

## Knowledge Is Power: Education and Economic Growth in Ohio

Prepared by The Ohio State University P-12 Project  
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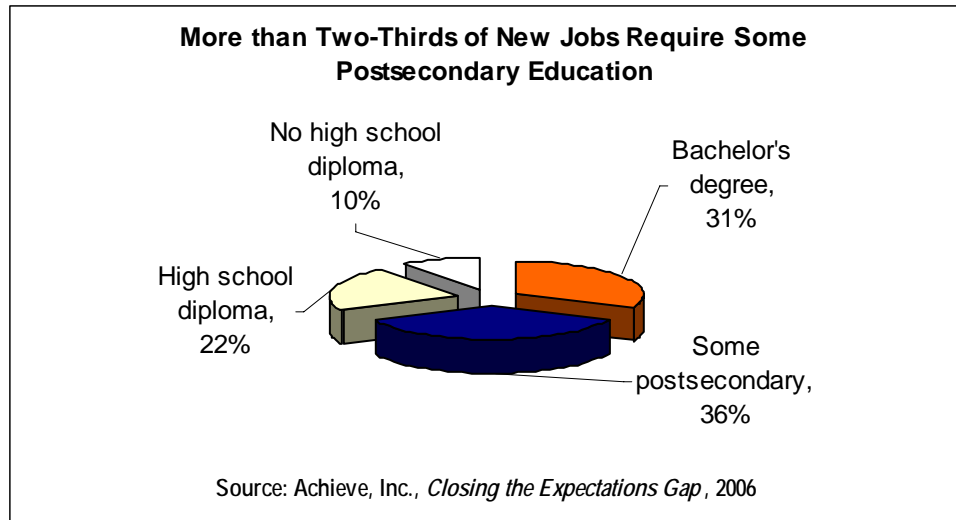
with special thanks to Sandra Kerka, Communications Manager, P-12 Project

*Ohio's economic competitiveness depends on the ability of its school system to produce an educated and skilled populace. (Achieve, Inc. Creating a World Class Education System in Ohio, 2006b.)*

As the education and training requirements of jobs are increasing, fewer students are being prepared to meet these expectations, nationally and in Ohio.

### Expectations of the 21st Century Workforce

- 90% of the fastest-growing occupations require some education beyond high school. (U.S. Department of Education, 2006a)
- By 2010, the number of jobs requiring at least a bachelor's degree is expected to increase 21.6%, and the number of jobs requiring at least an associate's degree is expected to rise 32%. (Ohio Business Roundtable, 2006)
- The proportion of new jobs requiring a high school education or less is expected to drop from 47% in 2004 to 37% in 2014. (Hecker, 2005)
- If current trends continue, more than 40 percent of manufacturing jobs will require postsecondary education by 2012. Thirty years ago, more than half of U.S. manufacturing workers did not even have a high school diploma. (Ohio Business Roundtable, 2006)
- Jobs requiring science, engineering, or technical training will increase 24% between 2004 and 2014. (U.S. Department of Education, 2006b)
- More than 50% of the current science and engineering workforce is approaching retirement. (Business Roundtable, 2005)
- The number of engineering degrees awarded in the U.S. is down 20% from its peak in 1985. (Business Roundtable, 2005)
- In 1970, half of the people in the world who held science and engineering doctorates were Americans. It is projected that by 2010 that figure will drop to 15 percent. (U.S. Department of Education, 2006b)
- More than 40% of undergraduates in China, 20% in Singapore, and 12% in Europe major in engineering; in the United States the figure is only about 6%, second lowest among developed nations. (National Academy of Sciences, 2007)
- In 2000, just 11 percent of all bachelor's degrees in the United States were in natural science or engineering. The world average was 23 percent, and for China the number was 50 percent. (Council on Competitiveness, 2005)
- Just under 6 percent of the 1.1 million high school seniors in the United States who took a college entrance exam in 2002 indicated they plan to pursue an engineering degree—a nearly 33 percent decrease from the previous decade. In comparison, 37 percent of China's college-going students plan to pursue engineering degrees. (Business Roundtable, 2005)



