

Falling Behind

How Ohio Continues to Lose its Place in the U.S. Economy

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Executive Summary

1. Sowing the Seeds of Long Run Economic Decline

When transportation costs were the dominant economic force determining success or failure, Ohio made historic investments in canals and rail to lower transportation costs and quickly pivoted from agriculture to manufacturing. Ohio rose to the 3rd most populous state in the nation with the first inland boomtowns. Ohio struggled to manage its sudden growth and quality of life in cities began to decline. Public health continues to be an issue for Ohio today. Every metric of success suggests Ohio continues to fall behind.

2. We Face More, not Fewer Challenges in the Decades to Come

As transportation costs continued their dramatic decline, industry dispersed from Ohio to the south and eventually around the globe. Both trade and increasing productivity in manufacturing through automation have left Ohio failing to keep pace with the rest of the nation as it has failed to diversify its economy.

3. The Increasing Importance of Quality of Life

Job growth increasingly goes to non-footloose jobs (not to footloose export sector jobs) that produce local goods and services, such as health care, education, recreation – goods and services that improve quality of life. Ohio has failed to make meaningful improvements in the amenities that increase quality of life. Quality of life (not the quality of the business environment) is increasingly associated with employment and population growth attracting high-skill workers.

4. Educated Workers are the Engine of Economic Growth

Educational attainment may now be the single most important predictor of economic success. Only the most educated workers have experienced net job growth and real wage growth. The dominant economic force in the U.S. economy is a skilled workforce. Highly educated workers are more productive, more innovative, and better able to adapt to the changing economic headwinds. Ohio cannot succeed without a highly skilled, well-educated workforce.

5. Economic Development Policies for Ohio

Ohio should focus on developing a skilled workforce by investing in education from early childhood education through higher education instead of focusing on ineffective sector-based economic development incentives designed to attract large manufacturing plants. To keep this skilled workforce (and attract new educated workers), Ohio must focus more on developing its comparative advantage in the amenities that enhance quality of life through local small businesses, increasing industry diversity, while lowering the tax burden on households.

Metric	Rank
Job Growth	37 th
Population Growth	31 st
Gross State Product Growth	30 th
Wage Growth	30 th
College Graduate Share	30 th
Higher Education Spending Per Capita	36 th
Public Health	38 th
State and Federal Park Acres Per Capita	42 nd
Quality of Life	45 th
Self-Employment Share	47 th
Industry Diversity	45 th
Manufacturing Employment Share	5 th
Corruption	7 th
Out Migration	12 th
Poverty Rate	13 th
Income Tax Revenue Per Capita	16 th
State and Local Tax Burden	19 th

Sowing the Seeds of Long Economic Decline

The Rise of Ohio to the 3rd Most Populous State in the Nation

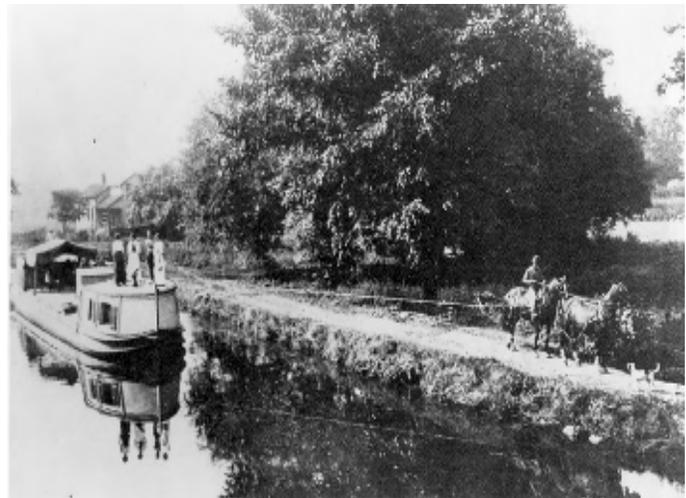
The location and structure of America's first major cities were largely determined by transportation costs. In 1802, when Ohio became a state, prohibitively high shipping costs generally limited economic activity, trade, and – therefore – population growth west of the Appalachian Mountains. Despite the geographic realities of Ohio, which was separated from easy trading partners to the east (due to the Appalachians), north (because of Lake Erie), and south (because of the Ohio River), this inland state became the 3rd most populous state in the nation by 1840.

The Appalachian Mountains were essentially an insurmountable obstacle for Ohio at the time of its founding, but its rivers were not. Ohio found a way to use its rivers and Great Lake to its advantage with the help of Robert Fulton's steamboat. While Fulton was not the first to invent the steam-powered boat, he was the first to make steamboats both useful and profitable, as highlighted by his 1807 journey from New York to Albany along the Hudson River. Fulton's steamboat lowered shipping costs associated with transporting goods and people along suitable waterways.¹ Just four years later, in 1811, Cincinnati was not only manufacturing steamboats but also sailing them from Ohio to New Orleans, opening Ohio to trade with the South. Cincinnati became the first inland boomtown and the 5th most populous city in the nation by 1860, and Ohio connected the nation from the South to the North, linking the supply of goods to demand from customers across the young nation. All of the nation's largest cities at the time were located on a significant waterway.

Understanding the importance of waterways to the success of the state, Ohio built the Miami Canal in 1827, which connected the Ohio and Miami Rivers. This route passed through Dayton and was later expanded to connect to Lake Erie, becoming the Miami-Erie Canal. Ohio capitalized on the Erie Canal, which connected New York City to the inland resources of the Great Lakes region by 1825, by building the Ohio- Erie Canal. Finished in 1827, the Ohio-Erie Canal connected the city of Akron to the Cuyahoga River near Cleveland and the shores of Lake Erie.

Before the canals were built, it cost about 27.5 cents per ton-mile to ship goods; after the canals, the cost went down to about 1.6 cents per ton-mile. Both the canal ways and the steamboat lowered freight costs roughly 95 percent and transit times by about 90 percent, making it feasible and profitable to transport agricultural goods from Ohio across the nation.² In total, the Ohio legislature invested about \$41 million (roughly \$1.06 Billion in a modern equivalent) to build both the Miami-Erie Canal and the Ohio-Erie Canal, nearly bankrupting the state.³ But the investment paid off. The efficient connectivity of markets, lowered cost of doing business, and increased returns to existing and expanding businesses sustained Ohio's economic growth for a time and allowed it to make an early move toward industrialization.

The Ohio and Erie Canal



Ohio's first steps into industrialization built on its existing comparative advantages in both transportation and agricultural production. For example, Dayton established a plant processing tobacco grown in Southern Ohio. With oats being the third most commonly grown crop at the time, oat mills – including what would become Quaker Oats – popped up all around the state. Cincinnati established itself as a pork processing hub, and textile factories across the state used wool from Ohio sheep.⁴ Ohio further capitalized on its natural resources producing iron, steel, and coal providing industry with an abundant, inexpensive energy source that fueled the industrial revolution. Fairly early in the industrialization process, Ohio expanded and diversified its industries, moving away from a dependence on agriculture at the same time that land was becoming more scarce.

Quaker Oats Company, Akron



Source: Ohio History Central

Ohio's early settlement patterns also created an opening for manufacturing in the late 19th and 20th centuries. Settlements by land grant were offered to Revolutionary War veterans who received lots of 40 to 300 acres, roughly sufficient for a single-family farm given the technology of the late 18th century. By the middle of the 19th century, these farms were too small to support the expanding population of the region, and Ohio's farms teemed with a growing population. At the same time, education, particularly in civics and the sciences, was more widely available throughout the Midwest through township schools,⁵ meaning that, at the start of the American Industrial Revolution, Ohio possessed not only an expanded transportation network, but abundant human capital. This provided a ready workforce, capable of adapting to a wide variety of production processes and with the technical skills required in manufacturing.

Indeed, the rapid growth of industrialization soon outstripped the available population. The higher standard of living found in industrial Ohio attracted many people from across the nation, including immigrants. At \$1.53 for a day of labor, Ohio offered the highest average wages in the nation in 1854⁶ (Ohio now ranks 26th in terms of highest average wages⁷). Consequently, Ohio experienced a dramatic shift toward urbanization as people flocked to its cities. Rail lines in the state were initially built primarily for transporting people. The first electric public railway was built in Cleveland in 1884, and streetcars rapidly replaced horsecars as the preferred mode of travel in cities around the country.

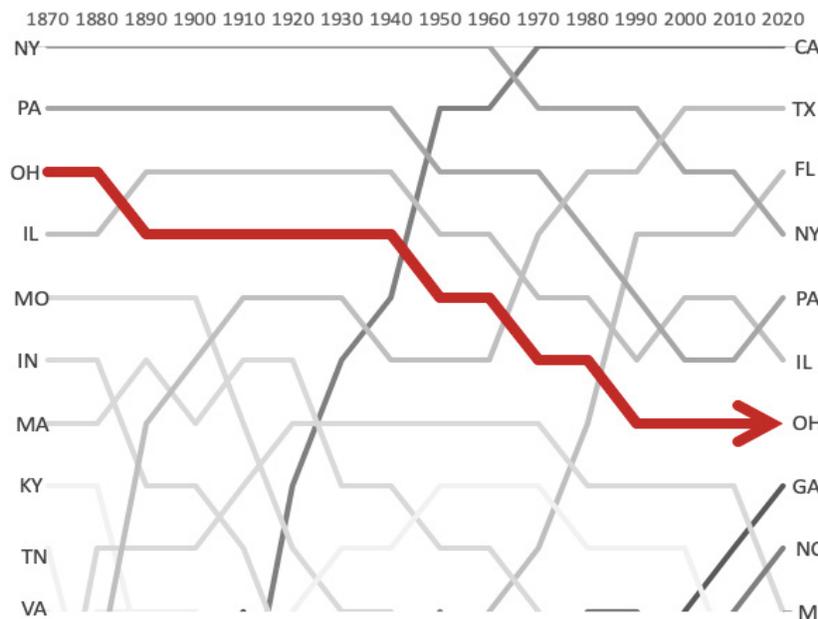
The Ohio Loan Law, initially designed to build additional canals, ended up granting more funds toward building railroads in Ohio, which had faster transit times than the canals and further lowered transportation costs.⁸ Eventually, rail replaced the canals while maintaining both the connection between Ohio's markets and the nation and Ohio's status as one of the prime movers of goods.

Ohio remained the 3rd most populous state in the nation from about 1840 to 1880. Ultimately, however, Ohio struggled to adjust to its rapid rise or adapt to changing economic forces. By 1890, Chicago's rise led Illinois to surpass Ohio, bumping Ohio down to 4th place. As transportation costs continued their dramatic decline, so did its importance in the location decision of businesses bringing other factors to the forefront of the location decision for both firms and families. The competitive advantage in transportation that Ohio exploited earlier in the century essentially disappeared, and the state has been slow to adapt to the changing global economic landscape since. Between 1950 and 2000, Ohio fell another 3 places, landing at its current 7th place position. In 20 years, Ohio is expected to fall another two spots, leaving it the 9th most populous state by 2040.

“The competitive advantage in transportation that Ohio exploited earlier in the century essentially disappeared, and the state has been slow to adapt to the changing global economic landscape since.”



Figure 1: Once the 3rd most populous state in the nation, Ohio will likely fall to 9th in the next 20 years



Source: Census, BEA

Ohio's Fall to the 4th Most Populous State in the Nation

The agglomeration of people into Ohio's cities offered tremendous advantages, but it was not without its disadvantages. As the congestion effects of people accumulated in Ohio's boomtowns, the state struggled to maintain services and keep up with the immense growth that occurred after the canals were built.⁹

Many cities in the state, as around the country, lacked paved roads and sewer systems, leading to Cholera outbreaks. The largest cholera outbreak in Ohio took the lives of approximately 8,000 people in Cincinnati, and the disease clearly diminished the standard of living in Ohio's cities. The inability to effectively address the water issues in the state ultimately affected its growth. In comparison, Chicago's enormously difficult and successful public health project to address Cholera helped Illinois continue to grow after Ohio's growth began to stagnate. After a severe Cholera outbreak that killed 6% of Chicago's population in 1854, Chicago set out to accomplish arguably the most ambitious public health project in history, led by Ellis Chesbrough. The entire city of Chicago was physically raised on jackscrews to make way for a citywide sewer system. Chicago's chief advocate for public health, Dr. John Rauch, M.D., helped establish the Chicago Board of health as well as a plan for Chicago's park system, including the creation of Lincoln Park. Today, the neighborhood near Lincoln Park is one of the most desirable (and expensive) places to live in Chicago. Urban green space, like Lincoln Park, is not only a highly desirable amenity that attracts residents but it also promotes physical activity and public health.¹⁰ Healthier workers are also more productive, promoting economic growth.¹¹ By 1880, Chicago earned a name for itself as the nation's leader in public health.¹² By removing the most significant congestion effects associated with the agglomeration of people in cities of the time, Chicago's investments in its sewer system and public health made possible its nearly unlimited growth potential. By 1890, Chicago's growth alone pushed the state of Illinois past Ohio to become the 3rd most populous state in the nation.

Ohio's cities have since made dramatic improvements investing in their public health infrastructure and in those regards are nearly unrecognizable from the cities they were in the late 1800s and early 1900s (the banks of the Scioto River in Columbus bear little resemblance to what was once there). Still, Ohio has fallen behind other states in developing its waterfront urban greenspace and in public health. Ohio now ranks **42nd** in total acres of state and federal parks per capita¹³ and **38th** in public health (incorporating 35 various measures of public health).¹⁴

The banks of the Scioto River in Columbus then and now



Source: Ohio History Central, Wikimedia

From sewer systems to police, the lack of public services helped pave the way for corruption in Ohio's cities. Unelected "city bosses" filled this void by having streets cleaned and enforcing some laws themselves, but they also relied on blackmail and bribery schemes, and corruption ran rampant.¹⁵ City bosses, such as George Cox in Cincinnati, maintained their corrupt power until city government and city services improved in the 1900s when it became more common to hire city managers with formal training and education in city operations and planning. However, Ohio still has higher than average corruption levels. Ohio is the **7th** most corrupt state in the nation (public corruption convictions per 100,000 residents between 1976-2018). This data does not yet account for the approximately \$61 million alleged bribery scheme surrounding Ohio House Bill 6 and (now former) House Majority Leader Larry Householder, the largest in Ohio history.¹⁶ Every one standard deviation increase in public corruption convictions per capita reduces growth in real Gross State Product per worker by about two-thirds of a standard deviation,¹⁷ meaning that corruption is not just a moral or social problem, but also an economic one.

Although corruption also followed Chicago's rise in economic importance, it remains the 3rd most populous city in the nation today. This is in large part due to Chicago's attention to public health, which allowed the city to grow as it established itself as the nation's first railroad hub. With more lines of track than any other city, Chicago essentially connected the U.S. from the Pacific Coast in California to the Eastern Seaboard in New York. The first intercontinental railroad also opened the floodgates to westward migration to California and the sunbelt. As other modes of passenger travel have replaced rail, Chicago has maintained its 3rd place rank, in part, by establishing itself as a hub for air travel.

As transportation costs have continued to fall and telecommunications technology has proliferated, the original economic forces that created the first cities in the U.S. have essentially been eliminated. Some claimed this dynamic would herald the death of cities, but business travel has increased over time as face-to-face meetings have become more important in an increasingly high-tech world.¹⁸ While COVID-19 has undoubtedly reversed this trend in the short term, the preference for virtual meetings over face-to-face ones will likely only be as long-lived as the virus itself. The presence of airport hubs and higher levels of passenger air travel increase high-tech employment as well as service sector employment in a city.¹⁹ In fact, every 10% increase in passenger travel is associated with a 1% increase in service-related industry employment.²⁰ Airline passenger activity is now a powerful predictor of population and employment growth.²¹ Chicago's ability to shift with the economic turns taking advantage of transportation innovations has buoyed growth in the city and state, whereas growth in Ohio has slowed dramatically over time. Chicago is one of the top three cities for airport passenger travel (the other two are Atlanta and Los Angeles); for comparison, Cleveland is the highest-ranking airport city in Ohio, ranked **45th**, and Columbus ranked **50th** in 2019.²²

As manufacturing employment grew nationwide, Ohio's early move toward industrialization helped Ohio maintain its rank as the 4th most populous state in the nation for 50 years, from about 1890 to 1940. During these 50 years, the population of the United States more than doubled with a population growth rate of 109 percent. Even as Ohio held its 4th place spot, it was already underperforming the nation during this time. Between 1890 and 1940, Ohio's population growth was much slower than the national average, with a growth rate of only 88% percent. During that same period, Texas' population grew nearly three times larger and California's population grew a staggering five and a half times larger, and both were posed to knock Ohio further down in the population rankings.

