Growth and Change: Closing Ohio's Knowledge Worker Gap to Build a 21st Century Economy

Swank Program in Rural-Urban Policy and
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Summary Report
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Executive Summary

It is all over the news in Ohio – the State's economy is and has been on a downturn. Several causes for this underperformance have been described by other policy briefs in the series[1], including a high state and local tax burden, fragmented local governance that blunts the competitiveness of Ohio's regions, and a lack of small business creation and entrepreneurship. But another cause is much more basic. With Ohio's move from primarily a manufacturing economy to a knowledge-based economy, Ohio must match this transition with a similar transition in the way we educate and retain our workforce. Ohio cannot change its weather to make it a more attractive location or alter the global reshuffling of manufacturing, but Ohio can exert some control over education and workforce training. And it will not be easy or a quick fix. Ohio's "unattainment" is entrenched in disturbing trends across the state. It is a pattern that starts in K-12 and runs through Ohioans adulthood. Despite the dismal statistics, education must be part of a larger effort to turn around Ohio.

In this policy brief, we argue that Ohio's economic development should stress proven policies such as education and human capital development, even if it doesn't sound like the hottest trend. Ohio has been putting a great focus on jobs. But turning around the Ohio economy is not only about jobs, it is about developing and sustaining a workforce with sufficient education and skills to populate these newly created knowledge economy jobs so the state can compete on a global basis.

Educational attainment does not start and end with college. We must focus on K-12 and early childhood education. Research has shown that the highest return on education investment for educational attainment in Ohio is early childhood development. Further, a focus on the complete range of education enables attraction and retention of knowledge economy talent on two fronts. First, a vibrant knowledge economy made up of a skilled workforce attracts more high-paying firms and, therefore, more mobile, talented people. Second, research demonstrates that good K-12 schools is an attractor of households interested in the quality education of their children. Investing in educational attainment provides little immediate return. This is a long-term and difficult investment because the winners are not today's politicians. However, focusing on educational attainment is a clear and proven strategy that Ohio can undertake.

Report Highlights

- Since 1970, nationally, the structural composition of education attainment has reversed, with almost 50% of adults over 25 years of age having had attended college and less than 20% without a high school degree – compared to 1970 when almost 50% of over 25-year olds did not have a high school degree.
- The good news is that Ohio has made similar improvements on the basic education front, increasing the number of Ohio adults receiving a high school diploma.
- The bad news is that Ohio has not matched these improvements with increases in the number of Ohio adults with a college education. This does not bode well for Ohio given the shift from goods manufacturing to a knowledge-based work place.
- The trends of increasing numbers of high school graduates, but not attaining a college education, is only getting worse in Ohio as compared to the nation.
- Comparing apples to apples, in the Midwest, Ohio has the lowest proportion of adults with some college degree, and exceeded only Indiana in terms of the proportion of adults with at least a four-year college degree.
- Ohio's bi-modal educational attainment (solid base of high school graduates, but weak base of college graduates) extends to both its metropolitan and nonmetropolitan areas
- Breaking the data down by Ohio counties, the image is even more startling. The overwhelming majority of Ohio's counties (77 out of 88 to be exact) are below the national average for higher education attainment in 2000. Comparing Ohio counties in 2000 to all other US counties in *1980* shows that even today, 61 Ohio counties cannot meet the 1980 US average. It doesn't matter how one tries to cut the data, Ohio's lack of college educated individuals is endemic across almost the entire state.
- The localized trends of attainment are getting stronger. The greatest gains in the share with a college degree were in those regions that already had higher relative shares, i.e., mostly concentrated around the state's five largest metropolitan areas of Cincinnati, Columbus, Cleveland, Dayton, and Toledo.
- Likewise, areas that have historically suffered on the educational attainment front, namely Appalachian Ohio, are only suffering more. Although this region experienced the greatest reductions in the share of Ohio adults not completing high school, this growing "unattainment" trend in higher education suggests this region is in somewhat of an "unattainment" trap. It will be hard for nonmetropolitan Ohio to close an income gap with a relatively low level of education, while negative effects on the workforce could also jeopardize employment growth.
- The same persisting geographic patterns extend to K-12 academic assessment. Therefore, the general pattern associated with college attainment starts well before adulthood.
- Regarding the geographic pattern of college preparatory opportunities, rural students are as likely to take the ACT and AP exams as urban students. More importantly, they also score about equally as well on these tests. Although rural students are far less likely to take the SAT.

Policy Recommendations

1. Adequately fund early childhood education.
2. Adequately fund K-12 education including from full-day kindergartens to successful preparation for college and university. In particular, target funds to low-income rural regions (and perhaps inner cities) that do not have the resources to fund their own programs. Recognize that quality education attracts parents who desire a world-class education for their children. Likewise, finding ways to streamline educational bureaucracies would also be a welcome way to redirect resources.
3. Make Ohio's colleges and universities financially affordable. Further extending the tuition freeze is one avenue, but aggressive financial aid programs to ensure all Ohioans can afford higher education should receive a higher priority.
4. Though not stressed in this report, a complete education program values technical and community colleges as a way of providing terminal degrees or providing bridges to the state's four-year universities.
5. Also, not stressed in this report, but just as essential is to maintain and enhance the state's graduate and professional programs as another critical bridge to the knowledge economy.
6. Support a strong economy that attracts educated workers to the state and retains the ones that we create. Any strides in educational attainment must be matched by strides in the overall economy. Again, why spend large sums of money to educate workers if they move elsewhere upon graduation.
7. Be patient. Such a program would make Ohio a leader in the knowledge economy, but not overnight. There is no reason to rely on the latest unproven trends and fads in economic development. The past suggests that they have not served Ohioans well, but the evidence suggests that these types of longer-term programs would serve the state's citizens better.

Introduction

Recent *Growth and Change* policy briefs have highlighted the problems the state has had in retaining population and creating strong job growth (Partridge, et al., 2007a, 2007b, 2008a). Several causes for this underperformance were described, including a high state and local tax burden, fragmented local governance that blunts the competitiveness of Ohio's regions, and a lack of small business creation and entrepreneurship. Yet, probably one of the most important features that is relatively lacking for 21st Century prosperity in Ohio is a workforce with sufficient education and skills to compete on a global basis[2].

Past economic research clearly shows that education is a key factor behind long-term prosperity. For example, there is a long literature documenting how states and metropolitan areas with higher shares of college graduates perform significantly better in terms of having faster subsequent income, employment, and population growth (Glaeser et al. 1995; Glaeser and Shapiro, 2003; Partridge, 1997, 2005; Simon 1998, 2004; Simon and Nardinelli, 2002). Indeed, a solid educational system provides a double dividend by (1) increasing the productivity of the workforce that attracts high-paying firms, and (2) as an attractor of households interested in the education of their children.

Despite the overwhelming evidence that a quality educational system and access to more educated workforce is a proven factor in prosperity, policymakers are often reluctant to invest in education due to their own self interest, which can be short-term, rather than society's self interest, which is long-term. Foremost, the returns to good education are often in the future, while the costs are upfront. Thus, politicians are reluctant to go into the electoral cycle taking the blame for the costs without receiving the credit for the benefits. Instead, economic development efforts take on a faddy or trendy basis without a strong research (or evidence-based) foundation, or worse, policies are adopted that research has shown is self destructive (Johnson, 2007). For example, despite the litany of evidence that tax breaks and abatements are net job killers for local communities and states, politicians seemingly are even more willing than ever to offer them. Likewise, state and local policymakers offer other fads such as building "industry clusters," attracting young urban professionals or the "creative class," short-term stimulus packages, or enhancing the "green economy" without any real understanding of whether these strategies are sensible or even work[3]. We argue that Ohio's economic development should stress proven policies such education and human capital development, even if it doesn't sound trendy or faddy. To

paraphrase Glaeser (2007), the best strategy is to attract large numbers of educated workers and 'get out of their way.'

We do not want to oversimplify the role of education as only supporting emerging industries with the highest levels of innovation. But, an educated workforce is a critical input in research and development and supporting the highest paying industries. Ohio's relative lagging performance in the areas of research and development is symptomatic of the state's weak economy and falling income. Innovation indicators discussed in our previous policy brief show that despite having the 7th greatest population, Ohio ranks 24th among all states in terms of the number of scientists and engineers and 35th in venture capital activity (Kauffman Foundation, 2007). Unsatisfactory progress in innovation can reduce firm productivity in Ohio, further reducing wages, which further dampens incentives for high skilled workers to remain in Ohio.

To break this vicious cycle, the state should invest in its educational establishments to foster innovation and build a productive workforce, otherwise the small 'brain drain' the state is currently experiencing may be reinforced[4]. Investment efforts in education must also be accompanied by state and local efforts to create a more vibrant job environment for its residents. Clearly, what good is it to educate a cohort of more educated workers if Ohio will only lose them (on net) to other states with more vibrant economies?