### And in Ohio...

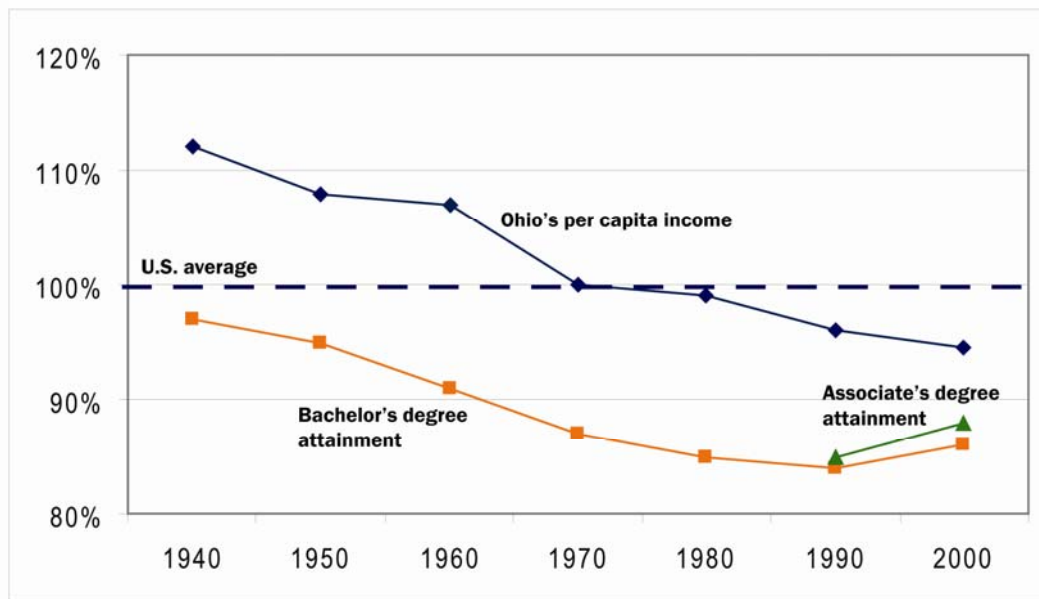
- Education will play a bigger role in the Ohio workplace. All categories that generally require at least postsecondary training are projected to grow faster than the 7.3 percent average for all occupations. (Ohio Department of Job and Family Services, 2006)
- Between 2000 and 2010, jobs requiring only on-the-job training are expected to grow the slowest. All categories that require at least postsecondary training are projected to grow faster than the 9.7% average for all occupations. Jobs requiring an associate degree will increase by more than 20%, and those requiring bachelor's or graduate degrees by more than 15%. (ODJFS, 2003)
- The Ohio economy will provide jobs for workers at all educational levels, but individuals with more education and training will enjoy better job opportunities. Growth rates between 2004 and 2014 will range from 2.3 percent for occupations requiring moderate-term on-the-job training to 18.8 percent for occupations requiring an associate degree for entry. (ODJFS, 2006)
- The increasing reliance on technology implies that manufacturers will need their workers to be far more skilled to begin with, and far more adaptable as technology changes. Manufacturers' needs for people with minimal skills will decline over the coming years, while the need for people with associate and bachelors degrees will increase. (LaFayette, 2007)

### Dollars and Sense

Higher education and higher income go together like bacon and eggs. The ability of Ohioans to "bring home the bacon," however, is slipping.

- Per capita income rises with higher education levels (U.S. Bureau of Labor Statistics). States with higher per capita incomes (MA, MD) also have more educated citizens.
- Ohio's per capita income is falling: 96% of nation's average in 1990 (\$18,743); by 2004 down to 94% of the average (\$31,161).
- Ohio's per capita income used to be well above the national average. This began to change in the 1970s, and now Ohioans' per capita income is 5.7% below the national average.

- In 2003, an individual with a bachelor's degree earned \$19,123 a year more than an individual with a high school diploma. A person with an associate degree earned \$6,839 more than an individual with a high school diploma.
- Compared to the national average, per capita income has paralleled the percentage of the population with a bachelor's degree.



