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## 2013 Teacher Supply and Demand in Ohio

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**Ohio** | Department  
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# OHIO EDUCATION RESEARCH CENTER

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Core **FUNDING** for the OERC is provided by the Ohio Department of Education. Additional funding comes from the Ohio Department of Job and Family Services in collaboration with the Ohio Board of Regents.

## FOREWORD

This report examines how trends in fertility and migration combined with changes in pension systems, the rise of community schools, the evolution of teachers' retirement decisions and the rate at which college students and more established teachers enter and stay in teaching shape the market for teachers. Changes over space, time and type of school are explored. Compensation and employment levels are tracked and projections for the range of the number of new teachers needed in Ohio over the next several years are offered. The report also examines the market for school administrators. This report has clear, and perhaps surprising, implications for the need to train additional teachers given new patterns that are evolving. These trends and their implications warrant tracking, especially given how recent the changes are and how the dislocations of the labor market have persisted since the Great Recession.

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## CONTENTS

Executive Summary.....	4
I. Introduction .....	5
Student Enrollment.....	5
Teacher Employment .....	5
Teacher Retirement.....	5
Teacher Employment Changes .....	6
Higher Education Pipeline.....	6
Who Becomes a Teacher? .....	6
Community and Private Schools .....	7
Administrator Employment.....	7
II. Student Enrollment in ohio’s schools .....	8
Historic Trends.....	8
Enrollment Projections.....	8
Enrollments by Race or Ethnicity .....	10
School Enrollment Changes by District Typology.....	10
Projections .....	11
Section Summary.....	12
III. Teacher employment in ohio’s schools.....	13
Historical Trends.....	13
Number of Traditional Public and Community School Teachers .....	13
Number of Teachers by District Typology .....	14
Teacher Pay .....	15
Teacher Pay by School Type .....	15
Teacher Pay by District Typology.....	16
Section Summary.....	16
IV. Teacher Exits, Retirements and Pension Benefit Changes.....	17
Changes in Ohio’s Retirement Systems .....	17
Historical Retirement Trends.....	17
Reemployment .....	20
Changes to STRS .....	21
Estimated Exits and Retirements .....	22
Section Summary.....	23
V. teacher Vacancies and Changes in Employment .....	24

National Vacancy Data .....	24
ODE Job Board .....	25
Historic Trends.....	25
Teaching Jobs in Demand.....	27
Other Potential Sources of Information.....	28
County Level Employment .....	28
Metropolitan Area Level Employment.....	28
Section Summary.....	31
VI. The Higher Education Pipeline.....	32
Pathways.....	32
The Administrator Pipeline.....	36
Licensing.....	37
Ohio's Teacher Licensing System .....	37
Licensing Trends in 2000-2012 .....	37
Field for New Teacher License Recipients in 2012.....	38
Section Summary.....	40
VII. Who Becomes a Teacher? .....	41
Teacher Data .....	41
2007 Graduates.....	41
Which Graduates Become Licensed?.....	45
Which Graduates Become Employed? .....	48
Which Graduates Become Employed in Education? .....	49
Section Summary.....	50
VIII. Community and Private Schools in Ohio.....	51
Number of Community School Teachers .....	51
Number of Students in Community Schools.....	52
Number of Community Schools.....	52
Private Schools and Students in Ohio .....	53
Pay for Private School Teachers.....	55
Section Summary.....	56
IX – Employment of Administrators in Ohio's Schools .....	57
Total Number of Administrator Positions .....	57
Administrator Positions by Type of School .....	59
License Data for Administrator Positions.....	60
Pay for Administrator Positions.....	61
Section Summary.....	64

Appendix: Methodology.....	65
Data Sources and Preparation .....	65
The Use of District Typologies .....	66
Methodology for Teacher Demand Projections.....	67

## EXECUTIVE SUMMARY

**The economic recession that began in 2008 has reduced the need for teachers overall.** It is estimated that Ohio will need about 700 fewer teachers per year in the coming years mainly due to declining birth rates during the economic recession. Birth rates fell from 65+ births per 1,000 women in 2008 to just over 62 births per 1,000 women in 2011. Unless fertility rates recover from their recent decline, the pace at which enrollments fall in Ohio will pick up.

**Retirement rule changes have already resulted in major declines in teacher stocks.** On average in Ohio, 6,000 teachers retire each year according to STRS annual reports. It is anticipated that high levels of retirement among teachers and administrators with 35+ years of service will continue. Retirement rates will likely level off and fall after July 2015 reflecting tighter eligibility requirements and less generous benefits. Mid-career teachers and administrators will find themselves “locked into” the system with less attractive retirement options making departures less likely. This is due to substantial pension wealth losses created by leaving the system early, especially if inflation accelerates. If low interest rates continue, further benefit reductions may be necessary.

**The supply of new teacher license holders in Ohio varies across grade ranges and subject areas.** Over a quarter of all new teachers licensed in Ohio in 2012 were in early childhood or prekindergarten through 3<sup>rd</sup> grade indicating a disproportionately large supply of early childhood teachers relative to teachers in the 4-12 grade range. Relatively few new teachers are trained in math and science compared to those trained in language arts and social studies.

**There is a shift moving students and teachers from private schools to community schools.** Private school enrollments and number of teachers are shrinking, while the number of community schools is growing. The first community schools were created in Ohio in 1998. Today they comprise slightly less than 10% of Ohio’s entire educational system.

**The number of people holding licenses for highly-skilled administrative jobs outnumbers the actual positions in Ohio.** There are roughly five people who hold a superintendent license for every superintendent job, three people who hold a principal license for every principal position, and about two people who hold a financial license for every treasurer position. This oversupply has caused inflation adjusted administrative pay to fall over time.

**Many people trained as teachers never become licensed.** One sixth of graduates with a bachelor’s degree or master’s degree in education were never licensed to teach in Ohio within five years of graduation.

**People trained as teachers who stay in teaching earn more.** Education graduates who work in education earn nearly double what other education majors employed in all other sectors earn one year after completing college.

## I. INTRODUCTION

This report analyzes the supply and demand of teachers for grades K-12 in the state of Ohio. This 2013 report parallels key information from the previous teacher supply and demand reports published in 2003 and 2007<sup>1</sup>, including the examination of both traditional public schools and community schools (called charter schools in other states). However, the 2003 and 2007 reports published by the Ohio Department of Education (ODE) focused on the supply and demand of teachers only while the current 2013 report focuses on both the supply and demand of teachers and administrators, such as principals. This report also expands on the 2003 and 2007 reports with new information from the Ohio Longitudinal Data Archive, a database of combined administrative records housed within the Ohio Education Research Center (OERC). Additional details regarding the data and methodology used for this analysis are located in the appendix. Key points from each section are summarized in this introduction.

### Student Enrollment

There are slightly less than 1.8 million elementary and secondary students in Ohio's public schools. Over time the number has been decreasing. Ohio has been losing about 1,500 students each year primarily due to falling birthrates. Over the past two decades Ohio has averaged around 150,000 births per year, but the trend over time is decreasing. Falling enrollments mean over time there will be less demand for teachers.

### Teacher Employment

There are about 110,000 teachers in Ohio's public schools. Over time the number has been decreasing as the state has reduced the number of full-time equivalent (FTE) teaching positions by about 500 per year. Community schools have had explosive growth in a relatively short time span. About 6,100 FTE teachers currently work in community schools. The average full-time public school teacher is paid about \$57,000 per year in Ohio. While actual pay has steadily increased for teachers, after adjusting for inflation Ohio's average teacher salary has stayed roughly constant over time. Steady inflation-adjusted pay combined with a slight reduction in the number of FTEs shows that the reduced demand for teachers is already identifiable in Ohio's data.

### Teacher Retirement

As a result of legislation, the Ohio State Teachers Retirement System (STRS) changed its plan rules starting in July 2013. The prospect of changes to STRS benefits created higher retirements in fiscal 2011 and an even higher rate in fiscal 2012. The 2012 rate continued in 2013 as the changes became effective. Teachers nearing 35 years of service, which entitles them to a higher monthly retirement check, are among the least likely to retire because working one or two more years will increase their pension by nearly 10% for the rest of their life - a benefit worth \$100,000 or more. Teachers' retirement patterns in Ohio for the past several years indicate that they have a good grasp of the economics of the pension system.

Continuing high levels of retirement among teachers and administrators with 35+ years of service are probable. Retirement rates will likely stabilize and decline after July 2015 reflecting tighter eligibility requirements and less generous benefits. Mid-career teachers and administrators will find themselves "locked into" the system with less attractive retirement options. This in turn, is

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<sup>1</sup> Copies of these reports (Condition of Teacher Supply and Demand in Ohio 2003 and Condition of Teacher Supply and Demand in Ohio 2007) are available upon request from the ODE.



likely to create fewer departures because of more substantial pension wealth losses generated by leaving the system early, especially if inflation accelerates. If low interest rates continue, further benefit reductions may be necessary. Less favorable pension benefits and a continuation of stagnant real earnings for teachers may undermine the economic attractiveness of teaching as a career.

## Teacher Employment Changes

Based on job vacancies posted on the ODE Job Board, the demand for early childhood teachers (K-3) is disproportionately low compared to the demand for middle childhood and high school teachers (4-12.) The demand for special education teachers is also high. Job vacancy data can provide valuable information on the demand for teachers, but it should be used with caution as posted jobs may not be representative. The Bureau of Labor Statistics' Job Openings and Labor Turnover Survey (JOLTS) shows that, at the national level, 1.25 hires happen in education for every posted job opening, indicating that not all education jobs are formally advertised. In the case of Ohio, the Job Board is not the only venue at which schools and districts can post jobs, and large urban districts and community schools tend to be the primary users. Data from both JOLTS and the Job Board show a rising number of formally posted vacancies over time.

Between 2010 and 2011 the typical Ohio county lost 3.3% of all school jobs, or 67 positions. Only 10 counties increased hiring, while 78 counties reduced employment. The typical metropolitan area between 2010 and 2011 lost 2.7% of all school jobs or 165 positions. Only 5 cities increased hiring while 39 cities reduced employment.

## Higher Education Pipeline

About 12,500 people are presently graduating each year from Ohio's colleges and universities with some type of degree in education. The number of degrees peaked at over 14,000 in 2005. Since that peak the number of graduates has steadily fallen. Presently over 90 colleges and universities award some type of education degree. The number of Ohio institutions granting degrees shows a steady upward growth since the mid-1990s. While the number of potential teachers has shrunk over the last few years, the increasing number of colleges granting degrees means the capacity of the pipeline has grown steadily.

In the last ten years the annual number of first-time teacher license holders in Ohio has gradually trended downward and is now about 7,100 people. There is evidence that the supply of recently licensed teachers qualified to teach prekindergarten through third grade is disproportionately large compared to the supply qualified in the 4-12 grade range. Additionally, the supply of math and science teachers is disproportionately small. Outside the traditional grade level and subject area fields, special education is the most common area of specialization.

## Who Becomes a Teacher?

Tracking how people transition from college graduation to the workforce indicates that a large proportion of education degrees in 2007 were awarded for advanced work in education, not to beginning teachers. Over forty percent (41.1%) of degrees were for master's degrees and 3.4% were for doctoral degrees. One-fifth (20%) of all education graduates from Ohio's state colleges and universities in 2007 with either a bachelor's degree or a master's degree did not obtain a license in the state within five years of graduation.

Sixty-nine percent of all 2007 education graduates had at least one paying job in every year from 2008 to 2011. However, 6% of graduates had one year without any recorded pay in Ohio. Five

percent of the graduates had two years of no pay and 6% had three years. Fifteen percent went all four years without recorded pay. Education graduates who work in education earn about twice as much as what other education majors working in all other sectors earn one year after they finish college.

### Community and Private Schools

In 2011 community schools comprised slightly less than 10% of Ohio's public education. The number of community school teachers and students has grown quickly since 1998 when the first schools opened in Ohio. The number of students enrolled in community schools is experiencing the fastest growth of all school types in Ohio. There are correspondingly more community school teachers to staff the growing number of schools. If the growth continues at current rates, by 2020 their share of Ohio's education system will include around 12% of all Ohio students.

Private school enrollment in Ohio has fallen during the early 2000's. Presently there are about 191,000 elementary and secondary private school students in Ohio, down from over 250,000 in 2001. The number of private schools over the past decade has shrunk by 7%, the number of FTE private school teachers has fallen by 10%, and the private school student-teacher ratio has dropped from 15 in 2001 to 12.5 in 2011.

### Administrator Employment

The total number of administrative positions, like principals, school treasurers and superintendents, in Ohio has ranged between 15,000 and 16,000 positions from 2004 to 2011. The number of administrative positions has shown no upward or downward trend. Because the number of students in Ohio has decreased over time, the ratio of students to administrators shows that the typical administrator is responsible for fewer students. In 2004, the typical administrator was responsible for about 118 students. In 2011, the typical administrator was responsible for 108 students.

The number of people holding licenses for highly skilled administrative jobs outnumbers the actual positions in Ohio. There are roughly three people who hold a principal license for every principal position; five people who hold a superintendent license for every superintendent job and slightly less than two people who hold a financial license for every treasurer and other financial position. In inflation adjusted terms, administrative pay has been falling over time. Administrators at community schools earn less money than those who work for traditional public schools.

## II. STUDENT ENROLLMENT IN OHIO'S SCHOOLS

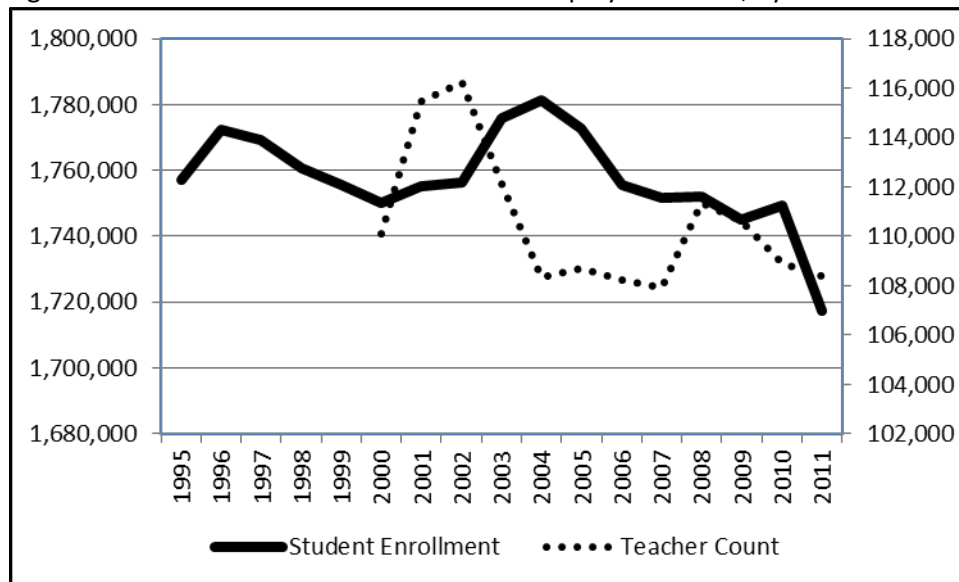
The demand for teachers is primarily based on the number of students that need instruction. In this section, the forces underlying movement in enrollments and how they relate to the number of teachers are discussed. This is followed by a description of how the number of students differs over time by ethnicity, type of school and district typology. In conclusion, a description of how these trends will impact the number of teachers needed is provided.

### Historic Trends

The solid line in Figure 2-1 shows the average number of students enrolled in the state of Ohio from the 1995-96 school year until the 2011-12 year. That solid line shows there have been about 1.75 million children being taught each year in Ohio's public schools. However, Ohio has been losing, on average, about 1,500 students each year over the 1995-96 to 2011-12 time period.

The dotted line in Figure 2-1 shows the number of teachers employed in Ohio. Like the number of students, the dotted line is decreasing over time. In 2000 and in 2011 the ratio of total students enrolled to the number of teachers employed was 16:1. Using the ratio of sixteen students per teacher, the implied need for 1.75 million students is about 109,400 teachers.

Figure 2-1: Students Enrolled and Teachers Employed in Ohio, by Year



### Enrollment Projections

Figure 2-1 provides a nearly 20-year history of enrollments. Demographic trends suggest that enrollments and hence the need for K-12 teachers, will continue to track downward. Future school enrollment is a function of births, deaths and the flow of school age children moving into Ohio and out of Ohio. Deaths are a negligible part of changes in total student numbers, and net migration out of the state is also small.

The most important factor is births. Changes in the number of births are reflected five or six years later in school enrollment. For example, if Ohio has 150,000 births each year, then over time there

will be 1.91 million students in grades K-12.<sup>2</sup> However, if Ohio has 137,000 births each year over the next fifteen years, births will generate about 1.75 million students in grades K to 12 – about 160,000 fewer students overall.

Figure 2-2 shows that the number of live births in the state of Ohio for the past two decades has averaged around 150,000 per year but has consistently trended downward over the period. Figure 2-3 shows the fertility rate in Ohio. The most salient features are the sharp decline in fertility with the high unemployment rate of the early 90's, the recovery of fertility of the late 90's to the small recession brought on by 9/11, the recovery of fertility that lasted through 2008, and yet another fertility decline after the 2008 cyclical peak in economic activity that continued the lack of recovery from the Great Recession. Whether the projections for the long-term demand for teachers associated with lower fertility come to pass likely depends on the health of the economy. While the unemployment rate has fallen from its worst recession levels, the fraction of the working-age population that is working is little changed over the past four years. The weak job market has led to considerable postponed fertility.

Figure 2-2: Number of Live Births in Ohio

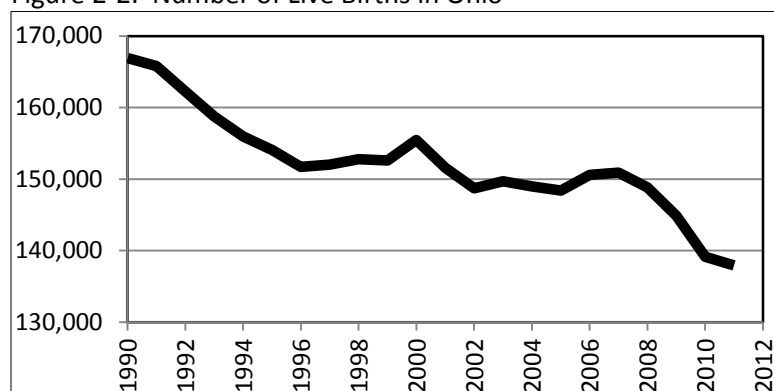
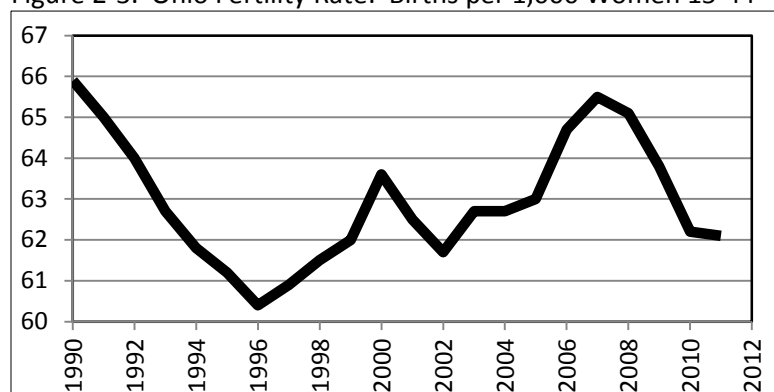


Figure 2-3. Ohio Fertility Rate: Births per 1,000 Women 15-44



Finally, part of the recent change in enrollments in public schools (including community schools) may reflect students being moved from public to private schools or home schooling. This factor introduces additional uncertainty into projections of teacher employment. Counts for teachers are confined to teachers in public schools (including community schools), excluding private schools, so

<sup>2</sup>  $1,912,500 = (150,000 \times 12.75)$ . There is a mixture of full-day and half-day kindergarten in Ohio, so if half the kindergartens are full-day, kindergartners will contribute about  $\frac{3}{4}$  of a full time equivalent student.

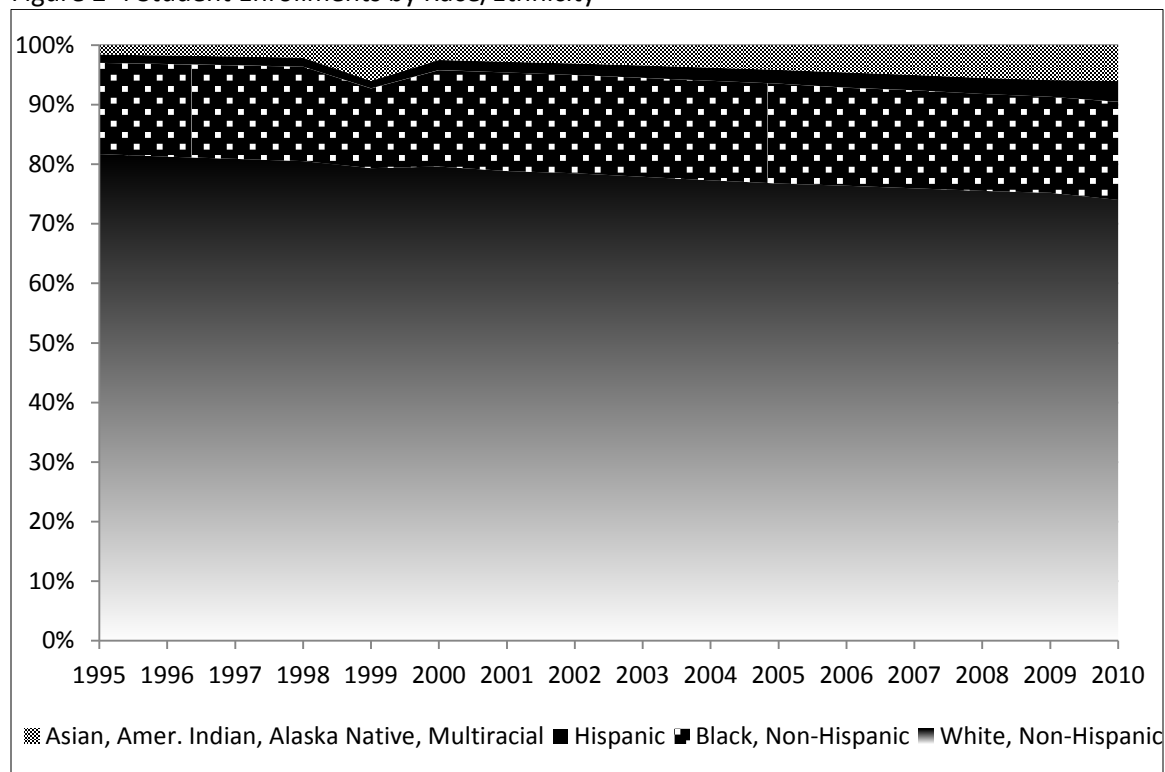
student flows to private schools will generate offsetting teacher demand the ODE data cannot reveal.