This policy brief will focus on Ohio's workforce development and education, as well as retention. It will first show that the state is successful in having a workforce with at least a high school education, but is lagging in having a workforce with a college education. This is very costly as the economy increasingly concentrates around knowledge activities. We will then focus on the geographical distribution of Ohio educational attainment of school performance. One conclusion is that Ohio's lagging performance is endemic in both its large urban areas and its rural communities—in which Appalachian parts of the state especially lag. Then we ask whether Ohio is falling further behind over time. Unfortunately, the answer is yes. Ohio's *relative* level of college graduate educational attainment is lower today than in 1970. Likewise, the state's metropolitan areas are on balance consistently losing the most mobile college graduates—single and under the age of 40. We conclude with some policy recommendations focusing on the need to build Ohio's workforce starting at a young age. The net returns of getting it right when a person is young are much higher than trying to "retrain" or "educate" a worker when they are adults.

Some of our specific conclusions are: Ohio's "unattainment" is entrenched in disturbing trends across the state. It is a pattern that starts in K-12 and runs through adulthood. Despite the dismal statistics, education must be part of a larger effort to turn around Ohio. Turning around the Ohio economy is not only about jobs, it is about developing and sustaining a workforce with sufficient education and skills to populate these newly created knowledge economy jobs so the state can compete on a global basis. Educational attainment does not start and end with college. We must focus on K-12 and early childhood education. A focus on the complete range of education enables attraction and retention of knowledge econ-

omy talent on two fronts. First, a vibrant knowledge economy made up of a skilled workforce attracts more high-paying firms and, therefore, more mobile, talented people. Second, research demonstrates that good K-12 schools is an attractor of households interested in the quality education of their children. Investing in educational attainment does not provide any immediate return. This is a long-term and difficult investment because the winners are not today's politicians. However, focusing on educational attainment is a clear and proven strategy that Ohio can undertake.

Economic Setting for the Knowledge Economy

Ohio's booming manufacturing industry led to a prosperous economy all the way up until the 1960s. However, with the contraction of the manufacturing sector in the Rust Belt, Ohio's per capita income had fallen from 10% above the U.S. average in 1955 to 8% below by 2006. This decline in manufacturing coincided with large-scale migration to the Sunbelt that further disadvantaged the state. As the U.S. economy has transitioned to a knowledge economy, Ohio also found itself disadvantaged by having low college educational attainment rates.

Successful states and winning regions throughout the world are able to adapt to changing industry opportunities as markets inevitably change and new technologies are employed. They cannot cling to past industry successes as new opportunities require quick responses. Today, in order to adapt to the emerging knowledge economy, Ohio must focus on developing a strong human capital base supported by a robust job environment to retain its brightest workers. Though Ohio cannot change its weather or alter the global reshuffling of manufacturing, it does have some control over education and workforce training.

Educational Attainment Levels

In the 1970s, almost 50% of the U.S. adult population did not have a high school degree. The percentage of adults with a four-year college degree was only slightly over 10%. With each passing decade an increasing proportion of the population has acquired at least a four-year college degree. By the turn of the 21st Century, the structural composition of educational attainment had reversed as almost 50% of adults over 25 years of age had attended college and less than 20% were without a high school degree.

Relative to the nation, Ohio's performance in attracting and retaining an educated populace is less than spectacular. At the lower end of educational attainment, Ohio fares pretty well. The state consistently has lower shares of the adult population that are not high school graduates and it has higher shares that have completed high school. Yet, again compared to the national average, Ohio has lower shares of adults 25 years of age that have either attended some college or completed a college degree. In an era when goods production dominated the American economy, building a good workforce that was highly capable of working in factories served Ohio well. Yet, with the changes in the global economic landscape, Ohio-

Population Composition by Educational Attainment Level, U.S. and Ohio, 1970 to 2000

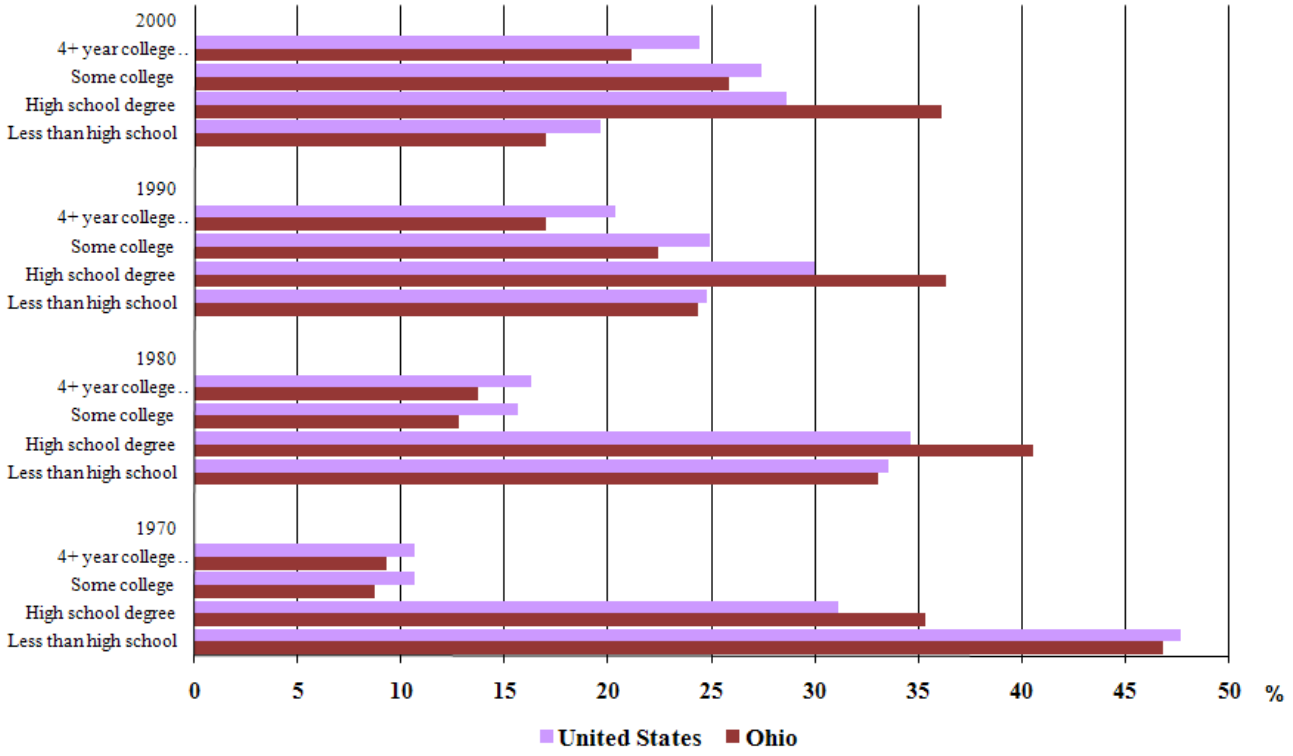

Figure 1

ans are no longer served by this distribution of educational attainment.

The state's lagging performance in educational attainment at the higher levels would be less worrisome if the state was closing the gap with the rest of the nation. Instead, Figure 1 shows that Ohio is lagging further and further behind. In the 1970s, the percentage of adults who attained a four-year college degree or higher in Ohio was only 1.4% lower than the national average, but by 2000 that wedge grew to 3.3%. Continuing this trend would have dire consequences for future economic competitiveness.

Comparisons to Ohio's neighboring Great Lakes states is a helpful benchmark because like Ohio, they have a strong legacy of manufacturing, similar settlement history, and climate. Figure 2 shows Ohio's 2006 educational attainment compared to its Great Lakes state neighbors and the nation. Ohio, had the lowest proportion of adults with some college degree, and exceeded only Indiana in terms of the proportion of adults with at least four-year college degree. Conversely, 37% of adult Ohioans possessed only a high school degree, the highest proportion in the Great Lakes region. But in terms of adults with no high school degree, Ohio is in the middle of the pack. Illinois is most successful in terms of being the only state in the Great Lakes region to have more adults with at least a four-year college degree than the national average. Thus, it is not surprising that Illinois has outperformed Ohio in terms of per capita income (Illinois' per capita income was 13% greater than Ohio in 2005)[5].

