is known about successful entrepreneurial businesses that decide not to access venture capital because they are hard to identify. These businesses may be closely held and dependent on retained earnings for finance, may be lifestyle companies where owners either want to maintain control or pursue smaller business niches, or may be devoted to slower-growing parts of the economy. The point is that, when aggregated, these companies are adding both jobs and portfolio diversity to the state's economy.

Third, women and African Americans are not well-represented among business startups. Geographic diversity is also lacking. Six of the seven startups listed above are located in Columbus, which has become the state's hot spot for new technology business creation, but other Ohio communities have the potential to produce entrepreneurial success as well. For example, the Brookings Institution's Metropolitan Policy Program has identified four regional universities in Ohio as having the potential to do more in terms of technology transfer in order to develop new businesses: Akron, Cleveland State, Shawnee State and Youngstown State.<sup>38</sup>

It will be up to the next governor and other state leaders to decide how to balance support for existing businesses that provide many current jobs and assistance to newer and smaller enterprises that help drive job growth.

## Forgotten Ohio Re-examined

In recent years, economists, political leaders and concerned citizens have engaged in a lively debate about what appears to be an increasing concentration of wealth at the top of the income scale. Many fear that the pandemic will deepen income and wealth disparities even further, not only geographically but along racial lines.<sup>39</sup>

In our 2018 paper, we discussed differences in per capita income among Ohio's 88 counties. Comparisons of income by race also show a pronounced gap between white Americans and Americans of color across the country. This disparity is even wider in Ohio. For example, a recent study by the Federal Reserve Bank of

St. Louis found that median income for Black households nationwide in 2018 was only 61 cents on the dollar compared to white households. In Ohio, the difference was even greater, at only 55 cents on the dollar. As can be seen in Table 2.4, this income gap was wider than in any other state surrounding Ohio.<sup>40</sup>

**Table 2.4. Annual Median Earnings of Black Households as a Percent of White Households, Ohio and Surrounding States, 2018**

| State         | Black Earnings as a Percent of White Earnings |
|---------------|-----------------------------------------------|
| West Virginia | 69                                            |
| Kentucky      | 68                                            |
| U.S. Average  | 61                                            |
| Indiana       | 58                                            |
| Pennsylvania  | 57                                            |
| Michigan      | 56                                            |
| Ohio          | 55                                            |

Source: Ana Hernandez Kent, "Examining U.S. Economic Racial Inequality by State," *Bridges*, Vol. 3, 2020, Federal Reserve Bank of St. Louis at [stlouisfed.org/publications](http://stlouisfed.org/publications).

Annual earnings are just one way to measure relative economic status. Studies of accumulated wealth, such as savings, home and property ownership, and savings and investments, show an even greater gap. One recent Federal Reserve study found that wealth of Black families nationally is only 15% that of white families.<sup>41</sup>

Many fear that the pandemic will exacerbate these differences because the impact of COVID-19 and responses to it has fallen much more heavily on minority and poor communities. Some of our readers have suggested we also address the issue of income and wealth disparities in Appalachian Ohio. These are the 13 counties on the eastern and southeastern borders of the state that have suffered a long-term economic decline due to the decline of coal mining as well as manufacturing.

According to data compiled by the Appalachian Regional Commission, the average per capita income in Appalachian Ohio in 2019 was only 75% of the national average, compared to 89% for the state as a whole. Table 2.5 compares Appalachian Ohio with Appalachian counties in neighboring states. Michigan and Indiana are not included because they do not have any counties that meet that definition.

Table 2.5 shows Appalachian Ohio fares better

than Appalachian Kentucky and West Virginia but trails Appalachian Pennsylvania in relative per capita income. It also shows that for all four states the relative income compared to the U.S. has declined over the five years from 2014 to 2019.

The impact of the pandemic on these differences is not yet clear. The Appalachian Regional Commission has not yet released updated numbers for 2020 on per capita personal income for these counties. The Bureau of Economic Research has updated statewide per capita income for 2020. It shows that Kentucky and Pennsylvania, like Ohio, increased per capita income in relation to the national average during this period. This may reflect the influx of stimulus payments, but West Virginia, which also received substantial stimulus money, lost ground.<sup>42</sup>

While it is important to note that the forgotten population in Ohio's cities is disproportionately people of color, the population of Appalachian Ohio is disproportionately white.<sup>43</sup> Nevertheless, most state-level policy initiatives designed to help one group advance economically also helps the other. There are a number of issues here, but we will focus on five topics that benefit a wide range of struggling families and that are particularly timely for the 2022 gubernatorial election in Ohio: the digital divide, viability of small and minority businesses, minimum wage, K-12 reform and child savings accounts.

## Digital Divide

When the pandemic forced the suspension of in-person instruction, the Cleveland Metropolitan School District surveyed parents to determine whether their students had the equipment and internet access necessary for online learning. The survey revealed that two-thirds of CMSD

students didn't have access to a device and 40% of students had no internet access at all. The school district developed a crash program to connect as many students as possible, but many challenges remain. One study of broadband internet access ranked Cleveland as the worst-connected large city in 2019, and another ranked Ohio 37<sup>th</sup> among the 50 states for connectivity in 2017.<sup>44</sup>

Other studies have identified large gaps in access for Ohio's Hispanic community; its rural areas, particularly those in the southeastern part of the state; and for developmentally disabled individuals.<sup>45</sup> The connectivity problem reflects both an affordability issue in inner cities, where connectivity exists but is unaffordable to many, and an availability issue in rural areas, where there is only limited service or no connectivity at all. The digital divide refers to disparities in access to the internet because of income or other barriers, which in turn exacerbates inequities in education, employment, health care and upward mobility.<sup>46</sup> Poor connectivity also stands in the way of the business attraction and expansion activities that struggling communities need for economic revitalization.