Ohio's Fall to the 6th Most Populous State in the Nation

One way Texas and California were able to increase their growth rates so quickly and dramatically stems from the composition of their economy. While Ohio relied on its manufacturing industry to sustain its growth (with manufacturing making up about 37% of total employment in 1950), both California and Texas had diversified economies; *a diverse economy is one of the best predictors of long run success.*²³ Among other things, diverse economies reduce transportation costs and foster innovation. Large industrially diverse cities, like Houston and Dallas in Texas and Los Angeles and San Francisco in California, essentially act as nurseries for new businesses and new products. The dynamic economies in industrially diverse cities are particularly important for fast-changing high-tech sectors – California is now a leader in the high-tech sector with the epicenter in Silicon Valley.²⁴ It also requires a culture of entrepreneurial risk taking.

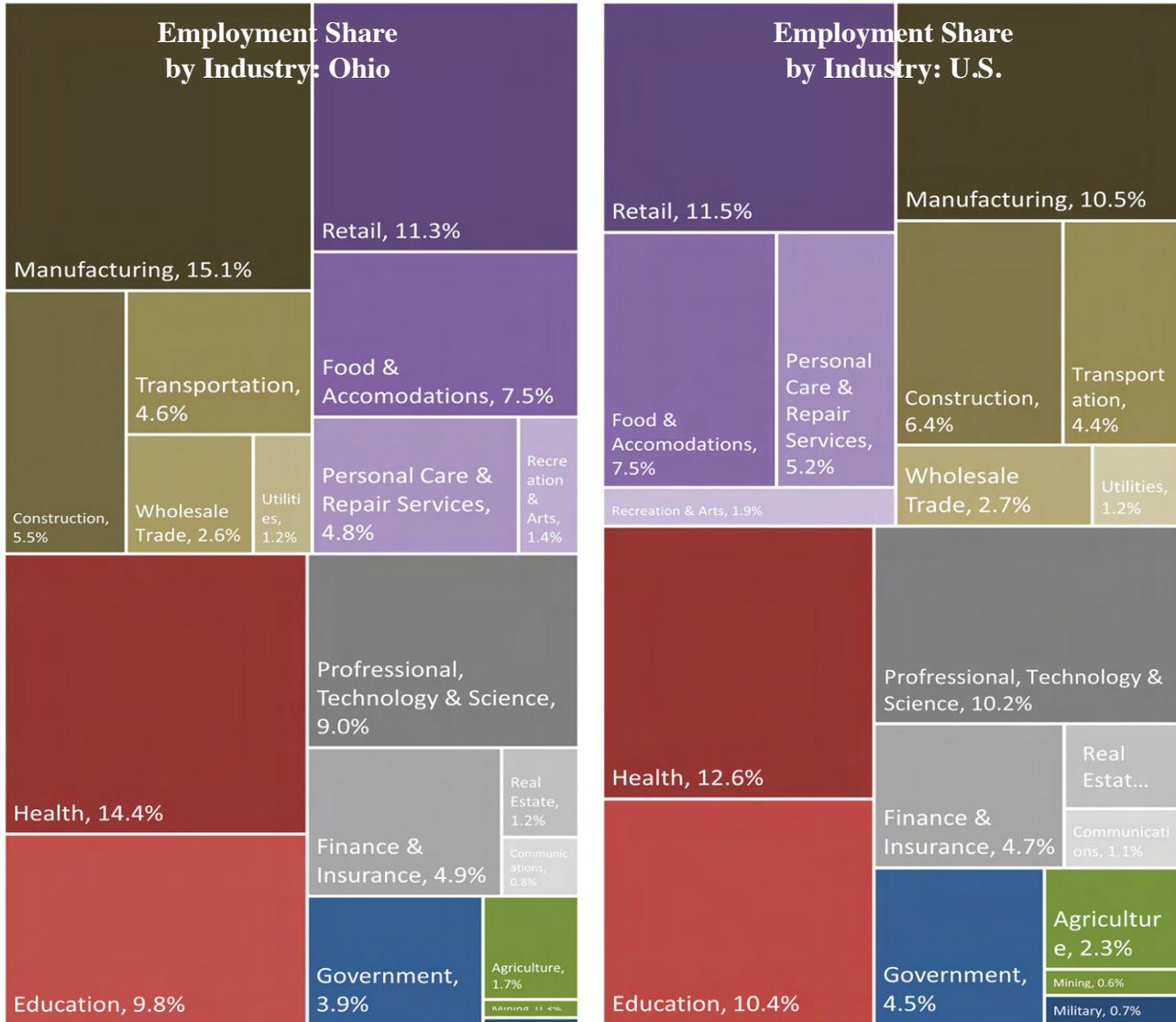
“A diverse economy is one of the best predictors of long run success. Yet, Ohio ranks 45th in industry diversity.”



Natural resources also sparked growth in California and Texas via the Gold Rush and Oil Boom, respectively. Not only are gold and oil considerably more valuable than the abundant coal found in Ohio, but both California and Texas were quick to diversify their economy rather than relying solely on these natural resources. Before the rail lines were established, California's relative isolation required it to develop a large number of industries within close proximity, from agriculture to manufacturing (manufacturing made up only 19% of total employment in California in 1950). Similarly, despite the significance of the oil industry (about 16% of employment in 1950), Texas also established a robust manufacturing industry (which comprised less than 14% of employment in 1950), as well as a banking and insurance industry in Dallas. By quickly diversifying its economic base, Texas and California were able to side step many of the pitfalls associated with the “natural resource curse” that tends to befall most localities that experience natural resource booms. Without diversifying a state's economic base, natural resource abundance has been shown to increase corruption and decrease investment, schooling, and R&D expenditure thereby stunting economic growth.²⁵ In 2012, Ohio began a new natural resource boom in response to innovations in natural gas drilling, namely hydraulic fracturing and horizontal drilling. Though initial economic expectations were high, the boom in oil and gas drilling has failed to result in the number of jobs that were initially forecast.²⁶ This is due in large part because the oil and gas drilling today as compared to a century ago is far more capital intensive (than labor intensive) and comprises just a small fraction of total employment.²⁷ Additionally, concerns over the natural resource curse in Ohio and the long run economic impact of relying on natural resource extraction persist as industry diversity declines and comparatively low taxes on natural gas extraction (significantly lower severance taxes than Texas, for example) limit the ability of drilling counties to counteract the mechanisms that cause the natural resource curse.

Every single standard deviation increase in industry diversity is associated with an increase of about 10% of a standard deviation in employment growth, making it hard to overstate the importance of industry diversity.²⁸ In 1950, as both Texas and California surpassed Ohio in the ranking of most populous state, Texas ranked 8th in industry diversity, California ranked 7th, and Ohio ranked **40th**.²⁹ In 2015, Ohio ranked **45th** in industry diversity.³⁰ Ohio has only fallen further behind, which should come as no surprise due to Ohio's overreliance on manufacturing and lack of industry diversity.

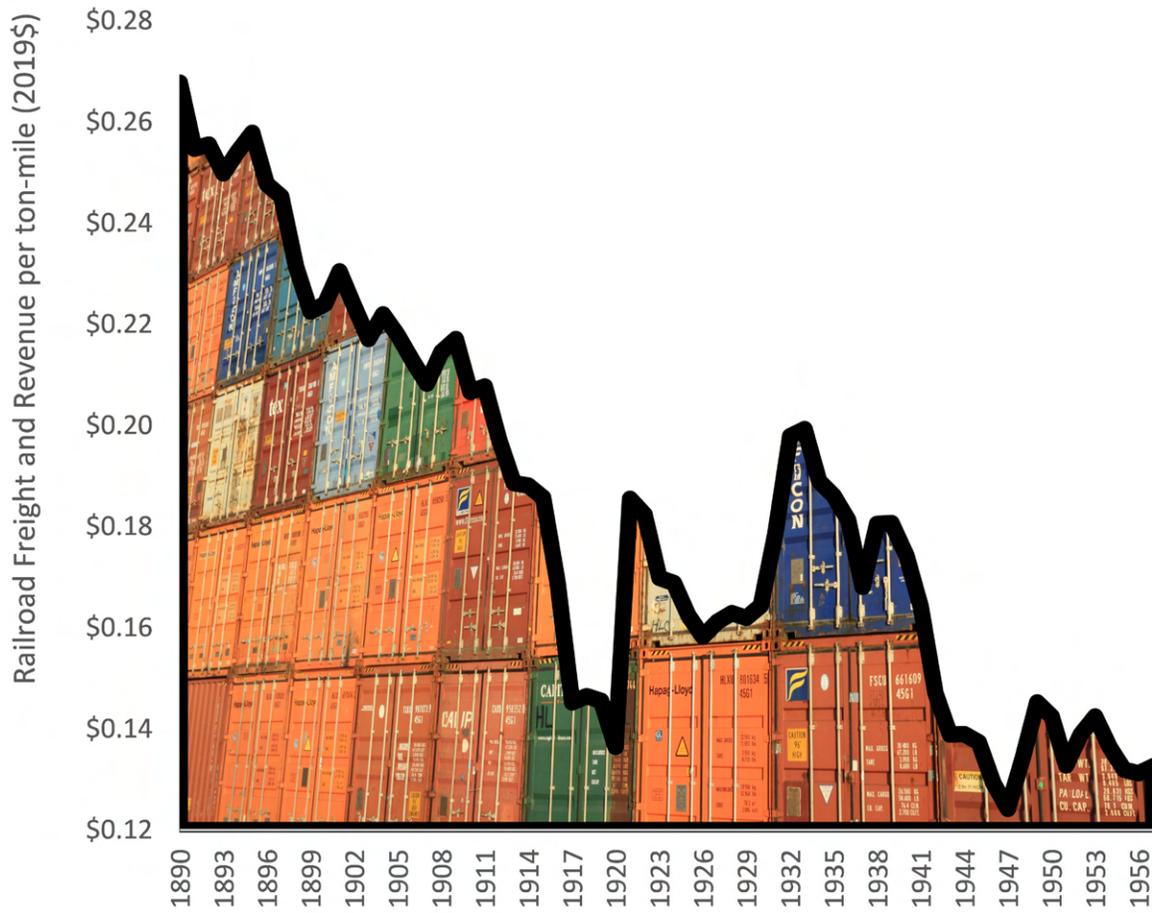
Figure 2: Ohio Has Failed to Diversify Its Industries Beyond its Manufacturing History



Source: IPUMS ACS, 2018

Ohio’s inland cities (including Cincinnati, Dayton, Cleveland, Akron, and Toledo) that built their existence on the transportation of goods across waterways and rail have all experienced population declines for decades. This is true for similarly industrially positioned cities around the country, in places like Buffalo, St. Louis, Detroit, and Pittsburgh. Even Chicago has seen population declines in more recent years. Early transportation costs decline in the late 1800s allowed industry to disperse and move westward into Ohio. As transportation costs continued their dramatic decline (Figure 3), however, goods-producing industries moved across the country and across the world, forcing Ohio and similar places to find a new way to compete for jobs and for people.

Figure 3: The Dramatic Decline in Transportation Costs has Led Industry to Disperse around the World



Source: Historical Statistics of the U. S. (Transportation)

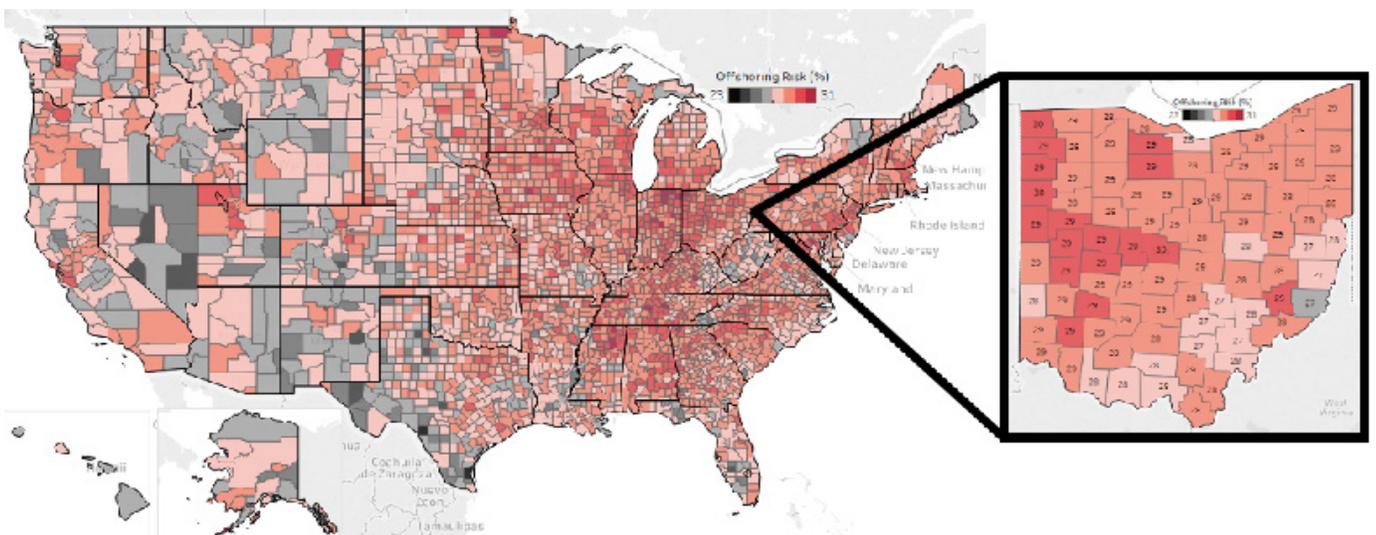
We Face More, not Fewer Challenges in the Decades to Come Ohio Continues to Fall Behind as Growth in New Industries and New Firms Fails to Keep Up

The decline in Midwest manufacturing employment was precipitated by the decline in transportation costs, which allowed manufacturing to move out of the Midwest and into Southern states. At the same time, the end of Jim Crow segregation in the south improved human capital, making available an abundance of educated workers in the same way the township schools in Ohio readied our workforce a century earlier. Other factors, such as air conditioning, and the interstate highway system improved the productivity of labor and capital in the south and southwest. This led to the migration of significant manufacturing from the Midwest to the South after 1960. Throughout the 1980s and 90s, manufacturing employment moved yet again, leaving the U.S. and following lower labor costs all around the globe. By and large, the low-skill production of goods is increasingly manufactured in countries with abundant, low-cost labor, and then imported into the U.S., whereas the U.S. has specialized more in the production of goods requiring higher skills. Though the Midwest may benefit from some onshoring as a result of COVID-19’s risk to global supply chains, any onshoring will likely be temporary and is unlikely to be accompanied by significant employment growth. Factory production may return, but new capital investment will almost certainly extend the automation trend. In the long term, trade, as well as automation, will continue to cut employment options for less educated workers in Ohio and across the nation.

“Trade, as well as automation, will continue to cut employment options for less educated workers in Ohio and across the nation.”



Figure 4: The Risk of Losing Jobs to Offshoring is High in the Midwest Industrial Belt

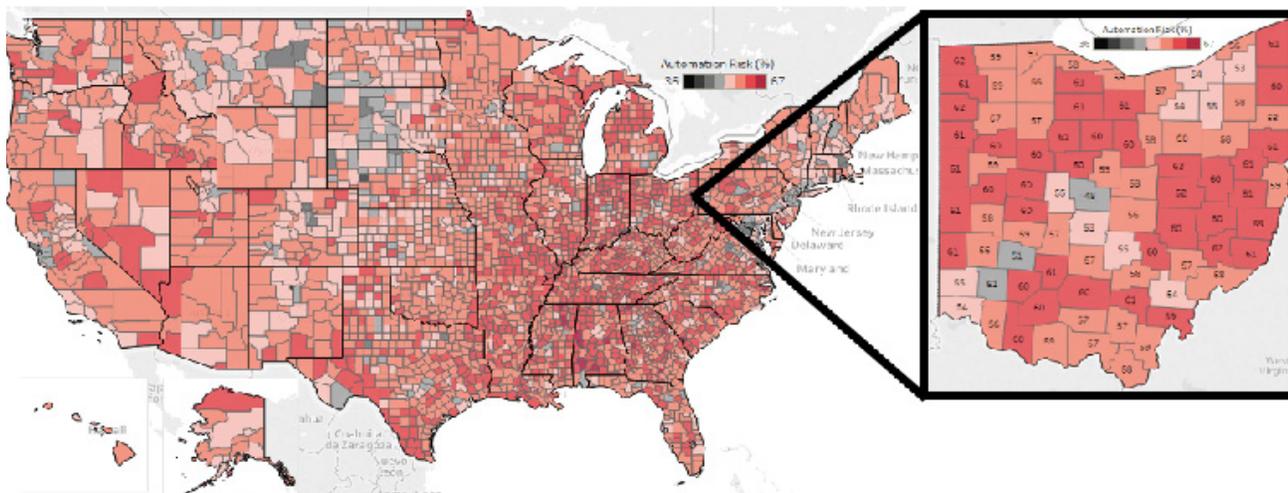


Source: calculations using work by Blinder (2009)³¹

As the U.S. has added jobs in other industries, manufacturing’s share of nonfarm employment has decreased from 38 percent of employment in 1943, to 22 percent in 1979, to less than 9 percent in 2019.³² The U.S. has increasingly improved its manufacturing productivity, just as it has increasingly improved its agricultural productivity. The upside of increases in agricultural productivity is the ability to produce far more agricultural output with fewer workers; the downside is the ability to produce far more agricultural output with fewer workers. In 1850, 60 percent of U.S. workers were employed in agriculture; by 2015, that percentage had plummeted to just over 4 percent.³³ In Ohio and throughout the Midwest, manufacturing stepped in to create good-paying jobs as the share of agricultural jobs decreased. In 2018, the annual average wage and salaries in Ohio’s manufacturing sector was nearly \$61,000, higher than the overall state average of just over \$51,000.³⁴ The very thing that makes these manufacturing jobs appealing, however, high wages, also creates an incentive for companies to invest in automation in order to reduce labor costs. Ultimately, automation and other labor-saving advances have allowed manufacturing in the state to go the way of agriculture; it’s more productive than ever but employs much fewer workers.