An increase in home schooling will not generate significant demand for employment as a teacher, although some teachers may move out of the formal market to teach their own or other families' students outside of traditional public and community schools.

### Enrollments by Race or Ethnicity

Figure 2-4 contains information on the percentage of enrolled students by race in all schools in Ohio. Figure 2-4 shows that over time the number of white, non-Hispanic students has fallen from 82% in the 1995-96 school year down to 74% in the 2010-11 school year. The category which classifies students as Asian, Native American and Multiracial has experienced most of the increase. This category has grown from 2% in 1995-96 to 6% in 2010-11.

Figure 2-4 Student Enrollments by Race/Ethnicity



### School Enrollment Changes by District Typology

The 2003 and 2007 Ohio teacher supply and demand reports sorted the overall patterns into a seven category district typology. This typology had categories like “Rural/Small Town” and “Major Urban – Very High Poverty.” Table 2-1 identifies the number of students who are in public school by using the Ohio Department of Education’s School Districts 2013 Typology<sup>3</sup>, which added an eighth category. Table 2-1 adds Community Schools as a ninth category.

<sup>3</sup> This report adopts the standardized use of the 2013 typology for analyses from all years. See the Appendix for additional details.

For 2011-2012, table 2-1 shows that most students are found in suburban districts with low student poverty and average student population. The group with the second most students is “Suburban: Very Low Poverty, Large Population.” The least number of students were found in “Rural: Average Poverty, Very Small Population” excluding “Community Schools” and “Other.”

Suburban areas with large student populations have been slowly growing over time. In 2005 this group had 12.5% of all public Ohio students. Six years later this group had 13.6% of all students. The category experiencing the greatest loss of students was “Urban: High Poverty, Very Large Population” declining from 12.3% of all students in 2005 to 10.0% in 2011.

Table 2-1 shows community schools have had rapid growth in over a six-year span. In the 2005-06 school year community schools had just over 70,000 students. In the 2010-11 year they had almost 114,000, an increase of over 60%.

Table 2-1: Percentage of Students in Ohio Public Schools by District Typology and Year

	Typology Description	2005	2006	2007	2008	2009	2010	2011
1	Rural: High Poverty, Small Population	10.2%	10.0%	10.0%	10.0%	9.9%	9.8%	10.0%
2	Rural: Average Poverty, Very Small Population	8.4%	8.4%	8.3%	8.3%	8.4%	8.2%	8.2%
3	Small Town: Low Poverty, Small Population	10.5%	10.5%	10.6%	10.5%	10.5%	10.4%	10.4%
4	Small Town: High Poverty, Average Population	11.3%	11.2%	11.2%	11.1%	11.1%	11.0%	11.1%
5	Suburban: Low Poverty, Average Population	17.7%	18.0%	18.1%	18.0%	18.0%	17.9%	18.0%
6	Suburban: Very Low Poverty, Large Population	12.5%	12.8%	12.9%	13.2%	13.4%	13.4%	13.6%
7	Urban: High Poverty, Average Population	13.3%	13.2%	13.1%	12.9%	12.8%	12.5%	12.6%
8	Urban: Very High Poverty, Very Large Population	12.3%	11.7%	11.4%	10.9%	10.8%	10.3%	10.0%
9	Community Schools	3.9%	4.1%	4.5%	4.9%	5.1%	6.3%	6.0%
10	Other	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%

## Projections

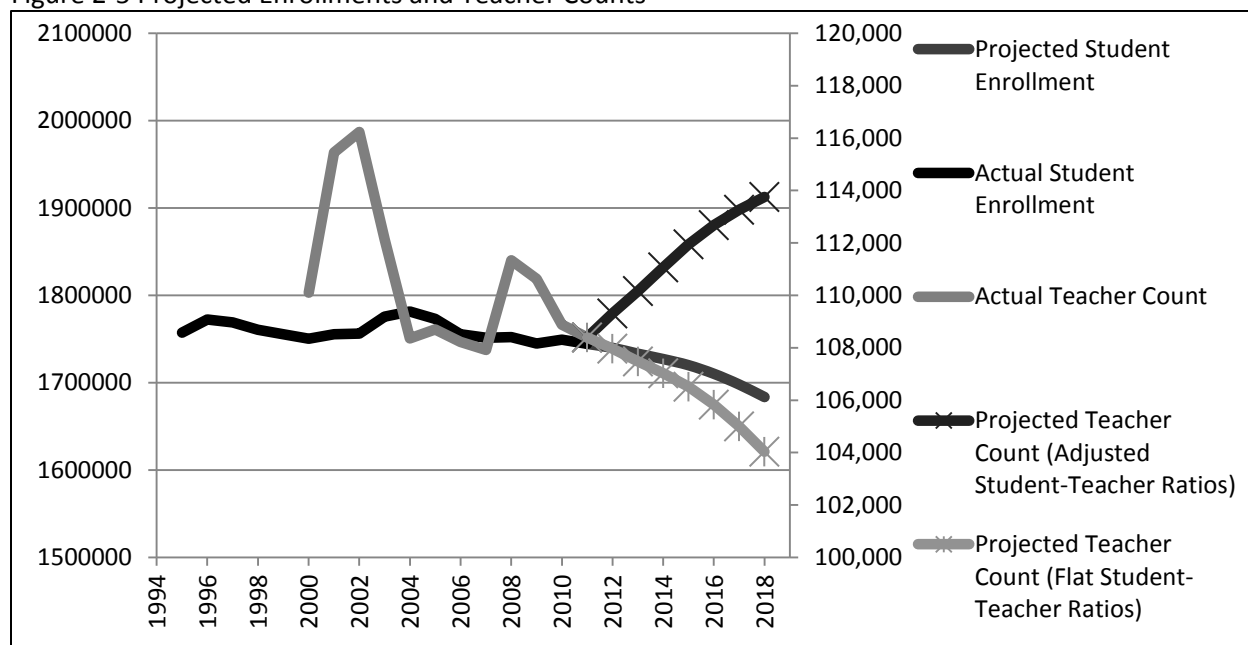
In Figure 2-5 projections are added to the data in Figure 2-1. Between 2011 and 2018 a decline of 70,000 students in K-12 is projected. This is around 10,000 fewer students per year. The 70,000 loss continues the actual trends that accelerated with the economic recession in 2008. Figure 2-5 shows the rescaled vertical axis to make the relative sizes of the various changes more clear. Teacher count projections use two assumptions<sup>4</sup>:

- 1) Typology-specific student-teacher ratios remain flat at 2011 levels, or
- 2) Typology-specific student-teacher ratios continue the typology-specific trends observed from 2005-2011.

<sup>4</sup> A more detailed description of the methods used for the predictions can be found in the Appendix.

The enrollment projections use data on children currently enrolled, data on children born but not enrolled as of the most recent school year, and future fertility based on current fertility rates.

Figure 2-5 Projected Enrollments and Teacher Counts



Under the first assumption, the demand for teachers is expected to decrease by about 700 teachers per year between 2011 and 2018. However, under the second assumption, an increase in demand is projected. Specifically the demand for teachers is expected to increase by about 700 teachers per year between 2011 and 2018. The first assumption may be more realistic given that student-teacher ratios across typologies have tended to stabilize since the 2008 economic recession, and recovery remains slow.

## Section Summary

This section provided facts, figures and trends on student enrollment. The key points include:

- Combined traditional public and community school enrollments in 2011-12 were about 1.72 million. Since 1995, Ohio has been losing about 1,500 students each year due to a mixture of declining fertility and small net migration out of Ohio. Enrollment declines of this size, on average, reduce the demand for teachers by about 100 positions per year.
- Unless fertility rates recover from their recent decline, the pace at which enrollments fall in Ohio will increase. A decrease in the demand for teachers of about 700 teachers per year is expected between 2011 and 2018 if student-teacher ratios remain constant.
- Community school enrollments have had substantial growth in a relatively short time span. Community schools now comprise 6% of total enrollment and educate over 100,000 students.
- Public schools are seeing a steady shift in enrollment away from urban school districts with very large and poor populations toward suburban school systems.
- Rural and small town schools have seen small declines in enrollment.
- For the next five years, fairly constant or slowly falling teacher counts are expected unless the fiscal constraints under which districts are operating change.

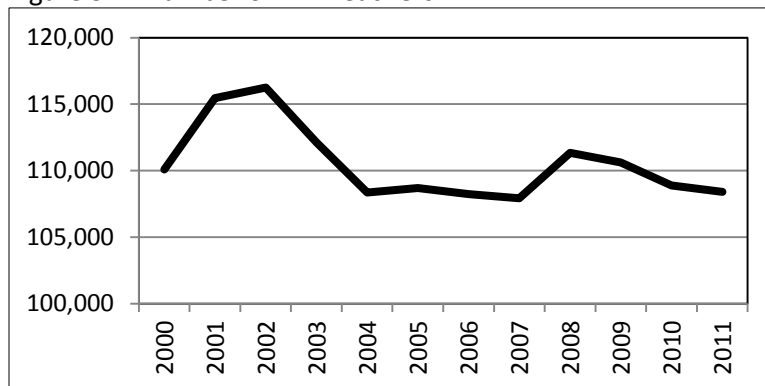
### III. TEACHER EMPLOYMENT IN OHIO'S SCHOOLS

Over the last decade the state has reduced the number of full-time equivalent (FTE) teaching positions resulting in approximately 108,000 teachers in Ohio's public schools. This section traces the decline in the number of FTE teachers and tracks changes in the location of where they teach and what they earn by building on Section II. This section serves as a baseline for Section IV on retirement and the recent changes in pension entitlements.

#### Historical Trends

Figure 3-1 tracks annual full time equivalent (FTE) employment from the school year beginning in August 2000 until the school year beginning in August 2011. Figure 3-1 shows that 110,000 teachers were employed in Ohio during 2000-2001. The number of FTE teachers peaked two years later at over 116,000 teachers. Since the peak in 2002-2003, the state of Ohio has been steadily reducing the number of FTEs by about 500 positions per year for all Ohio public schools. There were slightly more than 108,000 FTE teachers employed in Ohio during the 2011-2012 school year.

Figure 3-1: Number of FTE Teachers



The vast majority of teachers in Ohio are female – about 75%. In 2000, 73.6% of Ohio's teachers were women. By 2011, the percentage of women had climbed to 75.1%.

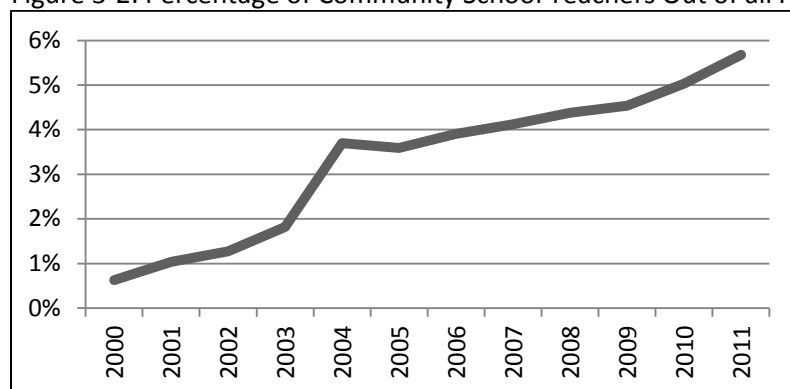
#### Number of Traditional Public and Community School Teachers

Since the early 2000s community schools have been a rapidly growing sector in Ohio. Figure 3-2 shows the percentage of teachers employed at community schools over time. In the school year that began in August of 2000, just 0.6% or 692 of all FTE teachers worked in community schools. By the school year that began in 2011 over 6,100 FTE teachers worked in community schools, a nine-fold increase. Community schools are adding approximately 500 FTE teachers yearly. Assuming the trend continues, by 2020 community schools could have over 10,500 FTE teachers and comprise about 10% of the PK-12 educational labor force.

Community schools have a slightly higher fraction of female teachers than public schools – about two percentage points higher.



Figure 3-2: Percentage of Community School Teachers Out of all PK-12 Teachers



### Number of Teachers by District Typology

Using the ODE School Districts Typology, Table 3-1 demonstrates the distribution of teachers from 2002 to 2011. The typology classifies Ohio's school districts into 8 groups that share similar demographic and geographic characteristics. The table shows the fewest teachers are found in rural areas. However, proportionately teachers have been shifting to rural areas over time; in 2002 only 16% of all teachers were in rural schools, but by 2011 teachers in rural schools had increased to 20%. The shift has come at the expense of urban districts. About 33% of all teachers worked in urban areas in 2002, but by 2011 the figure had fallen to 26%. In the previous section it was demonstrated that enrollments in rural schools are slowly falling. The pupil-teacher ratio in rural schools is also falling.

One reason for the falling pupil-teacher ratio in rural schools is due to the difficulties in eliminating a classroom when the classroom comprises an entire grade in the school. While urban schools can consolidate classes, this option is not available to rural areas that have schools which are geographically far apart. Rural schools sometimes use shared services to meet diverse needs across districts.

Table 3-1: Percentage of Ohio's Teachers in 2002, 2007 and 2011 by District Typology<sup>5</sup>

	Typology Description	% 2002	% 2007	% 2011
1	Rural: High Poverty, Small Population	10%	12%	14%
2	Rural: Average Poverty, Very Small Population	6%	6%	6%
3	Small Town: Low Poverty, Small Population	10%	10%	10%
4	Small Town: High Poverty, Average Population	12%	11%	11%
5	Suburban: Low Poverty, Average Population	17%	19%	19%
6	Suburban: Very Low Poverty, Large Population	12%	14%	14%
7	Urban: High Poverty, Average Population	15%	14%	14%
8	Urban: Very High Poverty, Very Large Population	18%	12%	12%

<sup>5</sup> The ODE School District Typology is found online at <http://education.ohio.gov/Topics/Data/Frequently-Requested-Data/Typology-of-Ohio-School-Districts>.

## Teacher Pay

Pay for the average traditional public school teacher has changed over time. Table 3-2 shows average teacher pay in Ohio in both current dollars and inflation-adjusted dollars. The middle column labeled “Actual Average Salary” shows that in 2002 the typical Ohio teacher made almost \$46,000 per year. This number has grown by slightly more than \$1,000 per year over time resulting in the typical teacher earning \$57,000 in 2011. At first glance, the figures in the middle column suggest teachers are steadily improving their financial situation.

The inflation adjusted salary (2012 purchasing power), demonstrates that instead of teacher salaries climbing over time, after adjusting for inflation, teacher salaries have been relatively flat from 2002 to 2011, hovering around \$60,000. Public school teachers in 2011 were paid slightly more than \$58,000 in 2012 dollars.

Table 3-2: Average Salary for Ohio’s Teachers

Year	Actual Average Salary	Inflation Adjusted Salary
2002	\$45,832	\$58,952
2003	\$47,981	\$60,368
2004	\$49,021	\$60,116
2005	\$51,063	\$60,484
2006	\$52,399	\$60,132
2007	\$53,694	\$59,907
2008	\$55,014	\$58,970
2009	\$56,288	\$60,745
2010	\$57,026	\$60,295
2011	\$56,993	\$58,190

## Teacher Pay by School Type

There are differences in teacher pay between traditional public and community schools. Table 3-3 shows the average teacher salary in current dollars by school type. Community school teachers earn much less than public school teachers and the gap has widened appreciably since 2005. The average community school teacher was paid just under \$34,000 in 2011. Teachers in community schools are more likely to be recently licensed and less likely to be unionized. The ratio column in table 3-3 shows, on average, that the typical community school teacher currently receives about 58% of their traditional public school counterpart’s salary.

Table 3-3: Average Salary for Ohio’s Teachers by School Type, in Current Dollars

Year	Community School Average Salary	Public School Average Salary	Ratio = Community / Public
2004	\$29,770	\$49,382	60.3%
2005	\$34,343	\$51,511	66.7%
2006	\$35,084	\$52,917	66.3%
2007	\$35,707	\$54,311	65.7%
2008	\$34,847	\$55,812	62.4%
2009	\$34,311	\$57,259	59.9%
2010	\$33,823	\$58,234	58.1%
2011	\$33,886	\$58,420	58.0%

## Teacher Pay by District Typology

Table 3-4 shows the average salary in the 2011-12 school year using the Ohio Department of Education's (ODE) School Districts Typology, which is described above. The table shows that "Suburban - Very Low Student Poverty & Large Student Population" districts pay the highest average teacher salaries - around \$67,500. The lowest pay is found in "Rural - High Student Poverty & Small Student Population" districts where teachers earn around \$45,000 on average each year.<sup>6</sup>

Table 3-4: 2011-2012 Average Salary for Ohio's Teachers by 2013 District Typology

Typology	Description	Salary	Comparison
6	Suburban - Very Low Student Poverty & Large Student Population	\$67,463	118%
8	Urban - Very High Student Poverty & Very Large Student Population	\$63,263	111%
5	Suburban - Low Student Poverty & Average Student Population Size	\$59,755	105%
7	Urban - High Student Poverty & Average Student Population	\$57,446	101%
4	Small Town - High Student Poverty & Average Student Population Size	\$54,552	96%
3	Small Town - Low Student Poverty & Small Student Population	\$53,536	94%
2	Rural - Average Student Poverty & Very Small Student Population	\$50,185	88%
1	Rural - High Student Poverty & Small Student Population	\$45,207	79%

The comparison column shows the percentage difference – positive or negative - from the overall average of \$57,009. Large, wealthy suburban districts provide a pay premium of almost 20% compared to the average school salary. Poor rural districts discount their average rate of pay by over 20%.

## Section Summary

This section has provided some facts, figures and trends on teachers. The important takeaways are:

- As first seen in Section II, there are approximately 110,000 FTE teachers in Ohio but the number is falling by about 500 per year.
- Female teachers outnumber males by about 3:1 and the ratio of male teachers is actually falling.
- The percentage of teachers employed by community schools has increased ten-fold since 2000. In 2000 about 0.6% of teachers worked in community schools compared to 5.9% in 2011.
- On average, in 2011 teachers were paid about \$58,000 per year in Ohio in 2012 dollars. While actual pay has steadily increased for teachers, after adjusting for inflation, average teacher salary has stayed roughly constant for ten years.
- Community school teachers receive about 62% of their traditional public school counterparts' salary.
- Rural teachers receive lower pay than urban teachers, although any comparison is complicated by the lack of reliable cost-of-living data that compares rural and urban costs. Large, affluent suburban districts have the highest pay levels.

<sup>6</sup> It is widely thought that there are cost of living differences in rural versus urban (and suburban) areas. However, the Bureau of Labor statistics does not attempt to quantify this difference. One study in Pennsylvania reported living costs were 6-12% lower in rural areas than urban. If this were also the case in Ohio it would attenuate many of the differences discussed although the salary gradient between large, affluent, suburban districts and rural districts would continue to be appreciable.

## IV. TEACHER EXITS, RETIREMENTS AND PENSION BENEFIT CHANGES

Over the long run, changes in fertility, enrollments and the pupil-teacher ratio drive the demand for teachers. One of the more significant factors changing the supply of teachers, in recent and the next few years, is the change in benefit rules for the State Teachers Retirement System (STRS). This section discusses changes in Ohio's retirement systems with a focus on STRS. Retirement trends, reemployment, exits and retirement data are also presented.

### Changes in Ohio's Retirement Systems

Over the past year, all five of Ohio's state retirement systems have changed their plan rules to make eligibility stricter and payments less generous. The Ohio Public Employees Retirement System (OPERS) was the first system modified. Its first changes, which were relatively small, happened on January 1, 2013. In the three months prior to January 1, 2013 OPERS reported that 80% more workers retired than at the same time a year earlier.<sup>7</sup>

The increase in OPERS retirement was not spread evenly throughout the system. For example, The Ohio State University had 72 people covered by OPERS retire in December 2011, but in December 2012, 200 people retired, almost a three-fold increase. By retiring in December 2012 instead of during 2013 these individuals did not forgo any cost of living (COLA) increase. While those covered by OPERS are not teachers, the reaction to incentives is similar.<sup>8</sup>

The change in benefit rules for the State Teachers Retirement System (STRS) was effective July 1, 2013 (shown in table 4-2). Anecdotal evidence and economic theory suggest these plan changes will generate more teacher retirements at the end of the 2012-13 school year. The prolonged political discussion of pension changes (they went into effect about a year later than originally thought) may have had an impact on 2011-12 retirements as well.

### Historical Retirement Trends

The optimal method of forecasting teacher retirement is to use STRS data on individuals and combine that with Education Management Information System (EMIS) staff data. STRS could not provide individual level demographic and plan data. However, STRS could provide data on the aggregate number of retirements from the STRS system over the past several years. Data from the EMIS system are used to document teachers and administrators. The data from STRS did not differentiate retirements from K-12 versus post-secondary claimants. The EMIS data did not have exact years of service under the STRS system, but the staff members that are teachers can be identified.<sup>9</sup>

Figure 4-1 shows the total STRS retirements (solid line) along with the estimated retirements (or exits) based on EMIS staff data (dotted line). A teacher, who was not present in two consecutive

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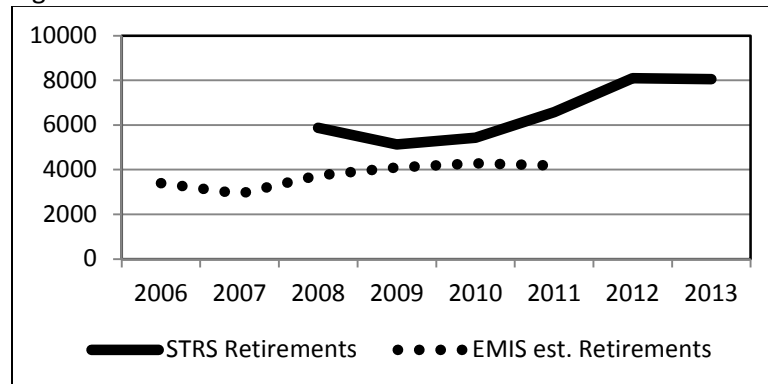
<sup>7</sup> <http://www.toledoblade.com/State/2013/01/22/Ohio-pension-changes-lead-to-retirement-rush.html>

<sup>8</sup> If OPERS people are paid closer to market wages then their incentive to retire is larger than STRS people who may be paid above market wages. In Section III we saw public school teachers, who are the dominant source of retirements, are paid significantly more than community school teachers. This suggests public school teachers are likely paid appreciably more than they would earn after retirement. Thus unless the teacher is eligible for a large pension, the economic incentive to retire will be lower than for OPERS workers.