Figure 3a shows that Ohio's bi-modal educational-attainment performance extends to both

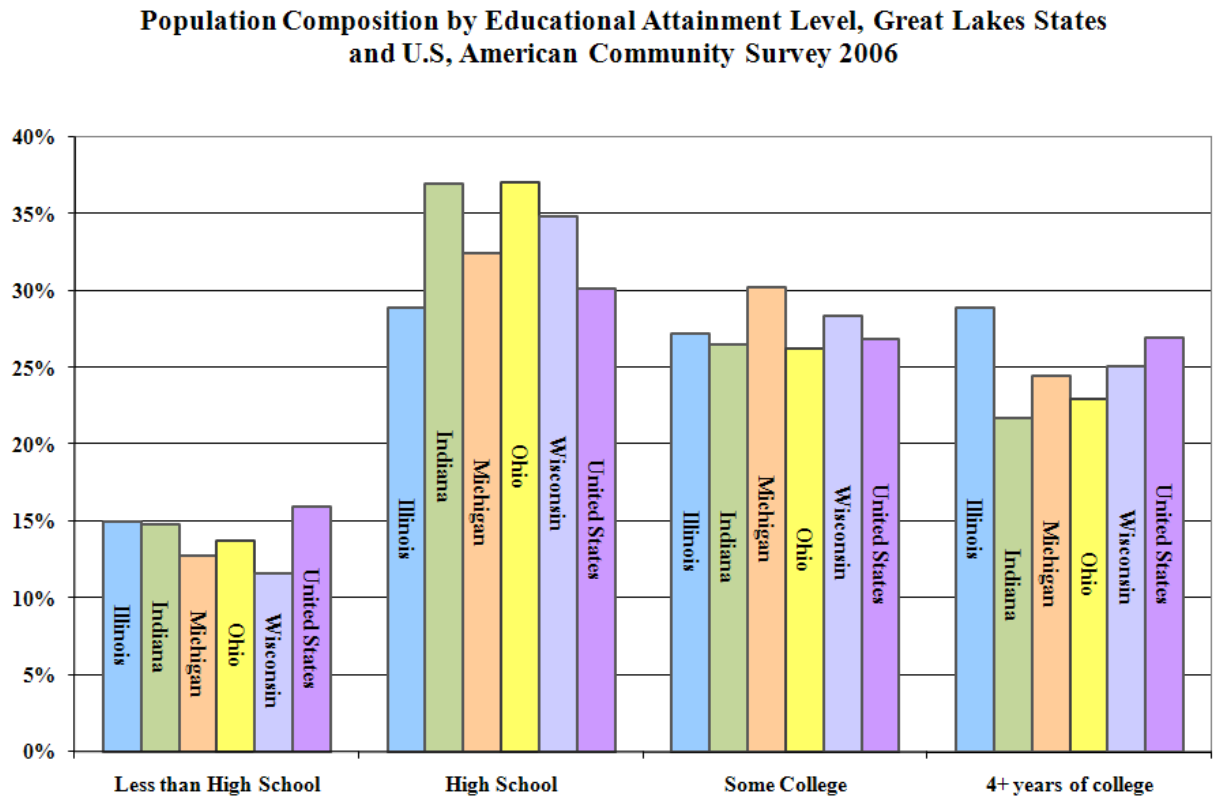

Figure 2

its metropolitan and nonmetropolitan areas. Specifically, both rural and urban areas outperform the nation in terms of having fewer high school dropouts and more high school graduates, but lag at the higher levels of educational attainment. The point is the state is not well positioned for capturing gains in the knowledge economy. Further, as shown in Figure 3b, even Ohio's largest metropolitan areas are far below peer-group competitors such as Raleigh-Durham NC, Portland, Boston, and Denver-Boulder.

Figure 4 shows the number of Ohioan counties in 2000 that trailed behind as well as surpassed the nation in the percentage of adults with at least a four year college degree. First the chart shows that only 11 of Ohio's 88 counties exceeded the national average in 2000. Eight other counties had college graduation rates that exceeded the 1990 national average, but lagged the 2000 national average, while another eight counties had a college graduate share that exceeded the 1980 national average, but lagged the 1990 national average. What is amazing, 36 counties had an average college graduate share that was less than the 1980 national average, though greater than the 1970 national average, and fully another 25 counties had a college graduate share that was below the 1970 national average. It doesn't matter how one tries to cut the data, Ohio's lack of college educated individuals is endemic across almost the entire state.

Population Composition by Educational Attainment Level, Nonmetro and Metro Ohio and the U.S, 2000