In 2019, Gov. DeWine created BroadbandOhio, an office dedicated to improving high-speed internet access across the state. In December 2020, the FCC announced it would invest \$170 million to expand broadband access in rural Ohio. And in May 2021, Gov. DeWine signed bipartisan legislation to establish Ohio's broadband expansion effort.<sup>47</sup>

As part of his 2022-2023 budget, Gov. DeWine proposed spending an additional \$290 million in one-time funds to expand high-speed internet across the state. The final budget provided \$250 million for this purpose.<sup>48</sup> The cost of providing fiber-optic cable throughout underserved Ohio is estimated to be \$1.7 billion, and the cost to

**Table 2.5. Comparison of Appalachian Counties in Ohio and Neighboring States, 2014-2019**

| State        | Appalachian Population (millions) | Appalachian Population % of State Total | Per Capita Income % of U.S., 2019 | Per Capita Income % of U.S., 2014 |
|--------------|-----------------------------------|-----------------------------------------|-----------------------------------|-----------------------------------|
| Ohio         | 2.0                               | 17                                      | 74.7                              | 76.5                              |
| Kentucky     | 1.2                               | 27                                      | 61.2                              | 65.8                              |
| W. Virginia  | 1.8                               | 100                                     | 64.5                              | 68.7                              |
| Pennsylvania | 5.6                               | 44                                      | 91.1                              | 92.5                              |

Source: Appalachian Regional Commission, "Personal Income Rates (BEA Data), 2019," accessed October 1, 2021, at data.arc.gov.

subsidize broadband for those who can't afford it is estimated to be between \$3.9 billion and \$5.2 billion annually, so this money, though significant, is not sufficient on its own to close Ohio's digital divide. The allocation, however, allows the process to begin and opens the opportunity to attract matching funds.<sup>49</sup>

In September 2021, the DeWine administration announced a new program to train fiber-optics technicians who will be needed to install Ohio's expanded broadband network. The partnership between Tri-County Career Center in Nelsonville, Horizon Broadband and JobsOhio is expected to train local residents for in-demand jobs that will pay \$60,000 a year to start.<sup>50</sup>

The Federal Communications Commission has embarked on a number of initiatives to improve broadband access, including a \$3.2 billion Emergency Broadband Benefit program aimed at low-income households.<sup>51</sup> An additional \$65 billion for broadband was included in the bipartisan federal infrastructure bill enacted in November.<sup>52</sup> How state and federal efforts fit together should become clearer after these programs are finalized over the next several months.

## Minority Business and the Pandemic

Preliminary evidence indicates that small and minority businesses have been hit particularly hard by the pandemic. This is significant because self-started small businesses are among the most effective pathways for minorities to achieve upward mobility and build wealth. The federal Paycheck Protection Program from the first stimulus bill passed in March 2020 was intended to help small businesses but fell short in several instances.<sup>53</sup> On the other hand, preliminary evidence suggests that business startups by minorities have surged during the pandemic, in part due to stimulus funds.<sup>54</sup>

Minority businesses, most of which are small, are supposed to be supported by an array of federal, state and local government agencies. Even though there seem to be rankings for almost everything, we have not been able to find any assessments of how well Ohio is doing, or not doing, compared to other states in terms of programs supporting minority business or in terms of the success of starting minority businesses. What we can say is that Gov. DeWine announced in June that \$155 million in grants would be made available to small and minority

businesses from federal stimulus funds. Another \$460 million in one-time grants for small businesses, especially in hard-hit sectors such as lodging, indoor entertainment, and bars and restaurants, was included in the 2022-2023 operating budget.<sup>55</sup> In addition, the DeWine administration announced in October two new state-funded, low-interest loan programs aimed at supporting minority- and women-owned businesses.<sup>56</sup>

## Minimum Wage

One tool for potentially reducing economic inequality is raising the statutory minimum wage. Currently, the federal minimum wage is \$7.25 an hour, and Ohio has set its own minimum wage of \$8.80 an hour, with a carve-out for small businesses.

Table 2.6 shows that, for most workers, Ohio's minimum wage is highest among all neighboring states except for Michigan. Ohio is also the only state in this group to have an automatic annual increase based on inflation, although Michigan does have some annual increases built in by statute. Ohio's cost-of-living increases are guaranteed via a state constitutional amendment approved by voters in 2006.

**Table 2.6. State Minimum Wage Levels as of January 1, 2021**

| State         | Minimum Hourly Wage |
|---------------|---------------------|
| Michigan      | \$9.65              |
| Ohio          | \$8.80/\$7.25       |
| West Virginia | \$8.75              |
| Pennsylvania  | \$7.25              |
| Indiana       | \$7.25              |
| Kentucky      | \$7.25              |

Source: National Conference of State Legislatures, "State Minimum Wages," April 20, 2021, at [NCSL.org/research](https://www.ncsl.org/research).

Michigan's statutory increase for 2021 was delayed a year due to concerns about high unemployment. What the state plans to do for 2022 has not yet been announced. Ohio's minimum wage for non-tipped employees is scheduled to increase to \$9.30 per hour on January 1, 2022.

The federal minimum wage, which hasn't been raised since 2009, has become a major topic of debate. Economists differ as to the effects of the minimum wage on income and employment

and have for some time.<sup>57</sup> The key is to find the sweet spot where the wage is high enough to lift workers' incomes, but not so high as to cost a large number of jobs. An increase in the federal minimum wage to \$15 an hour would have a major impact on Ohio's low-wage jobholders. Of the 15 occupations in Ohio projected to have the most openings between 2018 and 2028, nine had a median (not minimum) hourly wage of less than \$15 as of May 2019.<sup>58</sup>

Since the economy started growing again in spring 2021, many employers have raised their hourly wages to \$15 or more to attract workers.<sup>59</sup> How this will affect the minimum wage debate is unclear.

## K-12 Funding

A strong system of public education for grades K through 12 is a foundation for equal opportunity. Quality education is key to developing the skills necessary for earning a living. In fact, K-12 education is the only state function mandated in the Ohio Constitution to be "thorough and efficient." Nevertheless, the state has struggled to define what thorough and efficient public education means and how to pay for it. Even a favorable Ohio Supreme Court ruling in a lawsuit brought by Perry County on behalf of Forgotten Ohio failed to produce much in the way of change. Addressing Ohio's educational disparities, on display in rural and urban areas alike, is an issue of both economic development and fundamental fairness. Although specialized postsecondary education is growing in importance, such advanced training relies on basic reading, writing and computational skills learned in grades K-12.