Manufacturing employment in the U.S. has dropped 34 percent since its peak in 1979, while at the same time industrial production increased a staggering 587 percent.³⁵ Automation *will* continue to cut employment options for less educated workers over time; COVID-19 will only exacerbate the problem by lowering borrowing rates for companies, allowing them to further invest in labor-saving automation, and experimenting with lean workplaces as employees work remotely.

Figure 5: The Risk of Losing Jobs to Automation is High in the Rural Midwest



Source: Calculation using work by Frey and Osborne (2017)³⁶

The share of employment that is captured by the manufacturing sector is one of the most consistent predictors of slowing or negative growth from the 20th to the 21st centuries.³⁷ Ohio ranks **5th** in the largest share of manufacturing employment in the country.³⁸ Furthermore, the focus on turning around the manufacturing industry through subsidies and other incentives has prevented other industries from sprouting up. Policymakers often use economic incentives, such as subsidies and tax abatements, to attract new manufacturing plants, specifically million-dollar facilities, but these facilities have only a modest increase in new economic activity and do not generate any fiscal surplus.³⁹ In the long run, this overemphasis on attracting one large firm or industry stifles the development and growth of other businesses and industries, and the economic incentives typically offered to export-based industries have a negative effect on overall start-ups and job growth.^{40,41} This unintended consequence on other industries and especially on small and new firms hinders growth. Even in lagging regions, the

share of small firms and self-employment is associated with higher economic growth^{42,43,44} Ohio ranks **47th** in the share of employment coming from self-employment.⁴⁵

Table 1: Of the Fastest Growing States Today, Ohio Ranks 31st

State	Population Growth (2015-2020)		Employment Growth (2015-2020)		GDP Growth (2015-2020)		Average Annual Pay (2015-2019)	
	% Change	Rank	% Change	Rank	% Change	Rank	% Change	Rank
Idaho	10.6%	1	16.3%	2	14.7%	9	13.9%	5
Utah	10.1%	2	16.9%	1	18.3%	2	14.5%	3
Nevada	9.5%	3	14.9%	3	14.7%	8	12.4%	11
Washington	8.8%	4	13.6%	6	21.2%	1	22.8%	1
Florida	8.8%	5	13.9%	5	15.0%	7	11.9%	15
Arizona	8.0%	6	14.7%	4	15.8%	5	12.3%	13
Texas	7.3%	7	10.2%	13	12.5%	12	10.2%	35
Colorado	7.2%	8	12.1%	8	15.1%	6	14.1%	4
Oregon	7.1%	9	11.9%	9	17.3%	3	13.9%	6
South Carolina	6.5%	10	12.2%	7	13.6%	10	10.4%	31
North Carolina	6.3%	11	9.9%	14	8.2%	19	12.6%	9
South Dakota	5.7%	12	4.1%	36	5.0%	34	12.4%	12
Georgia	5.5%	13	10.8%	11	13.1%	11	11.6%	20
Montana	5.5%	14	6.8%	19	4.4%	39	12.0%	14
Tennessee	4.6%	15	10.5%	12	10.3%	15	10.6%	29
Delaware	4.4%	16	5.9%	24	-5.0%	49	8.4%	43
Minnesota	4.0%	17	5.4%	26	7.9%	21	11.4%	22
Nebraska	3.2%	18	4.1%	35	5.9%	28	11.7%	18
Virginia	3.2%	19	7.4%	15	7.6%	23	10.9%	27
Massachusetts	2.7%	20	7.0%	16	10.6%	13	13.2%	7
California	2.6%	21	11.4%	10	16.0%	4	15.7%	2
New Hampshire	2.6%	22	6.8%	21	10.5%	14	11.7%	17
Indiana	2.1%	23	5.4%	27	5.8%	29	11.2%	24
Arkansas	2.0%	24	7.0%	17	5.6%	31	11.1%	25
Iowa	1.9%	25	1.8%	42	2.7%	42	10.4%	32
Kentucky	1.7%	26	3.7%	38	4.4%	38	10.1%	37
Maryland	1.6%	27	6.1%	23	8.4%	18	10.2%	36
Missouri	1.6%	28	4.9%	30	4.8%	36	10.9%	26
Wisconsin	1.6%	29	4.5%	32	6.4%	27	11.2%	23
Maine	1.3%	30	5.3%	28	9.1%	16	13.0%	8
Ohio	1.2%	31	4.1%	37	5.6%	30	10.6%	30
Alabama	1.2%	32	6.7%	22	7.7%	22	10.3%	33
Oklahoma	1.2%	33	1.6%	43	1.8%	45	8.4%	42
Michigan	1.1%	34	5.6%	25	7.1%	24	9.8%	39
North Dakota	1.0%	35	-5.6%	50	-5.7%	50	6.7%	48
New Jersey	0.8%	36	6.8%	20	4.7%	37	8.0%	45
Vermont	0.5%	37	0.5%	45	5.4%	32	11.5%	21
New Mexico	0.4%	38	4.6%	31	6.5%	26	10.6%	28
Pennsylvania	0.3%	39	5.0%	29	6.6%	25	10.2%	34
Kansas	0.0%	40	2.7%	41	8.5%	17	9.5%	40
Mississippi	0.0%	41	3.1%	40	4.0%	40	8.1%	44
Rhode Island	0.0%	42	4.1%	34	3.4%	41	8.4%	41
Louisiana	-0.4%	43	-0.8%	46	1.2%	46	7.3%	47
Alaska	-0.5%	44	-3.4%	48	-0.2%	47	5.0%	50
Hawaii	-0.7%	45	4.3%	33	7.9%	20	12.5%	10
Connecticut	-0.7%	46	1.2%	44	2.0%	44	6.5%	49
New York	-1.1%	47	6.8%	18	5.1%	33	11.6%	19
Illinois	-1.5%	48	3.6%	39	4.9%	35	10.0%	38
Wyoming	-3.2%	49	-3.9%	49	-2.8%	48	7.5%	46
West Virginia	-3.5%	50	-2.4%	47	2.0%	43	11.7%	16

Source: Census, FRED, BEA

As the dominant economic forces that shape our world have evolved, Ohio largely continues pursuing an economic development strategy designed around the economic forces from a century ago, one that tries to change the prevailing economic winds instead of using them to move forward. Ohio holds steadfast to the hope that using economic development subsidies and tax abatements to attract new, large manufacturing plants will return Ohio to its former place as a giant in the U.S. economy. Instead, year after year, the winds of economic change push Ohio further and further behind.

“Ohio ranks 31st in population growth, 37th in employment growth, 30th in the growth of Gross State Product (GSP), and 30th in growth in average annual pay.”



The idled General Motors plant in Lordstown, OH

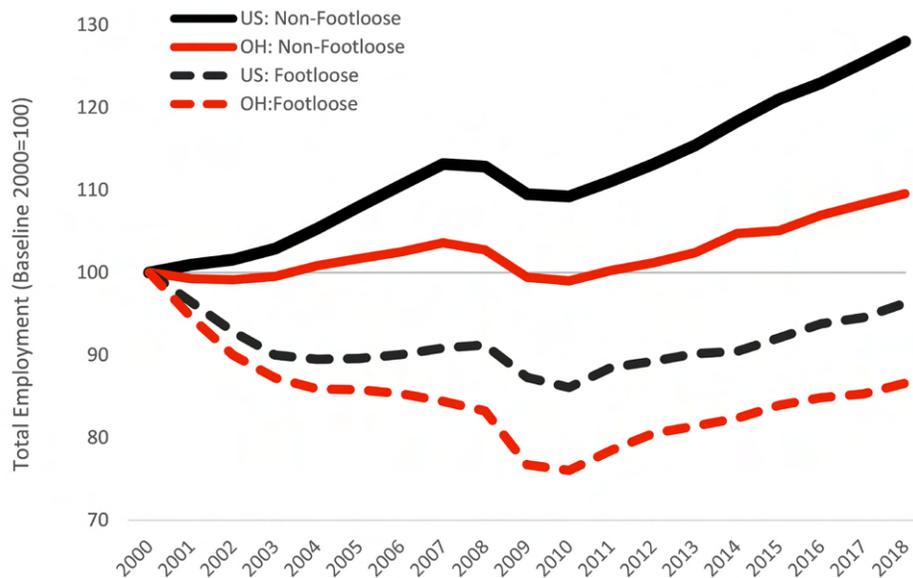


Source: Picture from Ross Mantle at The New York Times, “Buyer of G.M. Lordstown Plant Promises Union Work and Wages.” (Nov 7, 2019).

The Increasing Importance of Quality of Life

Most manufacturing jobs are considered “footlose,” meaning that they are not tied to a specific geographic location (as opposed to “non-footlose” jobs, which produce local goods and services, like those in service, health care, education, arts and culture, etc.). Since 2000, footlose jobs have decreased by 4 percent nationally and by 13 percent in Ohio (Figure 6). During the same time, non-footlose jobs have increased 10 percent in Ohio, far surpassing the total employment growth rate of only 4 percent. Nationally, non-footlose jobs increased a whopping 28 percent since 2000! The gap between Ohio and the nation in job growth stems from the gap in non-footlose job growth, and this gap has been widening for decades. Non-footlose jobs represent the increasing demand for goods and services that more directly contribute to quality of life in the local area. Non-footlose jobs are largely the jobs that contribute to quality of life in a community and in a region - from health to recreation.

Figure 6: Job Growth in the U.S. and in Ohio increasingly stems from non-footlose jobs



Source: BEA⁴⁶

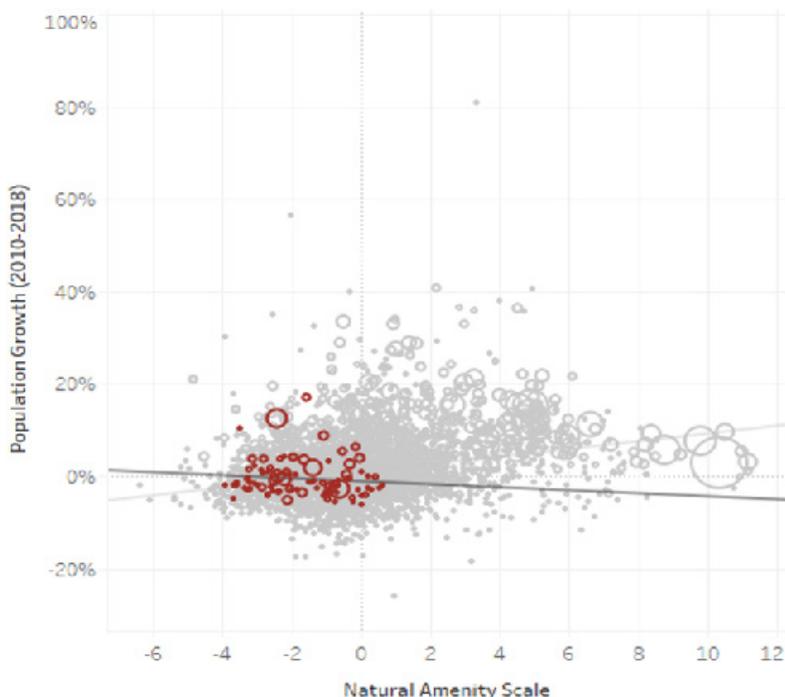
Ohio’s Fall to the 7th Most Populous State in the Nation

As Ohio remained steadfast in its focus on footlose manufacturing jobs, states like California and Florida focused on providing goods and services that people travel to the states to enjoy. Economic prosperity and lower transportation costs through the 1920s provided many people the opportunity to visit places like sunny California and Florida. And jobs in the tourism industry are the quintessential non-footlose jobs. As early as the 1920s, we can see migration patterns change to favor places with nicer weather and better local amenities.⁴⁷ By the 1950s, the engine of economic growth in counties across the U.S. was fueled not by firm-led growth but instead by amenity-led migration.⁴⁸ California, for example, is blessed with abundant natural resources, from beaches to mountains and giant redwood forests. But the state was also quick to capitalize on these resources. Several signifi-

cant conservation efforts, led by John Muir, restricted the negative impacts of growth on California’s vast natural resources that were drawing people to California, thereby sustaining its growth potential. Cities in California that were comparatively lacking in natural amenities were soon competing to become the nicest city in the nation – through the efforts of Katherine Olivia Sessions (nicknamed the mother of Balboa Park), the once desert town of San Diego was transformed into the lush and growing city we know today. In the early 1900s, California marketed itself as a great place to make a “comfortable, healthy home,” and as incomes increased, demand for those comfortable, healthy homes also increased.⁴⁹ As people began to move to California, the jobs quickly followed.

Places with more natural amenities experience higher population and job growth. Figure 7 shows that every single unit increase in the USDA’s natural amenity scale is associated with a 0.8 percentage point increase in population growth between 2010 and 2018. None of Ohio’s 88 counties rank in the top 3 quintiles of the USDA’s amenity scale index. Even taking into account broader measures of natural amenities, none of Ohio’s counties rank in the top quintile and only a few make it to the second quintile (Figure 8). It is not that Ohio does not have natural amenities – the state sits on one of the largest inland lakes in the world – but, rather, that it has failed to capitalize on those amenities. The results are clear. In Ohio, counties with more desirable natural amenities (such as those on Lake Erie and Salt Fork Lake) are not only not associated with higher population growth, but actually experienced population decline between 2010–2018 (red counties in Figure 7), including those counties with the highest values on the USDA’s natural amenity scale (Noble County and Guernsey County). Rather than seeing the development and growth potential of its natural amenities, particularly its waterfront areas,⁵⁰ Ohio has relegated these counties to transportation thoroughways and waste depositories.

Figure 7: In the U.S., counties with natural amenities experience higher growth; in Ohio, they experience lower growth

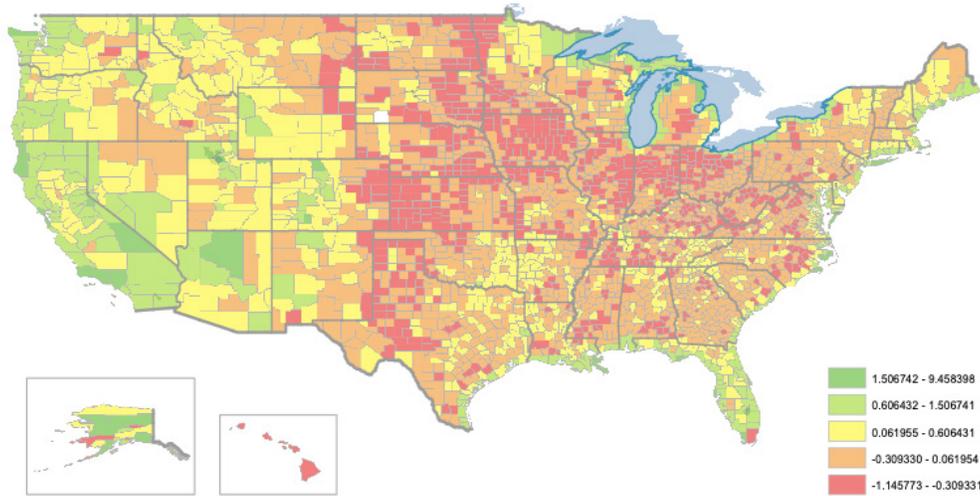


“It is not that Ohio does not have natural amenities – the state sits on one of the largest inland lakes in the world – but, rather, that it has failed to capitalize on those amenities.”