<sup>9</sup> The attempt to determine who had left teaching in 2005 and earlier with the EMIS data generated unreliable results. Retirements after the 2011-12 school year cannot be determined until the 2012-13 school year staff data are available.

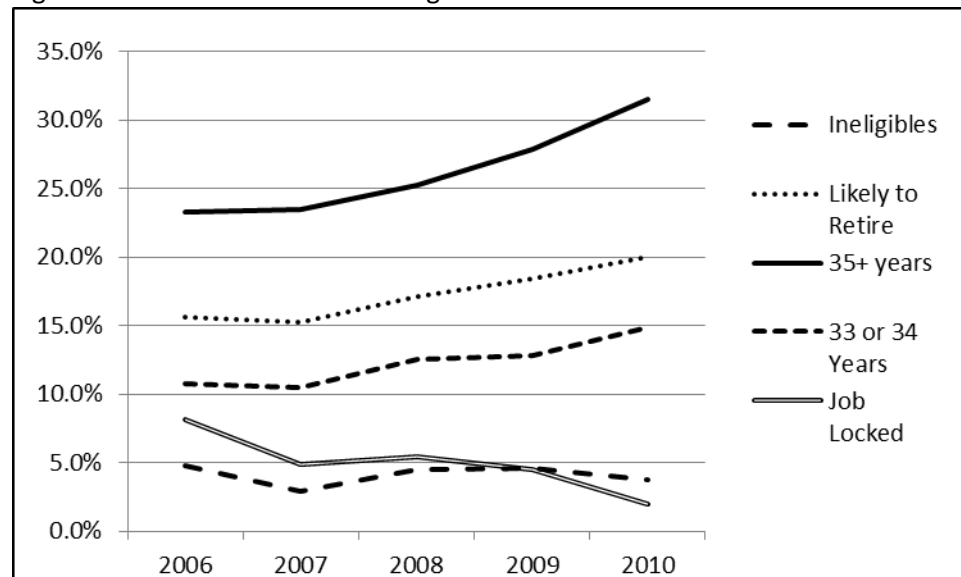
years was treated as an exit or retirement. A retired teacher who immediately returns as a teacher will not be imputed as a retirement as the EMIS data do not identify returning retirees. For the purposes of teacher supply and demand, what matters is an exit from teaching rather than the reason. The large jump in STRS retirements in 2012 and 2013 is remarkable. The discussion of STRS changes was prolonged, as noted. Other factors influenced the retirement decision, such as curriculum changes, more testing and teacher evaluation, the switch to semesters at OSU (recall the STRS data comingle teachers at all levels), and the recession that started in 2008.

Figure 4-1: Retirement Counts from STRS and EMIS Estimates



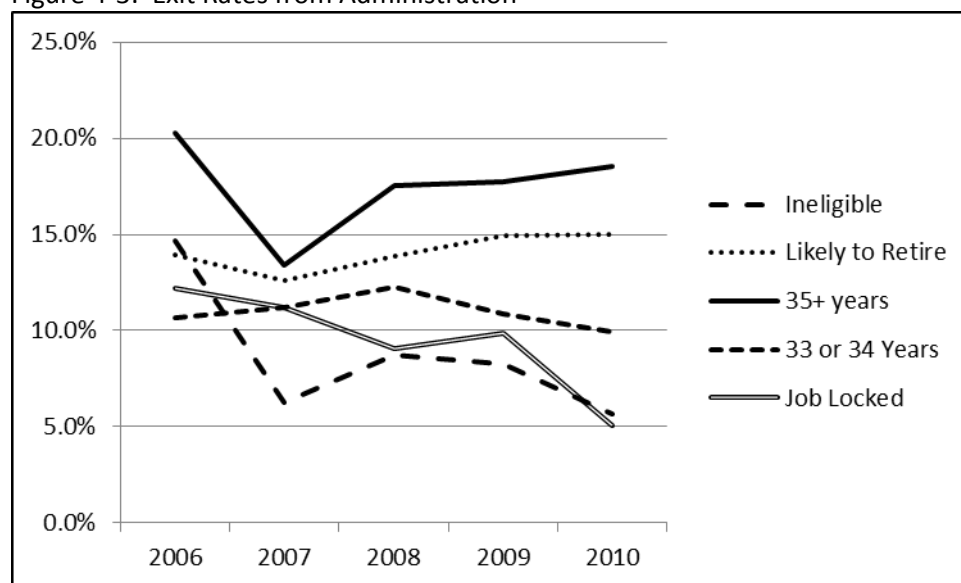
The STRS system is largely a defined benefit system, so the age and number of years of service are crucial determinants of the pension a retiring teacher will receive. In Figure 4-2, teachers are categorized by the rate at which each group has left teaching from the 2005-06 school year through the 2011-12 school year. The same is done in Figure 4-3 for personnel whose position code indicates they are administrators.<sup>10</sup>

Figure 4-2: Exit Rates from Teaching



<sup>10</sup> Position codes 100-199 are considered as administrators; 200-299 teachers. The same pension entitlement categories are used for teachers and administrators.

Figure 4-3: Exit Rates from Administration



Five groups of teachers are discussed with a variety of retirement possibilities.

- 1) **Ineligibles** consist of teachers who, based on their age and experience, are likely ineligible. Only the STRS data can generate a determinative measure of eligibility, so this classification is approximate.
- 2) **Likely to retire** includes teachers who are over fifty-five and have more than 27 but less than 33 years of experience<sup>11</sup>. These teachers are eligible for retirement benefits and do not have sufficient years of service to make postponing retirement by 1-2 years economically attractive.
- 3) **35+ years** are those with 35 or more years of service. They can retire at any time and constitute 20-25% of those who take retirement.
- 4) **33 or 34 years** includes teachers with 33-34 years of service. These teachers have a powerful economic incentive to reach 35 years and gain the enhanced benefit offered by STRS. As indicated, being close to 35 years makes them less likely to exit teaching than those with just under 33 years and half as likely as those with thirty-five or more years of service.
- 5) **Job locked** includes those who are eligible for a pension but have between five and 27 years of experience. These teachers are effectively “job locked” and likely have unfavorable job prospects outside teaching relative to their current earnings. They might also not be entitled to a pension that is close to their current standard of living and the value of their pension would be attenuated by inflation if they left STRS while they waited to become eligible for that pension.<sup>12</sup>

<sup>11</sup> The choice of 27 years as the divider was somewhat arbitrary. This group is eligible for pension that pays 60% of their salary with a single life annuity.

<sup>12</sup> The pension reforms would make this group wait even longer to be eligible to receive a pension, making the economic cost of retiring now and waiting to claim a pension even higher.

The rate of exit from teaching is about 5% for Ineligibles and that rate has remained flat. However, the recession has reduced the rate of exit for the “job locked” teachers. Those teachers with over 27 years have been steadily increasing their retirement rates. Those with 35 years are most likely to exit, and those who can attain the STRS enhanced benefit in the next two years are least likely to exit of the three groups.

The patterns of exit rates for administrators are quite different. For the three categories most likely to exit, rates for teachers are higher than administrators and rising in contrast to administrators for whom exit rates are essentially flat. It is suspected that higher compensation levels may explain the gradient. For pension ineligible and those subject to job lock, exit rates are sharply falling for administrators. The lack of external opportunity would be expected to have a stronger effect for persons whose current rate of pay is likely much higher than their second best alternative.

Table 4-1: Statewide Teacher and Administrator Counts by Exit Risk Category, 2011 (Counts, not FTE)

Category	Characteristics	Teachers	Administrators
<b>Ineligible</b>	Under 55 or less than 5 Years	105,285 (77.2%)	12,495 (74.9%)
<b>Likely to Retire</b>	Age 55+ and over 27 years	10,951 (8%)	1,751 (10.5%)
<b>35+ years</b>	Eligible to retire regardless of age	3,465 (2.5%)	843 (5.1%)
<b>33 or 34 years</b>	Eligible to retire; Have 33 or 34 years	2,700 (2%)	357 (2.1%)
<b>Job Locked</b>	Eligible to retire and have 5-27 years	14,055 (10.3%)	1,247 (7.5%)
	<b>Grand Total</b>	136,456 (100%)	16,693 (100.0%)

## Reemployment

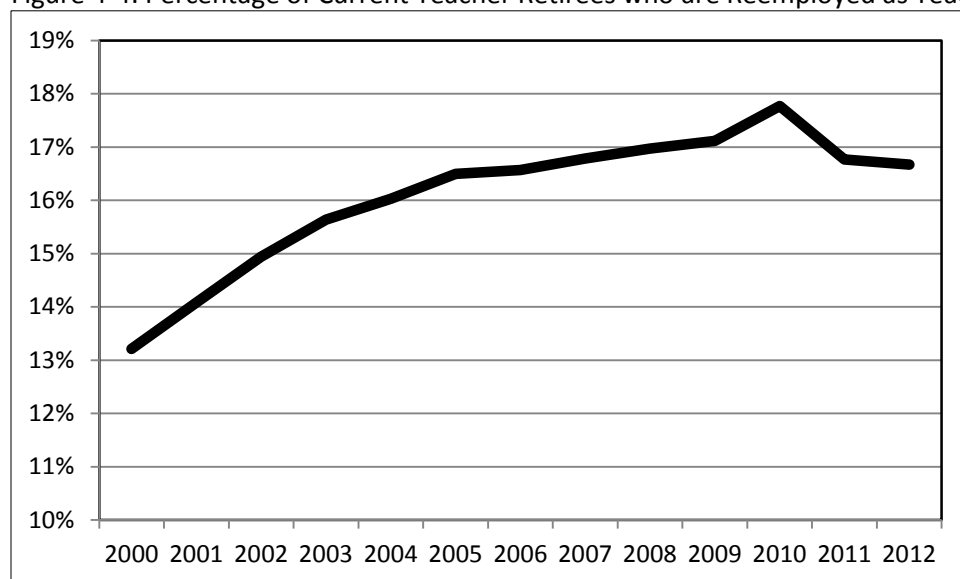
Some retirees immediately return to teach in their old jobs<sup>13</sup> or change jobs, schools or districts. Others switch to private schools. STRS annual reports identify the number of reemployed who are covered by the STRS system a second time. These reemployment figures are graphed in Figure 4-4, which shows the percentage of STRS retirees currently reemployed as teachers.

Figure 4-4 shows that a decade ago about 13% of STRS retirees were reemployed. This figure steadily rose over time until 2010 when it peaked at 18%. The figure for 2012 shows almost 17% of people receiving STRS retirement benefits were re-employed. Ultimately, returning retirees retire for good, and those data are not given by STRS. Over several years, re-employed retirees will about equal “final” retirements of returning retirees. Data from EMIS without STRS data do not allow the exact identification of the rates of re-employment to be more exact on the impact of re-employment. The elimination of the enhanced benefit means teachers no longer have a strong incentive to attain 35 years. Once they are eligible for a pension and have a “returning retiree” opportunity, they are more likely to take it. However, pension eligibility rules are being tightened which may reduce the opportunity to take retirement earlier and become a returning retiree.

<sup>13</sup> Teachers who retire and are then immediately reemployed lose the first two months of their STRS retirement benefits.



Figure 4-4: Percentage of Current Teacher Retirees who are Reemployed as Teachers



## Changes to STRS

On September 26, 2012 Governor John Kasich signed into law a bill that changed the benefit structure for the State Teachers Retirement System (STRS). These changes reduce the benefits provided to retirees to improve system solvency. Teachers who retired before July 1, 2013 were not impacted by the changes<sup>14</sup>. The reduction in benefits is large enough that the expectation is that many of the teachers who were eligible to retire before July 1<sup>st</sup> did so. The evidence suggests many teachers retired in 2011-12 or earlier either in anticipation of these changes or because they thought they would take effect earlier than they did. Table 4-2 highlights the five largest legislative changes to the retirement system. The State Teachers Retirement Board approved the key aspects of the plan that was ultimately adopted in October 2010. One area of the plan that underwent subsequent revision was the COLA limitation. That initial plan called for a three-year COLA hiatus for those retiring after July 1, 2011. While the effective date was ultimately postponed by two years, the threat of a lower COLA may have been responsible for the surge in STRS benefit claimants in fiscal year 2011 (July 2010 – June 2011).

Table 4-2: STRS Major Changes.

	Effective Date	Explanation of Legislative Change
1	July 1, 2013	COLA hiatus
2	July 1, 2013	Increased contribution rate
3	August 1, 2015	Final average salary change
4	August 1, 2015	Change in benefit formula
5	August 1, 2015	Change in eligibility requirements

The first change impacts retirement cost-of-living allowances (COLA). Currently these COLA increases are set at 2% a year. Teachers who retired on or before July 1, 2013 missed a single year of COLA increases, while teachers who retire after July 1<sup>st</sup> will miss four years of COLA increases

<sup>14</sup> There was a recent one-year suspension of the cost-of-living increase for all retirees, and new retirees face that suspension plus a suspension for four more years. Full details of the changes to STRS are found online at <https://www.strsoh.org/legislation/legislation.html>.



and do not get a COLA change until they have been retired for five years. This means that people who retire after July 1<sup>st</sup> will get a monthly benefit check around 8% smaller than people who retire before July 1<sup>st</sup><sup>15</sup>. This amounts to a roughly 8% reduction in pension wealth if a person is employed on July 1, 2013. With a typical K-12 pension having a present value of about a million dollars, this is an \$80,000 penalty for not being retired by July 1, 2013.

The second change increases the premium payment to STRS and has the effect of reducing pay for teachers who continue to work. The third change bases the pension on the average of the highest five years of salary instead of three, effectively reducing pensions of those retiring after June 30, 2015. This change encourages retirement before June 30, 2015 but has a smaller economic impact than the COLA change.

The fourth change impacts teachers with long tenure. Under the old law, a teacher's retirement benefit was computed as 2.2% of the average of the three highest years of earnings times years of service through 30 years of service. The enhanced benefit paid another 2.5% for the 31st year, 2.6% for the 32nd year, 2.7% for the 33rd year, 2.8% for the 34th year and at 35 years, the benefit becomes 88.5%, which amounts to increasing the benefit on the first 30 years of service from 2.2% to 2.5%. This 9% extra bonus acts as a 9% increase in pension wealth, or \$90,000 for a teacher with roughly a million dollars in pension wealth.<sup>16</sup> Teachers who will reach 35 years between July 1, 2013 and June 30, 2015 are financially slightly better off to take the 8% cut in pension wealth to gain the 9% by reaching 35 years<sup>17</sup> with the incentive being stronger the closer they are to 35 years.

The final change is more complex, but is designed to reduce STRS liability by creating an incentive to take retirement at older ages. These changes will not have an immediate impact, but make teaching in public schools economically less attractive. The liberal STRS pension plan likely plays an important role in attracting teachers to Ohio public schools. Those who remain in the system will work more years, reducing the need for new teachers to replace retirees.

### Estimated Exits and Retirements

The changes described above created incentives for a large wave of retirements from 2011 through 2013 and another, smaller wave through 2015. Based on retirement counts from STRS, retirements increased sharply in fiscal year 2011, before the changes were effective but possibly in anticipation of their effective date.

Based on the EMIS data, it can be estimated how many teachers fall into various pension entitlement categories. The pension changes will have their largest effect on the first three categories. The inducement to stay after 35 years will be much lower after 2015, so there will likely be a large wave of retirements from teachers remaining in the first two groups. The inducement to stay in teaching created by the enhanced benefit is fairly clear from the low propensity to retire among teachers and administrators in the "33 or 34 years" group. The "likely to retire" group will not have as strong an inducement to stay on, so a higher rate of exit for them is expected. On the other hand, the people who are "job locked" will remain in teaching, especially if the economy continues its weak performance of the past four years.

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<sup>15</sup> Because of compounding the loss is not  $4 \times 2\% = 8\%$ , but instead is 8.24%.

<sup>16</sup> For a teacher with 34 years of service, the increment to total wealth by working the 35th year is about 5 times their salary. Retiring with 34 years would likely be an ill-informed decision.

<sup>17</sup> The COLA is not legally guaranteed, so trying to avoid the COLA loss would not work if a financially strapped STRS cancelled the COLA anyway.

Figures 4-2 and 4-3 show more experienced teachers had been increasing their rate of retirement since 2007 with a much slower rate of increase for administrators in the same groups. At the other end of the experience scale, the exit rate for “ineligible” teachers is flat and slightly falling for the “job-locked” group. Among administrators, the exit rates for these latter two groups have been declining over the 2006-2011 interval. These trends suggest retirements among teachers will continue to be high until the pool of teachers with 35 or more years of experience is nearly exhausted. For administrators, exits among those with extensive experience will likely increase as well but not as strongly. For both teachers and administrators, exit rates for those ineligible for a pension as well as those with relatively few years of service in STRS are likely to slowly decline. These two groups account for about 85% of the two groups, tempering the overall impact of the pension changes. With the enhanced benefit vanishing after 2015, the existing stock of teachers and administrators will find early retirement with 35 years of experience less attractive.

One of the reasons exits continue falling for teachers and administrators is the state of the economy. Currently, the fraction of the population over 16 who have jobs is four percentage points lower than in 2007. That amounts to about ten million fewer people employed. In these circumstances, the stable pay, benefits and job security offered by public education makes it all the more difficult to find more attractive employment. Should the economy improve significantly and teacher earnings stagnate, the diminished attractiveness of employment in teaching due to smaller pension accruals will combine to make teacher retention a problem, but that possibility seems remote for the next several years.

## Section Summary

This section has provided some facts, figures and trends on teacher exits, retirements and pension benefit changes. The important takeaways include:

- Recent changes in retirements reflect a weak job market and STRS benefit changes.
- The rate at which teachers eligible for retirement have left teaching has been increasing since 2007. There has not been a corresponding increase in retirement rates for administrators.
- Talk of changes to STRS benefits created higher retirements in fiscal year 2011 and then an even higher rate in fiscal year 2012. The 2012 rate continued in 2013 as the changes became effective.
- Teachers nearing eligibility for the enhanced benefit are less likely to retire in the short term although eligible to retire. While other factors may intervene, this pattern reflects an understanding of the economics of the pension system by teachers.
- We anticipate continuing high levels of retirement among teachers and administrators attaining 35 years of service between June 30, 2013 and June 30, 2015. After July 2015 there will be less “spiking” of retirement at 35 years.
- Retirement rates will likely level off and fall after July 2015 reflecting tighter eligibility requirements and less generous benefits.
- Mid-career teachers and administrators will find themselves “locked into” the system with the less attractive retirement options less likely to create departures because of more substantial pension wealth losses created by leaving the system early, especially if inflation accelerates.
- If low interest rates continue, further benefit reductions may be necessary.
- Less favorable pension benefits and a continuation of stagnant real earnings for teachers may undermine the economic attractiveness of teaching as a career.

## V. TEACHER VACANCIES AND CHANGES IN EMPLOYMENT

Measuring job vacancies is a key component for understanding the flows of people in and out of teaching. When the flows increase, teacher tenure at each school falls. Higher turnover means less time to connect with students over long periods and less school specific history and knowledge. One way to measure the demand for teachers is to track the number of posted job openings. Many teaching jobs are filled by using internal hiring processes, such as promoting promising substitute teachers and student teachers into full-time roles. Other jobs are filled via informal channels, where school administrators have already identified individuals they would like to hire. Posted job openings are often used to fill more difficult openings. How teachers are hired, the types of positions with the highest demand and the location of hiring and vacancies are discussed in this section.

### National Vacancy Data

National data on educational vacancies and hires are found in the Bureau of Labor Statistics' Job Openings and Labor Turnover Survey, which is also known as JOLTS.<sup>18</sup> JOLTS is a monthly survey of about 16,000 organizations. This survey which includes a number of educational institutions provides data from December 2000 until present.

Educational services comprise all schools in the North American Industry Classification System (NAICS) code 61.<sup>19</sup> The educational services sector is broader than needed for the Ohio teacher supply and demand study because it includes openings at colleges, universities and for-profit training centers as well as elementary, middle and high schools. Nevertheless, these data provide, at the national level, a rough idea about trends in job openings and hiring.