A breakthrough, of sorts, in the decades-old public education funding quagmire appeared to have come in late 2020 when House Bill 305 passed the Ohio House. The bipartisan group of legislators who announced agreement on a new funding formula argued it would finally address funding inequalities. This plan included a definition of the per pupil cost of a thorough and efficient education and a mechanism for addressing the disparities in financial resources among school districts. It generated strong support from the usually fractious collection of education interest groups.<sup>60</sup>

HB 305 was incorporated into the House version of the 2022-2023 state budget with bipartisan support. However, the Senate had

concerns about its ultimate cost and adopted a different plan. The compromise included in the budget approved by the conference committee and signed by the governor funds the first two years of the proposed six-year plan but defers action on the remaining years to future General Assemblies.<sup>61</sup>

Ohio usually ranks in the middle among all states on various measures of educational performance.<sup>62</sup> Whether this new funding model will usher in a new era of increased opportunity for all Ohioans deserves to be vigorously debated. Although the ultimate decision will rest with the General Assembly, voters deserve to know where any candidate for governor stands on the new funding formula and how he or she would pay for it.

## Children's Savings Account

Establishment of a state-sponsored children's savings account has attracted increasing interest as a path to reduce the opportunity divide. The program involves an externally funded deposit from government or a private foundation of anywhere from \$100 to \$1,000 into a tax-free account that is automatically created when a child is born. It accumulates tax-free earnings until the child graduates from high school and then can be applied to training beyond high school, including a college degree, technical certification or an apprenticeship. Most states, including Ohio, already have a plan similar to this called a 529 Plan, but these have to be self-funded and tend to be used only by higher-income families whose children would be going to college anyway.

Advocates of children's savings accounts maintain that research shows lower-income families are much more likely to participate and even add money of their own if the account is seeded automatically. "The big thing is how a stock of assets can change the attitudes of mothers and kids," says Ray Boshara, a senior adviser for the Institute of Economic Equity at the Federal Reserve Bank of St. Louis. "College accounts change their attitudes about the ability to go to college. A relatively small intervention has potential to change economic outcomes. And it has a bigger impact among people of color."<sup>63</sup>

By one count, eight states have some sort of program of this nature, although they vary greatly. The two programs that have attracted the most interest are SEED OK in Oklahoma

and Keystone Scholars in Pennsylvania. Both programs started out making a \$100 deposit for every baby born in each state.<sup>64</sup> More recently, Connecticut announced a program providing a \$3,200 bond to every infant born into poverty, defined as qualifying for Medicaid.<sup>65</sup>

The 2022-2023 Ohio budget included a provision added in the Senate to establish Afterschool Child Enrichment educational savings accounts to offset costs of additional learning support for K-12 students. Eligible activities include tutoring, field trips and music lessons. The program, which draws on \$125 million the state received in federal funds, will award up to \$500 annually to families with incomes less than 300 percent of the federal poverty line who request it.<sup>66</sup>

## Energy — Unfinished Business

A stable and relatively inexpensive supply of energy is an important ingredient for economic growth, especially for industries such as manufacturing, data processing and logistics that use a lot of it. Before the pandemic, energy supplies for Ohio were relatively plentiful and cheap. The pandemic has produced more uncertainty regarding energy prices, but the most significant energy-related event of 2020 in the state had nothing to do with the pandemic at all.

### HB 6

In July 2020, federal officials announced the indictment and arrest of Ohio House Speaker Larry Householder and four others for alleged criminal activity involving the passage of House Bill 6 in 2019. That controversial piece of legislation required Ohio electricity users to pay

a surcharge to subsidize the continuing operation of a money-losing nuclear power plant owned by FirstEnergy of Akron to the tune of \$1 billion. HB 6 provided another \$700 million in subsidies for two money-losing coal-fired plants (one in Ohio and one in Indiana) and significantly weakened Ohio's energy-efficiency and green-energy standards.<sup>67</sup>

In the wake of the scandal, the Ohio General Assembly approved a partial repeal of HB 6 that eliminated the \$1 billion subsidy for the nuclear plant. Gov. DeWine signed the partial repeal into law on March 30, 2021. However, the other controversial features of HB 6 remain.<sup>68</sup>

Table 2.7 shows Ohio's renewable-energy standards compared to surrounding states. HB 6 lowered Ohio's target from 12.5% of electrical generation coming from renewable sources by 2026 to 8.5% and will end the standards permanently in 2026.

HB 6 also weakened Ohio's energy-efficiency standards for utilities, dropping the target of 22% reduction in customers' power usage to 17.5% and easing other restrictions. This prompted the American Council for an Energy-Efficient Economy, a group that advocates for higher energy-efficiency standards, to reduce Ohio's energy-efficiency ranking from a high of 18th among the 50 states and District of Columbia in 2013 to 37th in 2020.<sup>69</sup>

Advocates argue that stricter requirements for efficiency and renewables save customers money and better position Ohio to be competitive in changing energy markets. Opponents argue that the standards interfere with markets, cost Ohio consumers money and fail to protect existing jobs in fossil fuels. As of this writing, the issue remains unresolved.<sup>70</sup>

**Table 2.7. State Renewable Portfolio Standards and Goals, 2021**

| State         | Standard or Goal | Comment                                              |
|---------------|------------------|------------------------------------------------------|
| Michigan      | 35% by 2025      | Both efficiency and demand reduction                 |
| Pennsylvania  | 18% by 2021      |                                                      |
| Indiana       | 10% by 2025      |                                                      |
| Ohio          | 8.5% by 2026     | Formerly 12.5% but reduced in 2019                   |
| West Virginia | None             | Formerly 25% by 2025 but eliminated entirely in 2015 |
| Kentucky      | None             |                                                      |

Source: Laura Shields, "State Renewable Portfolio Standards and Goals," National Conference of State Legislatures, April 7, 2021, at [ncsl.org/research](https://ncsl.org/research).