Source: Population Data from the US BEA, USDA ERS Natural Amenity Scale

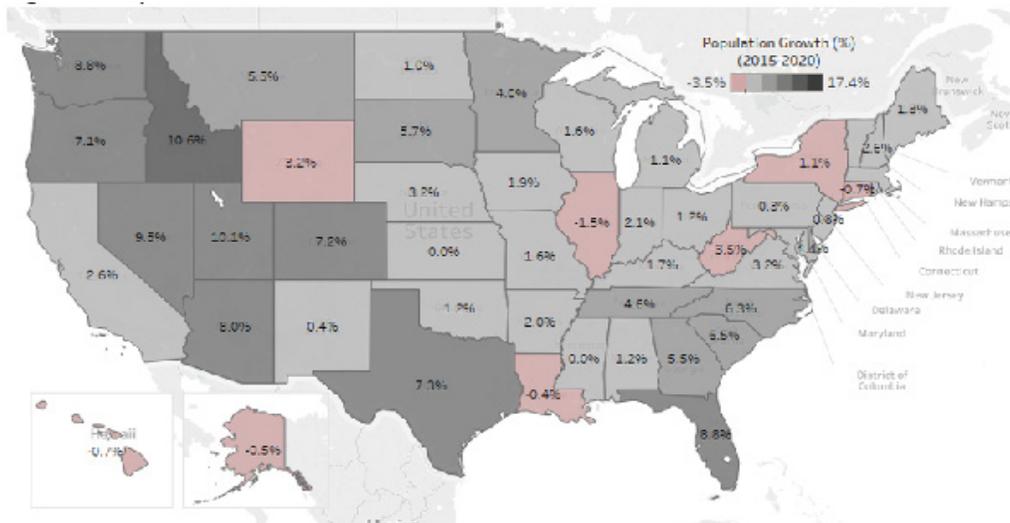
Figure 8: Natural amenities are now a key component of growth



Source: The Micropolitan Project

Ohio’s next fall in the population race came around 1990 with Florida’s rise. With its warm weather, beaches, and robust tourism industry that capitalized on its natural amenities, Florida knocked Ohio to its current tenuous rank as the 7th most populous state in the nation by 1990. Natural amenity rich states in the Sunbelt and mountainous west continue to outpace Ohio (Figure 9) slowed only by the high cost of living and high housing prices as the housing stock that has not kept pace with growth.

Figure 9: Population Continues to Move toward Nice Places to Live



Source: Census

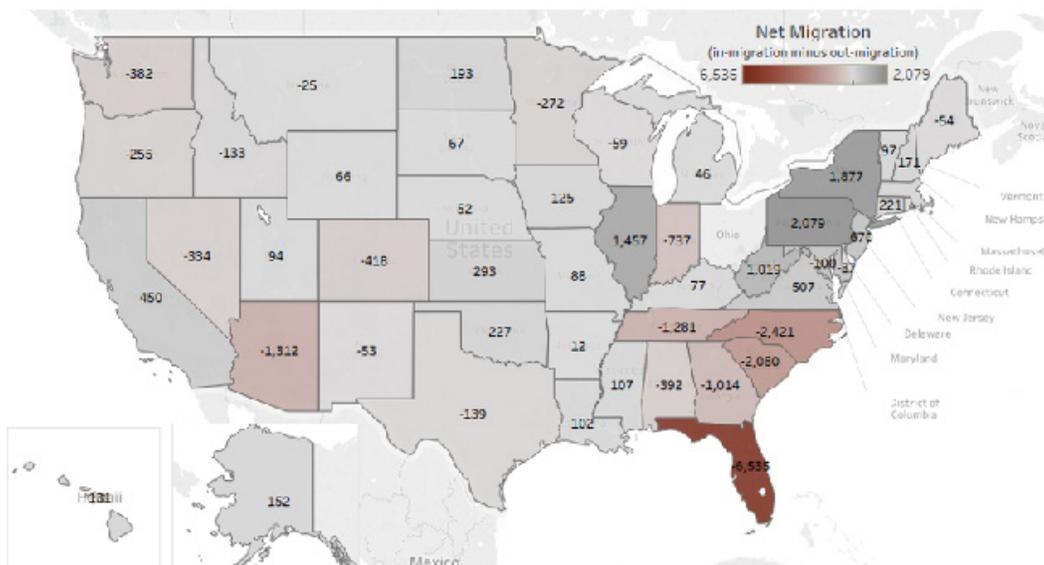
Ohio currently ranks **31st** in population growth between 2015-2020, and the fast growing Sunbelt states of Georgia and North Carolina are set to surpass it in the near future.

Ohio's Fall to the 9th Most Populous State

Within 20 years, it is anticipated that the populations in Georgia and North Carolina will outstrip that of Ohio, knocking the state down another two places to 9th.⁵¹ Indeed, net migration (Figure 10) shows Ohio losing people to Georgia and North Carolina (as well as Florida). Georgia and North Carolina both have more industry diversity than Ohio offering residents and especially dual earner households (now the majority) a larger variety of jobs. Compared to Ohio, they have also pivoted more toward growing local non-footloose service-based industries and rely less on the shrinking footloose manufacturing industry. Ohioans have made clear what states are simply nice places to live by voting with their feet and moving to those places.

Ohio is one of the most left states in the nation with the 12th highest out-migration numbers as over 200,000 people left Ohio in 2018.⁵²

Figure 10: Economic growth has followed the flow of people from Ohio to North Carolina and Georgia

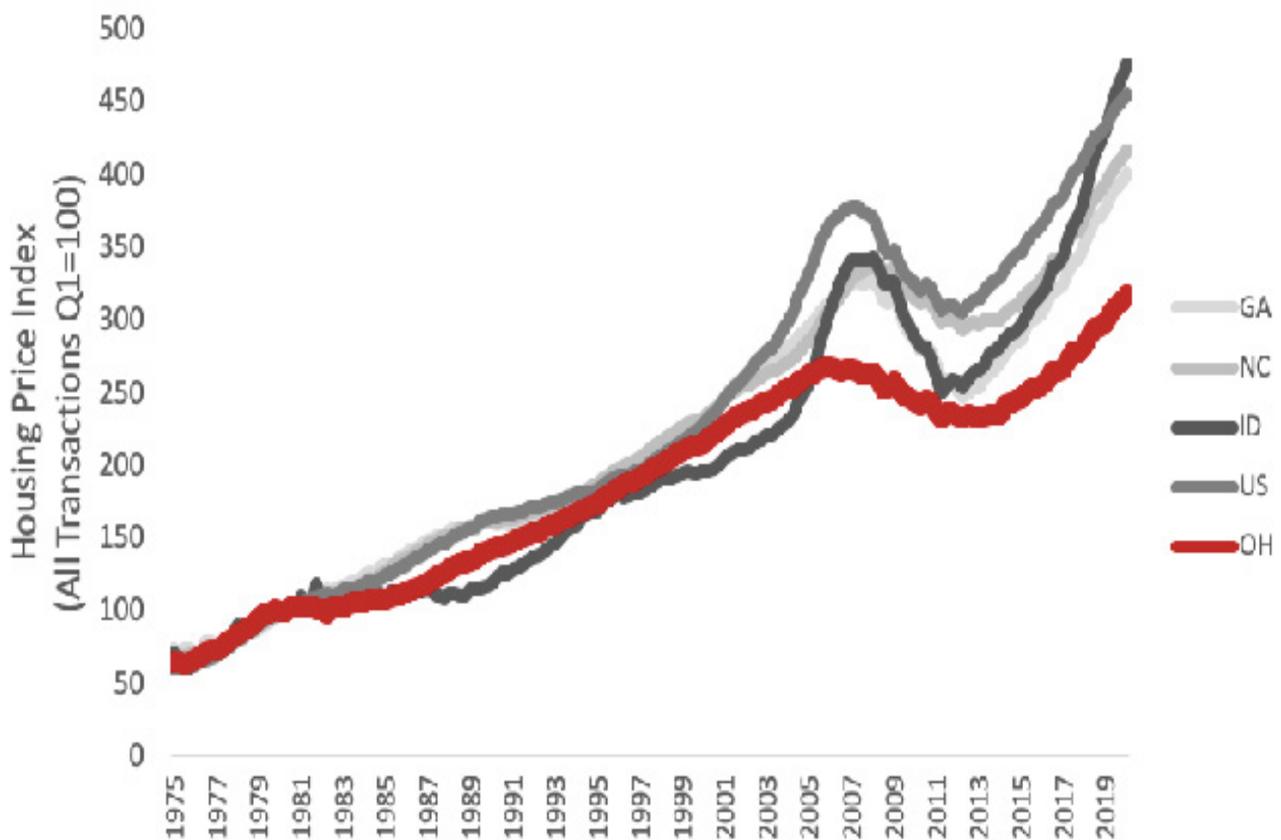


Source: IRS Exemptions Data 2017-2018

While it's true that natural amenities, like beaches and warm weather, certainly increase quality of life on average, they neither preclude places like Ohio nor are they the only consideration in quality of life decisions. Some states, like Wisconsin, have been able to capitalize on their winter weather by developing weather-appropriate recreational activities, like snowmobiling.⁵³ In these places, warmer weather is actually associated with lower growth and colder winters with higher growth. In this regard, Wisconsin has focused more on this unique comparative advantage in the competition to attract quality of life migrants. Moreover, natural amenities are not the only contributors to quality of life. Other local amenities – like restaurants and bars and arts and culture establishments – and public goods and services – like parks and public transportation – also increase quality of life.⁵⁴ While many amenities that contribute to quality of life capitalize on existing assets (such as natural resources), others can be built.

Ohio not only lacks some of the natural assets other states benefit from, but, perhaps more importantly, it has neither capitalized on the natural assets it does have nor built up local non-natural amenities to the same degree as other states. This is evident from its lagging population growth. People reveal preferences for various amenities by voting with their feet, and our current migration pattern should make it clear to Ohio’s policymakers that they do not prefer the current mix of amenities in our state. People also reveal their preferences by voting with their dollars. California’s high housing prices are largely a result of people bidding up the price of housing in desirable locations. Housing prices reflect not only the desirability of a house’s specific characteristics (the number of bedrooms and bathrooms, the size of the house, etc.), but also location, location, location. While “low housing prices” is often used a selling point for Ohio, what it really means is that people have been taking their dollars and voting for states like North Carolina, Georgia, and Idaho instead of Ohio (Figure 11).

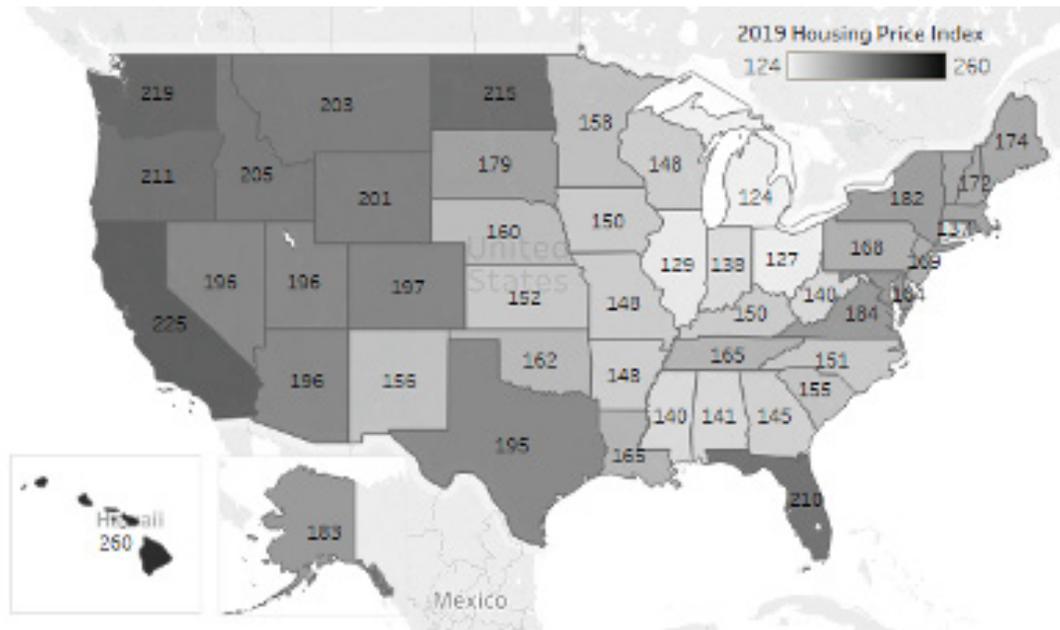
Figure 11: Ohio’s HPI is outpaced by the states where households prefer to locate



Source: All-Transactions House Price Index for the United States, Index 1980:Q1=100, Quarterly, Not Seasonally Adjusted

The fastest growing states see higher housing prices. Figure 12 shows that Ohio is lagging behind the nation in housing price growth, and currently ranks **49th** in a comparison of the Housing Price Index across states.⁵⁵

Figure 12: Households vote with their dollars for the most desirable places to live

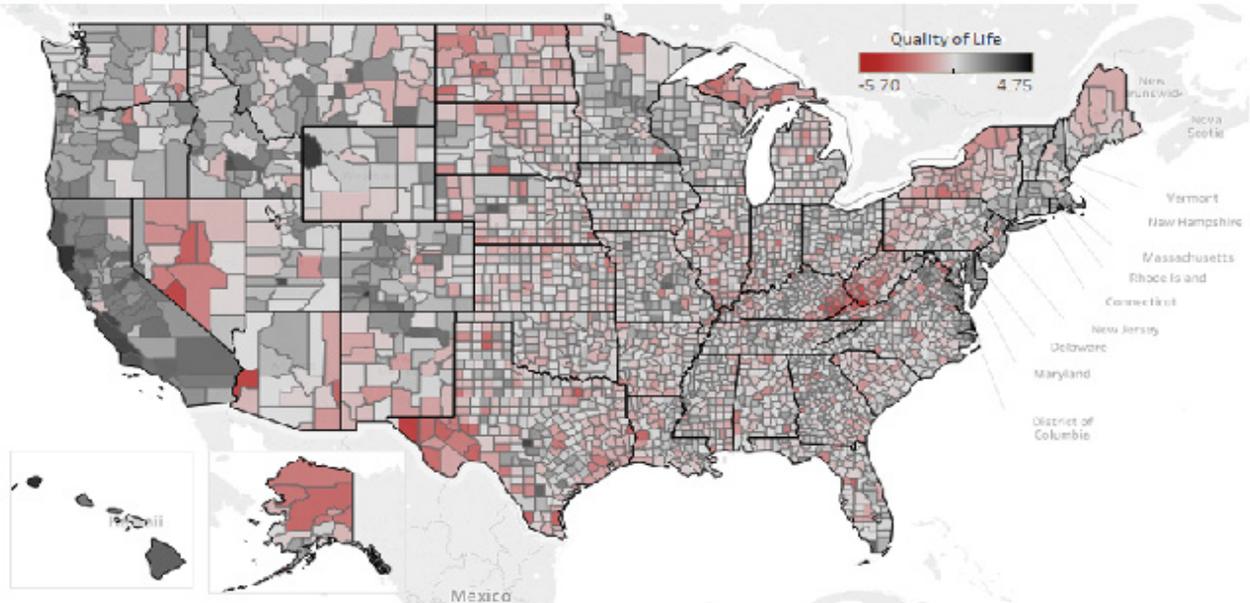


Source: FHFA Annual 2019 HPI base year 2000

Historically, households and firms have disagreed on what makes a place nice, but they both agree on their willingness to pay more to locate in the places they think are nice. Households are willing to pay higher housing prices and even forego higher wages for desirable locations and the bundle of amenities they offer. Thus, places with higher than expected housing prices (accounting for housing characteristics such as the number of rooms) and lower than expected wages (accounting for individual characteristics such as education and industry) must have higher quality of life because households are willing to pay to locate there (and revealing their preferences). Firms are willing to pay higher real estate prices and higher wages to locate in more productive places. Thus, places with higher than expected wages and housing prices (real estate prices) must have a higher quality of the business environment as firms are willing to pay to locate there. The correlation between estimates of the quality of life and the quality of the business (using willingness to pay) have historically been low, but we are seeing it rise over time as households and firms are increasingly choosing the same places.⁵⁶ This is not altogether surprising, since access to talented employees is an increasing challenge for firms; a focus on locating near places where well-educated workers live is an obvious result. The nicest places to live have in turn become the nicest places to business as well.