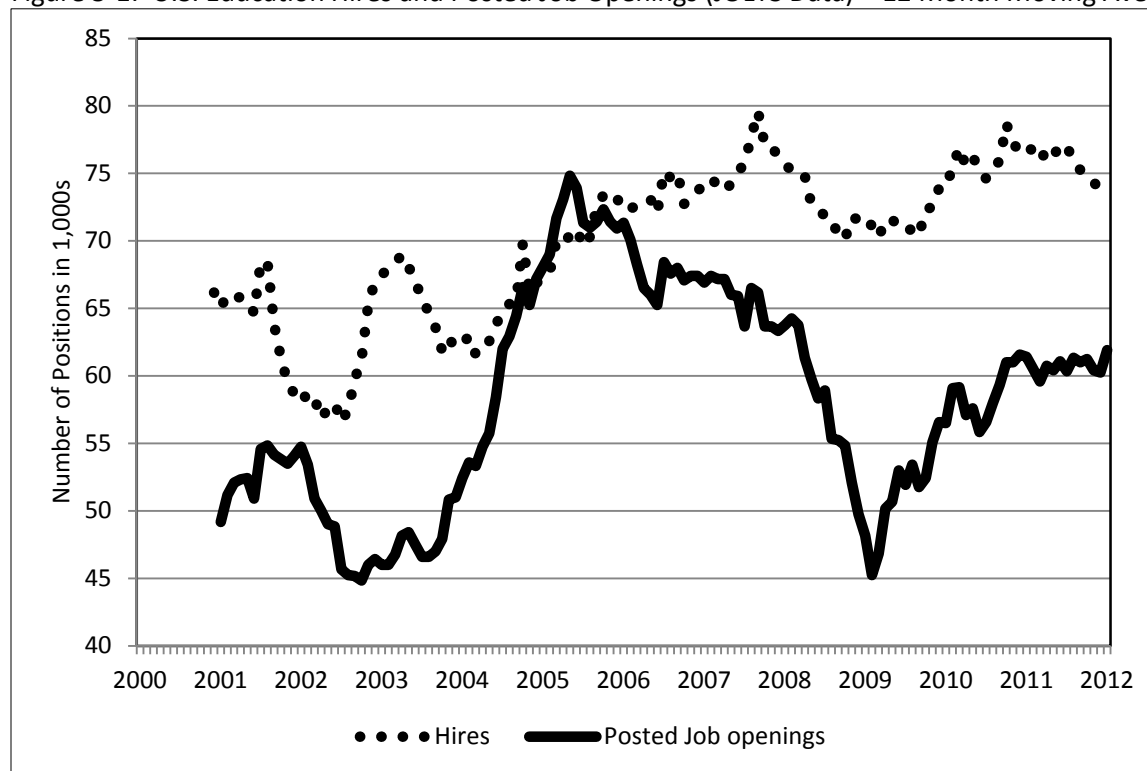
Figure 5-1 shows hires happen far more often than educational job openings are posted. On average 1.25 hires occur in this sector for every posted job opening. Moreover, there is a slight growth in both the number of posted job openings and hires over time. Regression results indicate an average annual national increase of 800 posted job openings and 1,500 more hires per year.

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<sup>18</sup> The data in this section and information about the JOLTS program come from [www.bls.gov/jlt](http://www.bls.gov/jlt).

<sup>19</sup> [http://www.census.gov/cgi-bin/sssd/naics/naicsrch?chart\\_code=61&search=2012%20NAICS%20Search](http://www.census.gov/cgi-bin/sssd/naics/naicsrch?chart_code=61&search=2012%20NAICS%20Search).

Figure 5-1: U.S. Education Hires and Posted Job Openings (JOLTS Data) – 12 Month Moving Average



### ODE Job Board

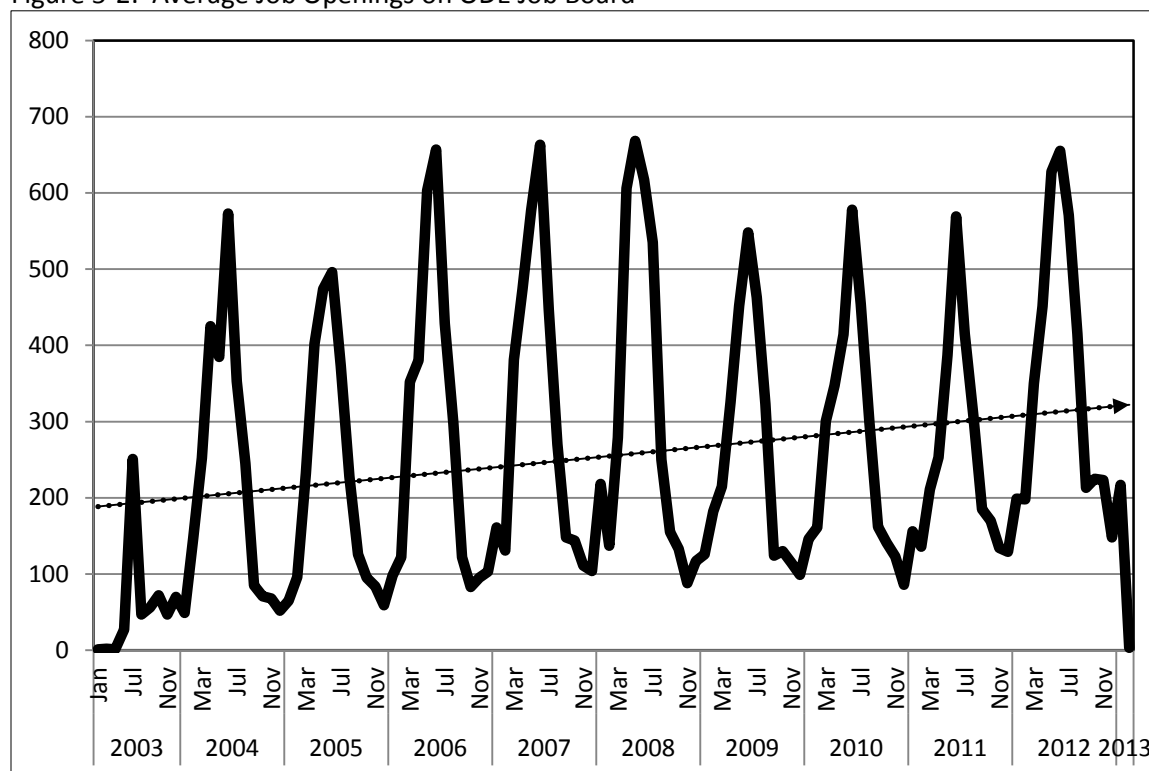
While JOLTS data are useful, their primary drawback is that they are available for tracking educational jobs only at the national level. This section uses data from the statewide ODE Job Board from 2003 to January 2013, which provides a better geographic focus.

The Job Board is used in very different fashions by each district. For example, Franklin County schools are heavy users of the Board and account for almost 8% of all jobs posted while other school districts are not. Only 685 of Ohio's 955 LEAs ever posted a job over the Job Board's decade plus existence, and among those LEAs posting a job, 54 of them only posted a single opening. Therefore the ODE Job Board is not representative of hiring done across Ohio.

### Historic Trends

Figure 5-2 shows the average number of posted job openings in the state of Ohio from January 2003 to January 2013. Since 2003 almost 31,000 jobs were posted on the board. The solid line shows there are large cyclical swings in the data. The peak in posted job openings occurs each year in June, with an average of 538 postings. The lowest amount of posted job openings occurs in December, with an average of 97 postings.

Figure 5-2: Average Job Openings on ODE Job Board



The dashed line is the best fitting linear trend. It reveals that the Job Board has witnessed about 13.5 more posted job openings each year from 2003 to 2013. Given Figure 3-1 showed the number of full-time teachers is falling over time, the increase in posted jobs means that either more jobs are being formally posted over time or teacher turnover is increasing over time.

Table 5-1 shows the number of job openings posted each year on the Job Board. The key point from this table is that on average from 2004 to 2012, there were about 3,300 posted job openings each year in Ohio. Postings peaked in 2012, when nearly 4,300 jobs were posted. The least number of postings occurred in 2004 when slightly more than 2,700 jobs were posted. The standard deviation is 511 postings. This suggests that about 95% of the time the number of posted job openings expected in Ohio ranges between 2,300 and 4,300 each year.

Table 5-1: Number of Job Openings on ODE Job Board by Year

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012
Jobs	2,705	2,730	3,341	3,611	3,803	3,102	3,212	3,052	4,276

Each job opening on the ODE Job Board is given a status. While there are a number of possible status flags, “expired,” “filled” and “open” comprise almost all of the cases. Table 5-2, shows that most jobs on the ODE board expire or time out. Relatively few jobs (10%) are marked as filled. This does not mean that the ODE posted position does not get filled since many school districts might fill their positions but not update the opening’s status. This lack of updating is another reason the ODE Job Board is not representative of unfilled teacher jobs in Ohio.

Table 5-2: Status of Job Openings on ODE Job Board.

Year	Expired	Filled	Open
2003	28%	1%	71%
2004	75%	4%	21%
2005	69%	16%	15%
2006	68%	16%	16%
2007	88%	12%	0%
2008	90%	9%	1%
2009	82%	11%	7%
2010	81%	10%	9%
2011	74%	10%	16%
2012	73%	7%	20%
<b>Average</b>	<b>77%</b>	<b>10%</b>	<b>13%</b>

## Teaching Jobs in Demand

Every ODE Job Board listing is assigned a title. In this section all open jobs posted in 2012 are grouped into 15 categories, based on ODE's licensure categories. There is no standard title list and each school district can enter whatever text they want to identify their open positions. Because there is no standard title list and some titles are only partially informative the results in this section are an approximation of demand in 2012. Moreover, the districts which use the ODE Job Board are not a random sample of districts but instead are primarily community and large urban schools. Because of these issues some of the positions may in fact not be as highly sought after as they appear.

Table 5-3 provides these 15 categories of posted jobs. In general the table shows about 80% of the jobs are for instructional needs and about 20% are for administrative and pupil services positions. Among licensed job postings, the state of Ohio has the most need for intervention specialists which refers mainly to special education teachers. Additionally the demand for early childhood teachers (K-3) is disproportionately low compared to the demand for middle childhood (4-9) teachers and 7-12 teachers.

Table 5-3: Types of Job Openings in 2012

	Category	# of Jobs	Percent
1	Unspecified Certified	488	6.0%
2	Treasurer/Business Manager	387	1.1%
3	Early Childhood Intervention	34	0.9%
4	Middle Childhood	458	12.1%
5	7-12 All Subjects	625	16.5%
6	Superintendent	65	1.7%
7	Multi Age PK-12	542	14.3%
8	Intervention Specialist	641	16.9%
9	Early Childhood	292	7.7%
10	Career Tech	147	3.9%
11	Principal	210	5.5%
12	Pupil Services	279	7.4%
13	Five-Year Associate	106	2.8%
14	Administrative Specialist	52	1.4%
15	Endorsements	66	1.7%

## Other Potential Sources of Information

There is one additional dataset that tracks vacancy information called the Conference Board's Help Wanted Online Data Series (HWOL).<sup>20</sup> The HWOL however, is not useful for understanding Ohio's teacher vacancy information because its state level information is provided in aggregate form. The HWOL breaks jobs vacancies at the state level down to just the first digit of the six digit Federal Government's Standard Occupational Classification (SOC) code. Providing only a 1-digit level code means vacancies for teachers are collapsed together with legal occupation, social service and some health care jobs.

## County Level Employment

The availability of education jobs in Ohio vary by geographical location. Employment changes at the county level and shows that most counties have experienced a shrinking labor force in their schools.

The Longitudinal Employer-Household Dynamics (LEHD) program is administered by the U.S. Census Bureau. LEHD data provide quarterly employment data at both the county and city level for the state of Ohio.<sup>21</sup>

The LEHD is a combination of multiple sources of information. The employment data come from the Quarterly Census of Employment and Wages (QCEW). QCEW includes the administrative information used to run each state's unemployment insurance system. Each quarter every company covered by the unemployment insurance system must provide information on their number of workers and their payroll. This information is combined with Census Bureau maps to create the LEHD data set.

The LEHD data are timely and provide a precise geographic measure of employment for each industry. The major drawback with using LEHD data is that every person who works in an elementary and secondary school is counted. It is impossible to extract just teachers from the LEHD data. Although, this report is intended to provide information only on teachers and administrators the numbers included in figure 5-3 and 5-4 in this section include administrative and non-teaching support staff in all numbers. Nevertheless, since teachers comprise the majority of workers at elementary and secondary schools, the LEHD are a good indicator to use.

Figure 5-3 shows the number of jobs in elementary and secondary schools by county. The typical county between 2010 and 2011 lost 3.3% of all school jobs or 67 positions. Only ten counties increased hiring. Seventy-seven counties reduced employment from 2010 to 2011.

## Metropolitan Area Level Employment

Figure 5-4 contains the same information as figure 5-3 but shows the information at the metropolitan or city level. The data track only those workers of each metropolitan area that are employed in Ohio. For example the LEHD data track information for the greater Cincinnati area, which overlaps parts of Kentucky. People who are employed in schools on the Ohio side of the border are counted in the below data, no matter what side of the border they actually live.

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<sup>20</sup> <http://www.conference-board.org/data/helpwantedonline.cfm>

<sup>21</sup> The LEHD data are found online at <http://lehd.ces.census.gov>



Figure 5-4 shows that the typical metropolitan area between 2010 and 2011 lost 2.7% of all school jobs or 165 positions. Five cities increased hiring. Thirty nine cities reduced employment from 2010 to 2011.

Figure 5-3: Elementary and Secondary School Employment by Ohio Counties (2011)

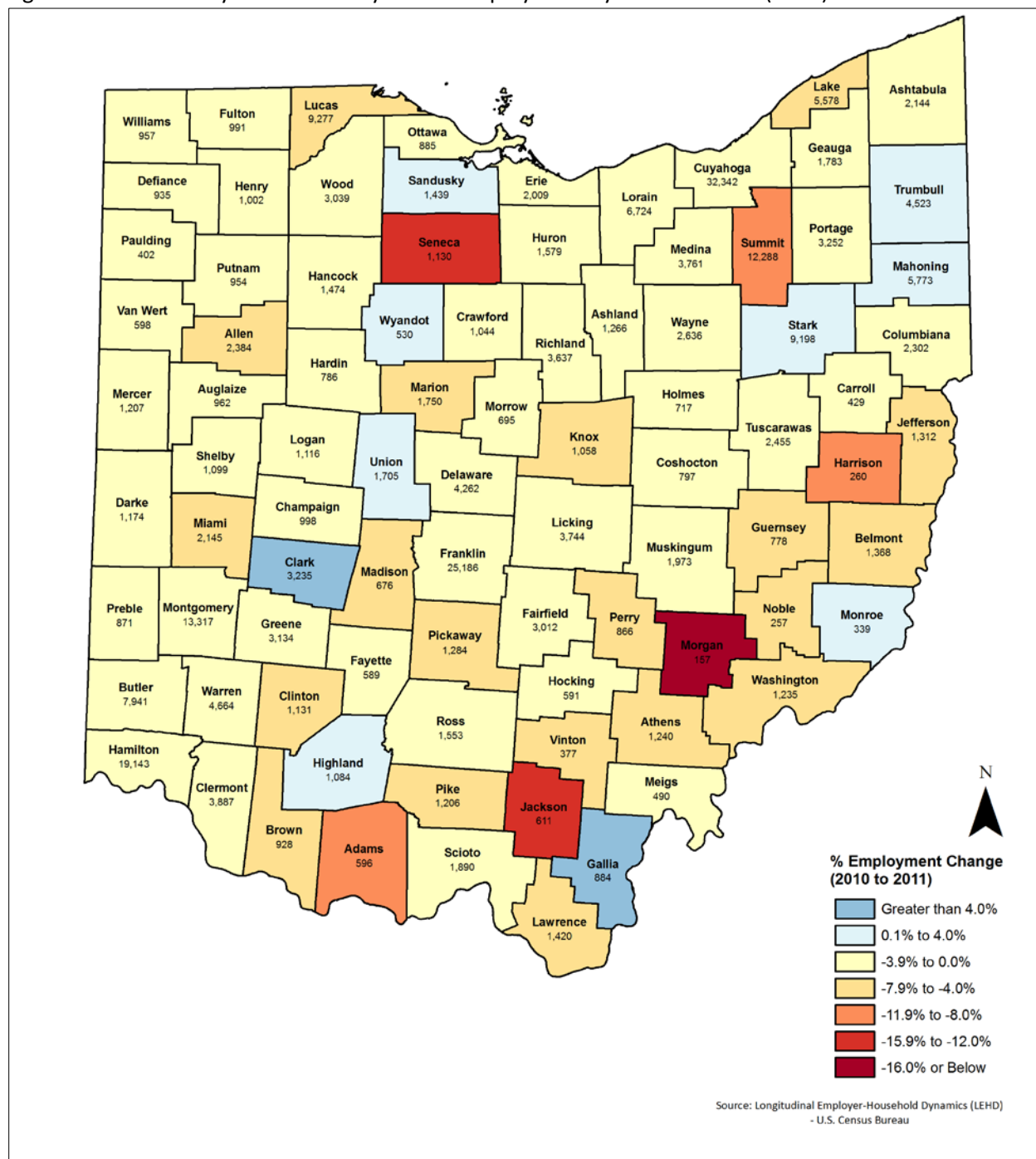
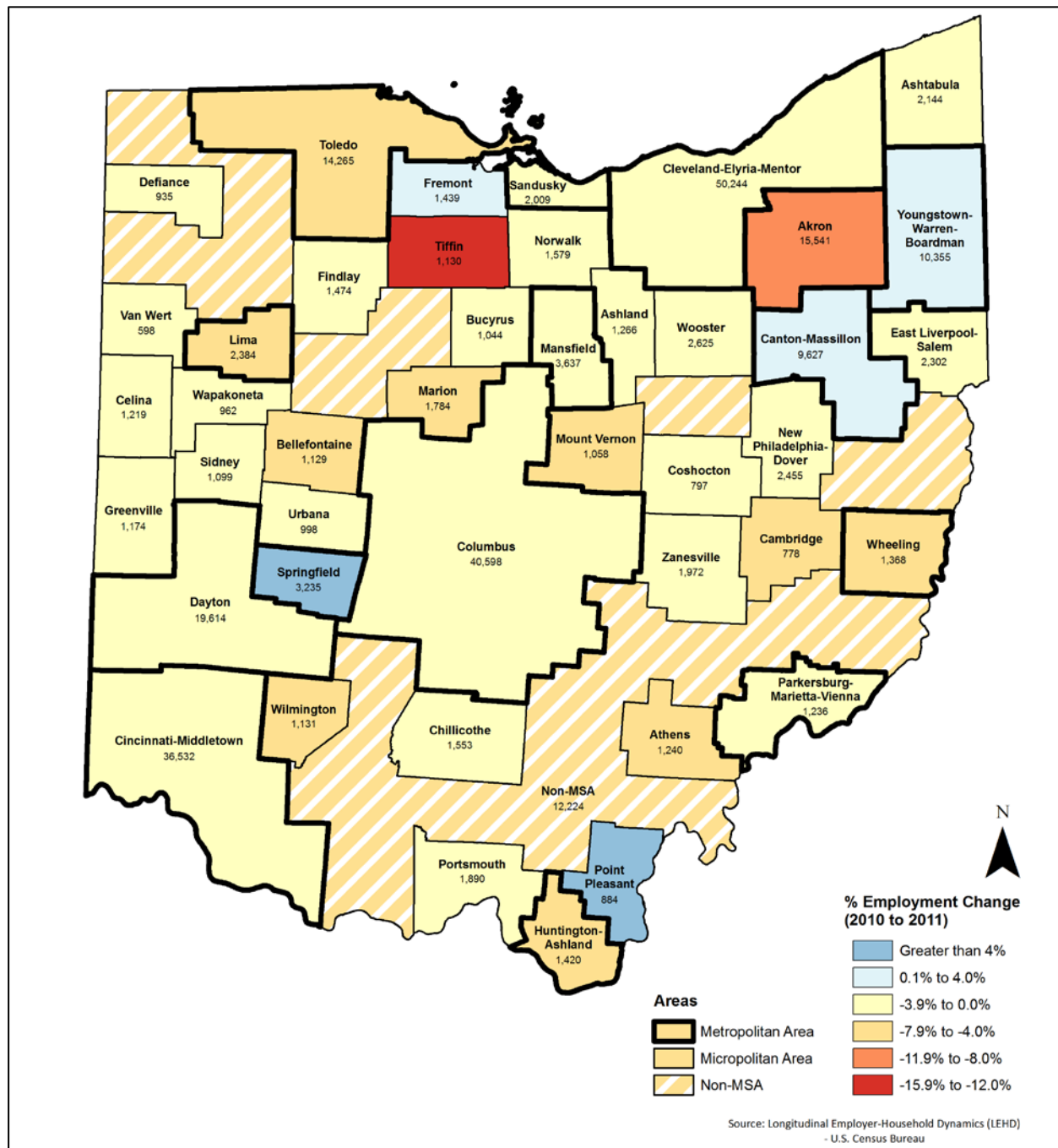




Table 5-5: Number of Jobs in Elementary and Secondary Schools for Ohio's Large Cities



## Section Summary

This section has provided some facts, figures and trends on vacancies and changes in employment. The important takeaways are:

- The Bureau of Labor Statistics' Job Openings and Labor Turnover Survey (JOLTS) for Ohio shows on average 1.25 hires happen in education for every posted job opening. Therefore not all education jobs are formally advertised.
- ODE's Job Board and JOLTS data both show a rising number of posted jobs over time. Given Figure 3-1 showed the number full-time teachers is falling over time, the increase in posted jobs means that either more jobs are being formally posted over time or teacher turnover is increasing over time.
- The demand for early childhood teachers (K-3) is disproportionately low compared to the demand for middle childhood and high school teachers (4-12.) There is also a high demand for intervention specialists. These facts are based on information from the ODE Job Board and might not be representative of what is happening throughout Ohio because the Job Board primarily tracks jobs in large urban and community schools.
- The typical county between 2010 and 2011 lost 3.3% of all school jobs, or 67 positions. Only 10 counties increased hiring, while 78 counties reduced employment. The typical metropolitan area between 2010 and 2011 lost 2.7% of all school jobs or 165 positions. Only five cities increased hiring while 39 cities reduced employment.

## VI. THE HIGHER EDUCATION PIPELINE

Teachers go through a rigorous training and testing process before securing a place in the classroom. The most common first step is obtaining a college degree. The second step is to obtain an appropriate teacher license. This section first analyzes the teacher pipeline by examining trends in people completing college degrees in education. Next licensure data is examined. Overall, the section shows thousands of people each year are training to become teachers.