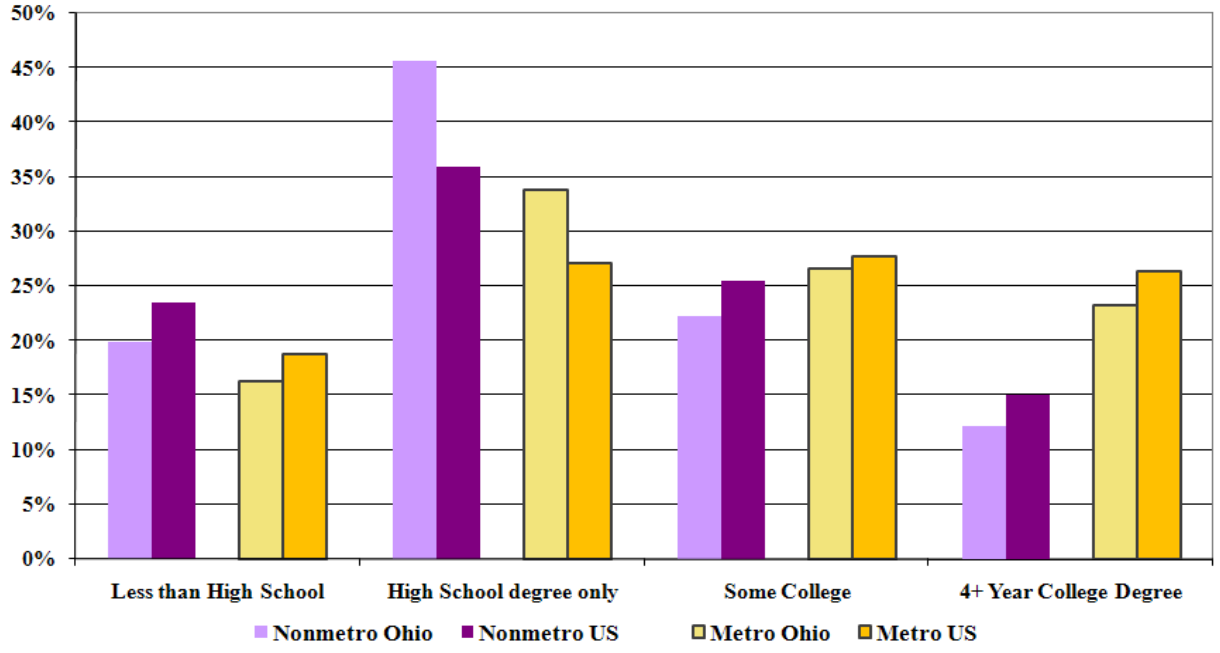

Figure 3a

Population Composition by Educational Attainment Level, Select Cities, ACS 2006

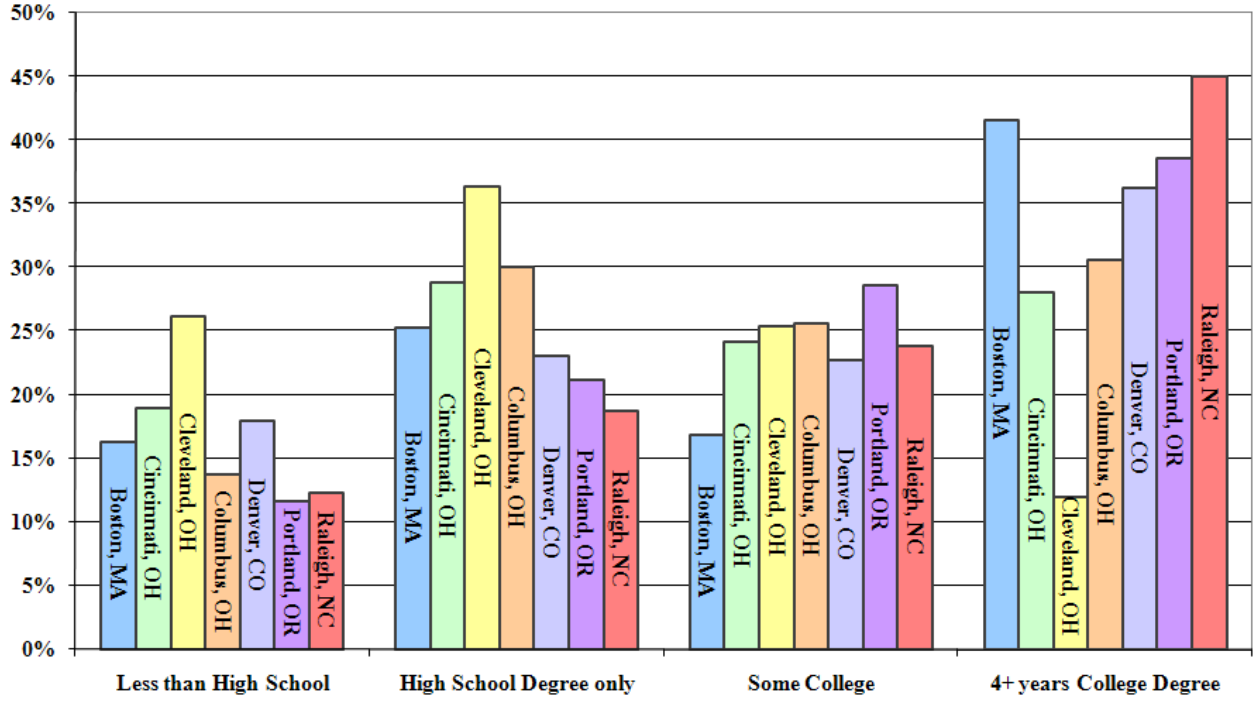

Figure 3b

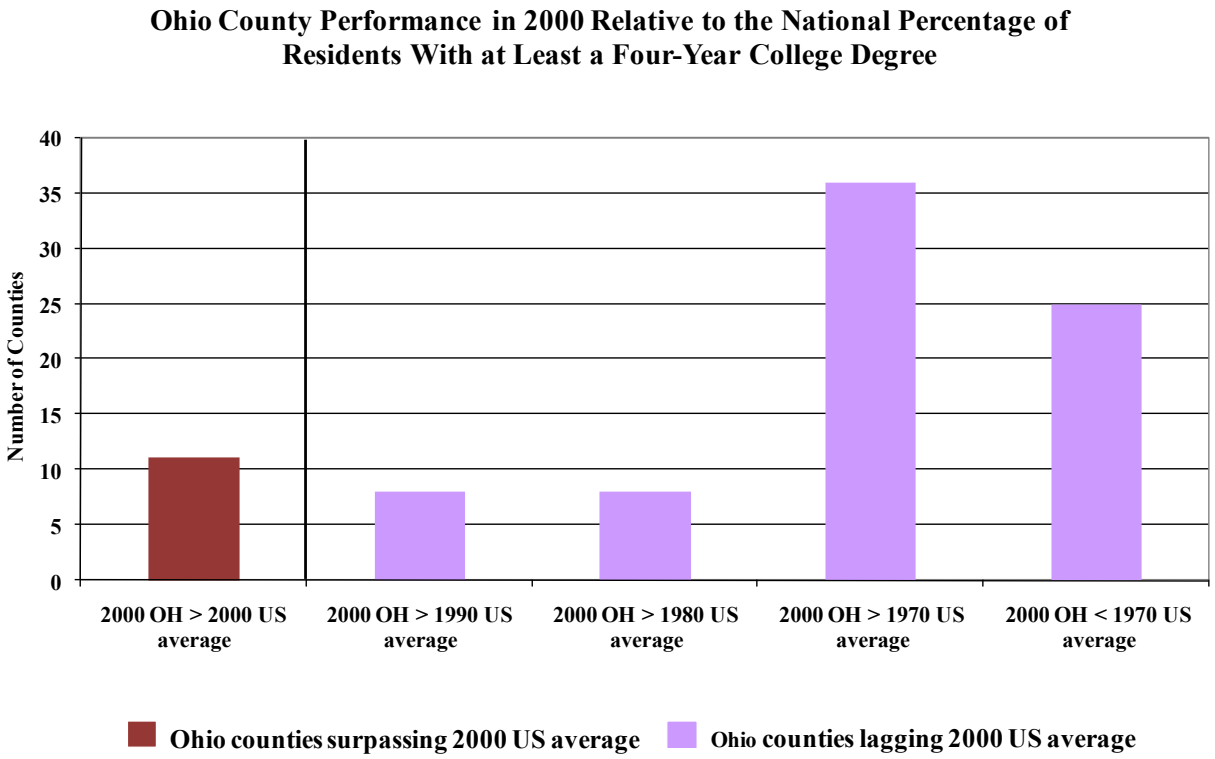
Ohio County Performance in 2000 Relative to the National Percentage of Residents With at Least a Four-Year College Degree
Number of Counties
40
35
30
25
20
15
10
5
0
2000 OH > 2000 US average
2000 OH > 1990 US average
2000 OH > 1980 US average
2000 OH > 1970 US average
2000 OH < 1970 US average
Ohio counties surpassing 2000 US average
Ohio counties lagging 2000 US average

Figure 4

The Geographic Distribution of Education Indicators in Ohio

There is a clear geographical pattern in the distribution of education attainment levels in the state, with the highest proportion of more educated individuals located in the urban cores, especially along the I-71 corridor. Another element of this geographical pattern is that it has persisted over time. The highest proportion of less-educated individuals is along the Ohio River and in Appalachian Ohio. Figures 5a and 5b show that in 1970, more than 10% of adults (over 25 years of age) in the three major metropolitan areas of Cincinnati, Cleveland, and Columbus had a four-year college degree compared to less than 5% of adults in most of Appalachian Ohio (the 1970 national average was 10.6%).

Figures 6a and 6b illustrate that the state's educational geography persists into this decade. For example, more than 20% of the adult population in most Appalachian Ohio counties did not even have a high school degree in 2000, suggesting that these counties are stuck in some sort of "trap" that hinders their prosperity. It is not surprising that many of these counties also exhibited the lowest rates of job growth between 1969