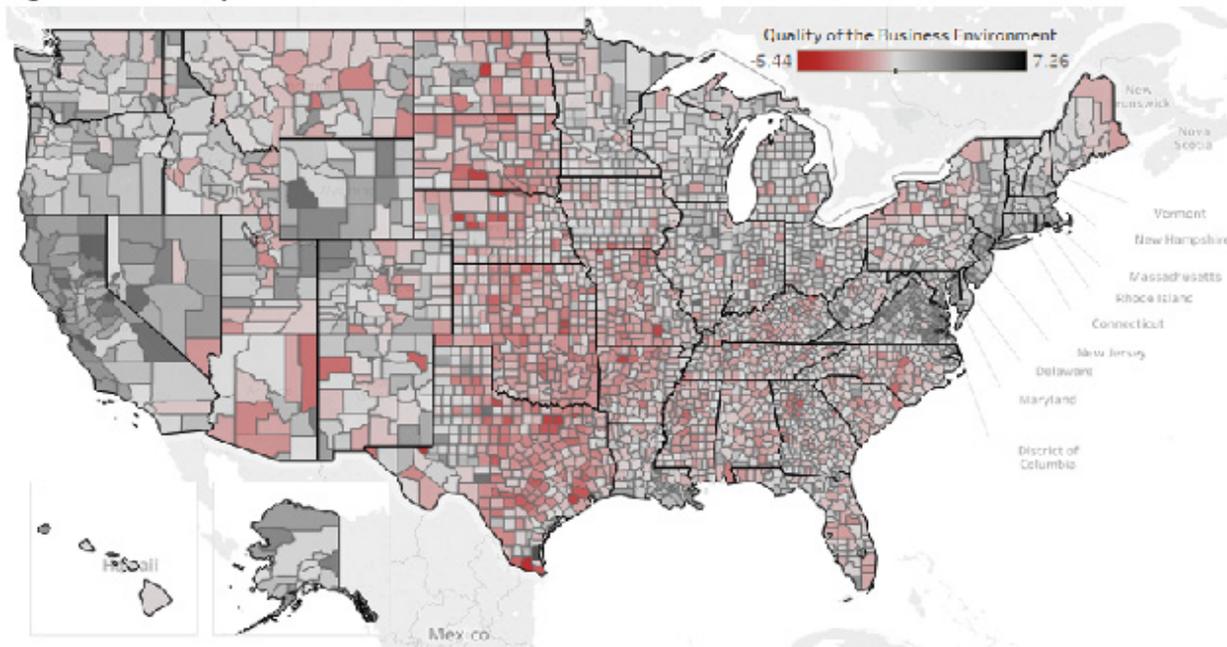
Using housing prices and wages (controlling for characteristics of the house and of the person), Figures 13 and 14 illustrates the premium households are willing to pay in order to live in a particular county (quality of life) and the premium firms are willing to pay to locate in a county (the quality of the business environment). Many of the fastest growing states, particularly along the west coast and eastern seaboard, have a high estimated quality of life and quality of the business environment.

Figure 13: Quality of Life Estimates



Source: Metropolitan Area Project

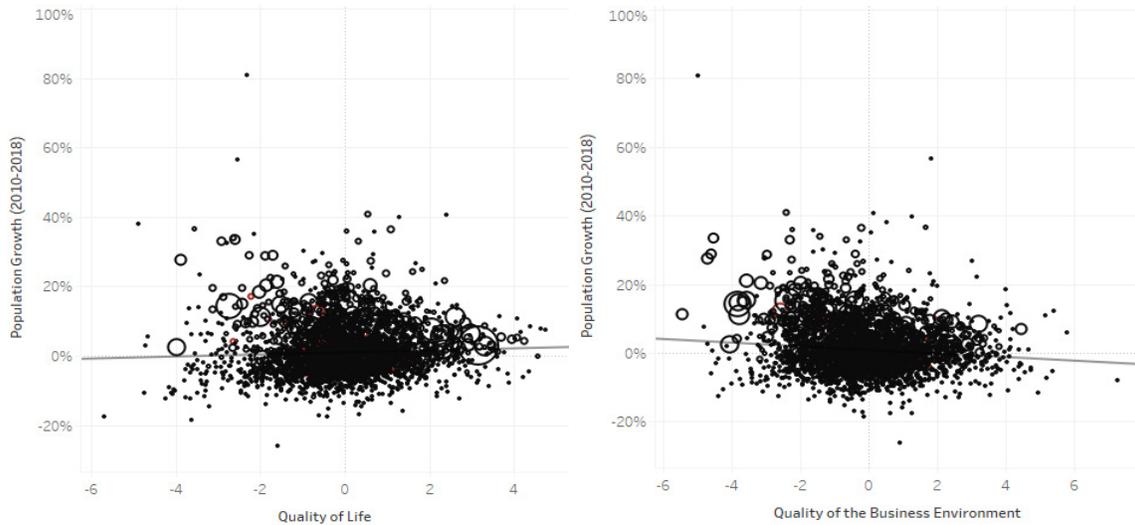
Figure 14: Quality of the Business Environment



Source: Metropolitan Area Project

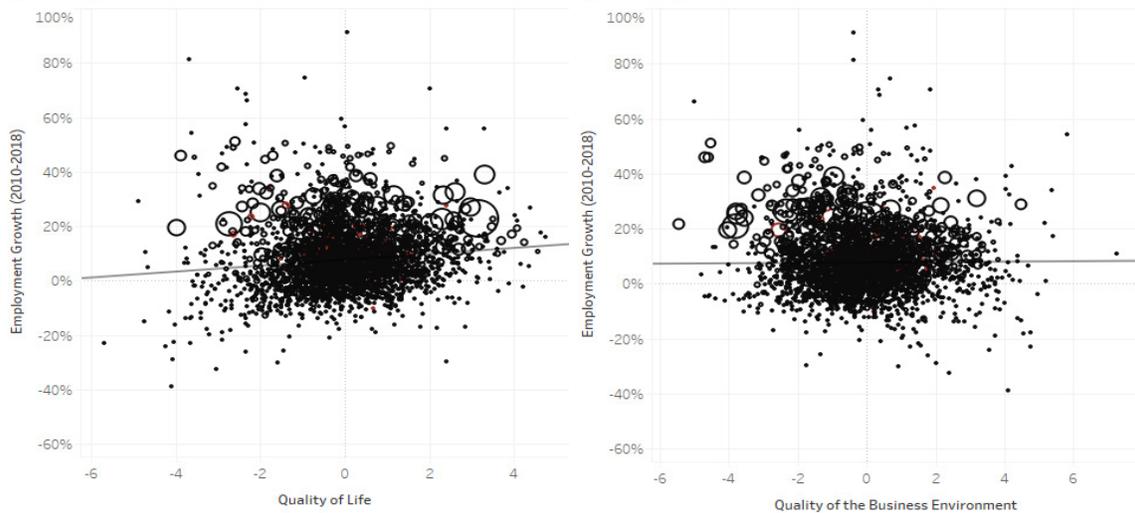
Counties with higher estimated quality of life are associated with higher population growth and higher employment growth between 2010 and 2018 (Figures 15 and 16). This is especially true for rural areas that have often struggled to keep pace with urban growth. Higher estimated quality of the business environment is not associated with higher population growth or higher employment growth. Population and jobs are flowing to counties that offer higher quality of life rather than those with a high quality of business environment.⁵⁷

Figure 15: Higher Quality of Life in Counties Is Associated with Higher Population Growth (But Not Higher Quality of the Business Environment)



Source: The Micropolitan Project

Figure 16: Higher Quality of Life in Counties Is Associated with Higher Employment Growth (But Not Higher Quality of the Business Environment)



Source: The Micropolitan Project

Higher quality of life and the mix of amenities can help keep and attract the most skilled workers, but preferences are not universal. Cultural and recreational amenities, for example, are associated with lower out-migration rates of young college-educated residents, whereas the preferences of older college-educated residents shifts more toward safety and milder climates.⁵⁸ Proximity to coastal areas and the Great Lakes region is associated with higher shares of college graduates.⁵⁹ *In 2018, Ohio ranked 45th in estimated quality of life.*⁶⁰ With lower estimated quality of life, however, Ohio will continue struggling to attract and keep a highly skilled workforce, which is one of the most consistent predictors of the long run success of cities and regions.

“Population and jobs are flowing to counties that offer higher quality of life rather than those with a high quality of business environment. With a low estimated quality of life, 45th in the nation, however, Ohio will continue struggling to attract and keep a highly skilled workforce, one of the most consistent predictors of long run success.”



Underutilized Waterfront Along Lake Erie’s Shores in Cleveland

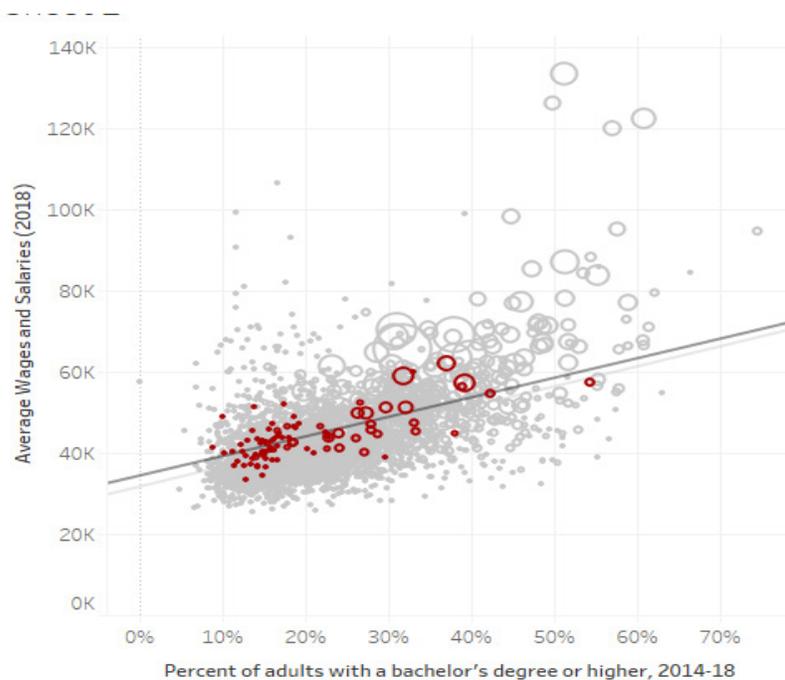


Source: Picture from Aerial Agents and McGraw, Daniel (April 4, 2018) “Lies, Damn Lies and the 450 Acres of Prime Real Estate That is Burke Lakefront Airport.” Clevescene

Educated Workers are the Engine of Economic Growth

In today's economy, educational attainment may be the single most important predictor of economic success. Economic growth stems from either growth in the size of the workforce or the productivity of that workforce. But only increases in productivity can grow the total economic output per person and improve our standard of living. Highly skilled workers are not only more productive they also increase the skills and productivity of the workers they interact with; even after controlling for the personal benefit of a college degree through higher wages, a 10 percent increase in the population's share of college graduates increase income growth by about 2 percent⁶¹ and increase average wages somewhere between 6 and 12 percent.⁶² In Ohio, as in the rest of the U.S., a higher share of the adult population in a county with a college degree is associated with a higher standard of living (Figure 17). When places fail to attract and keep a highly skilled workforce, they will fall behind in today's knowledge economy.

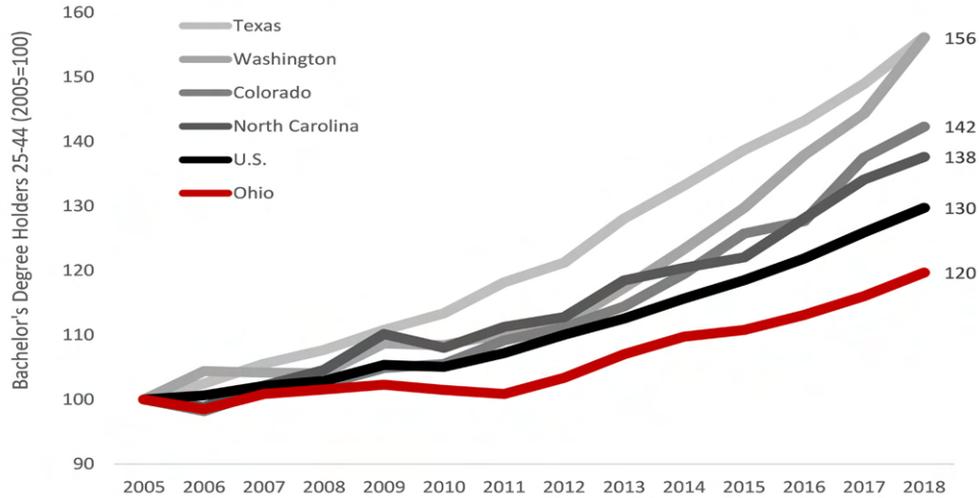
Figure 17: More Educated Counties have Higher Average Wages and Salaries



Source: USDA ERS and BEA

Although the number of Bachelor's degree holders in Ohio has grown over time as the share of the population age 25 to 44 with a Bachelor's degree increased from 27.1% in 2005 to 34% in 2018, Ohio has failed to keep pace with the rest of the nation as the rest of the nation has become comparatively more skilled.⁶³ The number of 25-44 year olds with a Bachelor's degree in Ohio has increased 20% (Figure 18) since 2005. Yet, the number of 25-44 year olds with a Bachelor's degree in the U.S. has increased 30% and Texas and Washington have increased by 56%!

Figure 18: Ohio is Falling Behind in Increasing the Number of College Graduates

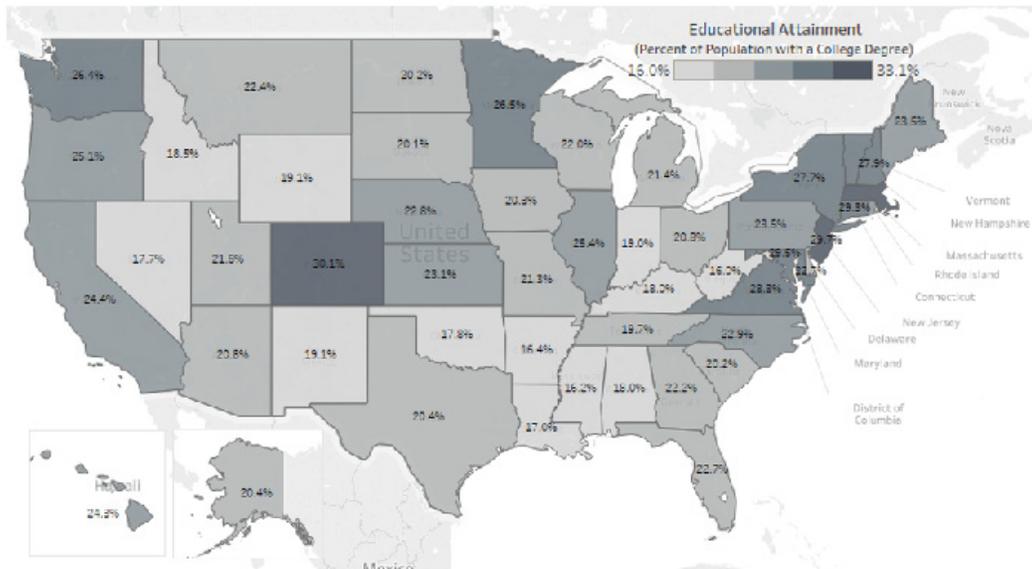


Source: National Science Foundation

As Ohio falls behind in educational attainment, its economic growth will also lag the nation. Economic growth in society, as in a business, stems from innovation, technology, and ideas that improve productivity. Workers that have a bigger impact on business’s productivity, and thus profits, reap higher wages and a higher standard of living. As a group, highly skilled workers, particularly college graduates, are more innovative. A 10 percent increase in the population’s share of college graduates increases the number of patents, a measure of innovation, by about 9 percent.⁶⁴

Ohio ranks **30th** in the share of the population with a college degree (Figure 19) & **30th** in the growth of average annual pay between 2015 and 2019 (Table 1).