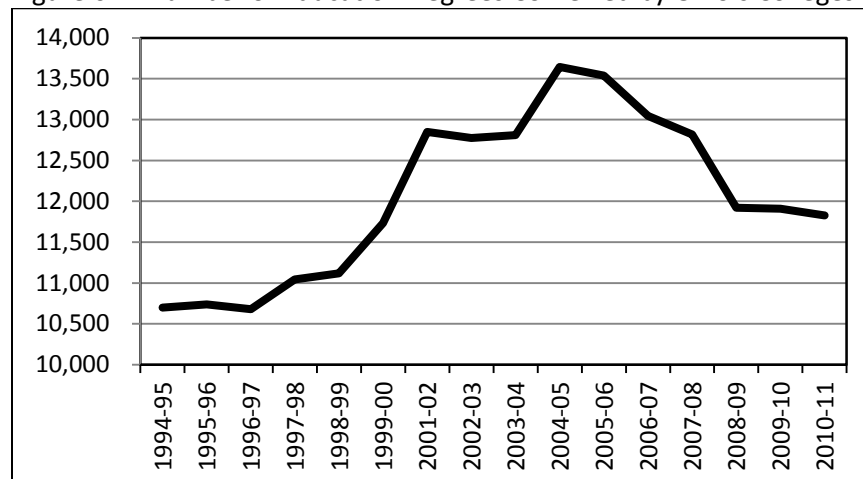
### Pathways

People interested in becoming a teacher in Ohio have three pathways:

- 1) They can graduate from an Ohio college or university that has a teacher preparation program. The 10 largest educational programs, based on the number of bachelor's degrees awarded are currently Bowling Green State University, Ohio University, Kent State University, Miami University, University of Cincinnati, University of Akron, The Ohio State University, University of Toledo, Youngstown State University, and Ashland University.
- 2) They can graduate from a college or university with a teacher preparation program from outside Ohio.
- 3) They can have extensive knowledge from a job or career and switch into teaching using an alternative or non-traditional pathway.

Since the majority of teachers in Ohio come via the first pathway, the following tables and graphs present trends from Ohio's colleges and universities. Figure 6-1 tracks the number of people who graduate with any type of college degree in education. The number of degrees conferred has had an upside down U shaped pattern since the mid-1990s. The number of graduates rose from almost 11,000 per year in 1994-95 to a peak of almost 14,000 in 2005. Since that peak the number of graduates has steadily fallen. The most recent data for 2010-11 shows slightly less than 12,000 people graduated with an education degree.

Figure 6-1: Number of Education Degrees Conferred by Ohio's Colleges and Universities



Note: Data are from the U.S. Department of Education IPEDS system and show first major.

More of Ohio's colleges and universities are creating programs in education over time. Figure 6-2 shows that in 1994-95 education degrees were given by 51 institutions. However, by 2010-11

education degrees were given by 57 institutions<sup>22</sup>. The number of institutions granting degrees shows a steady upward growth since the mid-1990s, suggesting that while the number of potential teachers has shrunk over the last few years, the capacity of the pipeline has grown steadily.

Figure 6-2: Number of Ohio Colleges and Universities Granting Education Degrees

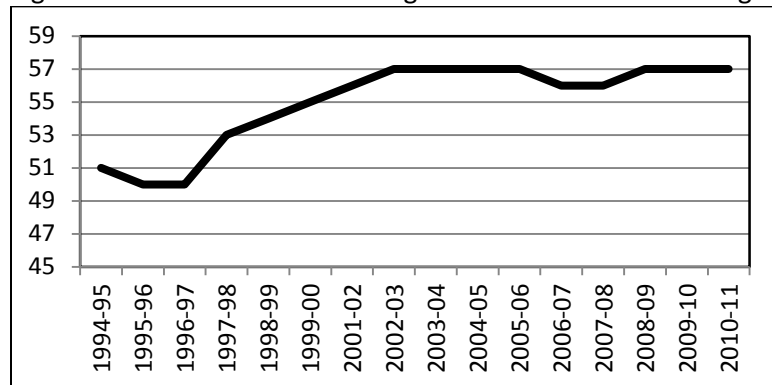


Table 6-1 shows the particular major or fields of education in which people have received degrees from Ohio's college and universities for the 2010-11 school year. More than half of all graduates received an educational degree in a specific level, such as kindergarten to third grade or a specific subject area such as teaching math or English.

Table 6-1 also shows the third most popular education major, with over 11% of graduates, was administration and supervision. The fourth most popular major was special education and teaching. Combined, the top four areas capture over three-quarters of all graduates. Most of the other majors such as bilingual education or instructional design garnered less than 1 percentage point of graduates.

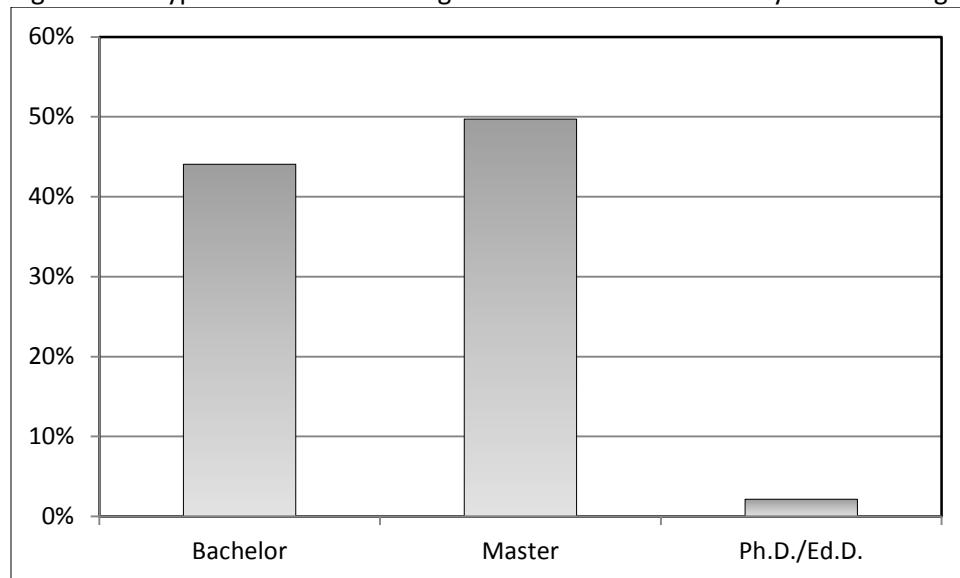
Table 6-1: Types of Education Majors Chosen by 2010-11 Ohio Graduates

Type	Total	Percent
Teacher Education Specific Levels and Methods	4382	36.1%
Teacher Education Specific Subject Areas	2264	18.7%
Educational Administration and Supervision	1345	11.1%
Special Education and Teaching	1323	10.9%
Education General	1111	9.2%
Curriculum and Instruction	946	7.8%
Student Counseling and Personnel Services	517	4.3%
Educational/Instructional Media Design	99	0.8%
Teaching English or French as Second or Foreign Language	60	0.5%
Social and Philosophical Foundations of Education	33	0.3%
Educational Assessment Evaluation and Research	32	0.3%
Bilingual, Multilingual and Multicultural Education	14	0.1%
Teaching Assistants/Aides	8	0.1%

<sup>22</sup> These figures come from the IPEDS data and include all public and private postsecondary institutions in Ohio with accredited teacher preparation programs. The figures do not include schools that only awarded associates degrees. Schools like The Ohio State University with education graduates at multiple campuses are counted as one institution.

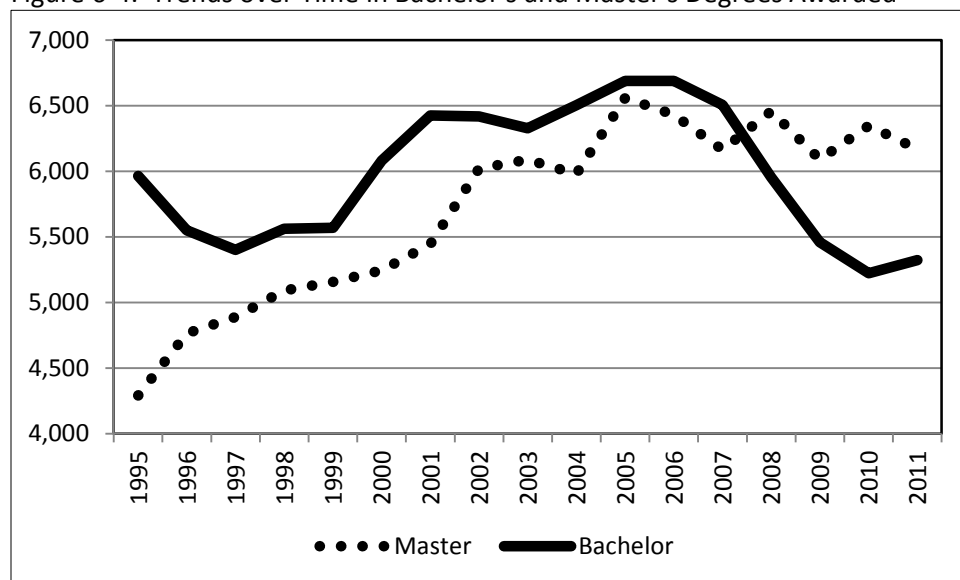
Figure 6-3 shows the types of educational degrees granted by Ohio's colleges and universities. Almost half (49.7%) of all degrees that are granted are master's degrees. Most of the rest are bachelor's degrees (44%). There are a small number of other degrees which comprise very little of the total degrees awarded.

Figure 6-3: Types of Educational Degrees Awarded in 2010-11 by Ohio's Colleges and Universities



Trends are shown in figure 6-4 for the majority of degrees awarded; either bachelor's or master's degrees. Master's degrees, which are shown by the dotted line, have increased since the 1990s and stayed at a high level since 2005. Bachelor's degrees are shown by the solid line. The number of bachelor's degrees peaked in 2006 and has since fallen.

Figure 6-4: Trends over Time in Bachelor's and Master's Degrees Awarded



The increase in the number of master's degrees is not surprising since in 1996 teachers needed a master's degree by the time they received their second license renewal. In 2009 Ohio's state

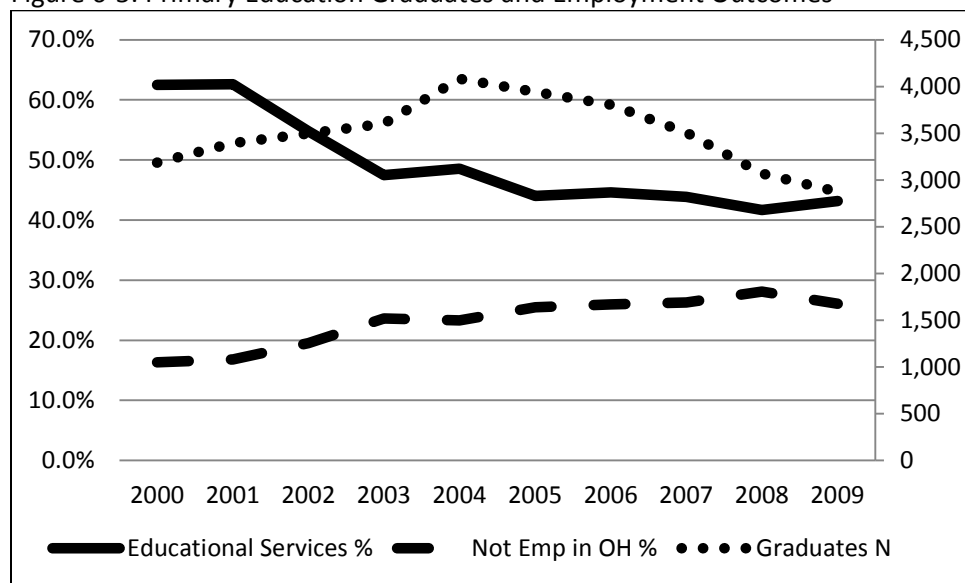
legislature changed the licensing system and required a master's degree for the top two tiers of teaching licenses; the Senior Professional Educator License and the Lead Professional Educator License.<sup>23</sup> Many district teacher contracts have salary steps defined by degrees and credit hours as well as years of service. The STRS pension size is defined by averaging the highest five (highest three under the old rules) salaries, making the acquisition of an advanced degree and additional credit hours a sensible investment decision even late in the career.

The number of vacancies in elementary education was modest, especially relative to the supply which is considerable. A natural question is whether this difference between supply and demand at the elementary grade level is persistent or returning closer to balance. In Figure 6-5 the number of graduates (right scale) from Ohio state-supported colleges and universities in early childhood, pre-K, kindergarten and elementary education from 2000-2009 are shown. On the left scale the fraction of these graduates who, one year later, were either employed by an organization providing educational services (primarily schools but not including pre-schools or day care centers) are graphed. The fraction of the graduates who were not employed in Ohio a year later are also shown, although without address data we cannot determine what fraction might be employed outside Ohio.

The fraction of students trained in elementary education who found employment in educational services started its long decline with the class of 2001. At the same time, the fraction of elementary education majors who did not find any employment started to increase. These two adverse trends are reflected in the decline in the number of students with this major starting with the class of 2004 – a lag consistent with a pipeline four years long.

While there has been a continuing mismatch in supply and demand for primary education, the evidence suggests undergraduates have been moving away from elementary education, even if not rapidly enough to restore balance in Ohio.

Figure 6-5: Primary Education Graduates and Employment Outcomes



<sup>23</sup> <http://www.ode.state.oh.us/GD/DocumentManagement/DocumentDownload.aspx?DocumentID=103803>.

## The Administrator Pipeline

Table 6-2 demonstrates what the pipeline looks like for administrators such as principals and vice-principals. It shows the number of people who graduated in the 2010-11 academic year with an “Educational Administration and Supervision” degree. The table is sorted from the highest to lowest number of master’s degrees awarded by the institution.

Table 6-2 shows the University of Dayton awarded the most (229) master’s degrees in 2010-11 and Union Institute and University (2) awarded the least. There is no relationship between the number of doctoral degrees awarded and the number of master’s degrees. Overall, the table shows that about 1,300 individuals received either a masters or doctoral degree in school administration. There are less than 6,000 traditional public and community schools in Ohio. This means a year’s worth of graduates in administration are roughly equal to one-fifth of the number of schools.

Table 6-2: Educational Administration and Supervision Majors In 2010-11

Institution Name	Bachelor	Master	Doctor
University of Dayton		229	4
Wright State University-Main Campus		158	
Ashland University		154	
University of Cincinnati-Main Campus		129	2
University of Akron Main Campus		101	1
Bowling Green State University-Main Campus		66	16
Kent State University at Kent		66	4
Xavier University		61	
Cleveland State University	42	40	
Ohio University-Main Campus		39	8
University of Toledo		34	9
Baldwin-Wallace College		30	
Antioch University-Midwest		26	
Youngstown State University		24	
Franciscan University of Steubenville		23	
Miami University-Oxford		21	7
John Carroll University		16	
Ursuline College		13	
University of Rio Grande		10	
Union Institute & University		2	10
<b>Total</b>	<b>42</b>	<b>1,242</b>	<b>61</b>

Note: The table does not include The Ohio State University (OSU), which did not separate education graduates by field, but consolidated all graduates under the “General Education” heading. While the number of OSU Education Administration graduates are not identified it must be much less than the 562 Masters and 77 Doctoral students who graduated with some type of education degree.

## Licensing

According to Ohio law, anyone employed as a teacher in an Ohio public school must hold a state teaching license. However, holding a teaching license does not imply employment as a teacher. Therefore, examining trends in licensing can provide valuable insights into disparities between teacher supply and demand.

The ODE's Educator Credentials database provides information about the stock of Ohio teacher license holders past and present. Inflows to this stock include experienced teachers from other states as well as new entrants into the teaching profession whether educated in Ohio or out of state. The analysis here focuses on new entrants into the teaching profession. First, Ohio's teacher licensing system is briefly reviewed. Second, trends among new entrants over the last decade are examined. Finally the subject area specializations of new license holders in 2012 are discussed.

## Ohio's Teacher Licensing System

The Ohio State Board of Education, through ODE, licenses teachers in Ohio. To obtain a license, a prospective teacher must submit an application, meet education and experience requirements and have no criminal history. Licenses are valid from one to five years, depending on the level, and upon expiration they can be renewed or advanced. In less than 0.01% of the cases from 2005 to 2010 a teacher's license was revoked because of Licensure Code of Conduct violations or engagement in criminal activity.

## Licensing Trends in 2000-2012

Figure 6-6 displays a 12-month moving average of the number of individuals per month to whom an initial entry-level Ohio teacher license<sup>24</sup> was issued. The issuance of new teacher licenses peaks in the summer months as new college graduates transition from school to employment. A smaller peak also occurs each January reflecting fall term graduation.

On average about 8,600 individuals obtained their first teacher license in each year from 2000 to 2012, but the trend over time has been downward. The dashed line reflects the best fit linear trend and indicates that the number of newly licensed teachers has declined by about 200 individuals per year between 2000 and 2012.

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<sup>24</sup> We define an initial entry-level Ohio teacher license as a license with a Professional Classification of either "Provisional," "Resident Educator," "Alternative Educator," or "Alternative Resident Educator," and a license type of either "Kindergarten-Primary (K-3)," "Kindergarten-Elementary (K-8)," "Elementary (1-8)," "Middle Grades (4-9)," "High School (7-12)," "Special All Grades (K-12)," "Education of the Handicapped (K-12)," "Vocational," "Comprehensive High School(7-12)," "Middle Childhood," "Adolescence to Young Adult (7-12)," "Multi-Age (PK-12)," "Intervention Specialist," "Career-Technical," "Early Childhood (PK-3)," or "Early Childhood Intervention Specialist."



Figure 6-6: 2000-2012 Newly Licensed Teachers per Month – 12-Month Moving Average

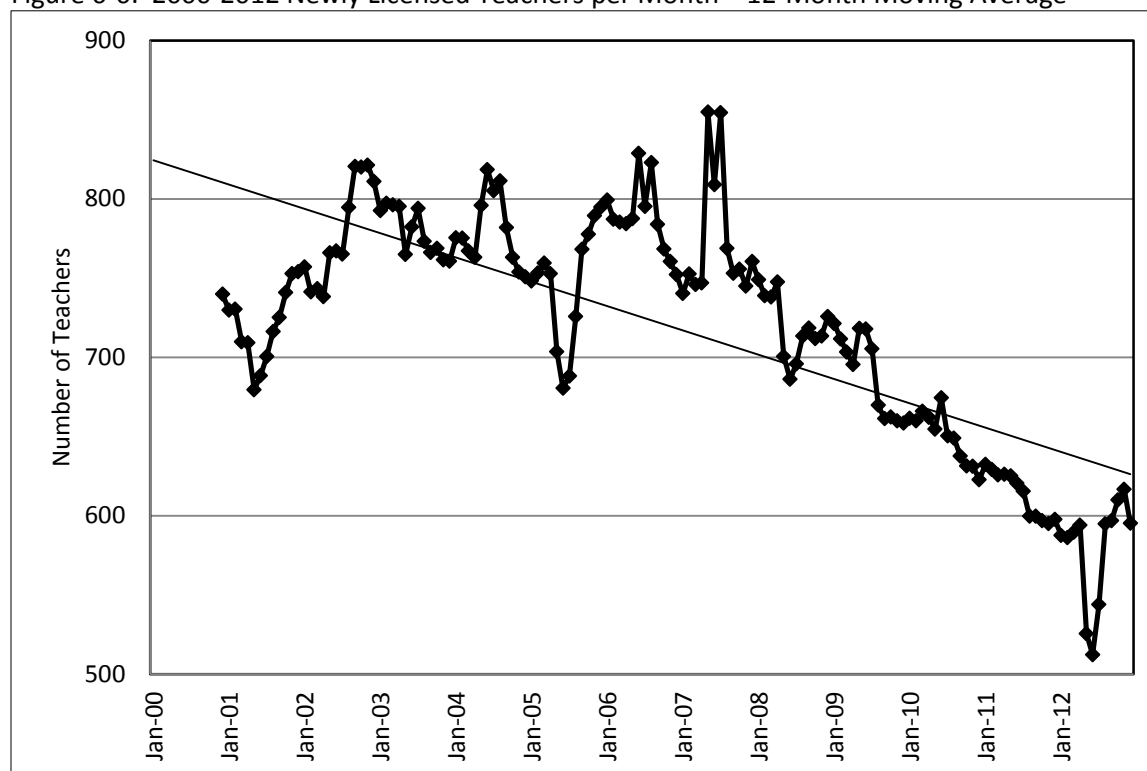


Table 6-3 aggregates the data in Figure 6-6 to show the total number of individuals to whom an initial teacher license was issued each year.

Table 6-3: Newly Licensed Teachers per Year, 2000-2012

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Number	8877	9048	9731	9128	9009	9536	9026	9124	8709	7900	7472	7170	7141

### Field for New Teacher License Recipients in 2012

Teachers to whom initial entry-level licenses were awarded provide a rich source of information on the supply of different types of teachers because the large majority of licenses specify one or more teaching fields or subject areas in which the individual is qualified to teach. In this way, the teacher licensing system itself segments the teacher labor market into measurable sub-markets.

In 2012, the ODE issued initial licenses recognizing specialization in over 100 designated teaching fields. To facilitate analysis these roughly 100 designated teaching fields were categorized into 16 mutually exclusive Groups so that each teaching field designation belongs to only one Group. This does not necessarily mean that qualification areas between Groups do not overlap. For example “Science 4-9” and “Life Science 7-12” are each separate teaching fields the former of which is classified into a “Science 4-9 Group” and the latter of which is classified into a “Science 7-12 Group.” It is the *teaching fields* that are categorized into mutually exclusive Groups, not the *teachers*. Just as a single teacher can be qualified in more than one field, a single teacher can also be qualified in more than one of the 16 teaching field Groups.

Table 6-4 displays information about the qualifications of teachers to whom initial licenses were issued in 2012. In practice it is relatively rare to be qualified in more than one of the 16 teaching field Groups. Some 80.5% of all initial license holders in 2012 are qualified in only one Group. The large majority of those qualified in two Groups are those with specializations in core subject areas (language arts, math, science, and social studies) for grades 4-9. This dual qualification is expected since Ohio law requires some teachers to be qualified in at least two Groups. For these individuals, qualification within two Groups is the norm, rather than the exception to the rule. Only 3.3% of teachers are qualified in three Groups or more.