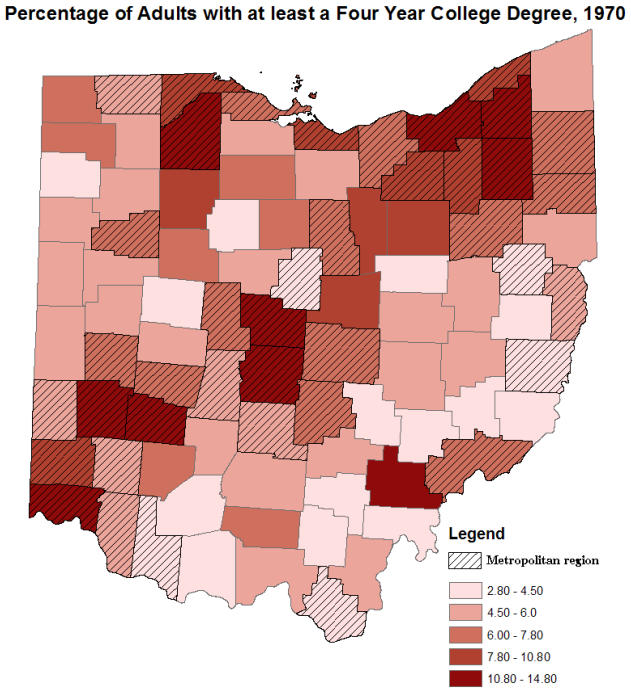

Figure 5a

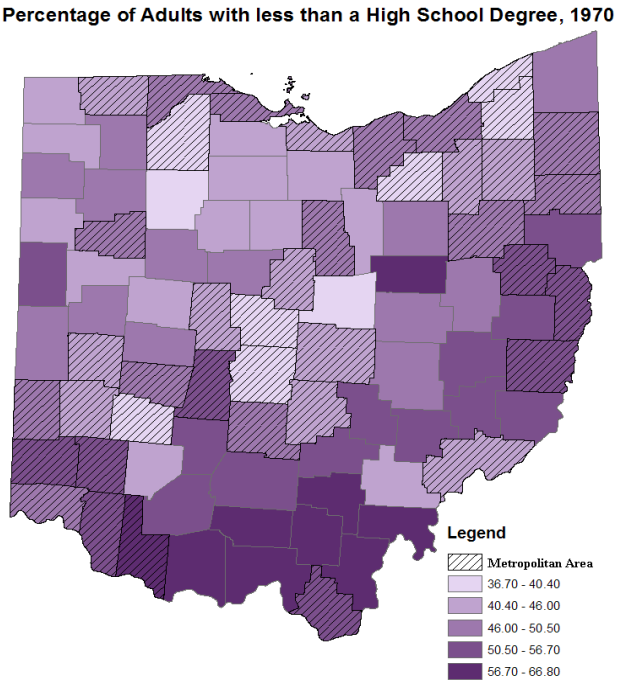

Figure 5b

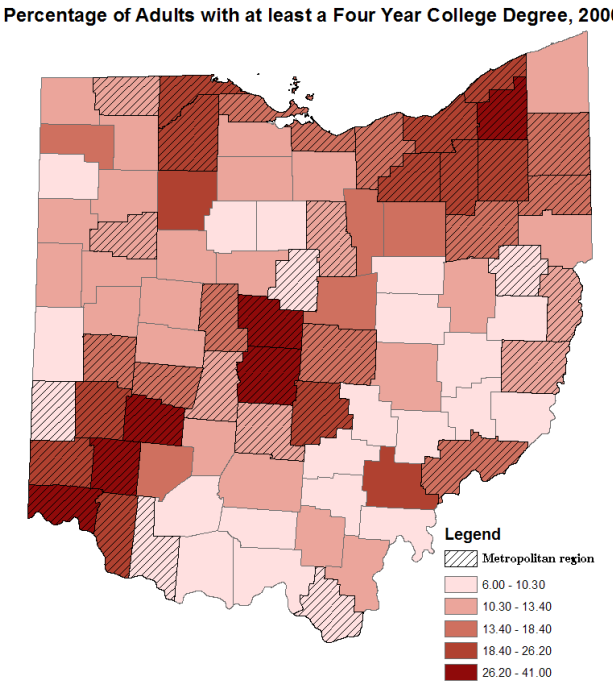

Figure 6a

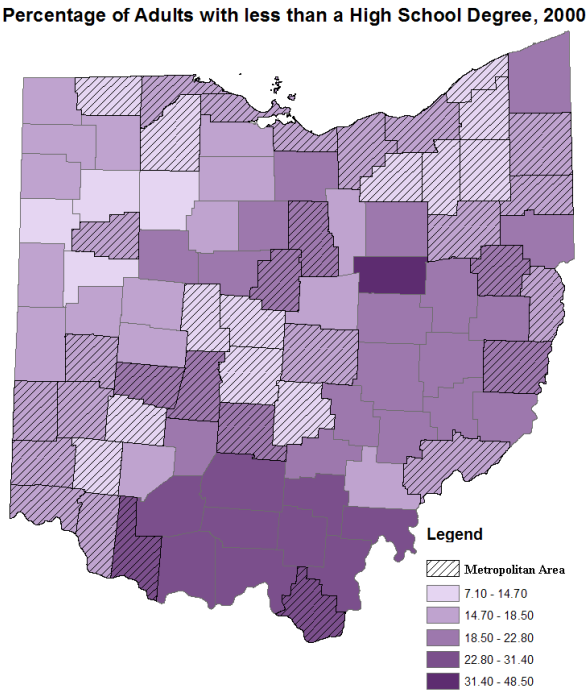

Figure 6b

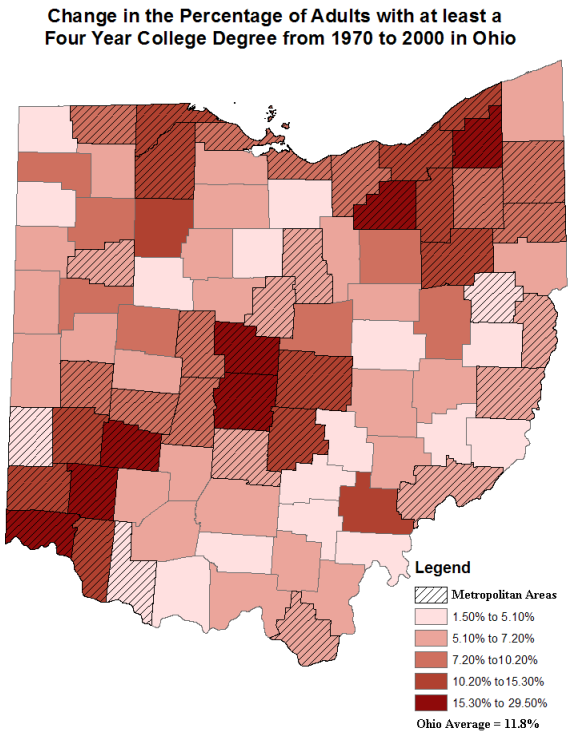

Figure 7a

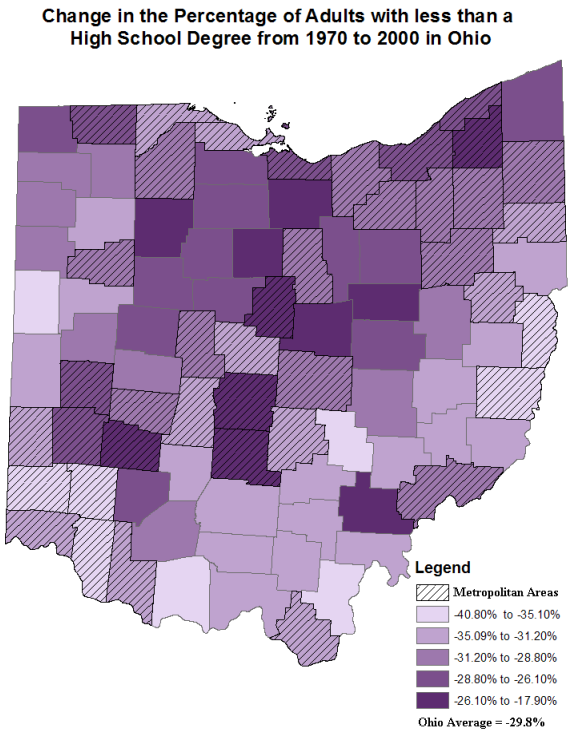

Figure 7b

and 2005 (Partridge et. al., 2007). One exception in Appalachian Ohio is nonmetropolitan Athens County, which has been at par with or even better than its metropolitan counterparts in terms of the proportion of college educated workers. In 2000, more than one-fourth of Athens County adults had a four-year college degree, which was a higher percentage than all but 7 of Ohio's 40 metropolitan counties. Likewise, Athens County also fared well in having relatively few adults who did not complete high school. Of course, a key reason for this relative success is Athens County is home to Ohio University, illustrating some of its indirect benefits. There are other nonmetropolitan success stories over the last four decades including Hancock County in the North-East and Knox County in Central Ohio.

Figures 7a and 7b respectively show the 1970 to 2000 change in the percentage of the adult population with a four-year college degree as well as the corresponding change for those who did not complete high school, respectively. The greatest gains in the share with a college degree were in those areas that already had higher relative shares, i.e., mostly concentrated around the state's five largest metropolitan areas of Cincinnati, Columbus, Cleveland, Dayton, and Toledo. Though Partridge et al. (2007) indicate that nonmetropolitan Ohio has fared pretty well in terms of relative job creation, this analysis suggests that nonmetropolitan areas have some shortcomings in terms of participating in the knowledge economy. It will be hard for nonmetropolitan Ohio to close an income gap with a relatively low level of education, while negative effects on the workforce could also jeopardize employment growth. Some good news is that parts of the state that experienced the greatest reductions in the share who have not completed high school were those Southeastern Ohio counties that had the highest shares in 1970. These changes are certainly welcome, but as Figure 6b showed, Southeast Ohio still has significant room for improvement on this dimension, and there is considerable room for improvement in terms of increasing college attainment.

Counties that have shown the most dramatic improvements in education levels relative to their own position in 1970 are suburban Delaware County in central Ohio and Warren and Clermont Counties in southeast Ohio. The share of highly skilled adults in Delaware County rose by more than 29 percentage points, whereas Clermont and Warren Counties registered improvements by 15.3 and 22.5 percentage points respectively. Again, it is not surprising that these are also the counties that have shown some of the highest increases in employment growth in the state (Partridge, et. al, 2007). Hence, any plan to bring sustained prosperity across all of Ohio will need to create other success stories over the next 10 years.

High School Performance and College Preparation

If the state is going to increase its share of college-educated workers, one good avenue is to improve its college preparation in K-12 (and before) of young Ohioans. Of course, improved schools for children have a host of other impacts on the state including as a way to attract and retain parents who are interested in the education of their children. A recently published study of home buyers in central Ohio demonstrated that the academic quality of schools was an important factor in peoples' choice to purchase homes in the suburbs (Morrow-Jones, 2008).

The first way we assess K-12 academic performance is through the academic achievement test scores from the Ohio Performance Test. This test is given to students in grades 3 to 10 to track their progress. The scoring ranges from 0 to 120 with 100 being the state's minimum goal of achievement. Figure 8 show that the distribution of these performance index scores of high school students in 2006-07 exhibits a similar geographic pattern as for educational attainment[6]. Some counties in more exurban southwestern Ohio do not fare well, but the weakest performance is again in Appalachian Ohio and Northeastern counties along the Pennsylvania border. Conversely, the highest performing counties tend to be in the suburban counties of the Big-5 metropolitan areas[7]. Likewise, even the core counties of these urban areas tend to fare well, reflecting the relatively high levels of suburbanization in these counties.

Counties in the south and east perform worse than those in central and northern Ohio. Thus, the general pattern associated with Ohio's geographical distribution of college attainment starts well before adulthood. Yet, the causal relationship is not clear: Are students in these low-performing regions under-performing in K-12, thereby reducing their chances to attend and complete college. Or conversely, do lower expectations of attending college dampen in-

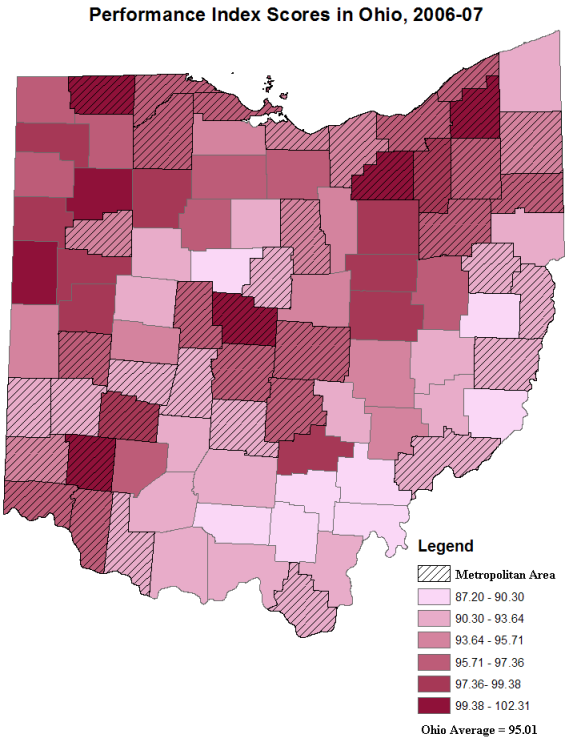

Figure 8

centives to perform well in school? In either event, these expectations need to be erased not just for the good of the individual underperforming students, but also for the Ohio's economy. Maybe even more important, locations with weak performing schools will not be attractive to potential new residents who consider high quality schools an attractive attribute—which will indirectly affect the competitiveness of lagging communities.

In further assessment of how the state is preparing its children is how they fare on college entrance exams. Figures 9, 10a, and 11a report data on the shares of Ohio students who took the 2005-2006 SAT, AP (Advanced Placement Test for college credit)[8], and ACT. The SAT is an important test for those interested in enrolling in selective universities, especially outside of Ohio. Because the SAT is only taken by a smaller subset of students, we will focus on the AP and ACT exams.