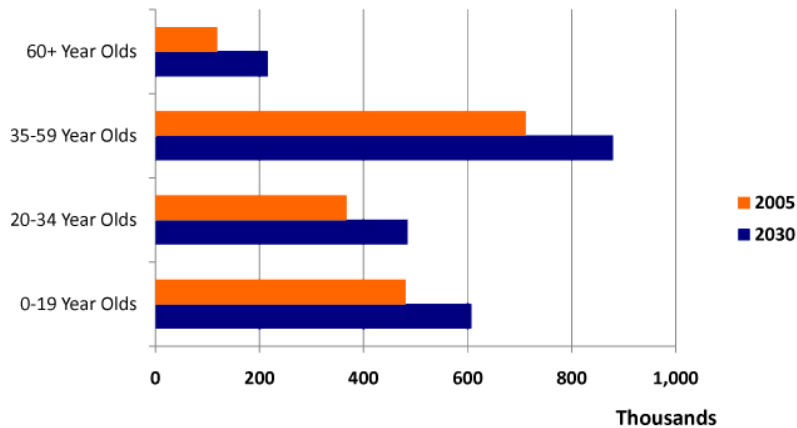
Source: U.S. Census Bureau, 2000

### Significant Challenges Facing Ohio

Within the context of these disparities in workforce expectations and income, Ohio and its entire P-16 education system face a number of significant challenges, some which were highlighted in the 2008 Ohio Board of Regents *Report on the Condition of Higher Education in Ohio*.

## Projected declines in Ohio's youth and working age population

### Population in Central Ohio : 2000-2030 by Age Group



Source: Ohio Department of Development, Office of Strategic Research



(Adapted from Reger, 2007)

- Between 2007 and 2017, the number of high school graduates will decrease by 6%. (Chronicle of Higher Education Almanac 2006-07)
- The demographic composition of the labor force is expected to change as Ohio's population ages and work force participation continues to increase; 63.8 percent of Ohio's labor force will be in the 25-54 age group by 2016, down from 67.2 percent in 2006. (ODJFS, 2008)
- The labor force participation rates of the youngest age group, those 16 to 24, has steadily decreased from 69.3% in 1996 to 66.3% in 2006 and projected to fall to 64.3% in 2016. (ODJFS, 2008)
- The Franklin County population is younger than the Ohio population, with a greater proportion of prime working age. However, mirroring national trends, the population is aging. (Community Research Partners, 2006)
- In 2004, the median age of Franklin County residents was 34.2 years, compared to 37.5 for Ohio. The county median age has increased from 32.5 years in 2000 and 30.8 in 1990 (Community Research Partners, 2006)
- In 2000, 46.1% of the Franklin County population (492,860) was of prime working age—25-54—compared to 43.1% of the Ohio population. (Community Research Partners, 2006)
- Between 1990 and 2000, the Franklin County population age 0-19 increased by 11.6%, while the state population in this age group increased by only 2.4% (Community Research Partners, 2006)
- Between 2000 and 2005, the prime working-age population (20-60) in the Columbus MSA grew 1.2% per year. Between 2010 and 2015, growth will be exactly half that: 0.6% per year. Between 2020 and 2025, growth will be less than 0.4% per year. (LaFayette, 2007)