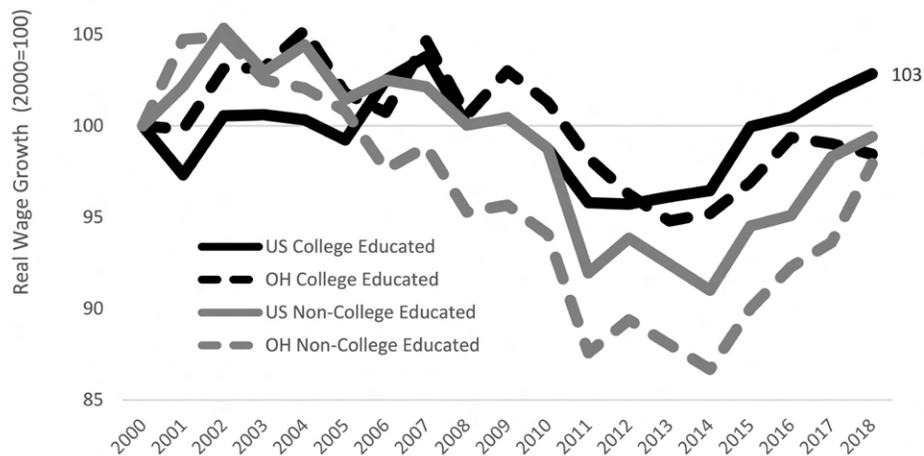
Figure 19: Ohio is Falling Behind in Educational Attainment



Source: Calculated with 2018 ACS data

Real wages (wages adjusted for inflation) have remained largely unchanged for many workers in the U.S., but not all. Only college educated workers have experienced growth in real wages in the U.S. since 2000 (increasing by about 3 percent - see Figure 20). In Ohio, however, wage growth for college educated workers lags growth for both college educated and non-college educated workers in the U.S. College educated workers, among the most mobile, can find real wages at least 7 percent higher elsewhere in the U.S. than they can in Ohio. That is a huge incentive for college graduates to take their skills with them to other states, particularly to those states that also offer them the quality of life amenities they are looking for. Indeed, there is evidence of a brain drain occurring in Ohio (and the Midwest more generally).⁶⁵

Figure 20: Only College Educated Workers have Experienced Growth in Real Wages Since 2000

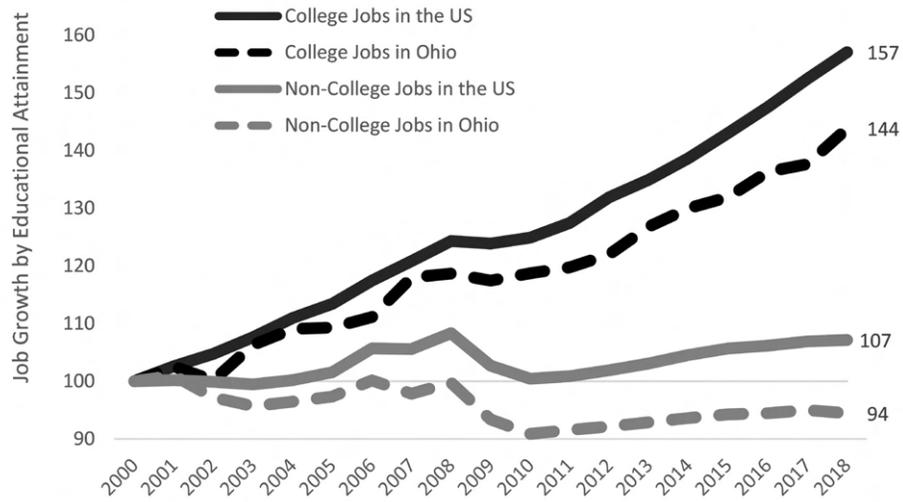


Source: Median inflation adjusted wage and salary data calculated using the ACS

In knowledge-based or an idea-based economy, college workers boost productivity, which in turn increases the benefit of hiring additional workers, which ultimately increases employment in an entire area. In a knowledge-based economy, jobs increasingly go to college-educated workers. *All of the job growth in Ohio since 2000 has gone to college-educated workers* (Figure 21). Even as Ohio continues to focus on attracting large manufacturing plants through economic development packages, non-college educated workers have not seen any job growth. Indeed, jobs for non-college educated workers in the state have fallen 6 percent since 2000, while at the same time increasing nationally. The national increase of jobs for non-college educated workers is largely a result of growth in service-based industries directly or indirectly supporting their knowledge-based economy – many by providing the local non-footloose jobs that increase quality of life.

A 10 percent increase in the share of the county population with a college degree is associated with just over a 4 percent increase in employment growth and just under a 4 percent increase in population growth (Figure 22). This is as true for Ohio (in red) as it is elsewhere in the nation. We can also see from figure 21 that college graduates have tended to prefer larger metro areas (the larger circles) which helps single workers looking for partners⁶⁶ and dual earner power couples (where both have a college degree and career) looking to locate in a city that offers a diverse set of job opportunities (industry diversity) along with urban consumption amenities.⁶⁷

Figure 21: All of the job growth in Ohio since 2000 has gone to college-educated workers



Source: ACS

Approximately 60 percent of the relationship between the share of the population with a college degree and employment growth is due to the increase in productivity associated with college educated workers. The rest is caused by increases in quality of life.⁶⁸ Quality of life amenities not only attract college educated workers, but college educated workers seem to attract the quality of life amenities that spur in-migration. In general, previous studies find a 10 percent increase in the college educated population in cities increases population growth by 5 percent.⁶⁹

Figure 22: More educated counties experience higher employment and population growth



Source: The Micropolitan Project

The relationship between the share of the population with a college degree and growth is most pronounced in declining areas.⁷⁰ Highly skilled college educated workers are better able to adapt to the negative shocks that declining regions have faced in recent decades. College educated workers make places more resilient. During the Great Recession, for example, college graduates and more generally workers with higher levels of both cognitive and people skills were less likely to face unemployment. Cities with higher shares of workers who possess both high cognitive and high people skills experienced more resilience in the face of the Great Recession and recovered more quickly.⁷¹ The economic success of a state, county, or city and its ability to adapt to the changing economic headwinds is almost exclusively a function of how well educated its workers are.

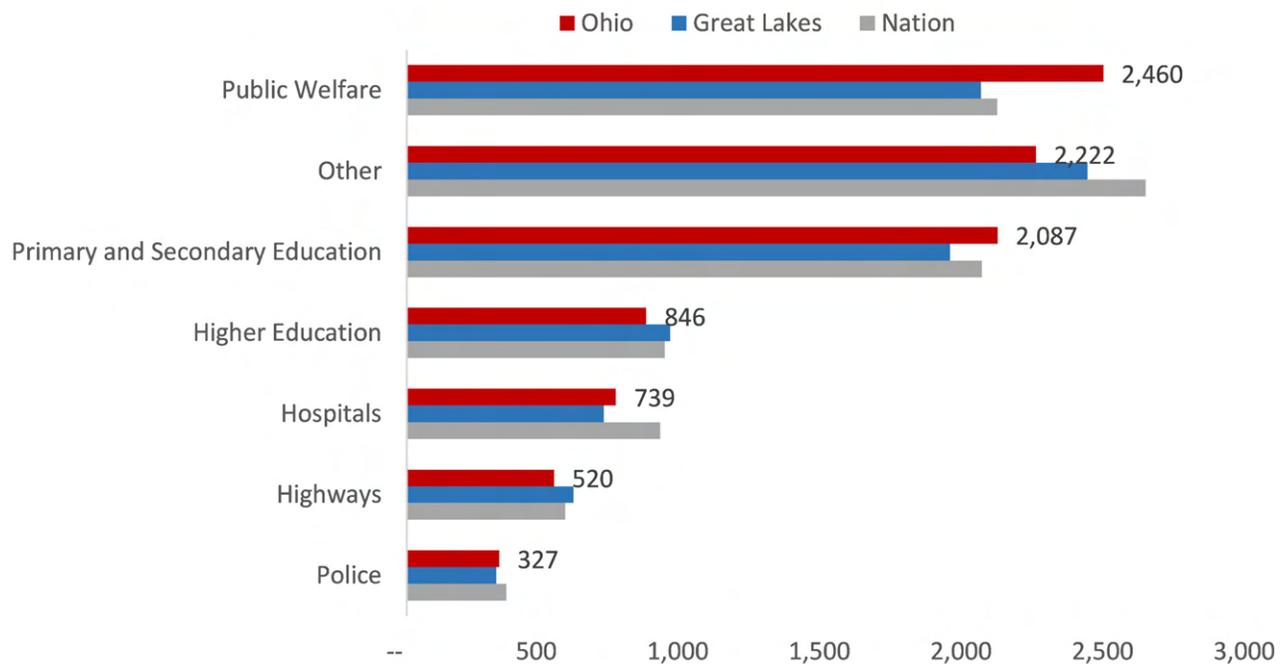
“Although the number of Bachelor’s degree holders in Ohio has grown over time, Ohio has failed to keep pace with the rest of the nation.”



Economic Development Policies for Ohio

Key institutions in Ohio have failed to adapt to the changing economic forces that determine growth in our modern economy. Though Ohio has more college graduates today than a decade ago, it has failed to keep pace with the educational attainment of other states and the nation. Ohio invests less in higher education than the nation and the Great Lakes region (Figure 23). *Ohio ranks 36th in higher education spending per capita.* Lower investments in four-year colleges decrease per capita income growth.⁷² Ohio spends more per capita on public welfare programs to address some of the very issues associated with lower educational attainment, including, among other things, Medicaid spending to address the health costs of low income households and associated with the opioid crisis. For example, higher educational attainment is associated with better health outcomes, lower crime rates, lower unemployment rates, higher income, and lower poverty rates. *Ohio has the 13th highest poverty rate in the nation.* This is also a result of Ohio's continued reliance on manufacturing. Opioid overdoses are more likely to occur in areas with large manufacturing plant closures, specifically automotive plant closures.⁷³ *In terms of public welfare spending per capita, Ohio ranks 15th highest.* This reality suggests that federal programs to support workers after plant closures, such as the Trade Adjustment Assistance program, are either ineffective or vastly underfunded.

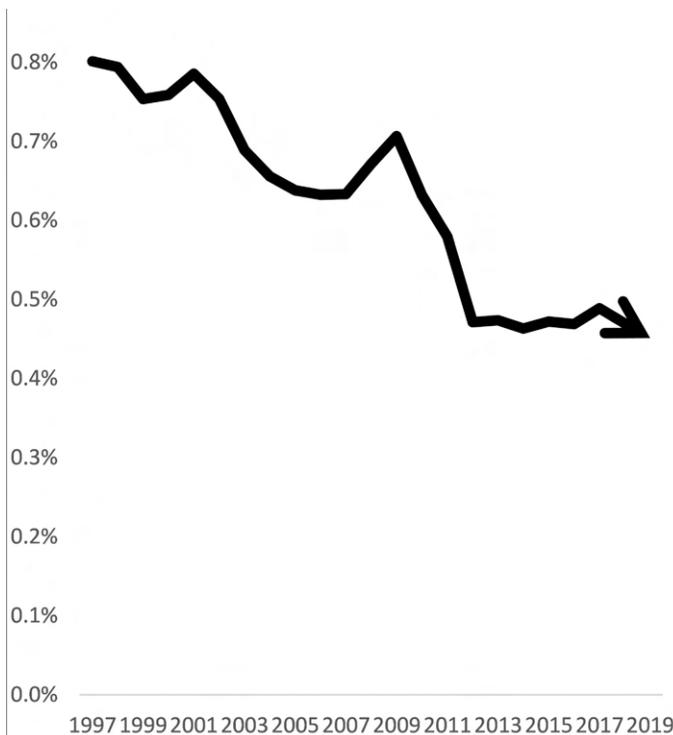
Figure 23: State and Local Expenditures Per Capita



Source: State and Local Expenditures Tax Policy Center, 2017⁷⁴

Further, as a share of GDP, Ohio’s spending on higher education has seen more than two decades of decline (Figure 24). For Ohio to regain its place in the U.S. economy, it must develop policies to increase educational attainment from early childhood through college. One way to increase educational attainment in Ohio is by investing in the skills of current residents, starting with early childhood education. Early investments in education have the largest impact and the highest return on investment at approximately 13% - through higher educational attainment, career achievement, and reduced costs in health and the criminal justice system.⁷⁵ Investments in early childhood education also reduce deficits, increases the labor force participation of parents, and strengthens the economy. Thus, it reduces poverty for both parents and children. For a state that has the 13th highest poverty rate in the nation, economic growth requires equitable growth through policies like investing in early childhood education. From a state that led the nation by making historically large investments in canals that would foster economic growth, Ohio has not made the same investments in the education of its workforce that would foster economic growth. Oklahoma is leading Ohio in early childhood education with a universal Pre-K program. Higher government spending on K-12 education also increases quality of life and the willingness of residents to pay to locate in a county.⁷⁶

Figure 24: Ohio’s Declining Share of Its GDP Spent on Higher Education



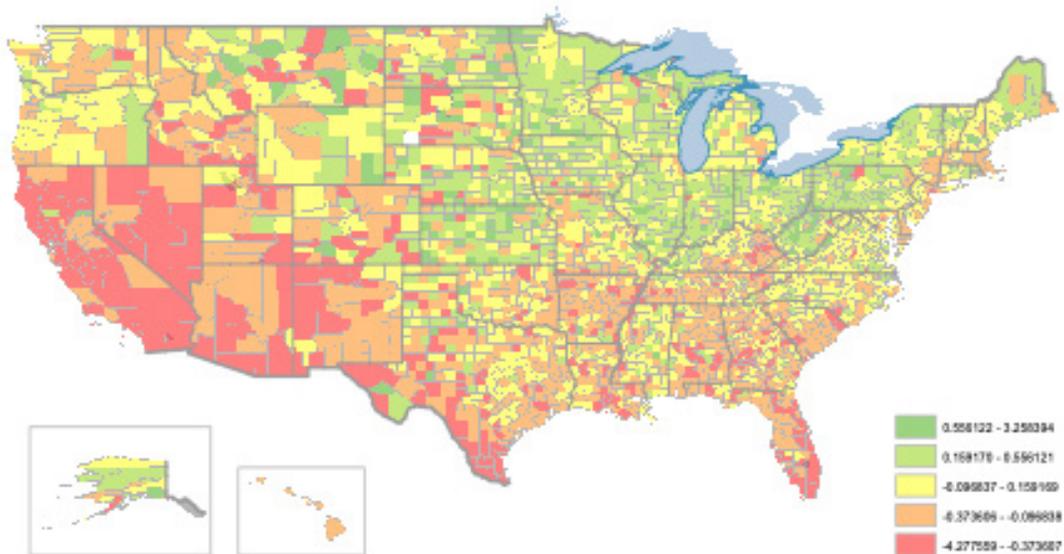
Source: National Association of State Budget Officers and the Bureau of Economic Analysis, U.S. BEA

Photo by: Andrew Neel from Pexels

Increasing the educational attainment and the skills of the current and future workforce in Ohio must be a top priority for the long term success of the state.

Ohio can also increase the share of college graduates by both keeping the college graduates it already has and attracting the in-migration of college graduates. The quality of life in an area and the bundle of consumption amenities an area offers have become increasingly important in keeping and attracting college graduates, which in turn determines the success of counties, cities, and states. Every state in the nation and every county within Ohio should be focused on both quality of life and educational attainment as key elements to both community and economic development. Ensuring Ohio is a nice place to raise a family and a nice place to live should be a top priority for Ohio. Ohio must capitalize on the natural amenities it does have, especially its waterfront areas, including lakes and rivers, and its parks. Although Ohio does not have the Rocky Mountains, it has its own set of natural amenities, from lakes and rivers to hiking and biking trails. When Ohio's high natural amenity counties are underperforming, it is a signal that they are not capitalizing on their natural amenities. This message may be especially important for declining areas along Lake Erie, but may also resonate in Ohio's rural counties that have the bulk of the state's forests, green and open space, inland lakes, parks, hunting areas, and other outdoor recreational amenities. Water quality concerns, such as algae blooms in Lake Erie near Toledo, that prevent recreational activities and perpetuate an outdated image of Ohio as an industrial-polluted state should be especially concerning to all Ohioans. In Ohio, improving quality of life may also mean figuring out how to capitalize on other quality of life assets – such as the existing stock of social capital, the strength and trust in the interpersonal relationships (Figure 25). Recent research finds that social capital increases business survival rates.⁷⁷

Figure 25: Social Capital, strength and trust in interpersonal relationships, is high especially in rural Ohio



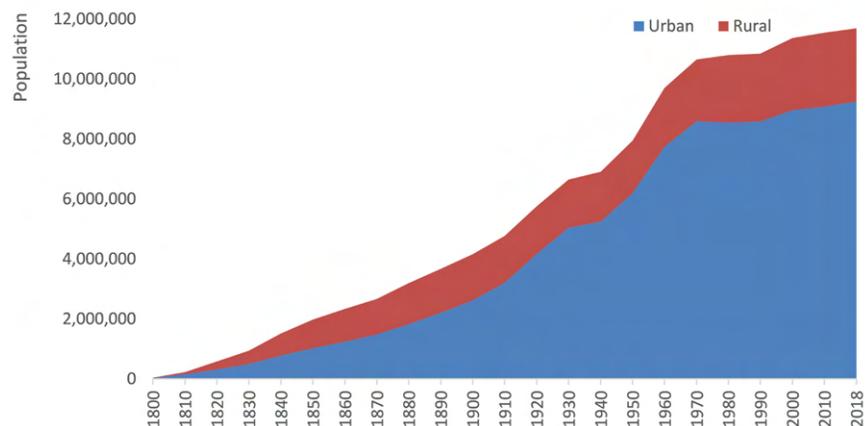
Source: Micropolitan Project

Some aspects of quality of life may be similarly important for every county in Ohio and can be approached from a state-level. For example, preferences for low crime rates, better air quality, higher spending on K-12 education, connectivity through roads and broadband, and recreation activities are all similar preferences regardless of the location.⁷⁸ Other quality of life amenities are best dealt with locally, as each city and county finds its comparative advantage in quality of life amenities. Although people generally prefer natural amenities, capitalizing on those natural amenities will look different as the natural amenities and preferences vary. Private goods and services can also capitalize on these natural amenities by creating places for visitors and residents to enjoy a meal or a drink after spending some time at the lake or park. Rather than a one-size-fits-all approach, local amenities should highlight the unique character of the community.