These figures show that the share of people who took the AP test in metropolitan areas in Ohio was nearly double the rate of nonmetropolitan areas. A significantly higher share of inner city students in the state's 'Big-8' cities[9] take AP exams compared to nonmetropolitan districts, whereas the gap is even larger in suburban districts. Again, the lack of available high quality education opportunities is not just a problem for the immediately affected rural students, but the lack of educational opportunities could be a barrier for attracting new residents who highly desire a good education for their children.

In some good news, nonmetropolitan Ohio students are about equally likely to take the ACT test—which somewhat suggests an initial willingness to attend college and university among rural students compared to their urban counterparts. Likewise, Figure 10b shows how metropolitan and nonmetropolitan students fare on these exams. It is particularly

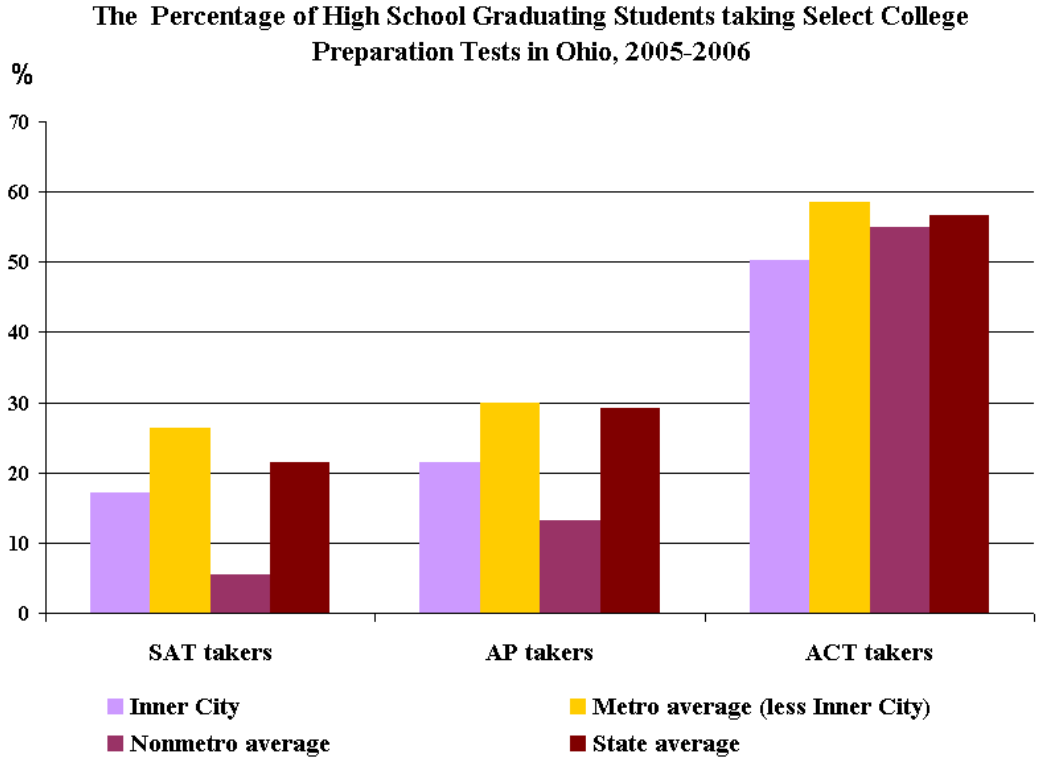

Figure 9

The Metro to-Nonmetro Ratio of the Average Percentage of High School Graduating Students Taking Select College Preparation Tests in Ohio, 2005-2006

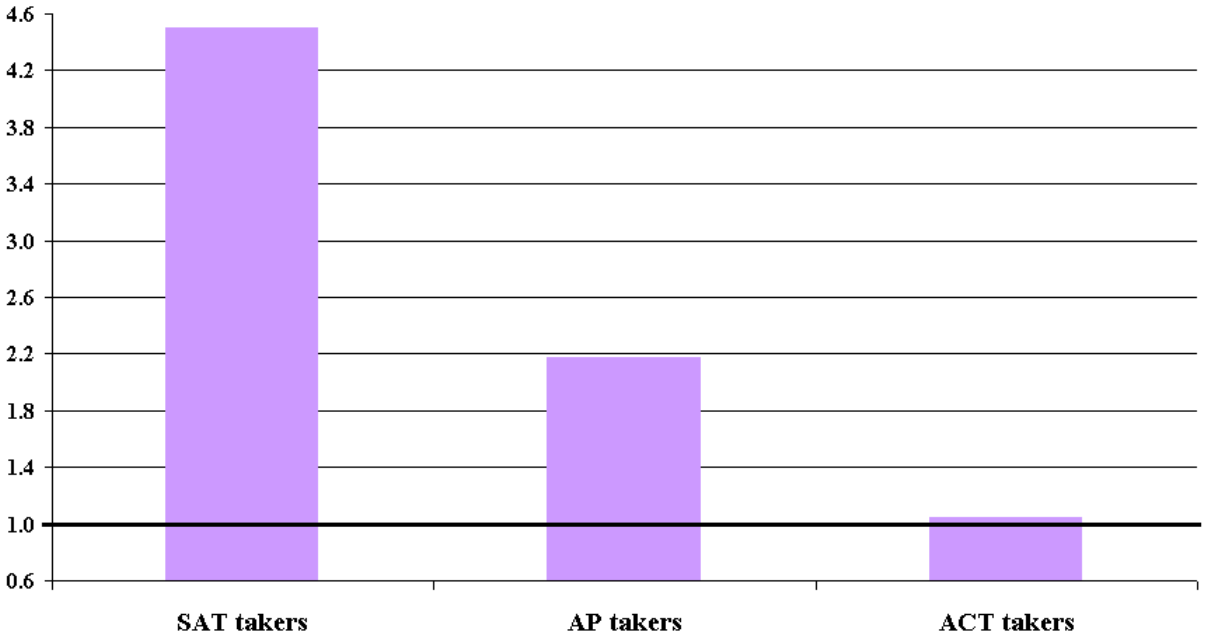

Figure 10a

The Metro-to-Nonmetro Ratio of the Average Performance of High School Graduating Students on Select College Preparation Tests in Ohio, 2005-2006

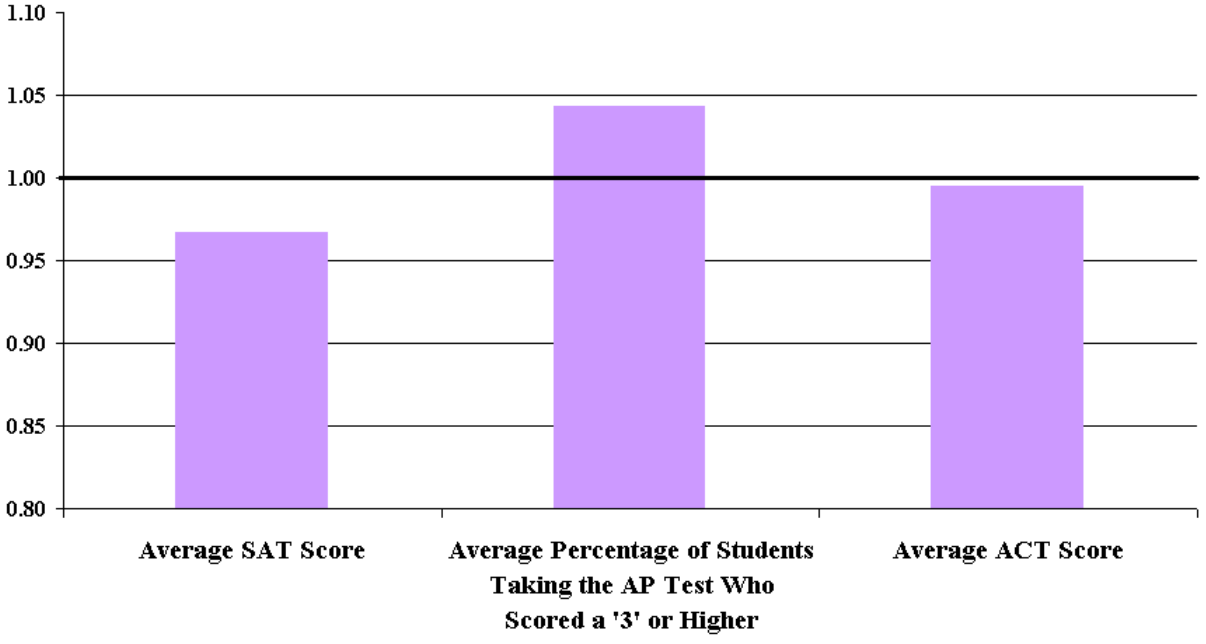

Figure 10b

The Metro (less Inner City)-to-Inner-City Ratio of the Average Percentage of High School Graduating Students Taking Select College Preparation Tests in Ohio, 2005-2006