## Fracking Tax

Beginning in 2012, Gov. John Kasich tried to persuade the Ohio General Assembly to raise Ohio's severance tax on natural gas. He argued that Ohio's tax of 2.5 cents on every million cubic feet (mcf) was substantially below that of most other large producing states, such as Texas, West Virginia and Oklahoma. Supporters also argued that tax increases were necessary to offset the costs of fracking, including inspections, capping orphan wells, funding a quick reaction capability when a well blows, and dealing with frack-water ponds and impoundments. Producers argued that a higher tax would weaken the growing industry, especially because Pennsylvania, whose fields bordered on Ohio's, also lacked a tax. Ultimately, the legislature refused to enact any increases, despite Gov. Kasich's multiple efforts.<sup>71</sup>

Since that time, Ohio's shale gas production has grown so that, by 2019, the state was the third-largest producer behind Texas and Pennsylvania. One of the challenges in comparing tax levels among states is difference in terminology regarding what is taxable and what is not. For example, Pennsylvania does not charge a severance tax but does assess an impact fee. In 2017, Pennsylvania Independent Fiscal Office (the state's equivalent of Ohio's Legislative Budget Office) prepared a comparison of effective tax rates that allowed a more-informed assessment of the large natural-gas-producing states. As can be seen in Table 2.8, the comparison revealed Ohio to have the lowest rates of all the major producing states.

In 2020, natural gas prices fell due to decreased demand in the wake of pandemic shutdowns. This would make fixed-rate taxes, such as those Ohio and Pennsylvania levy, higher compared to price-based taxes in other states. When natural gas prices rebound, the effective tax rate will rise in the price-based states and fall in the fixed-rate states. Ohio's next governor will have to decide where the best interests of Ohioans lie in addressing these issues.

## Federal Issues

Ohio possesses a unique set of characteristics that differentiate it from other jurisdictions across the globe. Yet it also retains ties to regional, national and global communities that affect the well-being of residents for both good and for ill. The next governor has limited influence over national and international affairs but will have a great deal to say as to how Ohio might respond. In this section, we examine five issues on the federal agenda that are of particular importance to Ohio in the wake of the recent pandemic. These are:

- Pandemic relief
- Infrastructure funding
- International trade
- Water protection
- Federal job clusters

## Pandemic Relief

The dire threat the pandemic posed to the nation's economy prompted a strong response

**Table 2.8. Production and Effective Tax Rate at Wellhead Among Top Natural Gas Producing States**

| State         | Production<br>(billion cubic feet in 2019) | Effective Tax Rate<br>(percent of market price) |
|---------------|--------------------------------------------|-------------------------------------------------|
| West Virginia | 1,911                                      | 5.0                                             |
| Oklahoma      | 1,490                                      | 4.6                                             |
| Louisiana     | 2,518                                      | 4.0                                             |
| Texas         | 7,440                                      | 3.5                                             |
| Arkansas      | 471                                        | 3.6                                             |
| Pennsylvania  | 6,782                                      | 1.4                                             |
| Ohio          | 2,558                                      | 1.3                                             |

Sources: Production from U.S. Energy Information Administration, "Shale Natural Gas Production and Proved Reserves: 2015 to 2019," at *ProQuest Statistical Abstract of the U.S. Online Edition*, 2021, Table 95. Effective tax rate from Pennsylvania Independent Fiscal Office, "Natural Gas Severance Tax" in *Analysis of Revenue Proposals FY 2017-2018 Executive Budget*, April 2017, 11 at ifo.state.pa.us.

from Washington in the form of two stimulus bills within a 12-month period and the potential for more to come. The Coronavirus Aid, Relief and Economic Security (CARES) Act signed by President Trump in March 2020 provided \$2.2 trillion in federal relief funds. The American Rescue Plan signed by President Biden in March 2021 provided another \$1.9 trillion.

The CARES Act directed most of its money to individuals and businesses, although funding was also earmarked to states and local governments for COVID-19-related costs. The American Rescue Plan reserved \$350 billion specifically for state and local governments. Ohio's share of this \$350 billion is estimated at \$11 billion, of which \$5.7 billion is to be spent at the discretion of the state government and \$5.3 billion at the discretion of local governments, including cities and counties.<sup>72</sup>

Legislation allocating Ohio's share of first-year funding of nearly \$2.3 billion was passed with strong bipartisan majorities and signed into law by the governor in June. It allocates \$1.5 billion to repay the federal government loan to the state's unemployment trust fund, more than \$400 million to local communities for costs associated with the pandemic and \$250 million to improve local water-treatment facilities.<sup>73</sup> Allocation of a second year of funding will occur next spring.

## Infrastructure Funding

The nation's deteriorating infrastructure has been the topic of a great deal of discussion but very little action for quite some time. In the supply chain section of this paper, we characterized Ohio's infrastructure efforts as a mixed bag, but one thing is clear: If some sort of effort from Washington finally emerges to address this issue, Ohio could be a big winner.

For example, Ohio has significant unmet needs regarding replacement of outdated water systems. By one count, Ohio's vast network of lead pipes in need of replacement tops that of all states except for Illinois.<sup>74</sup>

The bipartisan legislation signed by President Biden in November provides for \$550 billion in new spending over five years for traditional infrastructure projects, such as roads, bridges, rail and water, as well as funding to expand access to broadband.<sup>75</sup> If Ohio were to receive an allocation roughly proportional to its share of the U.S. population (3.5%), that would amount to about \$3.8 billion a year.

By comparison, state and local governments in Ohio spend about \$12 billion to \$13 billion annually on capital projects. In other words, the bipartisan infrastructure bill would provide a boost in spending for Ohio infrastructure of between 30% and 33% annually for five years.<sup>76</sup>

Now that this legislation has become law, the rules for distribution will be set by Congress and the respective federal agencies. Nevertheless, governors and state legislators will play an important role in setting priorities for how this money is distributed within their states. Ohio's next governor will also have to help anticipate the need for thousands of additional construction workers, architects and engineers to do this work in a statewide labor force that has not been growing.