Table 6-4: Qualifications of Newly Licensed Teachers 2012

	Teaching Field Group	# of Teachers	Percent
	<b>Qualified in a Single Group (80.5%)</b>		
1	Early Childhood PK-3	1927	27.0%
2	Language Arts 4-9	4	0.1%
3	Math 4-9	11	0.2%
4	Science 4-9	7	0.1%
5	Social Studies 4-9	1	0.0%
6	Language Arts 7-12	462	6.5%
7	Math 7-12	384	5.4%
8	Science 7-12	304	4.3%
9	Social Studies 7-12	505	7.1%
10	Special Education	1066	14.9%
11	Arts	508	7.1%
12	Career Technical	194	2.7%
13	Health & PE	180	2.5%
14	Foreign Languages	164	2.3%
15	English as a Second Language	12	0.2%
16	Other	19	0.3%
	<b>Qualified in Two Groups (16.2%)</b>		
	Language Arts 4-9 & Math 4-9	130	1.8%
	Language Arts 4-9 & Science 4-9	85	1.2%
	Language Arts 4-9 & Social Studies 4-9	264	3.7%
	Math 4-9 & Science 4-9	196	2.7%
	Math 4-9 & Social Studies 4-9	108	1.5%
	Science 4-9 & Social Studies 4-9	55	0.8%
	Other Two Group Qualifications	319	4.5%
	<b>Qualified in Three Groups or More</b>	233	3.3%
	<b>No Field Qualifications Specified</b>	3	0.0%
	<b>Total</b>	7141	100%

Table 5-3 indicates that 27.0% of new teachers are licensed only for early childhood (PK-3) instruction. By summing percentages, it is possible to show that 35.4% of new teachers are licensed only for instruction in the 4-12 grade range. This implies a disproportionately large supply of PK-3 relative to 4-12 teachers.

For new teachers specializing in one of the four core subject areas Table 5-3 reveals the distribution of qualifications across these subjects. At the high school level, the new supply of language arts and social studies teachers ( $462 + 505 = 967$ ) is about 1.4 times larger than the new supply of math and science teachers ( $384 + 304 = 688$ ). At the middle school level this type of trend is somewhat more difficult to discern due to the overlapping areas of qualification. However, from Table 6-4, it is possible to calculate that, among new license holders specifying a qualification in the 4-9 grade range, 647 are qualified to teach either language arts or social studies, about 1.1 times more than the 592 who are qualified to teach either math or science.<sup>25</sup> Finally, outside the traditional grade level and core subject fields, intervention specialist is the most common area of specialization constituting 14.9% of all newly licensed teachers.

## Section Summary

Teacher licensing patterns reveal important trends in the supply of teachers being produced by the higher education pipeline for elementary and secondary school teachers in Ohio. The important takeaways are:

- About 12,500 people are presently graduating each year from Ohio's colleges and universities with some type of degree in education. The number of degrees peaked at over 14,000 in 2005. Since that peak the number of graduates has steadily fallen.
- The number of institutions granting degrees shows a steady upward growth since the mid-1990s. Presently over 90 colleges and universities award some type of education degree. While the number of potential teachers has shrunk over the last few years, the increasing number of colleges means the capacity of the pipeline has grown steadily.
- While about 12,500 people graduate with an education degree, the annual number of first-time teacher license holders in Ohio has gradually trended downward over the last decade and is now about 7,100 people. This shows many education graduates are either leaving the state or pursuing careers outside education. It cannot be determined for sure whether what appears to be a mismatch in teachers trained versus teachers demanded is responsible for the decline in the number of education degrees conferred since 2005.
- License data suggest that the supply of new teachers qualified to teach grades K-3 is disproportionately large compared to those qualified to teach grades 4-12. Additionally, the supply of new math and science teachers is smaller than the supply of new language arts and social studies teachers. Improving alignment between supply and demand in these areas would benefit both job seekers and employers.

<sup>25</sup>  $647=4+1+130+85+264+108+55$  and  $592=11+7+130+85+196+108+55$ . It is also worthwhile to note that some teachers with the qualifications of interest fall into the "Other Two Group Qualifications" and "Qualified in Three Groups or More" categories; however, taking these cases into account does not change the pattern of results obtained by the simple calculations.

## VII. WHO BECOMES A TEACHER?

Many people obtain a college degree in education but not all transition to work in the education sector. This section first identifies the data used to make this determination focusing on 2007 graduates. This is followed by a discussion of which graduates become licensed in education, become employed in general and become employed in the education sector.

### Teacher Data

The Ohio Longitudinal Data Archive (OLDA) held at the Ohio Education Research Center (OERC) provides linked data allowing people who graduated from 38 different Ohio state colleges and universities to be tracked. Some of the universities are very large, such as The Ohio State University and Kent State University. Other colleges, such as Central State University are small. Data on individuals who attended private institutions are not included.

Table 7-1 shows slightly more than half of all people graduating in Ohio with an educational degree. The table was created by extracting from the Integrated Postsecondary Educational Data System (IPEDS) the list of all degree granting colleges and universities in Ohio with education graduates in 2010-11. The original list contained about 12,000 graduates. The list was divided into two parts; graduates in the 38 colleges and universities found in the OLDA and graduates among the other 188 institutions.

Table 7-1: Percentage of Graduates in 2010-11 Covered by OERC Database.

	IPED List	Tracked By OLDA Database	% Tracked by OLDA
<b>All Degrees</b>	12,263	6,968	57%
Associate's	507	244	48%
Bachelor's	5,322	3,223	61%
Master's	6,168	3,273	53%
Doctoral	266	228	86%

While the data from the OLDA cover 57% of all degrees awarded in the 2010-11 school year, there are very different coverage ratios for each type of degree. The lowest coverage ratios are for associate's degrees, with the OLDA data covering only 48% of graduates. The highest coverage ratio is for doctoral degrees, with the OLDA data covering 86% of graduates. Bachelor's and master's degrees coverage ratios are in the middle with a 61% and 53% coverage ratio respectively.

### 2007 Graduates

The OLDA data indicate that in 2007 there were 8,512 graduates with a first or second major in education. Table 7-2 shows that about half (49.4%) of the education degrees awarded in 2007 were bachelor's degrees. Over forty percent (41.1%) were for master's degrees. The other category includes people who were awarded certificates for completing educational courses that were not traditional multi-year programs.

Table 7-2: Types of Degrees Awarded to Ohio's Education Graduates in 2007

Type	Count	Percentage
Bachelor's	4,207	49.4%
Master's	3,495	41.1%
Doctoral	291	3.4%
Other	77	0.9%
<b>Total</b>	<b>8,512</b>	<b>100%</b>

Table 7-3 shows the types of majors found among 2007 graduates. The majors are based on the Classification of Instructional Programs (CIP) codes.<sup>26</sup> The majority (60.6%) of graduates had degrees in specific levels or subject areas.

Table 7-3: Types of Majors Awarded to Ohio's Education Graduates in 2007

Type	CIP Code	Count	Percentage
General	1301	813	9.6%
Bilingual, Education	1302	5	0.1%
Curriculum and Instruction	1303	546	6.4%
Administration and Supervision	1304	661	7.8%
Instructional Media Design	1305	66	0.8%
Assessment, Evaluation, and Research	1306	33	0.4%
Social and Philosophical Foundations Education	1309	23	0.3%
Special Education and Teaching	1310	657	7.7%
Student Counseling and Personnel Services	1311	361	4.2%
Education Specific Levels and Methods	1312	3289	38.6%
Education Specific Subject Areas.	1313	1876	22.0%
English or French as 2nd or Foreign Language	1314	32	0.4%
Teaching Assistants/Aides.	1315	5	0.1%
Other	1399	145	1.7%
<b>Total</b>		<b>8,512</b>	<b>100%</b>

Table 7-4 combines the two previous tables for those interested in a detailed view of education graduates. The table is sorted with majors that have the most number of graduates at the top and the least at the bottom. Overall, the table shows over fifteen hundred (1,504) people or 18% of Ohio's educational graduates chose either an early childhood or kindergarten/preschool major. Relatively few individuals received a teaching degree in math and science fields. Between math and science, math is the more popular major with 125 students (1.5%) of all education degrees being awarded in this area.

<sup>26</sup> <http://nces.ed.gov/ipeds/cipcode/Default.aspx?y=55>

Table 7-4: Specific Majors and Degrees Awarded to Ohio's Education Graduates in 2007

Major	CIP	BA	MA	PhD	Other	Total
Early Childhood Teaching	131210	125	736	24		885
Education, General	130101	33	40	643	97	813
Jr. High/Middle School Teaching	131203	6	508	105		619
Kindergarten/Preschool Teaching	131209	169	417	9		595
Special Education, General	131001		317	257	9	583
Secondary Education	131205	19	394	140	2	555
Curriculum and Instruction	130301		2	516	28	546
General Leadership Administration	130401			434	36	470
Elementary Education and Teaching	131202	8	250	210		468
School Counseling and Guidance	131101			254	28	282
Physical Education and Coaching	131314	10	239	22		271
Music Teacher Education	131312		163	36	1	200
Social Studies Teacher Education	131318		183	12		195
Reading Teacher Education	131315			188	5	193
Art Teacher Education	131302		120	64	7	191
Education, Other	139999	41	87	16	1	145
English/Language Arts Education	131305		121	20	1	142
Specific Subject Areas, Other	131399		35	98		133
Mathematics Teacher Education	131311		105	19	1	125
Higher Education Administration	130406		1	70	28	99
Health Teacher Education	131307		63	27	2	92
College Student Counseling Services	131102			79		79
General Science Teacher Education	131316		59	8		67
Educational/Instruction Media Design	130501			54	12	66
Instructional, Curriculum Supervision	130404		46	17		63
Specific Levels and Methods, Other	131299	3	43			46
Technical Teacher Education	131319		54	4	1	59
Adult Continuing Education Teaching	131201		2	52		54
Agricultural Teacher Education	131301	10	36	1	2	49
ESL Language Instructor	131401		11			11
Administration Supervision, Other	130499		2	14	13	29
Teacher Education, Multiple Levels	131206	9	11	9		29
Spanish Language Teacher Education	131330		25	4		29
Assessment, Testing, Measurement	130604		2	20	5	27
Trade Industrial Teacher Education	131320		5	22		27

Table 7-4: Specific Majors and Degrees Awarded (Continued)

Major	CIP	BA	MA	PhD	Other	Total
Biology Teacher Education.	131322		17	10		27
Social Philosophical Foundations	130901			15	8	23
Speech or Language Impairments	131012		22			22
Hearing Impairments Inc Deafness	131003		9			9
Business Teacher Education.	131303		12	4		16
Early Childhood Special Education	131015		11	1		12
Special Ed Teaching, Other.	131099		12			12
Family and Consumer Sciences	131308		11			11
Foreign Language Teacher.	131306		10			10
Technology Industrial Arts.	131309		10			10
French Teacher Education.	131325		7	1		8
Educational Evaluation Research.	130601			1	4	5
Gifted and Talented Teaching	131004			5		5
Teacher Assistant/Aide.	131501	5				5
Bilingual Multilingual Education.	130201		3	1		4
Orthopedic Physical Impairments.	131008	4				4
Computer Teacher Education.	131321			4		4
Drama Dance Teacher Education.	131324		3			3
Physics Teacher Education.	131329			3		3
Multicultural Education.	130202			1		1
Educational Statistics Research.	130603			1		1
Chemistry Teacher Education.	131323		1			1
German Language Education.	131326		1			1
Latin Teacher Education.	131333		1			1
<b>Total</b>		442	4207	3495	291	8435

Table 7-5 provides a list of the colleges and universities that education majors graduated from in 2007.

Table 7-5: Colleges and Universities Graduating Education Majors in 2007

College/University	Count	Percent
Bowling Green State University	1,219	14.3%
Ohio State University	1,213	14.3%
Kent State University	879	10.3%
Ohio University	729	8.6%
University of Akron	672	7.9%
University of Cincinnati	670	7.9%
Wright State University	634	7.4%
Cleveland State University	617	7.2%
Miami University	558	6.6%
Youngstown State University	465	5.5%
University of Toledo	453	5.3%
Shawnee State University	64	0.8%
Central State University	30	0.4%

### Which Graduates Become Licensed?

After graduating a key step in becoming a teacher is to become licensed. ODE provides a list of all individuals who have obtained any type of license to teach. For the purposes of this analysis, no distinction is made among the various levels or types of licenses. While a more in-depth analysis is possible, using this very crude method shows large numbers of graduates are never licensed.<sup>27</sup> Table 7-6 shows that one-fifth of all education graduates from Ohio's state colleges and universities in 2007 did not obtain a license within five years of graduation.

Table 7-6: Number and Percentage of Graduates by License Status

Group	Count	Percent
Never Licensed in Ohio	1,695	20%
Have License	6,760	80%
<b>Total</b>	<b>8,455</b>	<b>100%</b>

While one-fifth is a large number, it is possible that some of the graduates earned licensure in other states, such as Indiana, West Virginia or Michigan. Because the data only cover Ohio's licenses, people who graduate in Ohio but teach in a neighboring state are not be counted.

Table 7-6 shows the number and percentage of graduates who were both found and not found in the license database identified by type of degree received. Table 7-6 shows that about half of all people who earned a doctoral degree were never licensed to teach in Ohio. About one out of every six graduates with either a bachelor's degree or a master's degree was not licensed to teach in Ohio.

<sup>27</sup> A perfect match between graduates and certification is not possible since 57 graduates are missing the Key\_ID which enables the graduation database to be linked anonymously to the certification database.



Table 7-6: Number and Percentage of Graduates by License Status

Not Licensed	Licensed	Type	Not Licensed	Licensed	Total
639	3,553	Bachelor's	15.2%	84.8%	100%
607	2,854	Master's	17.5%	82.5%	100%
168	118	Doctor's	58.7%	41.3%	100%
48	29	Other	62.3%	37.7%	100%
1,695	8,455				

Table 7-7 shows the percentage licensed and not licensed by type of major. The list is sorted so that majors with the least licenses are at the top and the most licenses at the bottom. Some majors have only one or two graduates and the decisions of a single person can greatly influence the category. Majors with less than 10 people are excluded from the table to preserve privacy.

Of groups that have a large number of majors and were focused on K to 12 subjects, people who graduated with a health teacher major (77% not licensed); teaching English as a Second Language (74% not licensed) and technical teachers (64% not licensed) were among the largest categories.

Table 7-8 shows the percentage of graduates licensed and not licensed broken down by the college or university where the person graduated. The list is sorted so that colleges and universities with the least licensed individuals are at the top of the list and the most licensed are at the bottom. Again like table 7-7, which lists majors, some schools have very few education majors.

Table 7-7: License by Type of Major

Major	CIP	Degrees	% Not Licensed	% Licensed
College Student Counseling and Personnel Services	131102	79	92%	8%
Health Teacher Education	131307	91	77%	23%
Social and Philosophical Foundations of Education	130901	21	76%	24%
Higher Education/Higher Education Administration	130406	99	76%	24%
Teaching English as a 2nd Language	131401	27	74%	26%
Speech or Language Impairment Teaching	131012	22	73%	27%
Technical Teacher Education	131319	58	64%	36%
Adult and Continuing Education and Teaching	131201	54	63%	37%
Education, Other	139999	143	61%	39%
Physical Education Teaching and Coaching	131314	276	51%	49%
School Counseling and Guidance Services	131101	268	40%	60%
Hearing Impairments / Deafness Teachers	131003	19	37%	63%
Education, General	130101	807	31%	69%
Technology-Industrial Arts Teacher	131309	10	30%	70%
Educational Assessment, Testing, and Measurement	130604	27	30%	70%
Agricultural Teacher Education	131301	49	29%	71%
Educational/Instructional Media Design	130501	64	27%	73%
Teacher Education, Multiple Levels	131206	29	24%	76%
Art Teacher Education	131302	190	21%	79%
Specific Levels and Methods, Other	131299	60	20%	80%
Kindergarten/Preschool Education and Teaching	131209	612	18%	82%
Educational Leadership and Administration	130401	466	18%	82%
Early Childhood Special Education Programs	131015	12	17%	83%
Music Teacher Education	131312	200	15%	86%
Educational Administration and Supervision	130499	29	14%	86%
Early Childhood Education and Teaching	131210	888	13%	87%
Elementary Education and Teaching	131202	467	11%	89%
Specific Subject Areas, Other	131399	133	11%	89%
Social Studies Teacher Education	131318	195	11%	89%
Spanish Language Teacher Education	131330	29	10%	90%
Secondary Education and Teaching	131205	554	10%	90%
English/Language Arts Teacher Education	131305	142	9%	91%
Family and Consumer Sciences	131308	11	9%	91%
Mathematics Teacher Education	131311	125	8%	92%
Curriculum and Instruction	130301	542	8%	92%
Junior High Teaching	131203	619	7%	93%
Biology Teacher Education	131322	27	7%	93%
Business Teacher Education	131303	16	6%	94%
General Science Teacher Education	131316	67	6%	94%
Reading Teacher Education	131315	192	4%	96%
Special Education and Teaching, General	131001	583	4%	96%
Educational, Instructional, and Curriculum	130404	63	2%	98%
Trade and Industrial Teacher Education	131320	27	0%	100%
Foreign Language Teacher Education	131306	10	0%	100%

Note: Any field where there are less than 10 degrees is not shown to protect teacher privacy.

Table 7-8: License by College or University

College/University	Degrees	% Not Licensed	% Licensed
Central State University	30	37%	63%
University of Cincinnati	664	33%	67%
Ohio State University	1205	29%	71%
Kent State University	858	20%	80%
Ohio University	723	18%	82%
University of Akron	671	17%	83%
Bowling Green State University	1219	16%	84%
Cleveland State University	612	16%	84%
University of Toledo	452	15%	85%
Miami University	558	13%	87%
Youngstown State University	465	12%	88%
Wright State University	634	8%	92%
Shawnee State University	56	4%	96%

Note: Any college with less than 10 degrees awarded is not shown to protect teacher privacy.

### Which Graduates Become Employed?

The OLDA provides access to the wage records of all people covered by Ohio's unemployment insurance system. If a person is working in a covered job, the amount of pay they received each quarter is recorded. People with zero pay are either working outside of Ohio, volunteering their time in Ohio or are not employed. Table 7-9 shows the breakdown by annual pay for the graduates in 2007 for any type of job.

Table 7-9: Pay in Ohio for Ohio's Education Graduates in 2007 in Any Job

Pay	Pay in 2008	Pay in 2009	Pay in 2010	Pay in 2011
\$0	19%	23%	24%	26%
\$1 to 10000	13%	8%	7%	6%
\$10001 to 20000	16%	11%	9%	7%
\$20001 to 30000	14%	11%	14%	9%
\$30001 to 40000	16%	18%	18%	15%
\$40001 to 50000	11%	14%	14%	18%
\$50001 to 60000	6%	7%	7%	10%
\$60001 to 70000	3%	4%	3%	5%
\$70001 to 80000	1%	2%	2%	3%
\$80,000 +	1%	1%	1%	2%

Table 7-9 shows that the number of graduates who are not working for pay in Ohio steadily rises over time. In 2008 slightly fewer than one in five (19%) education graduates received no pay. Two years after graduation in 2009 the number had risen to 23%. In 2010 the number climbed to 24%. Finally, after four years since graduation over one in four (26%) did not work for pay in Ohio in any type of job.

The bottom of table 7-9 shows that the ranks of the top earners are steadily growing over time. In 2008 just 11% of the graduates earned \$50,000 or more per year. However, by 2011 the percentage had roughly doubled, with 20% of all graduates earning \$50,000 or more per year.

Table 7-10 shows the number of years without pay in the \$0 pay category for 2007 education graduates. Sixty-nine percent of all 2007 education graduates had at least one paying job in every year from 2008 to 2011. However, 6% of graduates had one year without any recorded pay in Ohio. Five percent of the graduates had two years of no pay and 6% had three years. Fifteen percent had all four years without pay.

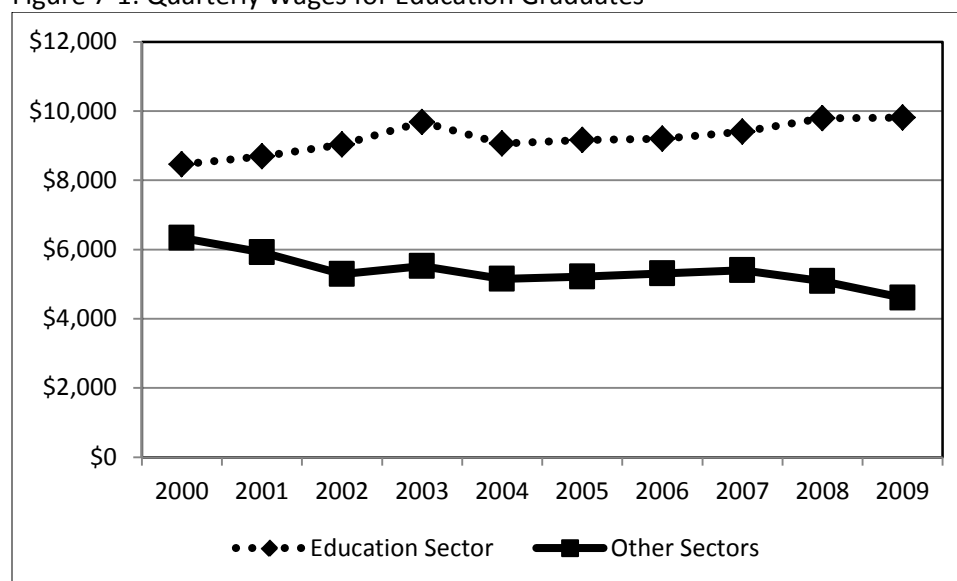
Table 7-10: Number of Years with Zero Pay in Ohio for Ohio's 2007 Education Graduates

Years without Pay	# of Graduates	Percentage
0	5,847	69%
1	473	6%
2	389	5%
3	482	6%
4	1,264	15%
<b>Total</b>	<b>8,455</b>	<b>100%</b>

### Which Graduates Become Employed in Education?

Bell & Neilson (2013) analyzed education graduates using the same data as used in this section.<sup>28</sup> Instead of examining 2007 graduates, they examined graduates from 2009 whose highest degree was in education (see figure 7-1).<sup>29</sup> They found that 60% of the people with an education degree were employed in education. Only 16% of the graduates were employed in fields outside of education. About 24% of the people who graduated in 2009 had no wage records available in Ohio.