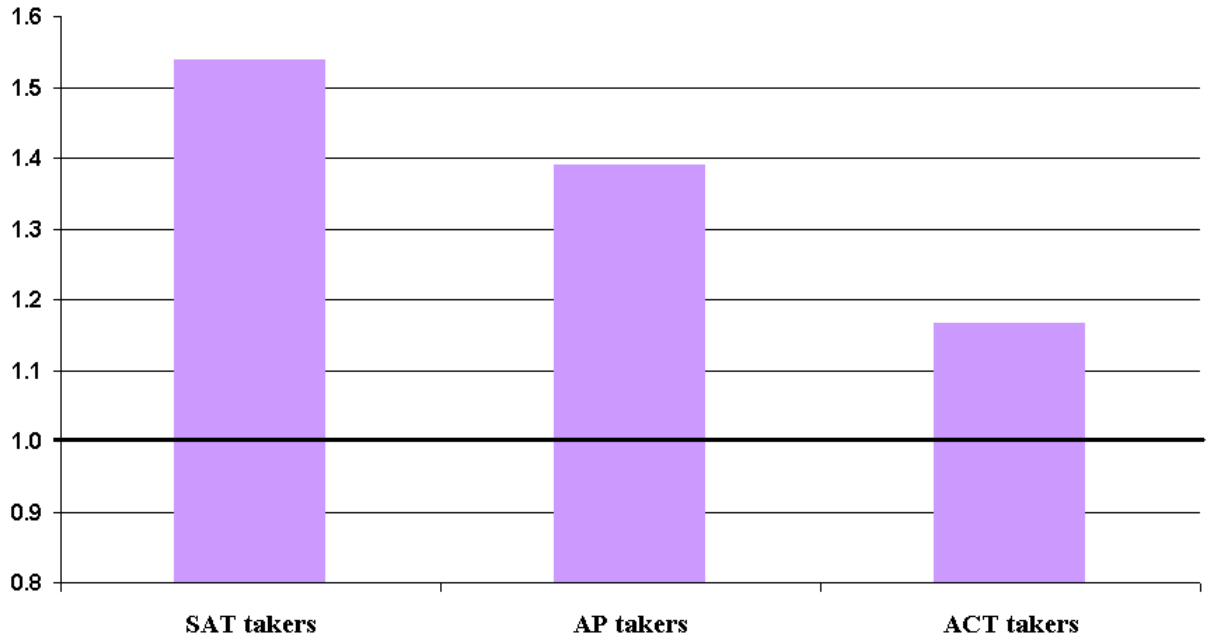

Figure 11a

The Metro (less Inner City)-to-Inner-City Ratio of the Average Performance of High School Graduating Students on Select College Preparation Tests in Ohio, 2005-2006

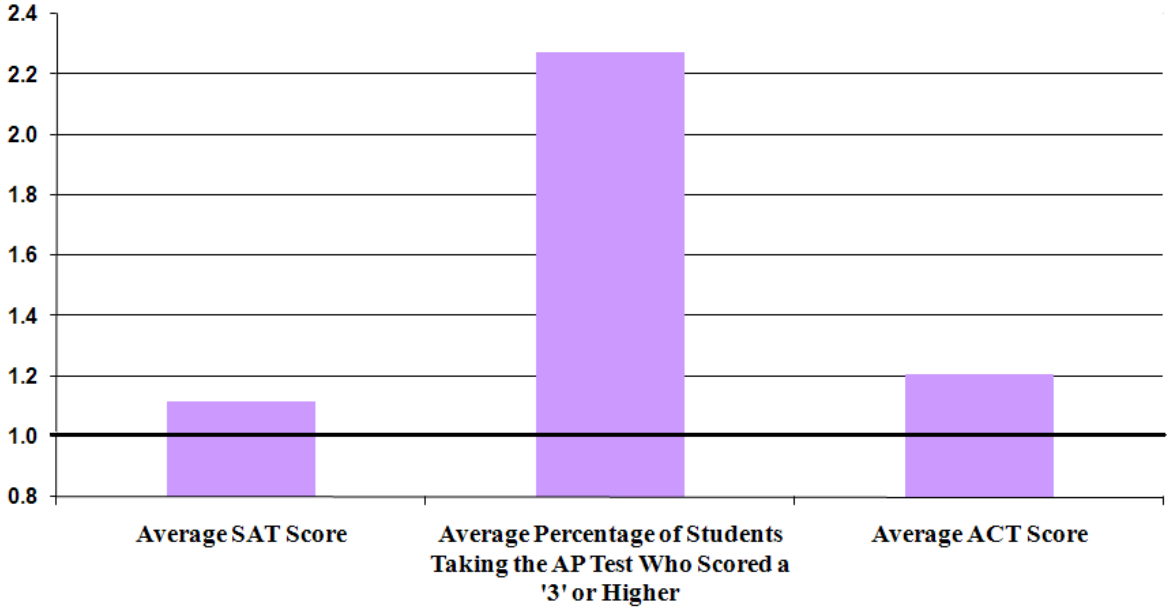

Figure 11b

noteworthy that rural students fare about equally well on the AP and ACT test. Thus, while there are shortcomings in Ohio's non-metropolitan schools, these findings suggest that expanding opportunities in the most disadvantaged districts could help close the achievement gap—i.e., there is no clear pattern that suggests that nonmetropolitan students cannot perform if given the right opportunities.

Figures 11a and 11b show that the inner city schools in the Big-8 large cities do not perform as well on the AP exam and ACT test. The figures show that a smaller share of inner-city students take these tests than in the rest of metropolitan Ohio, and they do not score as well on them. In fact, the average percentage of students taking the APs who scored a '3' or higher in the rest of metropolitan Ohio was 2.3 times greater than in the Big-8 inner-city districts.

Net Migration of Ohio's Skilled Workers

Besides "growing our own educated workforce," a key way for Ohio's metropolitan areas to maintain or enhance their competitiveness is to attract more college-educated individuals than they lose. In particular, because they are most mobile, Ohio needs to attract and retain young, single college-educated workers. Yet, between 1995 and 2000, Ohio's population of young (less than 40 years old), single and college-educated[10*] decreased by 8.8%. If this rate of decline were to continue, there would be clear consequences to the state.

A particularly discouraging trend is that Ohio's large Metropolitan Statistical Areas (MSAs)—which should be most active in developing professional service occupation, managerial positions, and research and development—registered a depletion of its young college educated workforce in terms of net migration with the rest of the nation. Among the three C's (Cleveland, Cincinnati, and Columbus), Table 1 shows that metropolitan Cincinnati-Hamilton experienced the highest rate of net-out migration. For every 1000 college educated residents in 1995, there were 45 less in the city by

Metropolitan Area	Number			
	Domestic in-migrants	Domestic out-migrants	Domestic 5-year net migration	Net Migration Rate[10**]
Average US Metropolitan[10*]**	**40,809**	**30,529**	**10,279**	**28**
Representative Large Metropolitan Areas				
Portland--Salem, OR--WA CMSA	23454	12125	11329	268.4
Denver--Boulder--Greeley, CO CMSA	41851	22172	19679	264
Washington--Baltimore, DC--MD--VA--WV CMSA	90851	65382	25469	102.4
Raleigh--Durham--Chapel Hill, NC MSA	21645	19451	2194	49.2
Boston--Worcester--Lawrence, MA--NH--ME--CT CMSA	61738	57002	4736	21.9
Ohio Metropolitan Areas				
Columbus, OH MSA	15,343	15,465	-122	-2.7
Cleveland--Akron, OH CMSA	14,948	15,911	-963	-15.8
Cincinnati--Hamilton, OH--KY--IN CMSA	11,493	13,319	-1,826	-45.4
Lima, OH MSA	351	482	-131	-116.9
Mansfield, OH MSA	470	647	-177	-123.4
Dayton--Springfield, OH MSA	4,783	7,386	-2,603	-154.1
Youngstown--Warren, OH MSA	1,150	2,688	-1,538	-189
Huntington--Ashland, WV--KY--OH MSA	855	1,763	-908	-225.5
Toledo, OH MSA	3,027	6,084	-3,057	-230.9
Parkersburg--Marietta, WV--OH MSA	446	931	-485	-259.9
Steubenville--Weirton, OH--WV MSA	287	693	-406	-262.4
Wheeling, WV--OH MSA	292	896	-604	-306.1

Table 1: The net migration rate of Ohio's young, single, and college-educated workers in selected Metropolitan Statistical Areas

2000. Metropolitan Columbus, on the other hand, had a small net out-migration rate of only 0.27%, while Cleveland experienced a 1.58% decrease. Toledo had one of the highest net-out migration rates of 23% among all Ohio MSAs between 1995 and 2000. Huntington and Parkersburg WV-OH MSAs also suffered high rates of net out-migration of young, single college educated individuals. In sum, Ohio's metropolitan areas are not competitive in terms of attracting and retaining its most mobile educated workers, suggesting a host of quality-of-life and economic concerns that need to be considered in any efforts to revitalize the state.

Policy Recommendations

This policy brief has reviewed the long economic literature that links strong local economic performances to having a highly educated population. In particular, the decline of natural resource-based sectors and manufacturing along with the emergence of the knowledge economy intensifies the need to have an adequately trained labor force to compete on a global basis. Then we show that Ohio has had some successes in minimizing the number of high school dropouts, but has not turned that success into attracting and retaining individuals with a four-year college degree. Ohio's inability to hold its own in increasing the share of the population with at least a college degree applies across all regions of the state and has been a persistent pattern that according to U.S. Census Bureau data, has been true since at least 1950. Improving the educational levels of Ohio's workforce is then paramount to altering the state's long-run economic fortunes.