The Biden administration has also asked Congress to allocate additional funds for a "human infrastructure" package to support early education, childcare, elder care, housing, health care, climate change and other social programs.<sup>77</sup> The fate and scope of this legislation is uncertain at this time, but, if something like it were to be enacted, it would provide additional funds for Ohio to distribute. If it is not passed, Ohio and other states will have to decide what new initiatives they think may be needed and determine how to pay for them without additional federal support.

## Trade

Earlier in this paper, we observed that the disruption in global supply chains caused by the pandemic may present an opportunity to strengthen Ohio manufacturing. This comes at a time when the views of both the nation's political leadership and rank-and-file voters are shifting on how to approach international trade.

Support for re-examining trade relationships with other countries was strong before the pandemic. After then-candidate Trump pressed this issue in his 2016 campaign, a bipartisan consensus developed that a different approach to trade policy that provided more protection for American workers was needed.

Beginning in 2018, the Carnegie Endowment for International Peace released a series of studies on the impact of foreign policy decisions on the middle class. The Carnegie researchers chose three states, the first of which was Ohio. They found that domestic and foreign policies intersect in many different ways. They found

that Ohioans supported more trade, but residents were skeptical as to the fairness of a system that disproportionately harmed factory workers in the industrial Midwest, where job losses were substantial. The Carnegie study concluded that the traditional way of viewing foreign and domestic policy domains as separate silos no longer served the national interest or local interests.<sup>78</sup>

In early 2020, the Trump administration was able to gain bipartisan approval for a new trade agreement with Mexico and Canada that provided greater protections for American workers.<sup>79</sup> However, progress with other trading partners, including China, was not forthcoming. The pandemic spread in early 2020 highlighted weaknesses in global supply chains in critical items, including protective medical equipment and computer chips.

In June 2021, the Biden administration announced several steps to help bring more manufacturing of critical items back to the United States. That same month, the U.S. Senate passed legislation designed to strengthen the ability of American companies to compete with China on technology advancements. The U.S. House had already passed a similar piece of legislation, although funding for both of these initiatives is still uncertain.<sup>80</sup>

Ohio's two U.S. senators, Rob Portman and Sherrod Brown, have been active in leading the state's response to international trade issues throughout this period. Although from opposing parties, they have worked together to represent Ohio's interests.<sup>81</sup> With Sen. Portman stepping down at the end of his term in early 2023, the next governor is in a position to work with Sen. Brown and Sen. Portman's successor to help assure a united front in protecting Ohio's interests in this critical public policy area.

## Water

Water is not usually a topic that generates a lot of excitement when it comes to economic development, but an ample supply of clean water is critical to economic growth. Ohio and its Great Lakes neighbors sit astride the source of 90% of the country's fresh water. Ensuring that water is plentiful and clean is largely the responsibility of the Great Lakes Commission, of which Ohio is a member. The commission has been around since 1955 and has had some success in cleaning

up the lakes.<sup>82</sup> In 2021, it assisted in getting Congress to pass the Great Lakes Initiative, which provides for a 58% increase in federal funding over five years. Individual states, including Ohio, and Canada have contributed additional resources.<sup>83</sup> In 2019, Gov. DeWine announced a \$172 million H2Ohio initiative to protect Ohio's water supply, including Lake Erie, although some environmental groups have criticized the governor's plan for relying too much on voluntary compliance.<sup>84</sup>

Continued access to this freshwater resource is not something to be taken for granted. Threats include not only industrial pollution and agricultural runoff but also invasive species and water diversion. Pressure for water diversion will likely build as water shortages in the West and Southwest threaten those regions' ability to grow.<sup>85</sup> At the same time, Ohio and its neighboring states will lose congressional seats due to population change and reapportionment. Ohio's next governor needs to continue to work with Ohio's congressional delegation and with neighboring states to protect this valuable resource.

## Federal Job Clusters

We highlighted the importance of certain federal installations in our 2018 paper: Wright-Patterson Air Force Base in Dayton, NASA's Glenn Research Center in Cleveland, the Defense Supply Center in Columbus, and the Defense Finance and Accounting Service offices in Cleveland and Columbus. Together these federal facilities provide more than 40,000 good-paying jobs. In addition, both Wright-Patterson and NASA Glenn provide research funding for local companies and institutions.

All of these facilities seemed to have survived the pandemic in good shape. DSC lost about 400 jobs out of 7,600, but Glenn stayed about the same and Wright-Patterson added 3,700 jobs, making the base Ohio's sixth-largest employer.<sup>86</sup> One of the benefits of federal government work is that it is less subject to the ups and downs of the economy. But these facilities are subject to the ups and downs of Washington budget politics. This means it is essential for Ohio's political leaders, including the governor, to remain engaged in the protection of these valuable assets.

## Resilience

At some point soon, the COVID-19 pandemic will be contained, and the novel coronavirus will take its place in history alongside SARS, polio and the H1N1 virus that caused the 1918 flu pandemic. However, if history provides any certainty, it is that sooner or later another pandemic or other crisis will threaten us. The time to prepare for that is now. We should not wait until another crisis strikes, but we need to apply what we learned from our response to COVID-19 so that, when something happens again, we are prepared.

The first line of defense is at the local level, resting on the capabilities of first responders, local health agencies and community health care providers. Although these frontline health workers stepped up admirably to help Ohioans cope with the pandemic, COVID-19 exposed two fundamental questions that should be explored: Is Ohio's structure of 113 local health departments too fragmented? And what is the impact on city services of a shift in tax receipts as a result of remote work arrangements? The impact of remote work on local tax revenues will likely not be known for a year or two.