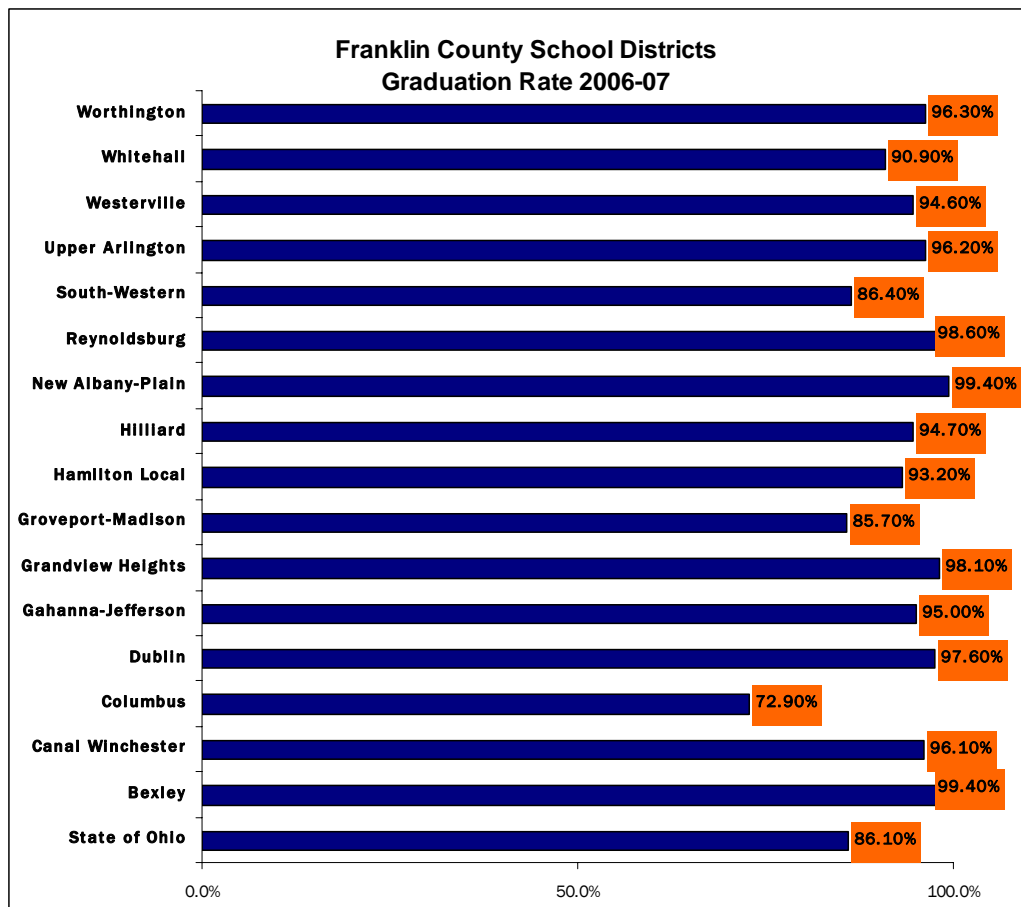
## Enrolling and graduating more adults (over 25 year olds)

The traditional pipeline of high school students will not address Ohio's educational needs. To reach international competitiveness by 2025, Ohio must rely on the re-entry pipeline—getting older adults back into the education system and on track to attaining college degrees. (Ohio Board of Regents, 2008)

- Ohio's higher education participation for 18-24 year-olds parallels the nation, but participation by 25-49 year-olds is far below national averages. (Ohio Board of Regents, 2008)
- Ohio workers are more likely to have finished high school than their national counterparts, but less likely to have finished college. Nearly a quarter of Ohio adults over age 25 had completed their BA in 2006, according to the American Community Survey, with rates essentially even among women and men. Rates differed between black and white adults in Ohio, with 23.6 percent of white adults and 16.8 percent of black adults in the state having completed college. (Hanauer, 2007)

## Improving high school graduation rates

Although the high school graduation rate in Ohio is inching up above the national average, there are significant differences among school districts. For example, compare the rates of Franklin County districts:

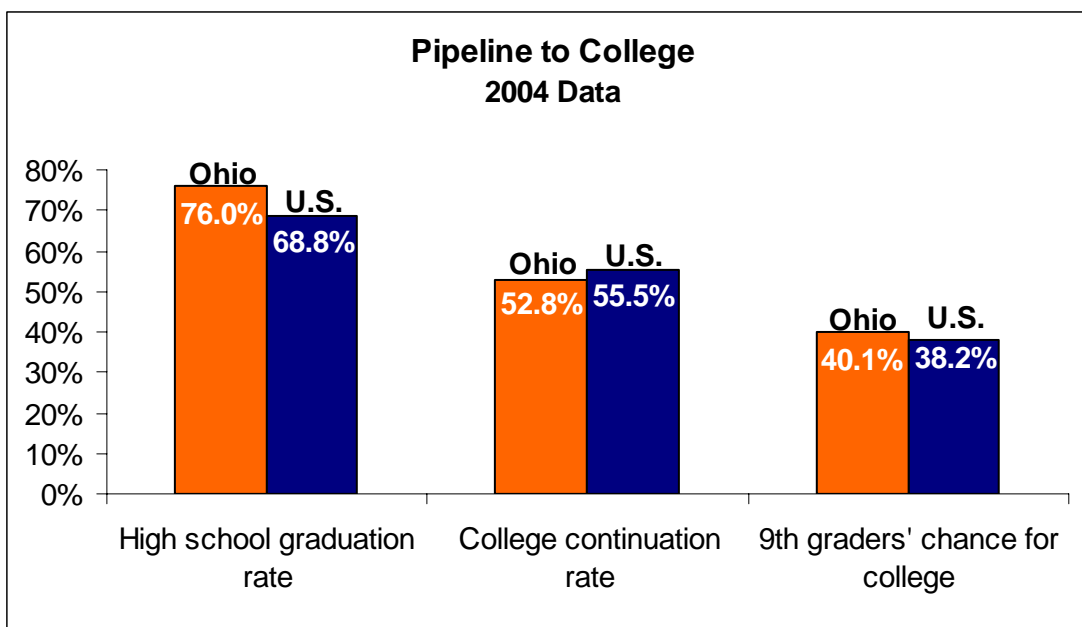


Source: Ohio Department of Education. (2007). 2006-2007 School Year Report Card.

## Improving college-going rates directly from high school

The college pipeline in Ohio is leaking. Out of 170,000 Ohio 9th graders:

- 70% will graduate from high school
  - 60% of those will go to college (120,000)
  - 50% of those will graduate in 6 years (36,000 graduates)
  - About 21% of the 9th graders will earn a bachelor's degree within 10 years (Glenn, 2006)
- We are near national averages in the percentage of high school graduates going on to college BUT we are below the national average in college completion (53% nationally vs. 47% in Ohio).
  - Ohio's college-going rate directly following high school graduation has dropped since 2002. (Ohio Board of Regents, 2008)



Source: Ohio Board of Regents (2008)

## Decreasing disparities in college participation

If you are a young white adult with money, chances are that you are in, or were in, college. If you are young minority with little money, chances are that you are not.

In Ohio:

- 37% of whites age 19-24 are enrolled in college;
- 26% of non-whites age 19-24 are enrolled in college;
- 61% of high income age 19-24;
- 20% of low income age 19-24.

In 2006, a greater proportion of Asian adults in Franklin County were college graduates (69.4%) compared to whites (36.6%), Hispanics (19.7%) or blacks (17.1%). Among Hispanics

was the highest percentage of adults not to have graduated from high school (27.3%) (Franklin County DataSource).

### **Improving participation and degrees awarded in educationally underserved counties**

The Educational Needs Index assesses educational, economic, and population conditions and trends that influence educational policy and planning. According to the ENI, some areas of Ohio are faring worse than others (<http://www.educationalneedsindex.com/ohio-education.php>). Because education and income levels are correlated, increasing higher education access and attainment in these counties is critical.

- Six counties rated “most critical” in terms of overall needs (educational, economic, and population factors): Adams, Ashtabula, Coshocton, Holmes, Knox, Scioto
- Parts of 9 other counties also rated “most critical” (correlated with large urban school districts): Cuyahoga, Franklin, Hamilton, Lorain, Lucas, Mahoning, Montgomery, Stark, Summit
- In addition, 40 counties and parts of 7 other counties rated as “critical.”
- Franklin County has sections in all four ratings (most critical, critical, less critical, least critical).
- 17 counties rated “most critical” in educational needs: Ashland, Ashtabula, Brown, Clermont, Clinton, Coshocton, Crawford, Fayette, Highland, Holmes, Huron, Knox, Morrow, Marion, Pike, Ross, Wayne
- Parts of 5 other counties rated “most critical”: Cuyahoga, Franklin, Lorain, Lucas, Mahoning