Eric Fingerhut, the relatively new Chancellor of the Ohio Board of Regents, stresses that efforts to increase the quality of higher education must be commensurate with efforts to retain those that Ohio's educational institutions churn out. Towards this end, there are encouraging signs. For example, college tuition for in-state students has been frozen for the 2008-2009 fiscal years. While we applaud these efforts, we note that a tuition freeze is only a sustainable solution if the state offsets the revenue losses of the state's colleges and universities—i.e., it would be simply political grandstanding for a freeze to be imposed without offsetting revenue to ensure a high-quality education[11]. Likewise, the state should implement targeted financial aid to low income Ohioans to further reduce financial accessibility concerns. Finally, any positive benefits of a two-year tuition freeze would quickly be lost if tuition begins to accelerate at pre-freeze levels in fall 2009.

Nonetheless, failing to create jobs, while producing more educated workers, will still lead to the exodus of these workers out of the state (on net). The recent stimulus package and the 3rd Frontier recognizes the need to enhance the state's innovation capacity as way of enhancing Ohio's economy—though it is less clear whether the state should be so directly involved in micromanaging the specific technologies where these resources are spent. Government bureaucrats, legislators, and governor staffs do not make good scientific committees. However, it is welcome that state officials recognize that a strong economy reinforces the positive impacts of a strong human capital/education program.

A state or region should invest in enhancing college educational attainment levels if it wishes to create a more conducive environment for a vibrant research and development sector, as well as a strong economy. The more pressing question is what kinds of investment in education would yield the maximum socioeconomic benefit. Investments that have been shown to yield the

highest public and private returns are not the more touted programs directed at retraining middle aged workers. Likewise, the highest returns are not in internships or other curriculum changes at the college level. That's not to say that such conventional programs are worthless. Rather, the most effective policy recommendation to improve Ohio's current educational landscape would appear to be investments in early childhood development (ECD).

Art Rolnick, Senior Vice President and Director of Research at the Minneapolis Fed is an ardent proponent of ECD. He further laments that ECD programs are rarely portrayed as economic development initiatives (Federal Reserve Gazette, 2003). Rolnick stresses statistics that portray the many merits, both public and private, of such programs. For instance, 3 or 4 year-old children from low-income Michigan families who participated in the 1960s Perry School program were more socially and economically successful as adults than non-participants. They were less likely to be placed in a special-education program, had better high school graduation rates, were less likely to be arrested five times or more by age 27, and had higher earnings when they were adults. The benefit cost ratio for ECD programs is computed to be 8-to-1, or in other words, every dollar invested yields $8 in return. Indeed, this analysis underlies why Nobel Prize winning economist James Heckman also supports ECD programs rather than adult training programs (Carneiro and Heckman, 2003).

Clive Belfield, at the Federal Reserve Bank of Cleveland estimates that the gains to investing in universal preschooling in Ohio through educational costs savings[12] is $242 million, assuming that the impacts of preschool are only one-quarter as strong as those found in published studies. Greater tax revenue—resulting from parents who would be able to work while their children are in preschool—are on the order of $25 million. Factoring in other savings, the net return of Early Childhood Education in Ohio is estimated to be $299 million, which means that for every $1 invested the returns to the State are $1.62. Belfield's analysis suggests that it should be common sense to invest in ECD initiatives if the goal was to strengthen Ohio's economy.

Why don't politicians and policymakers invest in ECD programs? For one, the timeline for return is much longer than the typical stay in office. Likewise, politicians and policymakers are often acting in their own self-interest because they don't want to risk political capital for positive returns that won't materialize until after next political cycle. Yet, the public needs to hold such decision makers accountable for such short-sightedness from society's point of view. For example, in Ohio, if the state had began to make the investments in ECD a generation ago, the state would be receiving the positive benefits from these far-sighted investments today. Again, good education pays a double-dividend—it is an amenity that attracts parents interested in the child's education and it helps build the human capital for the next generation.

The upshot is that the entire state—rural and urban—can benefit from a better educated and prepared workforce. The results of this analysis suggest that plans to improve Ohio's position in the knowledge economy should consider the following elements:

1. Adequately fund early childhood education.
2. Adequately fund K-12 education including from full-day kindergartens to successful preparation for college and university. In particular, target funds to low-

income rural regions (and perhaps inner cities) that do not have the resources to fund their own programs. Recognize that quality education attracts parents who desire a world-class education for their children. Likewise, finding ways to streamline educational bureaucracies would also be a welcome way to redirect resources.

3. Make Ohio's colleges and universities financially affordable. Further extending the tuition freeze is one avenue, but aggressive financial aid programs to ensure all Ohioans can afford higher education should receive a higher priority.
4. Though not stressed in this report, a complete education program values technical and community colleges as a way of providing terminal degrees or providing bridges to the state's four-year universities.
5. Also, not stressed in this report, but just as essential is to maintain and enhance the state's graduate and professional programs as another critical bridge to the knowledge economy.
6. A strong economy that attracts educated workers to the state and retains the ones that we create. Any strides in educational attainment must be matched by strides in the overall economy. Again, why spend large sums of money to educate workers if they move elsewhere upon graduation.
7. Be patient. Such a program would make Ohio a leader in the knowledge economy, but not overnight. There is no reason to rely on the latest unproven trends and fads in economic development. The past suggests that they have not served Ohioans well, but the evidence suggests that these types of longer-term programs would serve the state's citizens better.

End Notes

1. For the complete series of Swank Program in Rural-Urban Policy policy briefs, visit http://aede.osu.edu/programs/Swank/.

2. This policy brief has borrowed from Brigitte Waldorf's Purdue University policy brief for the state of Indiana.

3. Gabe and Kraybill (2002) find that Ohio firms that received economic development assistance *promised* more new jobs than firms that did not receive government assistance, but in the end, *created fewer* net jobs than otherwise equal firms that did not receive economic development assistance. The reasons for tax incentives failing to create jobs (on net) include the basic explanation that firms that *need* government subsidies to be competitive are likely less competitive than firms that do not receive these incentives. Likewise, greater tax incentives also imply that government taxes have to be increased on other existing firms and households, or government services need to be curtailed. The outcome is the existing businesses are a little less competitive, causing job losses, while Ohio's households relocate to other states. Finally, government targeting of particular "strategic" industries have generally failed (Glaeser, 2007)—i.e., that is, why should politicians and government bureaucrats be better informed than the industry leaders themselves in what are the hot or expanding industries?

4. We describe the 'brain drain' further below.

5. Both per capita income and job growth figures are derived from the Bureau of Economics Regional Economics Information System data at www.bea.gov (accessed July 23, 2008). Total US job growth between 1990 and 2005 was 19.9% whereas Ohio job growth was only 10.4%. The US on average grew 9.5% faster than Ohio.

6. The performance index score represents the achievement of all students on all five subject areas of the proficiency tests. For each tested subject in grades 3,4,5,6, 7, 8 and 10, students score at one of five performance levels – Limited, Basic, Proficient, Accelerated and Advanced. The performance index averages the scores for the five subject areas tested in the school and creates a scale of 0-120 with 100 being the goal. (Source: Ohio Department of Education, http://www.ode.state.oh.us/GD/Templates/Pages/ODE/ODEDetail.aspx?page=3&TopicRelationID=1266&ContentID=13571&Content=31774)

7. Athens County is an exception in this case, because it had a high percentage of adults with at least a four year degree in 2000, but low average performance index scores in 2006-07.

8. An Advanced Placement course is, by design, a college level course taught in the high school context using a standardized course syllabus aligned with the College Board Advanced Placement test for that course. AP Exams are graded on a 5-point scale as follows:
   5 Extremely well qualified
   4 Well qualified

3 Qualified
2 Possibly qualified
1 No recommendation
Source: Ohio Department of Education

9. The 'Big-8' are Akron, Canton, Cincinnati, Cleveland, Columbus, Dayton, Toledo and Youngstown.

10. *The young are those who were aged 25 to 39 in 2000; the single are those who were never married, or were widowed or divorced in 2000; and the college educated are those who had at least a bachelor's degree in 2000.
** The net migration rate is based on an estimated 1995 population, which is the sum of young, single, and college educated people who reported living in the area in both 1995 and 2000, and those who reported living in that area in 1995 but lived elsewhere in 2000. The net migration rate is the 1995-to-2000 net migration, divided by the estimated 1995 population of the 25 to 39 cohort and multiplied by 1000.
***The average US metropolitan figures for out-migrants, in-migrants, net migration and net migration rate are calculated by taking a weighted average of the values for individual metropolitan areas. The weights are based on the population of the metropolitan area.

11. The state should also consider minimizing out of state tuition as a way of attracting out of state students. Regardless of where they attended high school, any method of generating more college graduates in Ohio has similar long-term impacts on the state's economy if the graduates remain in the state. Governor Strickland's July 2008 executive order to allow out-of-state veterans to attend Ohio universities as in-state students is a step in this direction, though improving financial aid packages to all out-of-state residents would have a much broader impact.

12. Belfield says that education systems will save primarily because they will be able to reduce both special education expenditures and the total cost of education for each child to graduation.

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Ohio Reference Map