The second line of public health defense and emergency response consists of state agencies reporting to the governor. This includes Ohio's Emergency Management Agency, the Department of Public Safety, Ohio National Guard and the Ohio Department of Health. These entities also stepped up to the challenge, but questions remain about the state's capability regarding public health. Ohio has ranked poorly for quite some time in this area. For example, the Health Policy Institute, a nonprofit organization representing public health professionals across the country, ranked Ohio 47<sup>th</sup> among the 50 states and District of Columbia in "health value" in 2019, largely because of Ohio's relatively low investment in public health services.<sup>87</sup>

Gov. DeWine has expressed support in the past for increased funding for public health.<sup>88</sup> The state budget approved in June provided \$36 million more in general funds for the Ohio Department of Health in 2022 (a 35% increase). Much of that money would go to public health programs proposed by the governor as part of his Healthy People and Recovery Ohio initiatives.<sup>89</sup>

The enacted budget did not fund the governor's request for \$25 million in one-time general funds to improve public health information

systems. It instead directed this to come from other sources, either at the local level or from unused federal COVID-relief funds. The budget language also required local health departments serving communities of under 50,000 to conduct an efficiency study and merge with a larger department if the study advised it. Local health departments opposed this requirement.<sup>90</sup>

Other party and ideological differences surfaced during deliberations on the 2022-2023 state operating budget. Buoyed by higher-than-expected state projections, majority Republicans in both the Ohio House and Senate included a permanent personal income tax cut in their versions of the budget. They argued that the reduction would put more money in the hands of consumers and would boost economic growth. Some minority Democrats argued that the tax cut would primarily benefit the wealthy and divert funding from unmet needs in K-12 education, broadband expansion and childcare. In the end, the Republican majority carried the day, and the budget passed with a \$1.7 billion tax cut and bipartisan support.<sup>91</sup>

The Republican majority also abolished the Tax Expenditure Review Committee, a legislative oversight group created in 2016 to review various tax breaks that had accumulated over the years. Critics on both the political left and the right have supported reviews of these tax breaks, but neither the governor nor the legislature has moved to review them. The Ohio Department of Taxation estimated that tax breaks totaled \$8.9 billion in 2020, or the equivalent of about a third of state's General Fund revenues.<sup>92</sup>

State revenue growth for 2022-2023 was projected to be strong enough to support both a tax cut and selective spending increases. What the outlook will be for 2024-2025 remains to be seen. We know that K-12 reform, broadband expansion and childcare support will require additional funding in these later years. Whether revenue growth will be sufficient to continue funding these at some level remains to be determined and is something the next governor will present to the General Assembly early in 2023.

The third layer of protection is the state's Budget Stabilization Fund. This was set up primarily to protect state services in the event of an economic downturn, but the money can be used for other purposes with legislative approval. During good times, the fund earns interest that can be used to supplement General Fund revenues.

The Budget Stabilization Fund stood at \$2.7 billion at the end of FY 2020. Gov. DeWine considered tapping it at that time to help buffer losses from the economic downturn associated with the Great Shutdown that was associated with the pandemic. He ultimately decided not to because the state's economy appeared to be recovering more rapidly and a large amount of federal recovery aid was on the way. At the end of FY 2021, the fund remained at \$2.7 billion, or about 8% of annual General Revenue Fund expenditures. This 8% figure was precisely the median balance for "rainy day" funds for all 50 states in mid-2020.<sup>93</sup>

In July, Fitch Ratings, one of the country's three major bond-rating agencies, raised Ohio's default rating from stable to positive, in part based on the strength of the state's rainy day fund. This is the best default rating that the state has seen since 1979.<sup>94</sup>

Two Budget Stabilization Fund issues remain for the next governor. One is determining appropriate uses to draw on the fund. Various interest groups have argued that some of these funds should be used to assist them during the pandemic. Second is the current statutory cap of 8.5% of annual General Revenue Fund expenditures. Some have argued that the size should be risk-based. For example, during the 2008-2010 recession, Ohio's General Fund revenue fell by \$3.8 billion, or 12% of the total projected for FY 2009 alone.<sup>95</sup>

## Post-Pandemic Ohio

In this paper, we have demonstrated that Ohio's economy is already well on the road to recovery to pre-pandemic levels. Employment in most sectors was already at or near pre-pandemic levels in March 2021, although some trouble spots persist, particularly in the Leisure and Hospitality sector. However, uncertainty remains over the impact of the spread of the variants, supply-chain backlogs, worker shortages and inflation fears. The pandemic's effects on the economy will likely linger for years. This post-pandemic period presents several challenges and opportunities going forward for Ohio and its next governor. These are:

- **Changing Workplaces** — The experience with working at home is likely to impact commuting patterns and commercial real-estate values, but nobody knows for sure how or how much. This could pose

a challenge to Ohio municipalities that are dependent on income tax revenues generated by commuters who work there but live elsewhere. It may also provide an opportunity for Ohio communities to recruit remote workers from both coasts. How widespread that opportunity may be is not as clear, and many of these communities will likely need to invest in expanding broadband access and rehabilitating aging structures.

- **Workforce Challenges** — Ohio needs to continue to address the misalignment between employer skill demands and worker skill supply. Ohio faces the added challenge of finding more workers when its working-age population is not growing and a growing number of workers have dropped out of the workforce.
- **Supply Chains** — Supply chain disruptions may lead to openings for Ohio in advanced manufacturing, logistics and new business activities, but this will require a focus on developing appropriately skilled workers, particularly in advanced manufacturing, upgrading highway infrastructure and nurturing high-tech startups.
- **Forgotten Ohio** — Differences in opportunity for advancement based on a person's color, community or both were highlighted in stark relief during the pandemic. Opportunities to bridge this divide may come from addressing issues such as the digital divide, minimum wage, growth of minority businesses, educational opportunities for young people and K-12 funding reform that have pushed onto the agenda in this period.
- **Energy** — Energy prices fell as businesses shut down during the pandemic, but long-term impact of the pandemic on energy prices, production or distribution, if any, are not clear at this point. What is clear is that the next governor will have an opportunity to decide whether to address the remaining controversies regarding HB 6 and the appropriate tax levels for natural gas extraction.
- **Federal Issues** — The massive federal response to the pandemic has opened a national debate on a number of issues

important to Ohio, including infrastructure, trade, water and federal job clusters. Strong teamwork among state officials and Ohio's congressional delegation will be needed as Ohio's representation in Congress continues to decline due to population shifts.