### **Improving college retention and completion rates**

*Nationally,*

- The United States is still among the top nations in the proportion of older adults (35-64) holding a college degree (39%, second only to Canada’s 41%).
- BUT it drops to 7th in the educational attainment of young adults (25-34).
- The U.S. remains among the leaders in college participation (4th, 35% of young adults 18-24 currently enrolled in college).
- BUT it ranks in the bottom half in college completion (17 degrees/certificates completed per 100 students enrolled)

Source: Organisation of Economic Co-operation and Development (OECD). Data represent the percentage of adults with an associate’s degree or higher in 2003. (Wagner, 2006)

*And in Ohio:*

- Ohio ranks 29th nationally in the attainment of bachelor’s degrees and 32nd in associate degrees. (National Center for Higher Education Management Systems and Jobs for the Future, 2007)
- 24.8% of Ohioans have a bachelor’s degree or higher (national average is 29.5%) (Hanauer, 2007)
- To reach the national average, 230,000 more Ohioans would have to earn associate’s, bachelor’s or higher degrees. And to be competitive with top-performing states would require more than 600,000 additional Ohioans with associate’s, bachelor’s or higher degrees. (Ohio Board of Regents, 2008)

- The Governor’s Commission on Higher Education and the Economy recommended that Ohio increase the total enrollment in higher education by 30% between 2003 and 2015, in addition to the substantial increase occurring already (12% from 1998 to 2005). This occurred at the same time Ohio’s 18-49 year old population decreased 2%. (Governor’s Commission on Higher Education and the Economy, 2004)
- In 2006, the percentage of the Franklin County population with a bachelor’s degree was considerably higher than for the state of Ohio as a whole. (Franklin County DataSource)

### **Improving educational rigor in high school and college**

A more educated population is a key component to Ohio’s economic future. BUT educational rigor must be maintained. Additional emphasis must be placed on encouraging STEM majors at all levels.

#### *College Remediation in Ohio*

- 41% of Ohio college freshmen under age 20 took remedial courses; 33% needed math remediation and 23% needed English remediation. (Ohio Board of Regents, 2005)
- Remedial students are less likely to complete degrees: 27% obtain a 2-year degree; 15% get a bachelor’s degree compared to nonremedial students.
- Of students who took remediation, only 8% majored in STEM, compared to 20% of nonremedial students.
- Given current rates of remediation, if we increased bachelor’s degrees to the national average over 97,000 of the new degree pursuers would require remediation and only about 7,700 would major in STEM fields.

#### **Trends in Degrees Awarded by Level and Field Ohio Public and Private Institutions—2002-2006**

	2002	2003	2004	2005	2006	% Change
<b>Associate Degrees</b>						
Total	19,796	20,859	22,200	22,391	2,3891	21%
STEM	8,049	8,988	10,351	10,374	11,220	39%
Non-STEM	117,147	11,871	11,849	12,017	12,671	8%
<b>Bachelor's Degrees</b>						
Total	52,288	54,344	56,252	56,428	57,997	11%
STEM	12,282	12,104	12,745	12,615	13,347	9%
Non-STEM	40,006	42,240	43,507	43,813	44,650	12%
<b>Graduate/Professional Degrees</b>						
Total	23,224	23,719	24,467	25,710	25,916	12%
STEM	5,886	5,618	6,165	6,475	6,426	9%
Non-STEM	17,338	18,101	18,302	19,235	19,490	12%

Source: Ohio Board of Regents (2008)