Figure 7-1: Quarterly Wages for Education Graduates



This analysis broke down the 60% of people with an Ohio education degree who were employed in education. They found that 83% were working in elementary or secondary schools, 8% were

<sup>28</sup> Frank Bell and Lisa Neilson "Connecting Researchers to the Ohio Longitudinal Data Archive" OERC Conference: Connecting Research, Practice, and Policy, June 17, 2013, Columbus Ohio.

<sup>29</sup> Bell and Neilson's work slightly under counts the full population of education graduates since some education graduates hold additional, higher degrees from non-education programs.

working in postsecondary schools, 6% in child care services and 3% in educational support services.

Moreover, their research shows that quarterly wages for education graduates, one year after they finish college are much higher for graduates who get an education job instead of working in another sector. Among 2009 graduates, graduates who worked in education earned almost \$10,000 per quarter or \$40,000 per year, compared to about \$4,500 per quarter or \$20,000 per year for those who worked outside the education area. See figure 7-1 for details.

## Section Summary

This section analyzed how people transition from college graduate with a degree in education to work in the education sector. The data in this section cover slightly more than half of all people graduating in Ohio with an educational degree. The important takeaways are:

- A large proportion of education degrees in 2007 were awarded for advanced work in education, not to teachers just starting out. Over forty percent (41.1%) of degrees awarded (or) conferred were degrees master's and 3.4% were doctoral degrees.
- The top three universities that produce Ohio's teachers are Bowling Green State University (14.3%), The Ohio State University (14.3%) and Kent State University (10.3%). These three schools alone produce about 3,300 education graduates each year.
- One-fifth (20%) of all education graduates from Ohio's state colleges and universities in 2007 did not obtain a license within five years of graduation. Half of all people who earned either an associate degree or a doctoral degree were never licensed to teach in Ohio within five years of graduation. About one out of every six graduates with either a bachelor's degree or a master's degree were not certified to teach in Ohio within five years.
- Some 69% of all 2007 education graduates had at least one paying job in every year from 2008 to 2011. However, 6% of graduates had one year without any recorded pay in Ohio, 5% of the graduates had two years of no pay and 6% had three years. Interestingly, 15% had all four years without pay.
- Education graduates who work in education earn about double what other education majors working in all other sectors earn, one year after they finish college.

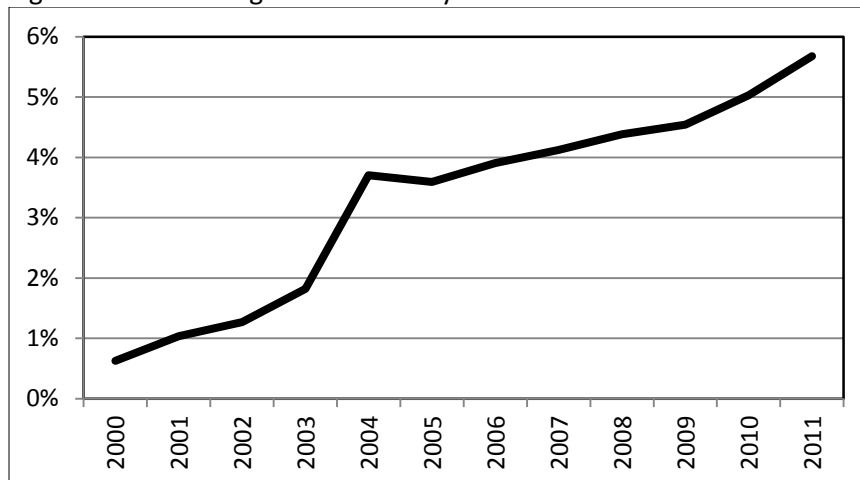
## VIII. COMMUNITY AND PRIVATE SCHOOLS IN OHIO

The shift from traditional public and private schools to community schools is important because traditional public school teachers are unionized and community school teachers most frequently are not. Unionized workers typically have a higher probability of staying on the job since their contracts often reward seniority and have other features that reduce turnover. This section identifies key information on teachers, number of students and the number of schools. It demonstrates that community schools have shown remarkable growth over the last decade while private schools have shown a large decline.

### Number of Community School Teachers

Figure 8-1 provides a picture of the percentage of teachers who are working in community schools. Since the early 2000s community schools have grown rapidly in Ohio. In the 2000 school year, just 0.6% or 692 of all FTE teachers worked in community schools. By the 2011 school year over 6,100 FTE teachers worked in community schools, a factor of nine increase. Community schools are adding approximately 500 FTE teachers yearly. Assuming the trend continues by 2020 community schools will have over 10,500 FTE teachers and comprise about 10% of the PK-12 educational labor force.

Figure 8-1: Percentage of Community School Teachers Out of all PK-12 Teachers

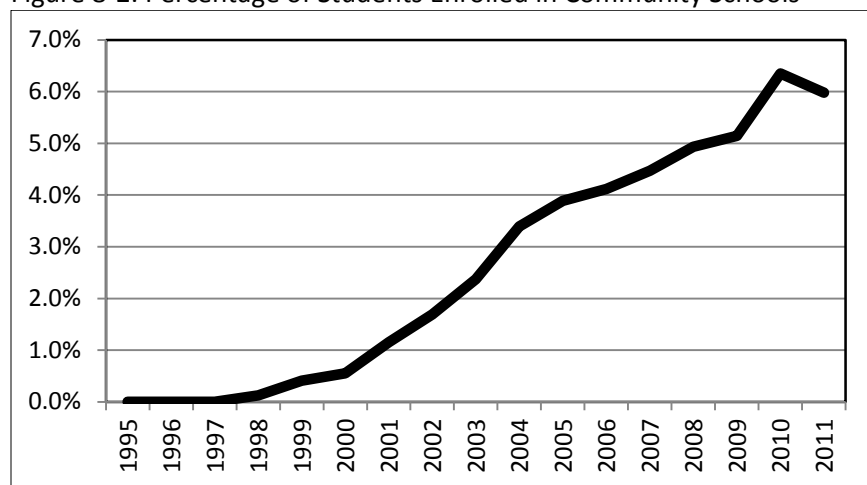


Community schools have a slightly higher female to male teacher ratio than traditional public schools. Since 2000 female teachers at traditional public schools comprise on average 74.2% of all teachers. Female teachers are 76.1% of all community school teachers, 2% higher than found in traditional public schools.

## Number of Students in Community Schools

Figure 8-2 tracks the number of students who are enrolled in community schools. In the middle of the 1990s, no students were enrolled in community schools because the first one did not open until 1998. In 1998, the first year with reported enrollments in community schools, slightly more than 2,200 students enrolled in community schools. The number of students has since grown rapidly. In the 2000 school year, just 0.6% of all students (about 10,000) were enrolled in community schools. By the 2011 school year 6% of all students (about 105,000) were enrolled in community schools, a factor of ten increase. Community schools are adding approximately 9,000 students a year. Assuming the trend continues, by 2020 community schools will have almost 200,000 students and comprise about 12% of PK to 12 enrollments.

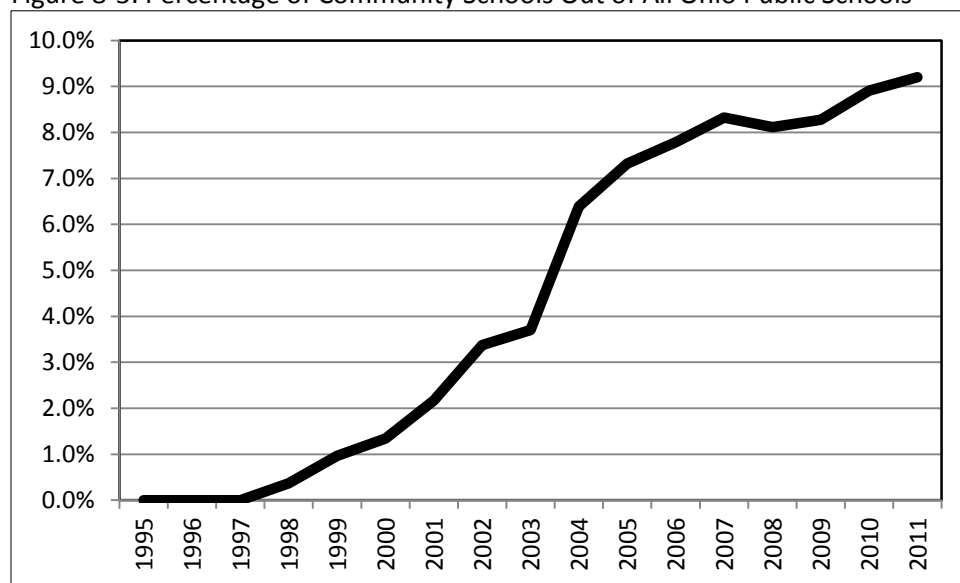
Figure 8-2: Percentage of Students Enrolled in Community Schools



## Number of Community Schools

Figure 8-3 tracks the percentage of community schools out of all Ohio public schools. The graph is similar to figure 8-2, which tracked students. The first year of community schools was 1998, when there were just 14 community schools. Since that year the number of schools has grown rapidly. In the school year that began in August of 2000, there were 52 community schools comprising 1.3% of all Ohio public schools. By the 2011 school year there were 346 community schools or 9.2% of all Ohio public schools, an increase by a factor of seven. There are about 29 more community schools added each year.

Figure 8-3: Percentage of Community Schools Out of All Ohio Public Schools



### Private Schools and Students in Ohio

Private schools are places that teach one or more of grades in kindergarten through 12<sup>th</sup> grade, have one or more teachers and do not provide support for home schooling. Recent research suggests that, nationally, enrollment in private schools is declining because many parents are switching from private schools to community schools.<sup>30</sup> This research means that part of the tremendous growth in community schools is coming at the expense of private schools and their teachers.

Every two years the U.S. Bureau of the Census conducts the Private School Universe Survey. This survey is paid for by the National Center for Education Statistics (NCES). The Private School Universe Survey determines the total number of private schools, students, and teachers.<sup>31</sup> The latest Private School Universe Survey data available publically are for the 2011-12 school year. Figure 8-4 shows the number of private schools in Ohio from the 2001-02 school year until 2011-12. The figure shows that the number of private schools in Ohio has shrunk from 1,042 to 968 a change of -7% over the decade.

<sup>30</sup> Stephanie Ewert, "The Decline in Private School Enrollment." SEHSD Working Paper Number FY12-117, January, 2013, U.S. Census Bureau Social, Econ., and Housing Statistics Division. [http://www.census.gov/hhes/school/files/ewert\\_private\\_school\\_enrollment.pdf](http://www.census.gov/hhes/school/files/ewert_private_school_enrollment.pdf).

<sup>31</sup> Data from the survey is available online at <http://nces.ed.gov/surveys/pss>.



Figure 8-4: Number of Private Schools in Ohio



Figure 8-5 shows the number of private school students in Ohio. While figure 8-4 showed a slight shrinkage in the number of schools, this figure shows a steeper decline. In 2001 there were over 250,000 students in Ohio's private schools. In 2011 the number dropped to about 191,000 students. This fall in students indicates a decreasing private school size. In 2001 the average private school in Ohio contained 246 students. In 2011 the average private school in Ohio contained just 197, a drop of over 20 percentage points.

Figure 8-5: Number of Private School Students in Ohio

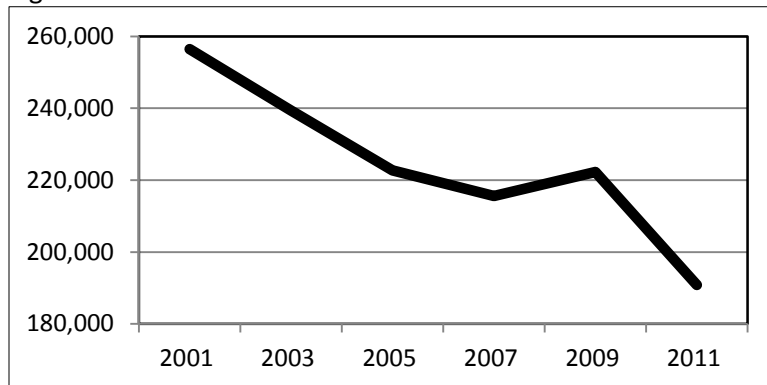
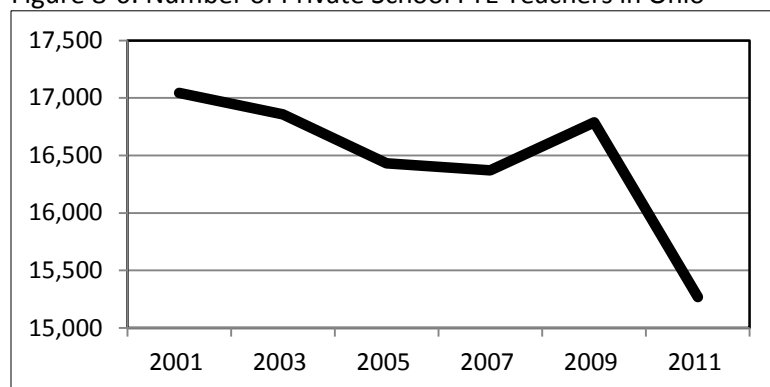


Figure 8-6 shows the number of private school teachers in Ohio. The previous figure showed a decline in the number of students. This figure also shows a decline in the number of private school teachers. In 2001 there were over 17,000 FTE private school teachers in Ohio. In 2011 there were about 15,300 private school teachers. The decline in the number of students combined with the decline in teachers implies that student teacher ratios are changing over time. In 2001 the average private school teacher in Ohio taught 15 students. In 2011 the average private school teacher taught just 12.5 pupils.

Figure 8-6: Number of Private School FTE Teachers in Ohio



### Pay for Private School Teachers

Publicly available data tables produced from the Private School Universe Survey do not include pay for private school teachers. The NCES runs another collection effort called the Schools and Staffing Survey (SASS) which does provide teacher pay. The drawback to using the SASS is that pay figures are only for the national level and the data are relatively old. In the 2008-09 school year the average public school teacher received \$53,230, while the typical private school teacher earned \$39,690.<sup>32</sup>

Pay differences between public and private teachers exist even after accounting for seniority. Table 8-1 shows average pay for public and private school teachers based on the number of years spent teaching. The far right column shows the ratio of public to private teacher salaries. On average public school teachers earn about one-third more than private school teachers and there is no relationship between the amount of time spent teaching and the public school wage premium.

Table 8-1: Teacher Pay and Time Spent Teaching in 2007-2008

Time Spent Teaching	Public	Private	Ratio Public to Private
1 year or less	\$42,210	\$32,120	1.31
2 to 4 years	43,490	34,220	1.27
5 to 9 years	49,120	38,110	1.29
10 to 14 years	54,150	41,310	1.31
15 to 19 years	58,260	42,740	1.36
20 to 24 years	61,210	43,880	1.39
25 to 29 years	63,860	42,910	1.49
30 or more years	65,470	50,560	1.29

<sup>32</sup> Data in this section is taken from The Digest of Education Statistics "Table 80. Average salaries for full-time teachers in public and private elementary and secondary schools, by selected characteristics: 2007-08" [http://nces.ed.gov/programs/digest/d11/tables/dt11\\_080.asp](http://nces.ed.gov/programs/digest/d11/tables/dt11_080.asp).

## Section Summary

This section has provided some facts, figures and trends on community and private schools. The important takeaways are:

- In 2011 community schools comprised slightly less than 10% of Ohio's public education system.
- Community schools, teachers and students have grown very quickly since 1998 when the first schools opened in Ohio. The number of students enrolled in community schools is experiencing the most growth, community school teachers are experiencing the second most growth and the number of schools the least growth. If the growth continues at current rates, by 2020 their share of Ohio's education will be somewhere in the high teens.
- The growth in community schools suggests more job openings for teachers in the future. It also suggests average teacher tenure at a particular school will fall over time in Ohio.
- Private school enrollment was falling during the early 2000's. In 2001 there were over 250,000 students in Ohio's schools. In 2011 the number dropped to about 191,000 elementary and secondary private school students in Ohio.
- Because of falling student enrollment the number of private schools over the past decade has shrunk by 7% and the number of FTE private school teachers has fallen by 10%. Overall, the trend has been for smaller class sizes in the typical private school since the private school student-teacher ratio has fallen from 15 in 2001 to 12.5 in 2011.
- National data suggest public school teacher salaries are about 30% higher than those of private school teachers.

## IX – EMPLOYMENT OF ADMINISTRATORS IN OHIO’S SCHOOLS

The supply of individuals holding licenses for highly skilled administrative jobs vastly outnumbers the demand, measured by actual positions in Ohio. This section provides information on the total number of administrative positions in elementary and secondary schools on non-teaching staff positions, such as principals and assistant principals in the state of Ohio. It also discusses positions by type of school, license data and administrator pay.

### Total Number of Administrator Positions

Data on employment for particular types of administrators are available from the iLRC (interactive local report card) Power User Reports back to the 2004-05 school year.<sup>33</sup> The total number of administrative positions, shown in table 9-1, ranges between 15000 and 16000 positions.<sup>34</sup>

Table 9-1: Total Number of Elementary and Secondary Administrator Positions in Ohio Schools

Year	Number	Year	Number
2004	15,142	2008	15,840
2005	16,218	2009	15,848
2006	16,045	2010	15,676
2007	15,885	2011	15,879

However, as demonstrated in Section II, the number of students in Ohio has been falling over time. Figure 9-1 graphs the ratio of students to administrators. This graph shows the number of students assigned to the typical administrator for all schools (solid line), public schools (dashed line) and community schools (dotted line). For all schools (solid line) over time the typical administrator is responsible for slightly fewer students. In the 2004-05 school year the typical administrator was responsible for about 118 students. By the 2011-12 school year the typical administrator was responsible for 108 students, ten fewer students than found eight years earlier.

The dashed line shows that the typical administrator in Ohio’s public schools is responsible for 120 students. This workload has not changed over the past seven years. The dotted line shows the workload for the typical administrator in Ohio’s community schools has increased. In the 2005-06 school year each community school administrator handled 40 students, but by 2010-11 each was responsible for almost 54, a gain of 14 students. The reduced number of students per administrator seen in the solid all school line is the result of combining very different staffing ratios for public and community school administrators. As community schools become more important in Ohio the administrator to student ratio has shifted from the higher public school level toward the lower community level.

<sup>33</sup> Go to <http://ilrc.ode.state.oh.us> and choose “Teacher Data,” then choose staff members to get the reports used in this section.

<sup>34</sup> While most administrators hold down a single job in a single school, two community school groups, Summit Academy and Constellation Schools, have people assigned to all branch schools. Summit Academy reports one person is the “Administrative Assistant” for 26 schools in Ohio. Constellation Schools reports one person is the treasurer at 19 different schools. These two only distort administrative data slightly because they comprise a tiny portion of Ohio’s school system.

Figure 9-1: Ratio of Students to Administrators

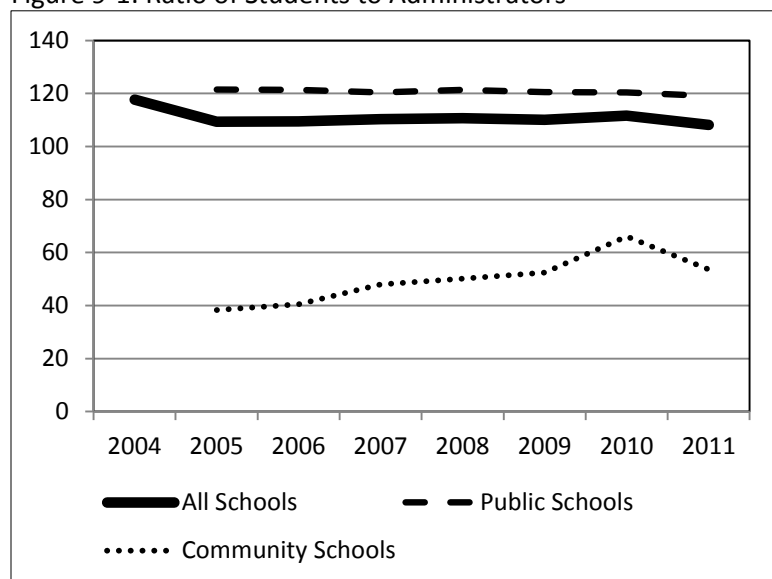


Table 9-2 categorizes the administrators by specific jobs. The table, sorted into four categories, shows a number of trends. First, at the top of the table, the principal's category shows there has been steady growth in the number of assistant principals over time. In the 2004-05 school year there were just 1,665 assistant principals working in Ohio's schools. By 2011-12, the number had risen to 1,829, an increase of 164 positions. Over the same time period, however, the number of principals has stayed fairly constant. In 2004-05 there were 3,670 principals and by 2011 there were 3,690, an increase of just 20 positions. While the assistant principal category has grown the percentage of administrators in either the principal or assistant principals has not changed. In 2004-05 these two groups comprised 35% of all administrators. Eight years later in 2011-12, the two groups still comprised 35% of administrators.

The second category of the tables shows there has also been steady growth in the number of superintendents, assistant superintendents and deputy superintendents in Ohio. In 2004-05 there were 998 people employed in these positions. In 2011-12 the number had risen to 1,105. Like principals, the superintendent category comprises the same share of all administrative jobs over time. In both 2004-05 and 2011-12, superintendents comprised 7% of all administrative positions.

Table 9-2: Number of Administrators by Job Category

	2004	2005	2006	2007	2008	2009	2010	2011
<b>Principals</b>								
Principal	3670	3649	3609	3583	3594	3546	3571	3690
Assistant Principal	1665	1686	1646	1645	1742	1740	1758	1829
<b>Superintendent</b>								
Superintendent	778	774	773	774	776	780	780	845
Assistant, Deputy Superintendent	220	214	220	225	278	278	266	260
<b>Financial</b>								
Treasurer	791	829	838	827	804	807	808	862
<b>Other Administrative</b>								
Coordinator	2609	2934	2893	3008	2630	2607	2548	2506
Supervisor/Manager	3326	3337	3145	2971	2030	2086	2078	1968
Director	364	752	763	696	900	967	994	1083
Other Official / Administrative	769	883	873	874	965	961	845	746
ESC Supervisor	0	0	0	0	807	729	733	713
Administrative Assistant	541	657	717	705	713	727	680	710
Education Admin. Specialist	228	248	245	315	411	430	415	428
Community School Administrator	133	201	261	190	189	190	186	214
Intern / Manager / Ombudsman	48	54	62	70	1	0	14	25
<b>Total</b>	15142	16218	16045	15885	15840	15848	15676	15879

The third category of table 9-2 shows steady growth in the treasurer position. There are over 70 more treasurer positions available in 2011-12 than in 2004-05.<sup>35</sup> The final category, “Other Administrative” has also experienced growth. This group contained 8,018 people in 2004 and 8,393 people in 2011-12, a gain of almost 400 people. This group comprises about half (53%) of all administrators and accounts for half of the growth in administrative positions.