- Resilience — The pandemic tested the ability of Ohio's institutions to respond to an emergency of unprecedented scope. By and

large, they were up to the task. Nevertheless, questions remain about the resilience of the state's public health network and the appropriate level and use of the state's Budget Stabilization Fund.

In the next section, we explore the questions these issues and those identified in the first paper pose for Ohio's next governor.

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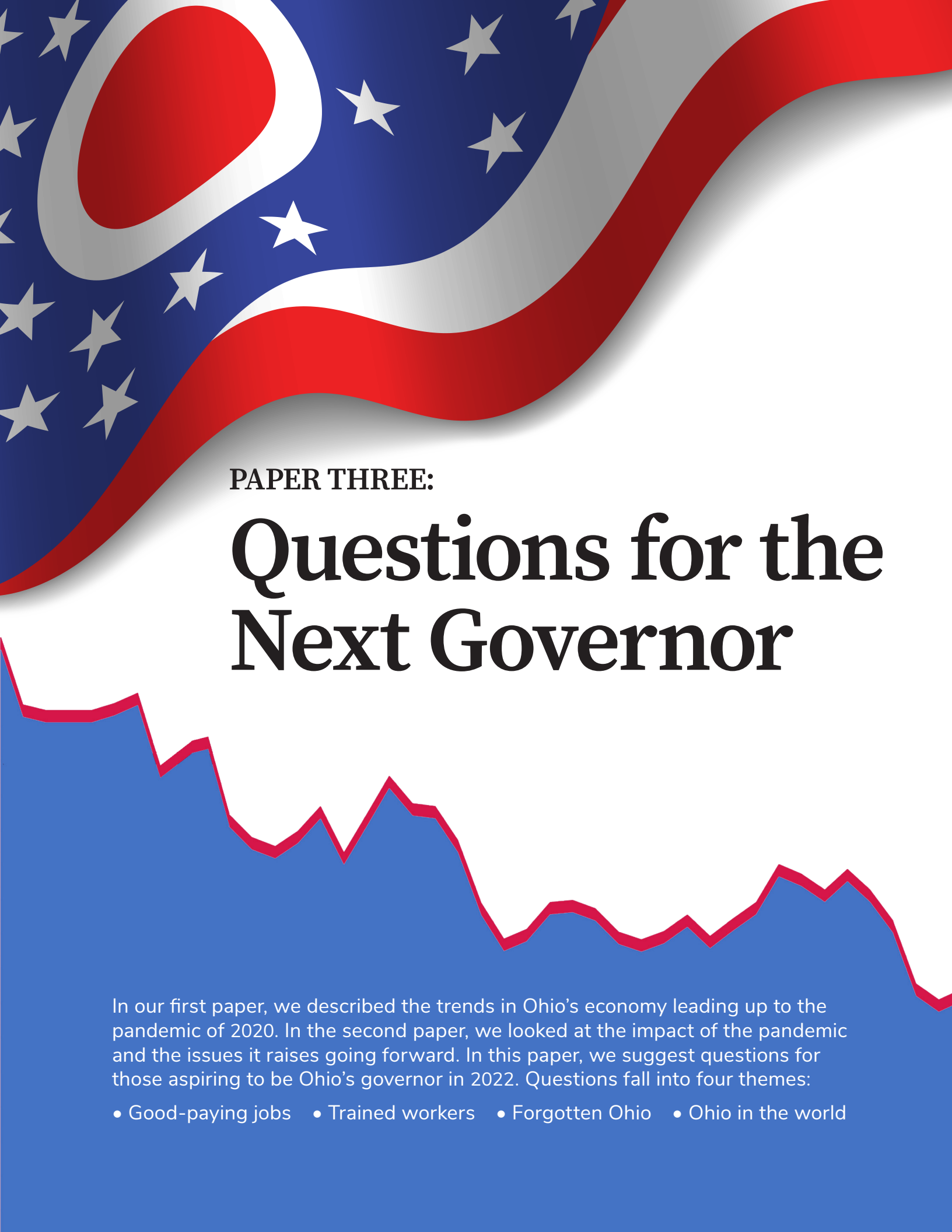
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PAPER THREE:

# Questions for the Next Governor

In our first paper, we described the trends in Ohio's economy leading up to the pandemic of 2020. In the second paper, we looked at the impact of the pandemic and the issues it raises going forward. In this paper, we suggest questions for those aspiring to be Ohio's governor in 2022. Questions fall into four themes:

- Good-paying jobs
- Trained workers
- Forgotten Ohio
- Ohio in the world

# Questions for the Next Governor

We begin each section with a summary of what we have found. We then pose a broad, open-ended question on the topic, followed by a series of more specific questions regarding issues related to Ohio's economy.

## Good-Paying Jobs

Our first paper traced the long-term decline in jobs and per capita income in Ohio and other Midwest manufacturing states compared to the rest of the United States. This relative decline in Ohio's economic standing was due to the loss of high-paying manufacturing jobs, primarily owing to automation but also from increased foreign and domestic competition. We showed that for all of the four common measures of economic well-being (per capita income, adjusted per capita income, GDP and job growth), Ohio's economy grew, but continued to significantly lag the nation in the years leading up to the pandemic. For one measure (per capita income adjusted for living costs), Ohio came closer to matching the national average, but only because of lower housing costs. We found evidence of opportunities in some sectors, such as advanced manufacturing and logistics, but not in other fields. Questions this raises for the next governor include:

1. How well do you think Ohio is doing in producing high-paying jobs? If well, why and how would you make sure this continues? If not well, why and what would you do to change things?
2. In 2021, JobsOhio celebrated its 10th anniversary as a semi-independent, private nonprofit. Would you continue JobsOhio as currently structured, modify it or return it to being a state agency?