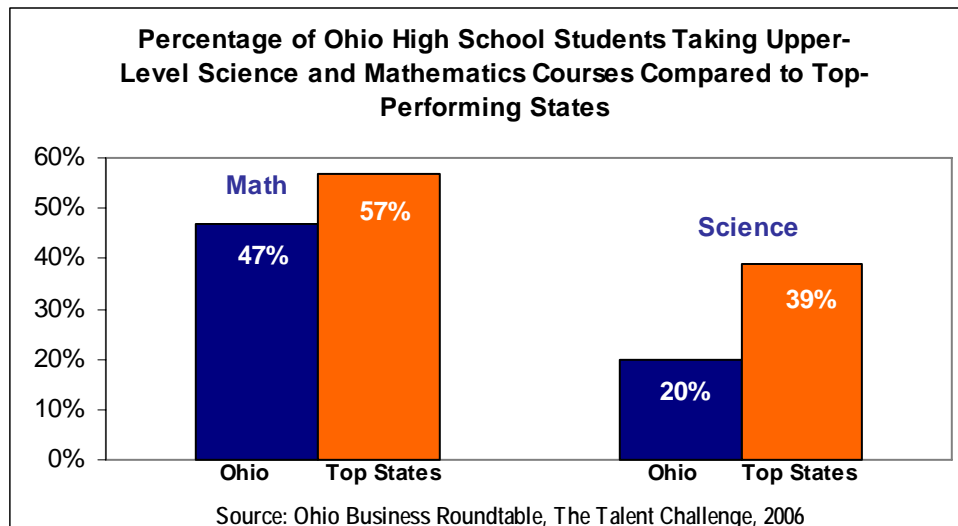
#### *High School Preparation*

The single most important predictor of college success is successful completion of a rigorous high school curriculum.

Over 70% of Ohio high schoolers do not take the full core. [The minimum academic core curriculum consists of four English courses and three courses each in math, science, and social studies; the full core includes four courses each in English, math, and social studies and three courses in science that include biology, chemistry, and physics (Ohio Board of Regents, 2005).] The Ohio Board of Regents projects that 40 percent of first-time college freshmen who completed a minimum core curriculum in high school will earn a college degree. For students who took a complete core curriculum, the success rate jumps to 69 percent. (Ohio Board of Regents, 2005)

Research from ACT (2007) documents the value of a rigorous core curriculum. Of the 81,000 Ohio high school graduates who took the ACT test in 2005, 59 percent took a core curriculum and 34 percent took less than the core curriculum. (ACT defined “core curriculum” as four years of English and three years each of mathematics, social studies, and science).

- Those who take the core curriculum in high school score higher on the ACT than those who don’t—regardless of gender, family income, and racial-ethnic background.
- This is true even when students’ achievement levels are taken into account. Ohio students who take more rigorous high school courses score higher on the ACT than those who don’t regardless of prior levels of achievement (indicated by grade point average).
- Ohio students who take the core curriculum in high school enroll in college at a higher rate, and have higher completion rates, than those who don’t—regardless of gender, family income, and racial-ethnic background.



**Academic preparation—The good news:**

- More Ohio students are achieving proficient levels on state and national tests. Judging from Ohio’s state assessment scores, the majority of Ohio students are doing relatively well. In the 2006 exams, for instance, 75 percent of 3rd graders scored at the proficient level or above in mathematics, 71 percent in reading.
- The 2006 scores for 6th graders were higher in reading (84 percent meeting standards) than in mathematics (68 percent proficient or above).
- In 8th grade, 77 percent of students scored proficient or above in reading, and 68 percent scored proficient or above in mathematics in 2006.

- In 2006, 89 percent of 10th graders passed the reading component of the Ohio Graduation Test (OGT), 83 percent passed the math component and 73 percent passed science.  
(Ohio Grantmakers Forum, 2006)

### **Decreasing achievement gaps**

Although these are hopeful signs, the rising tide isn't floating all boats. Gaps in achievement and the need for remediation are causes for concern.

#### *Academic preparation of Ohio students by race/ethnicity*

- *Core completion:*
- Asian-Pacific Islander 43%
- White 24%
- Hispanic 19%
- African American 16%

#### *Academic preparation of Ohio students by district type*

##### *Those who have taken the minimum core:*

- Low income districts 65%
- Medium income districts 66%
- High income districts 75%
- Parochial 79%
- Independent 78%

##### *Remedial course enrollment*

- Low income 53%
- Medium income 43%
- High income 34%
- Parochial 31%
- Independent 28%

Achievement gaps persist across grade levels on state tests:

**30%:** Average percentage point gap between white and African American 3rd graders who are proficient in reading and math on Ohio's state test.

**30%:** Average percentage point gap between white and African American 6th graders who are proficient in reading and math.