Highly educated urban areas that offer a variety of urban consumption amenities are the engines of economic growth in the U.S. These engines have largely stalled in Ohio as growth in Ohio's urban areas has stalled since 1970 (Figure 26). The success of Ohio's large metropolitan areas is critically important to the success of Ohio as a state as a whole but also to the success of the state's rural areas. Rural areas that are better connected to a healthy large urban city center experience higher growth (thus, the connectivity of rural areas to metropolitan areas becomes critically important – whether that is through roads and bridges or broadband).⁷⁹ Urban amenities such as arts and culture, restaurants and bars, retail, and walkable neighborhoods that provide easy access to these urban amenities are increasingly important to the success of cities.

Of the big 8 metro areas, only Columbus ranks in the top 100 metropolitan areas in terms of population growth ranking 87 out of 384 (Table 2). Migration data shows that nearly all of Columbus' population growth has come from other areas in Ohio.⁸⁰ Between 2017 and 2018, 97 percent of the migration into Franklin County came from within the state.⁸¹ Other than neighboring counties, the top counties sending residents to Columbus are other metropolitan counties, including Cuyahoga County (Cleveland) and Montgomery County (Dayton). Poaching population

Figure 26: The engines of Ohio's economic growth, its cities, have stalled



Source: U.S. Census

from other metropolitan areas within the state means that the growth Columbus has experienced for decades is likely unsustainable. Additionally, Columbus' growth comes at a clear cost to the state's other metro regions. Cleveland, for example, continues its decline in the rankings of population growth between 2015-2018, and is now 309th of 384 metropolitan areas. No metro area in Ohio ranks in the top 100 in terms of employment growth, GDP growth, or wage growth. Pittsburgh may be among the best examples of a Midwestern city that was able to pivot toward high-tech industries by leveraging its universities and entrepreneurial culture while reallocating resources to invest in revitalizing its urban core as suggested by urban planners such as Jane Jacobs.⁸² Jane Jacobs advocated for mixed-use dense development that supported every aspect of our varied daily lives from jobs to recreation amenities all within the urban core.

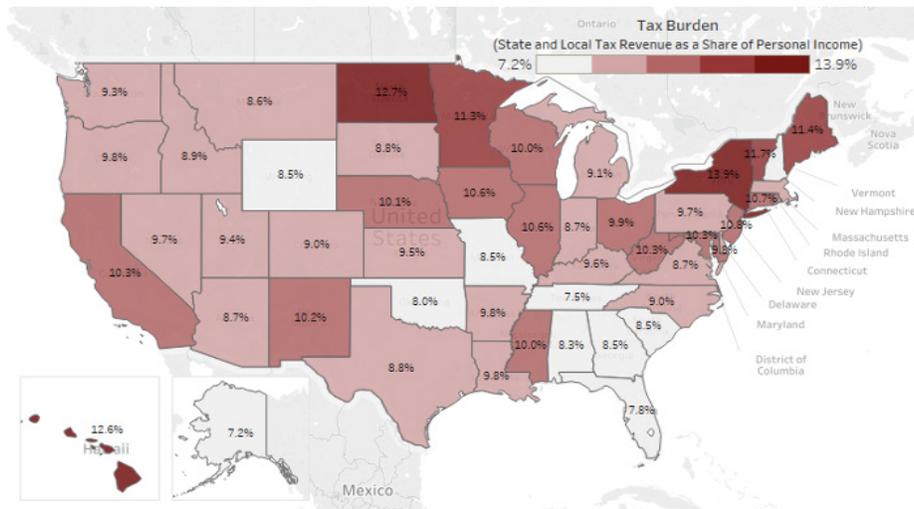
Table 2: Ohio metro area rankings show Ohio’s engines of economic growth have stalled

Metro	Population Growth (2015-2018)		Employment Growth (2015-2018)		GDP Growth (2015-2018)		Average Wage Growth (2015-2018)	
	% Change	Rank	% Change	Rank	% Change	Rank	% Change	Rank
Akron	0.1%	280	1.4%	307	2.6%	288	6.0%	295
Canton	-0.9%	337	2.2%	275	1.2%	323	6.5%	268
Cincinnati	1.5%	195	5.7%	120	6.1%	161	7.7%	183
Cleveland	-0.4%	309	2.9%	241	3.1%	269	7.0%	244
Columbus	3.9%	87	6.5%	101	5.7%	175	6.9%	248
Dayton	0.8%	236	3.7%	207	4.7%	211	7.2%	234
Toledo	-0.4%	310	1.9%	286	2.7%	284	7.4%	207
Youngstown	-1.8%	360	-0.6%	359	-0.8%	362	5.9%	300

Source: BEA Rankings out of 384 Metro Areas

Every county in Ohio, whether urban, suburban, or rural, must offer quality amenities including quality public goods and services, such as K-12 education and infrastructure. But governments also need to offer these public amenities in an efficient and transparent manner. All else equal, households and firms are not willing to pay higher taxes for the same level of goods and services they could get in another state for less. All else equal, higher taxes detract firms and households. Ohio currently ranks **19th** in the highest total tax burden (state and local tax revenue as a share of personal income).⁸³

Figure 27: State and Local Tax Burden

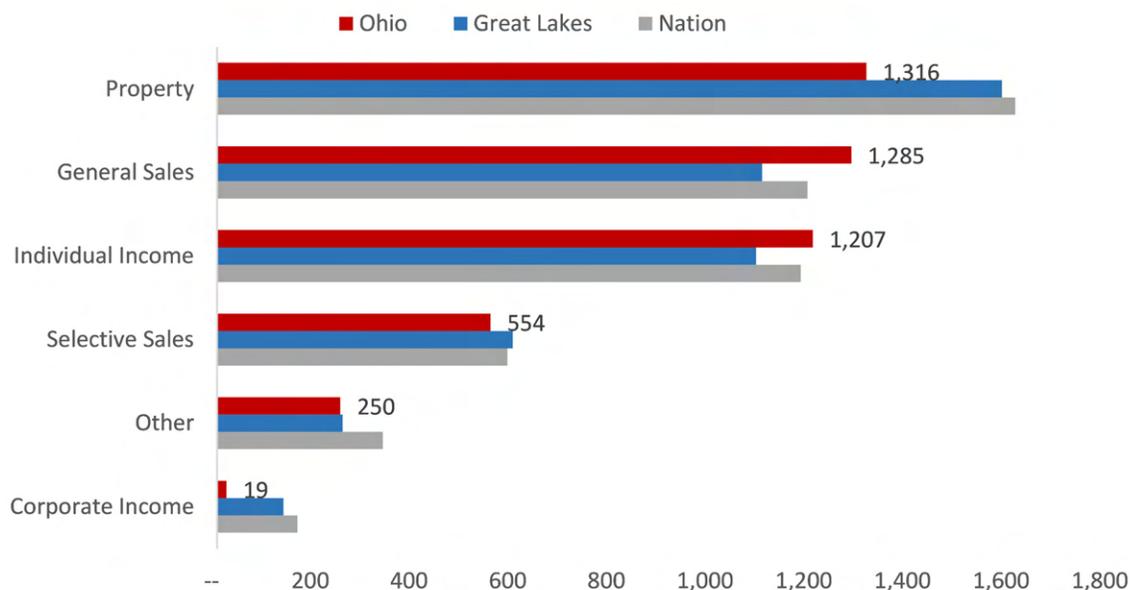


Source: Tax Policy Center, 2017⁸⁴

The higher tax burden in Ohio mainly stems from households (Figure 28). Compared to both the nation and the Great Lakes region, Ohio residents pay higher income taxes and general sales taxes. *Ohio ranks 16th in individual income tax revenue per capita.* Lowering income taxes makes work pay

more – an issue for long-term jobless workers in places that have experienced automotive plant closures and are left with lower paying jobs. Expanding programs like the Earned Income Tax Credit to subsidize workers, specifically secondary earners, could boost employment for the long-term jobless workers less willing to work for lower wages in a similar way that the current EITC program boosts employment for single mothers.⁸⁵ Lowering income taxes and shifting the tax burden away from household income, makes Ohio more attractive to households.

Figure 28: Households Pay Higher Income Taxes and Sales Taxes



Source: State and Local General Revenue Per Capita, Tax Policy Center, 2017⁸⁶

Corporations pay substantially lower taxes in Ohio compared to the Great Lakes region and the nation. *In 2017, Ohio ranked 5th lowest in corporate income tax revenue per capita.*⁸⁷ Yet, job growth in Ohio is 37th in the nation. Both Georgia and North Carolina have higher corporate income taxes and will soon surpass Ohio in employment and population rankings. Clearly, corporate taxes are only one factor in the decision to start a business or to locate a business in Ohio. Firms are increasingly following the most productive workers to the locations they prefer, and while firms are not willing to pay higher taxes, all else equal, they are willing to pay higher taxes to have access to more productive and more highly skilled workers. Firms are also willing to pay higher taxes for education spending that provides them with more skilled worker and for better infrastructure that improves access to markets. High-income productive workers, however, may not be willing to pay higher income taxes in a state unless that state offers them the amenities they prefer.

By lowering corporate income taxes and providing tax abatements and other economic development incentives, Ohio is taking a race-to-the bottom approach to economic development, an approach that has proven to be ineffective. Policymakers are no better at picking winners among firms in the economy than they are at picking the right stocks in the stock market. These types of economic development strategies are also prone to corruption, as in the alleged bribery scandal surrounding House Bill 6. **Overall, lower taxes do not have a significant effect on state growth and targeted tax incentives are more likely to harm growth than to support it.**⁸⁸

There is a high opportunity cost associated with ineffective sector-based economic development policies. A race-to-the top approach that instead invests in communities by increasing educational attainment, productivity, entrepreneurship, and connectivity through better internet access is more likely to boost growth in states.⁸⁹

Encouraging entrepreneurship and economic growth through small businesses is likely to offer a greater return on investment than tax breaks to large firms.⁹⁰ States with a higher share of small businesses have a more diverse, dynamic, and productive workforce with higher GDP growth. Thus, states with a higher share of small businesses and a higher share of college-educated workers are better able to adjust to the economic headwinds increasing the speed of economic growth. Ohio should focus more on the goods and services it provides for small businesses than lowering the tax rates for just a few favored large firms. The impact of Coronavirus on Ohio's small businesses will likely be especially detrimental to a state that has struggled to encourage small business growth.

“In the long run, this overemphasis on attracting one large firm or industry stifles the development and growth of other businesses and industries, and the economic incentives typically offered to export-based industries have a negative effect on overall start-ups and job growth.”



Source: Photo by Kaique Rocha from Pexels

Summary and Policy Discussion

This study examines the rapid rise and slow decline of Ohio’s economic fortunes. The goal of this work is to open a much broader discussion surrounding policies that influence the long run growth of the state. Ohio’s experience of a once booming population to one of stagnant economic growth is not unique. Indiana, Michigan, Wisconsin, Illinois, and Pennsylvania all face similar challenges. In each of those states, especially in cities, which have been hardest hit by rustbelt declines, important, long term conversations surrounding economic development, education, and tax policies are in full swing. These discussions are focused on improving the quality of life for current residents and the economic opportunity for future residents. While these conversations vary in different communities, they share a common realization that economic growth in the 21st Century will be led by highly educated workers living in communities that are attractive and accessible. These workers care about local amenities, especially the quality of educational opportunities for their children. Ohio is falling behind in both educational attainment and in quality of life.

This conversation is important for Ohio. Our state is now one-fifth of the way through the 21st Century, but still dominated by a suite of mid-20th Century economic development, education, and tax policies. These policies are not sufficient to the task of crafting a prosperous and growing Ohio throughout the remainder of this century. The unintended consequence of outdated economic policies that favor one industry or one business over another as policymakers attempt to pick winners and losers in the economy is to crowd out and stifle new industries and new firms while failing to diversify Ohio’s economy. For example, while JobsOhio has spent \$70 million so far on one proposed cracker plant in a questionable attempt to further capitalize on extracting natural resources, Ohio has failed to capitalize on its natural amenities – with a far greater potential value to Ohio’s economy. Ohio sits on one of the largest inland lakes in the world – yet counties along Lake Erie are in decline. In the U.S., counties with natural amenities like these experience higher growth; in Ohio, they experience lower growth. Moreover, natural amenities are not the only contributors to the type of quality of life that results in economic growth. Other local amenities – restaurants and bars and arts and culture establishments – and public goods and services – like parks and public transportation – also increase quality of life. These built amenities are especially important for cities in Ohio that have failed to keep pace with other cities in the U.S. The opportunity cost of policymakers using government funds to deplete Ohio’s natural capital is the investments that could have been made to increase its natural capital instead as well as other built amenities to find Ohio’s comparative advantage in the race to improve quality of life.

Metric	Rank
Job Growth	37 th
Population Growth	31 st
Gross State Product Growth	30 th
Wage Growth	30 th
College Graduate Share	30 th
Higher Education Spending Per Capita	36 th
Public Health	38 th
State and Federal Park Acres Per Capita	42 nd
Quality of Life	45 th
Self-Employment Share	47 th
Industry Diversity	45 th
Manufacturing Employment Share	5 th
Corruption	7 th
Out Migration	12 th
Poverty Rate	13 th
Income Tax Revenue Per Capita	16 th
State and Local Tax Burden	19 th



Ohio’s low quality of life and stagnant wage growth on top of the higher tax burden households face are enough to push many college graduates, among the most geographically mobile, to leave Ohio taking their skills with them, resulting in a brain drain. Despite the large number of universities in Ohio (Ohio ranks 19th in the nation in the number of universities per capita), many college graduates do not stay.⁹¹ Instead of capitalizing on the educational infrastructure of the state, Ohio has cut higher education funding while falling behind on the amenities Ohio has to offer well educated workers. Ohio is falling behind in nearly every metric that provides an indication of the long run economic prospects of a state.

As Ohio considers how to respond to economic challenges in the wake of COVID-19, we will continue to perform analysis of the cause of growth differences between places. We will apply those lessons to policy dimensions, aimed at informing and influencing both state and local policy. In the coming months, we will produce a number of short policy studies, which outline potential state and local actions to propel Ohio to faster, broader, and more equitable growth throughout the remainder of the 21st Century.

“Ohio is falling behind in nearly every metric that provides an indication of the long run economic prospects of a state.”