3. Do you think Ohio's current tax structure and use of tax incentives is conducive to creating more high-paying jobs? If not, how would you change it?
4. Should Ohio review the \$8 billion annually in tax expenditures? If so, how would you go about it?
5. Do you think Ohio has a competitive advantage in advanced manufacturing and logistics? How would you support it?
6. Is Ohio doing enough to support entrepreneurship, particularly business startups that create high-paying tech-sector jobs, through Third Frontier and other initiatives? If not, why and what would you do differently?
7. What would you do to take advantage of the national trend of companies allowing employees to work remotely? Do you think the state should assist municipal governments that have lost revenue due to increases in remote work? Do you think Ohio does enough to assist its older communities in refurbishing, upgrading and modernizing aging facilities?
8. What is your position on the portions of HB 6 that have not yet been repealed regarding subsidies for coal-burning power plants, energy efficiency standards and green-energy mandates? Do you see a need for greater oversight and transparency as a result of the HB 6 bribery scandal?
9. Is the current severance tax on natural gas fracking appropriate, or would you advocate an increase? If an increase was approved, what would you do with the money?

10. What has the pandemic taught us about maintaining the resiliency of Ohio's economy in the event of the unexpected? What would you emphasize going forward, especially regarding emergency response capability and the size and use of the state's Budget Stabilization Fund?

## Trained Workers

Our first paper also traced the evolution of Ohio's workforce, from one that was more manufacturing-based to one that is more technology-based. We found that Ohio lagged the nation in its number of workers with college degrees, but that gap has been gradually narrowing. We also found evidence of shortage of middle-skill workers although there remains a great deal of confusion about what "middle-skill" means. Meanwhile, the largest number of job openings expected over the next several years will continue to be in lower-wage areas that do not require training beyond high school. This raises the following questions for Ohio's next governor:

1. Do you think Ohio is doing enough to make sure its workers can meet the skill demands of good-paying jobs of the future? If so, what would you continue? If not, what would you change? How would you define success?
2. How well do you think the Governor's Office of Workforce Transformation has done its job? Would you continue it as currently structured or modify it?
3. Do you think that Ohio is producing or attracting enough workers with college degrees?
4. Do you think that Ohio has a shortage of workers with mid-level skills? If so, what should the state do to address it? Do you think Ohio schools put too much emphasis on going to college and not enough exposure to more vocationally oriented training?
5. Many employers, particularly in the food service and hospitality industries, say they can't find enough workers to fill jobs they already have. Do you share this concern? Why or why not? If so, what do you think that the state needs to do to address the issue?
6. What does Ohio need to do to enlarge its workforce? What role does reducing opioid addictions play in that effort? What about addressing the hurdles people with criminal records face in the job market? What about legal immigration?
7. Do you think Ohio is doing enough to attract workers from out of state by emphasizing inclusiveness and welcoming diverse viewpoints?

## Forgotten Ohio

Too many Ohioans have not shared the benefits of a growing economy, not because of anything they did wrong, but because they live in the wrong place, are the wrong skin color, or had a run of bad luck. During the latter stages of the 2010-2019 economic expansion, the wealth gap between the haves and have-nots showed signs of narrowing. The economic downturn caused by the pandemic interrupted even this minimal progress and raised fears that the gap would grow even wider.

A study by the St. Louis Federal Reserve found that the income gap between white and Black families in Ohio is greater than that of the nation as a whole and greater than that of surrounding states. Work of the Appalachian Regional Commission has documented the considerable challenges facing people living in that region. There are steps the state can take that would potentially reduce these gaps. Questions for the next governor include:

1. Do you think Ohio is doing enough to ensure equal opportunity for all its citizens to share in the fruits of their labor? If so, why and what would you continue? If not, why and what would you change? How would you define success in either case?

2. What would you do to expand broadband access? How long would it take, and how would you pay for it?
3. What would you do to assist small and minority businesses in recovering from the pandemic-induced recession?
4. Do you favor or oppose raising the state's minimum wage?
5. Do you favor a publicly funded children's savings account plan? If so, how would you pay for it?
6. Three initiatives funded in the 2022-2023 operating budget designed to help Forgotten Ohio are either in the first phases of major multiyear endeavors (broadband and K-12) or one-time funding (childcare expansion). Do you support advancing these programs in the future, and, if so, how would you ensure adequate funding?

## Ohio in the World

In our second paper, we discussed some of the critical issues on the federal agenda that potentially will affect Ohio's economy. The governor of Ohio is one of many players who influence these national and international policies. But the governor and Ohio's two U.S. senators are the only major elected officials empowered to speak for all Ohioans on these issues. Consequently, we have developed the following questions for the next governor. These questions are also appropriate for the U.S. Senate candidates seeking to succeed Sen. Rob Portman, who is stepping down in 2022 after two terms.

1. What do you think are the most important national and international policy issues needing to be addressed on the federal level that impact Ohioans? How would you make sure these interests are addressed?

2. Now that the proposed bipartisan infrastructure package has been passed by Congress and signed into law, what would be your priorities for Ohio? What role do you think the state should play in ensuring enough skilled workers are available to proceed in a timely manner?
3. What is your position on what has been called the "human infrastructure" bill aimed at childcare, health care, etc. If this legislation is not adopted, what would be your priorities to address Ohio's human infrastructure needs and how would you pay for it?
4. What is your position on international trade agreements, particularly with China but also with other trading partners such as Canada?
5. Do you support an increase in the national minimum wage? If so, how much of an increase?
6. What would you do to help protect the Great Lakes from threats to water quality and from attempts at diversion of water?
7. What would you do to protect good-paying jobs at major federal installations in Ohio, including Wright-Patterson Air Force Base in Dayton, Defense Construction Supply Center in Columbus, NASA Glenn Research Center in Cleveland, and Defense Finance and Accounting Service offices in Cleveland and Columbus?
8. Ohio's congressional delegation will shrink again in reapportionment from the 2020 Census. What would you do to maintain or increase Ohio's influence under those circumstances? Do you see any potential for alliances with other states? If so, with whom and why?



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Stewart's research focuses primarily on public policies related to workforce development and regional economic development policy. Her body of work comprises projects for state government agencies, universities, nonprofit economic development intermediaries, and local think tanks and advocacy groups. A former newspaper journalist, Stewart holds a PhD from the Levin College of Urban Affairs at Cleveland State University.



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