### Administrator Positions by Type of School

Tables 9-3 and 9-4 identify administrator positions by the type of school. The top of each table contains information on traditional public schools, while the bottom has information on community schools. Table 9-3 shows that the traditional public schools had about 14,000 administrators in 2011-12 compared to about 2,000 administrators for community schools.

Table 9-4 shows the percentage of administrators in each category. The base is the number of administrator positions filled in each type of school during the particular year. Table 9-4 demonstrates that traditional public schools have roughly twice as many principals and assistant principals as community schools. Traditional public and community schools have roughly the same percentage of superintendents and financial administrators.

<sup>35</sup>Little of the increase is caused by community school groups using a single treasurer for multiple facilities. In 2004, Constellation Schools had one treasurer for nine different schools and Summit Academy had one treasurer for six schools, for a total of 15 positions. In 2011, the numbers increased for Constellation, with one treasurer being reported for 19 schools but Summit Academy did not report a treasurer for any of its schools, for a total of 19 positions.

Table 9-3: Number of Administrators by Type of School

	2011	2010	2009	2008	2007	2006	2005	2004
<b>Public</b>								
Principals	5219	5064	5049	5098	5089	5118	5174	5189
Superintendents	995	941	939	935	942	934	935	952
Financial	787	745	744	738	742	746	746	728
Other Admin	6914	7202	7361	7300	7441	7416	7521	7334
<b>Community</b>								
Principals	300	265	237	238	139	137	161	146
Superintendents	110	105	119	119	57	59	53	46
Financial	75	63	63	66	87	92	83	63
Other Admin	1479	1291	1336	1346	1388	1543	1545	684

Table 9-4: Percentage Breakdown of Administrators by Type of School

	2011	2010	2009	2008	2007	2006	2005	2004
<b>Public</b>								
Principals	38%	36%	36%	36%	36%	36%	36%	37%
Superintendents	7%	7%	7%	7%	7%	7%	7%	7%
Financial	6%	5%	5%	5%	5%	5%	5%	5%
Other Admin	50%	52%	52%	52%	52%	52%	52%	52%
<b>Community</b>								
Principals	15%	15%	14%	13%	8%	7%	9%	16%
Superintendents	6%	6%	7%	7%	3%	3%	3%	5%
Financial	4%	4%	4%	4%	5%	5%	5%	7%
Other Admin	75%	75%	76%	76%	83%	84%	84%	73%

### License Data for Administrator Positions

Table 9-5 shows the number of licenses earned by year in the state of Ohio for administrative positions. The license data are explained in more detail in Section VI. Licenses were classified into four different categories. Principals are people who earned a license in Elementary Principal (K-8), High School Principal (7-12), MRDD Principal, Middle School Principal (4-9) and Principal. Superintendents are people who earned a license as an Assistant Superintendent, Associate Superintendent, Local Superintendent or Superintendent. Financial administrators have a license as a School Business Manager or School Treasurer. The final category, other administrators, includes people with an Administrative Specialist license or one of the nine licenses that start with Educational Administrative Specialist (EAS), or a license in Personnel Administration and Supervisor.

Table 9-5: Number of Licenses Earned By Year in Ohio

Year	Principal	Superintendent	Financial	Other Admin
2008	2241	1305	336	799
2009	2334	1204	335	776
2010	4614	1165	425	830
2011	3592	852	308	724
2012	2295	715	273	492
<b>Total</b>	15,076	5,241	1,677	3,621

One problem with table 9-5 is that some individuals earn multiple licenses in the same administrative specialty. For example, some people have an Elementary Principal (K-8) license and also a Middle School Principal (4-9) license. Table 9-6 fixes this problem by counting both the total number of licenses and the number of people who received at least one license in each category. For example, 13,263 people received a license to be a school principal since 2008 but these people received a total of 15,076 licenses.

Table 9-6: Number of Licenses and Number of People

	Principal	Superintendent	Financial	Other Admin
Number of Licenses	15,076	5,241	1,677	3,621
Number of People	13,263	4,875	1,472	3,424
Licenses per Person	1.14	1.08	1.14	1.06

Comparing the “number of people” with the “number of licenses” in table 9-6 shows that people holding multiple licenses in a particular administrative category is not a major problem. The average number of licenses per person is seen in the bottom row of table 9-6. Principals and financial administrators, such as treasurers, hold 1.14 licenses per person, which means table 9-5 overestimates the supply by at most 14%. The least bias is found in other administrators which overestimates the supply by about six percent.

Comparing the number of people holding licenses with the number of actual jobs shows there are many qualified people for every position. There are roughly three people who hold a principal license for every principal position. Financial positions have less overlap. There are over 1,500 people who hold licenses compared to about 800 positions. This means there is slightly less than two people who hold a license for every position. There are about 5,000 people who hold at least one superintendent license but there are only about 1,000 people employed as a superintendent. This means there are roughly five people holding the license for every superintendent position.

The least overlap is found in the other administrative positions category. In this group about 4,000 people hold a license compared to about 8,000 people who are employed, which is a ratio of one half a license for every position. However, the other administrative position contains a number of jobs such as administrative assistant, which do not have a license exam.

## Pay for Administrator Positions

The iLRC database also contains average pay for administrator positions. Table 9-7 contains the actual average pay from the iLRC Power User Reports. It shows in the bottom row that the average administrator salary has risen from about \$64,500 in 2004 to about \$73,200 in 2011. It is important to note that for some higher level administrative positions, such as superintendents,



compensation packages often include other benefits such as use of a car and reimbursement of STRS fees, which are not captured by table 9-7.

Table 9-7: Actual Average Pay For Administrative Positions

	2004	2005	2006	2007	2008	2009	2010	2011
<b>Principals</b>								
Principal	\$75,069	\$76,578	\$78,564	\$80,614	\$82,467	\$84,008	\$84,352	\$83,683
Assistant Principal	\$68,063	\$69,850	\$71,896	\$73,867	\$76,131	\$76,786	\$76,758	\$76,430
<b>Superintendent</b>								
Superintendent	\$93,268	\$95,186	\$95,402	\$98,637	\$101,403	\$101,389	\$103,093	\$100,348
Assistant, Deputy	\$96,800	\$97,073	\$98,876	\$101,178	\$104,549	\$105,783	\$103,967	\$105,850
<b>Financial</b>								
Treasurer	\$63,857	\$65,726	\$68,788	\$69,091	\$72,780	\$76,289	\$77,853	\$76,639
<b>Other</b>								
Coordinator	\$48,879	\$50,656	\$51,107	\$49,336	\$51,635	\$54,875	\$55,914	\$56,238
Supervisor/Manager	\$58,600	\$60,311	\$61,061	\$63,067	\$63,951	\$63,366	\$64,519	\$63,883
Director	\$71,123	\$73,080	\$74,880	\$70,943	\$71,587	\$77,976	\$78,991	\$80,113
Other Official /	\$48,489	\$48,265	\$47,680	\$45,221	\$46,843	\$49,210	\$52,222	\$50,935
ESC Supervisor					\$68,218	\$72,455	\$73,051	\$72,754
Administrative	\$43,966	\$40,459	\$39,585	\$34,538	\$36,862	\$43,876	\$44,632	\$43,252
Education Admin.	\$79,752	\$77,501	\$80,305	\$47,810	\$48,869	\$82,842	\$85,931	\$84,121
Community School	\$56,102	\$65,389	\$67,557	\$52,508	\$53,886	\$59,078	\$66,883	\$59,576
Intern / Manager /	\$49,738	\$55,149	\$58,295	\$58,971				
<b>Total</b>	\$64,456	\$66,033	\$67,003	\$66,475	\$68,742	\$71,914	\$73,172	\$73,239

The table shows that superintendents and principals earn much more than the average administrative salary. Administrative assistants, coordinators and people classified in the other administrative category earn much less than the average. Assistant principals and treasurers earn about the average salary.

Table 9-7 provides a biased picture of salary growth because it does not include the impact of inflation. If pay is rising over time at a rate slower than overall prices then actual pay will present a biased view. Figure 9-2 shows the total average pay and the total average pay adjusted for inflation into 2012 dollars.<sup>36</sup>

The figure shows that average pay has clearly climbed over time but that inflation adjusted pay has generally fallen. From 2008 to 2009 the average administrator received an inflation adjusted increase in pay. However, for all other years after adjusting for inflation pay has either declined a lot or a little. Table 9-8 provides the inflation adjusted pay for each administrative category. It shows some categories, like superintendents have experienced a large inflation adjusted drop in pay. Other categories like treasurers have fared rather well. In 2009 and 2010 their average inflation adjusted pay was well above 2004 levels.

<sup>36</sup> Inflation is tracked using the Bureau of Labor Statistics Consumer Price Index, CPI-W.

Table 9-8: Inflation Adjusted Pay for Administrative Positions

	2004	2005	2006	2007	2008	2009	2010	2011
<b>Principals</b>								
Principal	\$92,059	\$90,707	\$90,160	\$89,942	\$88,397	\$90,660	\$89,186	\$85,441
Assistant Principal	\$83,468	\$82,738	\$82,508	\$82,414	\$81,606	\$82,866	\$81,157	\$78,035
<b>Superintendents</b>								
Superintendent	\$114,37	\$112,74	\$109,48	\$110,05	\$108,69	\$109,41	\$109,00	\$102,45
Assistant, Deputy	\$118,70	\$114,98	\$113,47	\$112,88	\$112,06	\$114,15	\$109,92	\$108,07
<b>Financial Personnel</b>								
Treasurer	\$78,310	\$77,853	\$78,941	\$77,085	\$78,014	\$82,330	\$82,315	\$78,249
<b>Other Administrative</b>								
Coordinator	\$59,942	\$60,003	\$58,650	\$55,045	\$55,348	\$59,220	\$59,118	\$57,419
Supervisor/ Manager	\$71,863	\$71,439	\$70,073	\$70,364	\$68,550	\$68,384	\$68,217	\$65,225
Director	\$87,220	\$86,564	\$85,932	\$79,152	\$76,735	\$84,151	\$83,518	\$81,796
Other Official/ Administrative	\$59,463	\$57,170	\$54,717	\$50,453	\$50,211	\$53,107	\$55,215	\$52,005
ESC Supervisor					\$73,124	\$78,192	\$77,238	\$74,282
Administrative Assistant	\$53,917	\$47,924	\$45,428	\$38,534	\$39,513	\$47,350	\$47,190	\$44,160
Education Administration Specialist	\$97,802	\$91,801	\$92,158	\$53,342	\$52,383	\$89,402	\$90,856	\$85,888
Community School	\$68,800	\$77,454	\$77,528	\$58,584	\$57,761	\$63,756	\$70,716	\$60,827
Intern/Manager/ Ombudsman	\$60,995	\$65,325	\$66,898	\$65,793				
<b>Total</b>	<b>\$79,044</b>	<b>\$78,217</b>	<b>\$76,892</b>	<b>\$74,167</b>	<b>\$73,685</b>	<b>\$77,609</b>	<b>\$77,365</b>	<b>\$74,777</b>

Figure 9-2: Administrators' Average Pay and Average Pay Adjusted for Inflation

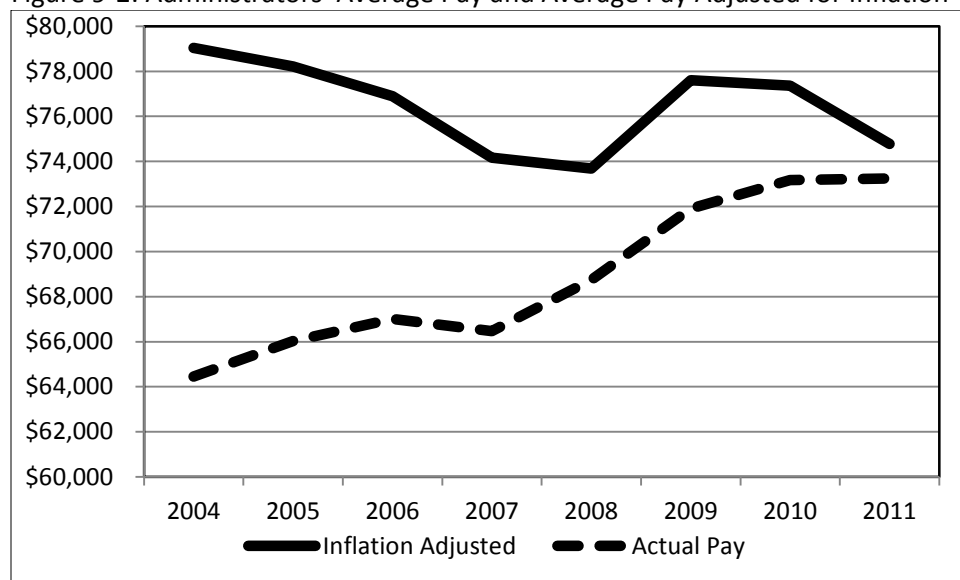


Table 9-9 shows pay by type of district. The \$73,239 figure under “All State” shows how much the average administrator makes in the state of Ohio. Administrators in schools located in major Ohio cities on average earn over \$81,000, which is an 11% premium over the state wide average.

Table 9-9: Average Administrator Pay by Type of School in 2011-12 School Year

	All State	Major City	Local Towns	Community
Average Admin. Pay	\$73,239	\$81,121	\$71,112	\$48,951
Compared To All State	100%	111%	97%	67%

Administrators in local towns earn over \$71,000, which is a 3% discount to the state wide average. Administrators who work for community schools earn the least. Their average pay is slightly less than \$49,000 per year, which is a 33% discount compared to the state wide average.

## Section Summary

This section has provided some facts, figures and trends in the number of administrative positions, the supply of potential administrators and administrators' pay. The important takeaways are:

- The total number of administrative positions in Ohio has ranged between 15,000 and 16,000 positions from 2004 to 2011. The number of administrative positions has shown no upward or downward trend, but with the shift toward community schools, the student to administrator ratio has fallen by 10%.
- The number of people holding licenses for highly skilled administrative jobs vastly outnumbers the actual positions in Ohio. There are roughly three people who hold a principal license for every principal position; five people who hold a superintendent license for every superintendent job and slightly less than two people who hold a financial license for every treasurer position.
- In inflation adjusted terms administrative pay has been falling over time. Administrators at community schools earn much less money than those people who work for traditional public schools.

## APPENDIX: METHODOLOGY

This appendix provides technical details on the data and methodologies used in this report. First, data sources and preparation are reviewed. Second, the use of district typologies is discussed. Finally, the methodology employed for teacher demand projections is explained.

### Data Sources and Preparation

This report draws on a variety of data sources to examine the factors influencing teacher supply and demand in Ohio.

The main underlying source of data used for this report is the Ohio Department of Education's (ODE's) Education Management Information System (EMIS.) All publicly funded schools in Ohio are required to report student- and staff-level data to the ODE each year via EMIS. Thus the EMIS data provide student and staff information for all traditional public and community schools in Ohio, but private schools are not covered. A portion of the data collected through EMIS are aggregated by the ODE at the school, district, and state levels and made publicly available on the ODE website through the Interactive Local Report Card (iLRC) Power User Reports. These data can be accessed at <http://reportcard.education.ohio.gov/Pages/default.aspx>. While the original student- and staff-level EMIS data files are not publicly available, the Ohio Education Research Center (OERC) maintains a copy of these files through an agreement with the ODE. These data file copies form part of the OERC's Ohio Longitudinal Data Archive (OLDA.) Both the public and private forms of the EMIS data form the backbone of the data used for this report.

While a few sections of this report reference only the EMIS data, many sections use additional data sources to either supplement the EMIS data or conduct focused analyses on specific topics. The following provides a brief description of the data sources used in each section following the Introduction in Section I.

Section II supplements the EMIS data with information on fertility and fertility rates from reports published by the National Center for Health Statistics. The fertility information is based on data from all birth records in the state of Ohio. Additional details can be found at <http://www.cdc.gov/nchs/births.htm>.

In Section III, only the EMIS data are used.

Section IV supplements the EMIS staff data with information from the State Teachers Retirement System (STRS) Comprehensive Annual Financial Reports (CAFRs.) These reports include all individuals with an STRS account and do not distinguish between K-12 and postsecondary staff. Private school staff are not covered by STRS. These reports can be accessed at <https://www.strsoh.org/publications/annualreports/cafrs.html>.

Section V uses data from three alternative sources. The first is the Job Openings and Labor Turnover Survey (JOLTS) conducted by the Bureau of Labor Statistics. The JOLTS is a monthly survey of both private businesses and government organizations that provides data at the national level disaggregated by industry. This report examines data for institutions classified under North American Industry Classification System (NAICS) code 61, Educational Services. Such organizations include public and private K-12 schools, postsecondary institutions, and for-profit training centers. Data and information about JOLTS is available at [www.bls.gov/jlt](http://www.bls.gov/jlt).

The second data source used in Section V is the ODE Job Board, a searchable database of educator job vacancies in Ohio administered by the ODE. Traditional public and community schools, but not private schools, may post vacancies on the Job Board, but the heaviest users tend to be large urban districts and community schools. The Job Board can be accessed at <http://education.ohio.gov/About/Education-Jobs>.

The third data source analyzed in Section V is data collected for the Longitudinal Employer-Household Dynamics (LEHD) program run by the Census Bureau. Data from the LEHD is collected by Ohio's unemployment insurance system. Only data from the education industry, defined by classification in NAICS code 61, was used from the LEHD. As noted above, NAICS code 61 aggregates public and private K-12 schools, postsecondary institutions, and for-profit training centers. The LEHD data are found online at <http://lehd.ces.census.gov/>.

In Section VI data from the Integrated Postsecondary Data System (IPEDS) and the ODE Educator Credential database are analyzed. IPEDS data include both public and private colleges and universities. IPEDS data contain administrative information provided by all institutions of higher education. The IPEDS data are available at <http://nces.ed.gov/ipeds/>. The ODE Educator Credential database includes individual-level data on all Ohio-credentialed educators past and present including teachers, administrators, and pupil support personnel such as counselors. This database is available at <http://education.ohio.gov/Topics/Data/Frequently-Requested-Data/Staff-Data>.

Section VII uses data from three different sources. The first source is data collected by the Ohio Board of Regents via the Higher Education Information (HEI) System which OERC has integrated into the OLDA. The HEI data contain individual-level data covering students all public two- and four-year postsecondary institutions in Ohio. These data are not publicly available. Second, this section uses the Educator Credential database which was used in Section VI and is described above. The third data source used in Section VII is the Quarterly Census of Employment and Wages (QCEW). The QCEW contains individual-level data on quarterly wages for all employees covered by Ohio's unemployment insurance system. As with the HEI data, these data are integrated into the OLDA and are not publicly available. Additional information can be found at <http://www.bls.gov/cew/>.

Section VIII incorporates data from the Private School Universe Survey managed by the Census Bureau and the National Center for Education Statistics (NCES.) These data include only private schools and can be found at <http://nces.ed.gov/surveys/pss/>. This section also cites information in the 2011 Digest of Education Statistics produced by the NCES. Information cited in this report can be accessed at [http://nces.ed.gov/programs/digest/d11/tables/dt11\\_080.asp](http://nces.ed.gov/programs/digest/d11/tables/dt11_080.asp).

Section IX uses the EMIS data as well as the ODE Educator Credential database used in Section VI and described above.

When necessary, preliminary "cleanup" of the data was performed before conducting analysis. Examples of cleanup procedures include eliminating observations for which insufficient information was reported or for which reported information was internally inconsistent.

## The Use of District Typologies

Due to requests received by the ODE to develop a consistent method of categorizing school districts for research purposes, the ODE developed the typology classification system in 1996. District

typologies are defined by the ODE and are based on a combination of the district's environment (urban, suburban, small town, or rural) and student poverty levels. The ODE uses typologies to classify only traditional public schools; community schools are not assigned to typologies. The Ohio Teacher Supply and Demand Reports from 2003 and 2007 used a seven-category district typology. In May 2013 the ODE revised its typology classification system and added an eighth typology. All districts were subsequently reclassified among these eight categories. Additionally, where convenient, this report treats community schools as a ninth typology. This report adopts the standardized use of the 2013 typology for analyses from all years. This is done so that information across multiple years is comparable.

### Methodology for Teacher Demand Projections

This report makes seven year (2012-2018) projections for total student enrollment and teacher demand in publicly funded Ohio schools. These totals aggregate across traditional public and community schools. Values for 2012 and 2013 are projected because 2011 was the last year for which data were available at the time this report was written. Total student enrollment was predicted based on historical and projected annual births in Ohio. Annual birth projections assumed continuing recent trends.

Teacher demand predictions took into account projected total student enrollment as well as projected trends in the distribution of students across the nine district typologies discussed above and projected trends in typology-specific student-teacher ratios. First, the distribution of students across typologies was predicted assuming continuing linear trends in the evolution of this distribution observed in 2005-2011. Linear trends were estimated with a constrained, linear, simultaneous equation model in which predicted percentages were constrained to sum to one. Second, typology-specific student teacher ratios were predicted based on continuing linear trends in observed in 2005-11. Finally, this information was combined to project teacher demand.

This report calculates teacher demand projections under two contrasting scenarios. The first scenario assumes student-teacher ratios remain constant at 2011 typology-specific levels from 2012 to 2018. The second scenario assumes continuing linear trends in typology-specific student-teacher ratios observed during 2005-2011. This trend was downward in six typologies and statistically insignificant in the other three. The first scenario may be more realistic given that student-teacher ratios across typologies have tended to stabilize since the economic recession, and recovery remains slow. For each scenario teacher demand predictions were calculated by dividing predicted students per typology by the predicted typology-specific student-teacher ratio and summing across typologies.