References

1. Glaeser E.L., Kohlhase J.E. (2004) Cities, regions and the decline of transport costs. In: Florax R.J.G.M., Plane D.A. (eds) Fifty Years of Regional Science. Advances in Spatial Science. Springer, Berlin, Heidelberg.
2. Guelzo, Allen C. 1999. Abraham Lincoln: redeemer President. Grand Rapids, Mich: W.B. Eerdmans.
Digital History. (2019). "Accelerating Transportation." https://www.digitalhistory.uh.edu/disp_text-book.cfm?smtID=2&psid=3509
3. Case Western Reserve University. "Ohio and Erie Canal." Encyclopedia of Cleveland History. <https://case.edu/ech/articles/o/ohio-and-erie-canal#:~:text=With%20its%20terminus%20on%20the,and%20required%20146%20lift%20locks.Ohio>
Ohio History Central. "Miami and Erie Canal." http://ohiohistorycentral.org/w/Miami_and_Erie_Canal#:~:text=The%20canal%20commissioners%20estimated%20that,which%20was%20interest%20on%20loans.
4. Ohio History Central "Early Industrialization." https://ohiohistorycentral.org/w/Early_Industrialization
Ohio History Central. "Agriculture and Farming in Ohio." https://ohiohistorycentral.org/w/Agriculture_and_Farming_in_Ohio
5. Kaestle, Carl F. (1988). "Public Education in the Old Northwest: Necessary to Good Government and the Happiness of Mankind". The Indiana Magazine of History, 60-74.
6. United States. Bureau of Labor Statistics. (1934). History of wages in the United States from Colonial times to 1928. Washington: United States Govt. Print.
7. U.S. Bureau of Economic Analysis (2019) SAINC30
8. Ohio History Central. "Railroads." <https://ohiohistorycentral.org/w/Railroads>
9. Ohio History Central. "Urbanization." <https://ohiohistorycentral.org/w/Urbanization>
10. Wolch, Jennifer R. and Jason Byrne, Joshua P. Newell. (2014). "Urban greenspace, public health, and environmental justice: The challenge of making cities 'just green enough'" Landscape and Urban Planning, 125:234-244.
11. Bloom, David E. and David Canning and Jaypee Sevilla. (2001). "The Effect of Health on Economic Growth: Theory and Evidence." NBER Working Paper No. 8587. <https://www.nber.org/papers/w8587>
12. Cain, L. (1972). Raising and Watering a City: Ellis Sylvester Chesbrough and Chicago's First Sanitation System. Technology and Culture, 13(3), 353-372.
Chicago. (n.d.). In Wikipedia. <https://en.wikipedia.org/wiki/Chicago#:~:text=During%20the%201870s%20and%201880s,movement%20to%20improve%20public%20health.&text=The%20chief%20advocate%20for%20improving,Chicago's%20park%20system%20in%201866.>

13. Data on total state and federal park acres from Playground Equipment.com “U.S. States Ranked by State and National Park Coverage” <https://www.playgroundequipment.com/us-states-ranked-by-state-and-national-park-coverage/> combined with 2018 population data from the U.S. Bureau of Economic Analysis.
14. United Health Foundation and the American Public Health Association. (2019). “America’s Health Rankings Annual Report” https://assets.americashealthrankings.org/app/uploads/ahr_2019annualreport.pdf
15. Ohio History Central. “City Bosses” https://ohiohistorycentral.org/w/City_Bosses
16. McCarthy, Niall (Feb, 2020). “The Worst U.S. States for Corruption.” Statista. <https://www.statista.com/chart/20877/federal-corruption-convictions-per-10000-inhabitants/>
17. Johnson, Noel D. and Courtney L. LaFountain and Steven Yamarik. (2011). “Corruption is bad for growth (even in the United States)” *Public Choice*, 147: 377-393.
18. Gaspar, J. & Glaeser, E. L. (1998) “Information technology and the future of cities.” *Journal of Urban Economics*, 43: 136-156.
19. Button, Kenneth and Somik Lall. (1999). “The Economics of Being and Airport Hub City.” *Research in Transportation Economics*, 5: 75-105.
20. Brueckner, Jan. (2003). “Airline Traffic and Urban Economic Development” *Urban Studies*, 40(8): 1455-1469.
21. Green, Richard K. (2007). “Airports and Economic Development.” *Real Estate Economics*, 35(1): 91-112.
22. Federal Aviation Administration. Preliminary CY 2019 Passenger Boarding Data. https://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/
23. Duranton, Gilles and Diego Puga. (2013). “The Growth of Cities” *Handbook of Economic Growth* 2:781-853.
24. Henderson, J. Vernon, Ari Kuncoro, and Matt Turner. (1995). “Industrial development in cities.” *Journal of Political Economy*, 103(5):1067–1090.
25. Papyrakis, E. and R. Gerlagh. (2007). “Resource Abundance and Economic Growth in the United States.” *European Economic Review*, 51(4): 1011-1039.
26. Columbus Dispatch (Jan 28, 2014) “Fracking: So where’s the economic boom that was promised?” <https://www.dispatch.com/article/20140128/NEWS/301289852>
27. Weinstein, A., and M. Partridge. 2011. “The Economic Value of Shale Natural Gas in Ohio.” Swank Program in Rural-Urban Policy Summary and Report.

28. Glaeser, Edward L., Heidi Kallal, José A. Scheinkman, and Andrei Schleifer. 1992. Growth in cities. *Journal of Political Economy* 100(6):1126–1152.
29. Calculated using IPUMS Census 1950 data and HHI
30. Calculated using IPUMS American Community Survey data for 2015 and HHI
31. Devaraj, Srikant, Michael Hicks, Emily Wornell and Dagny Faulk (2017) “How Vulnerable are American Communities to Automation, Trade & Urbanization” Center for Business and Economic Research, and Rural Policy Research Institute Center for State Policy, Ball State University, June 19, 2017.
32. Federal Reserve Economic Data. All Employees, Manufacturing/All Employees, Total Non-farm. <https://fred.stlouisfed.org/graph/?g=cAYh#0>
33. Visual Capitalist. “Visualizing 150 Years of U.S. Employment History.” <https://www.visual-capitalist.com/visualizing-150-years-of-u-s-employment-history/#:~:text=The%20agricultural%20sector%20was%20king,60%25%20of%20all%20U.S.%20employment.>
34. U.S. Bureau of Economic Analysis (2018).
35. Federal Reserve Economic Data. Industrial Production: Total <https://fred.stlouisfed.org/series/INDPRO#0>
36. Devaraj, Srikant, Michael Hicks, Emily Wornell and Dagny Faulk (2017) “How Vulnerable are American Communities to Automation, Trade & Urbanization” Center for Business and Economic Research, and Rural Policy Research Institute Center for State Policy, Ball State University, June 19, 2017.
37. O’Sullivan, A. (2003). *Urban economics*. Boston: McGraw-Hill/Irwin.
38. IPUMS American Community Survey (2018)
39. Patrick, Carlianne (2016). “Identifying the Local Economic Development Effects of Million Dollar Facilities.” *Economic Inquiry*, 54(4): 1737-1762.
40. Partridge, Mark, and Sydney Schreiner, Alexandra Tsvetkova, and Carlianne Patrick. (2020). “The Effects of State and Local Economic Incentives on Business Start-Ups in the United States: County-Level Evidence.” *Economic Development Quarterly*, 34(2).
41. Haltiwanger, J., Jarmin, R. S., Miranda, J. (2013). “Who creates jobs? Small versus large versus young.” *Review of Economics and Statistics*, 95(2), 347-361.
42. Bunten, D., Weiler, S., Thompson, E., & Zahran, S. (2015). “Entrepreneurship, information, and growth.” *Journal of Regional Science*, 55(4), 560-584.
Goetz, S. J., Fleming, D. A., & Rupasingha, A. (2012). “The economic impacts of self-employment.”

Journal of Agricultural and Applied Economics, 44(3), 315-321.

Komarek, T. M., & Loveridge, S. (2014). "Too big? Too small? Just right? An empirical perspective on local firm size distribution and economic growth in U.S. counties and high-poverty rural regions." *Economic Development Quarterly*, 28(1), 28-41.

Komarek, T. M., & Loveridge, S. (2015). "Firm sizes and economic development: Estimating long-term effects on U.S. county growth, 1990–2000." *Journal of Regional Science*, 55(2), 262- 279.

43. Stephens, H., Partridge, M. D. (2011). "Do small businesses matter for economic growth in Appalachia?" *Growth and Change*, 42(4), 431-465.

44. Stephens, H., Partridge, M. D., Faggian, A. (2013). "Innovation, entrepreneurship and economic growth in lagging regions." *Journal of Regional Science*, 53(5), 778-812

45. IPUMS, American Community Survey (2018).

46. Footloose jobs refer to manufacturing, logistics, the management of companies and enterprises, insurance, securities.

47. Rappaport, Jordan. (2007). "Moving to nice weather," *Regional Science and Urban Economics*, Elsevier, vol. 37(3), pages 375-398.

48. Partridge, Mark. (2010). "The dueling models: NEG vs amenity migration in explaining US engines of growth." *Papers in Regional Science*, 89(3): 513-536.

49. Library of Congress. "California: Magnet for Tourists and Home Buyers." <https://www.loc.gov/collections/california-first-person-narratives/articles-and-essays/early-california-history/magnet-for-tourists-and-home-buyers/>

50. Stephens, H. and M. Partridge. (2015). "Lake Amenities, Environmental Degradation, and Great Lakes Regional Growth." *International Regional Science Review*, 38(1)

51. Demographics Research Group. Weldon Cooper Center for Public Service. University of Virginia. <https://demographics.coopercenter.org/national-population-projections>

52. Census (2018) <https://www.census.gov/data/tables/time-series/demo/geographic-mobility/state-to-state-migration.html>

53. Partridge, M. and D. Rickman, K. Ali, M.R. Olfert. (2008). "The Geographic Diversity of U.S. Nonmetropolitan Growth Dynamics: A Geographically Weighted Regression Approach." *Land Economics*, 84(2): 241-266.

54. Glaeser, Edward L. and Jed Kolko and Albert Saiz. (2001). "Consumer City." *Journal of Economic Geography*, 1(1):27-50.

Albouy, David Y. (2008). "Are Big Cities Bad Places to Live? Estimating Quality of Life across Metropolitan Areas."

National Bureau of Economic Research Working Paper 14472

Reynolds, C.L. and A. Weinstein. (2020 Working Paper) “Gender Differences in Quality of Life and Preferences for Location-specific Amenities across Cities”

55. Federal Housing Finance Agency (2019). Housing Price Index base year 2000
<https://www.fhfa.gov/DataTools/Downloads/Pages/House-Price-Index-Datasets.aspx>

56. Chen, Y. and S. Rosenthal (2008). “Local amenities and life-cycle migration: Do people move for jobs or fun?” *Journal of Urban Economics*, 64(3): 519-537.

57. The Micropolitan Project. Robert Wood Johnson Foundation grant through the Institute for Advanced Learning & Research, “Charting a More Prosperous Future for America’s Micropolitan Regions.” Michael Hicks, Amanda Weinstein, and Emily Wornell, June 2019-November 2020.

58. WWhisler, R. and B. Waldorf, G. Mulligan, and D. Plane. (2008). “Quality of Life and the Migration of the College-Educated: A Life-Course Approach.” *Growth and Change*, 39(1): 58-94.

59. SStephens, H. and M. Partridge. (2015). “Lake Amenities, Environmental Degradation, and Great Lakes Regional Growth.” *International Regional Science Review*, 38(1)

60. Author estimations using IPUMS American Community Survey 2018 data. Hedonic housing and wage regressions were used to estimate normalized state fixed effects that indicate the premium household are willing to pay (in higher housing prices and lower wages) in order to live and work in a more desirable state.

61. Glaeser, Edward L. and Albert Saiz (2003), “The Rise of the Skilled City,” NBER Working Paper 10191

62. Moretti, E. (2003). “Estimating the Social Return to Higher Education: Evidence from Longitudinal and Repeated Cross-Sectional Data,” *Journal of Econometrics*.

63. National Science Foundation. (2018). Bachelor’s Degree Holders among Individuals 25–44 Years Old. <https://nces.gov/indicators/states/downloads>

64. Glaeser, Edward L. and Albert Saiz (2003), “The Rise of the Skilled City,” NBER Working Paper 10191

65. Partridge, M. and D. Rickman, K. Ali, M.R. Olfert. (2008). “The Geographic Diversity of U.S. Nonmetropolitan Growth Dynamics: A Geographically Weighted Regression Approach.” *Land Economics* 84(2): 241-266.

66. Compton J, Pollak R (2007) Why are power couples increasingly concentrated in large metropolitan areas? *J Labor Econ* 25(3):475–512

67. Dora L. Costa, Matthew E. Kahn, Power Couples: Changes in the Locational Choice of the College Educated, 1940–1990, *The Quarterly Journal of Economics*, Volume 115, Issue 4, November 2000, Pages 1287–1315

- 68.** Shapiro, J. (2006) “Smart Cities: Quality of Life, Productivity, and the Growth Effects of Human Capital.” *The Review of Economics and Statistics*, 88(2): 324-335.
- 69.** Glaeser, Edward L. and Albert Saiz (2003), “The Rise of the Skilled City,” NBER Working Paper 10191
- 70.** Glaeser, Edward L. and Albert Saiz (2003), “The Rise of the Skilled City,” NBER Working Paper 10191
- 71.** Weinstein, A. and C. Patrick. (2020). “Recession-proof skills, cities, and resilience in economic downturns.” *Journal of Regional Science*, 60(2): 348-373.
- 72.** Aghion, P., Boustan, L., Hoxby, C. M., & Vandenbussche, J. (2009). The causal impact of education on economic growth: Evidence from the U.S. (mimeo) Department of Economics: Harvard University (March).
- 73.** Penn Medicine News. (Dec 30, 2019). “When Automotive Assembly Plants Close, Deaths from Opioid Overdoses Rise.” <https://www.pennmedicine.org/news/news-releases/2019/december/when-automotive-assembly-plants-close-deaths-from-opioid-overdoses-rise>
- 74.** Tax Policy Center (2017) State and Local Expenditures <https://www.taxpolicycenter.org/statistics/state-and-local-general-expenditures-capita>
- 75.** The Heckman Equation. FAQ for The Lifecycle Benefits of an Influential Early Childhood Program. <https://heckmanequation.org/resource/faq-lifecycle-benefits-influential-early-childhood-program/>
- 76.** The Micropolitan Project
- 77.** Conroy, Tessa and Steven Deller. (2020). “Regional Level Social Capital and Business Survival Rates.” *The Review of Regional Studies*, 50: 230-259.
- 78.** The Micropolitan Project
- 79.** Partridge, Mark, Rickman, Dan, Ali, Kamar, Olfert, M. Rose (2008). “Employment Growth in the American Urban Hierarchy: Long Live Distance.” *The B.E. Journal of Macroeconomics*, 8(1). <https://www.degruyter.com/view/journals/bejm/8/1/article-bejm.2008.8.1.1627.xml.xml>
- 80.** Millsap, Adam. (Aug 6, 2018). “Columbus, Ohio Is Booming But Will It Last?” *Forbes*. <https://www.forbes.com/sites/adammillsap/2018/08/06/columbus-ohio-is-booming-but-will-it-last/#865f6ec25be1>
- 81.** IRS 2017-2018 Migration Data. <https://www.irs.gov/statistics/soi-tax-stats-migration-data>
- 82.** The Economist. “From rustbelt to brainbelt.” <https://www.economist.com/special-report/2020/07/23/from-rustbelt-to-brainbelt>
The Economist. “The Urban Prairie” <https://www.economist.com/special-report/2020/07/23/the-urban-prairie>

- 83.** Tax Foundation <https://taxfoundation.org/publications/state-local-tax-burden-rankings/> , Tax Policy Center, 2017 <https://www.taxpolicycenter.org/statistics/state-and-local-general-expenditures>
- 84.** Tax Policy Center (2017) State and Local General Expenditures <https://www.taxpolicycenter.org/statistics/state-and-local-general-expenditures>
- 85.** Glaeser, Edward L. (2018). “Mission: Revive the Rust Belt.” <https://www.city-journal.org/revive-rust-belt>
- 86.** Tax Policy Center (2017) State and Local General Revenue Per Capita <https://www.taxpolicycenter.org/statistics/state-and-local-general-revenue-capita>
- 87.** State and Local General Revenue Per Capita, Tax Policy Center, 2017 <https://www.taxpolicycenter.org/statistics/state-and-local-general-revenue-capita>.
A similar analysis by the Tax Foundation in 2015 found Ohio ranked the 10th lowest effective tax rates for corporate headquarters <https://interactive.taxfoundation.org/location-matters/>
- 88.** Goetz, S. J., Partridge, M. D., Rickman, D. S., Majumdar, S. (2011). “Sharing the gains of local economic growth: Race-to-the-top versus race-to-the-bottom economic development.” *Environment and Planning C: Politics and Space*, 29(3), 428-456.
- 89.** Goetz, S. J., Partridge, M. D., Rickman, D. S., Majumdar, S. (2011). “Sharing the gains of local economic growth: Race-to-the-top versus race-to-the-bottom economic development.” *Environment and Planning C: Politics and Space*, 29(3), 428-456.
- 90.** Tsvetkova, A., Partridge, M. & Betz, M. Self-employment effects on regional growth: a bigger bang for a buck?. *Small Bus Econ* 52, 27–45 (2019).
- 91.** Ranking calculated using the number of universities by state from World Atlas <https://www.worldatlas.com/articles/which-state-has-the-most-colleges.html>