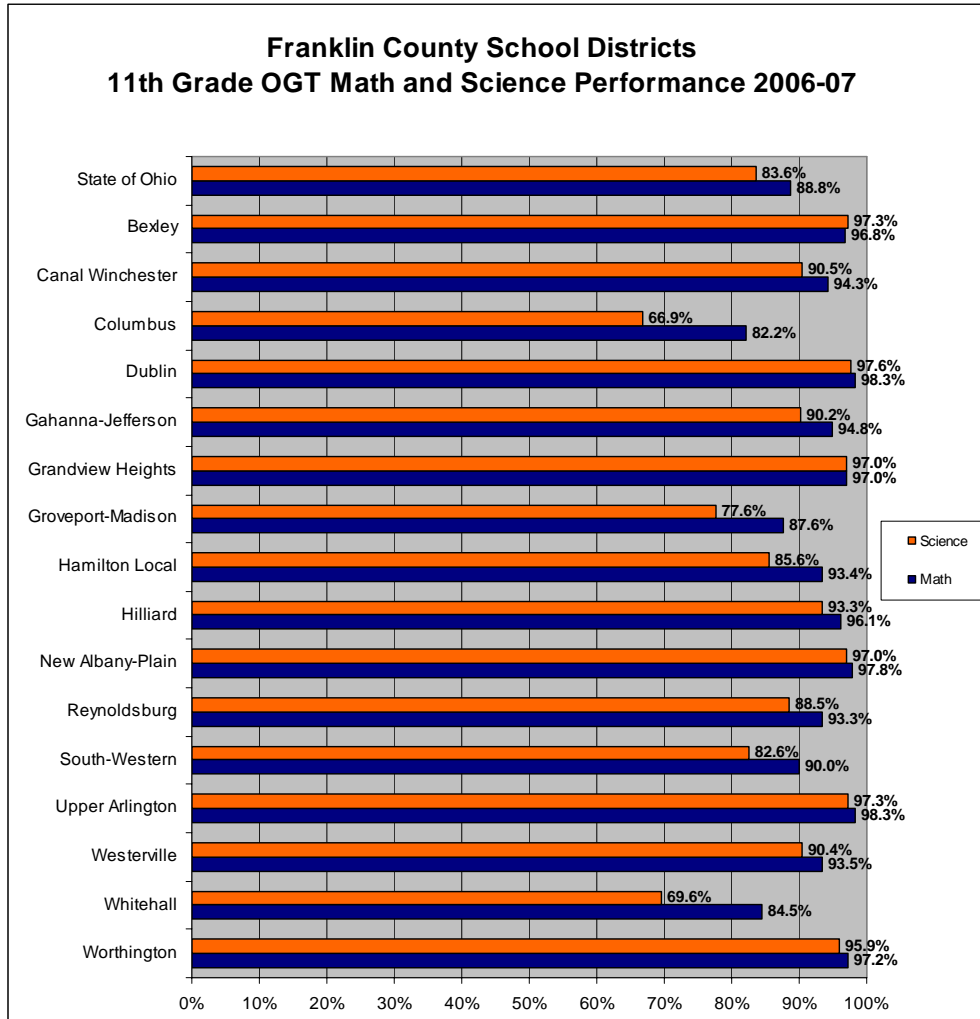
**33%:** Average percentage point gap between white and African American 8th graders who are proficient in reading and math.

**19%:** Average percentage point gap between white and African American 10th graders who are proficient in reading and math.

(Ohio Grantmakers Forum, 2006)

In Franklin County:

- In school districts with significant African-American populations, female students performed better than male students on the reading OGT in 2006-2007. Performance on the math OGT was more even between the two genders. (Franklin County DataSource)
- Whites and Asians generally performed better than blacks and Hispanics on the reading and math OGT exams, though the extent of this difference varied by school district. (Franklin County DataSource)



Source: Ohio Department of Education. (2007). 2006-2007 School Year Report Card.

Knowledge is power. We know more about achievement levels and more about what helps with success than ever before. Clearly, the breadth of issues that affect Ohio's economic and educational success reaches beyond the bounds of any single level on the educational continuum. It is our challenge to take this knowledge and use it to build cohesive educational pathways of educational access and to foster aspiration for higher education among all students.

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