KC-AERC Kansas City Area Education Research Consortium

Teacher Labor Market - Report 1 October 2011

A Statistical Portrait of the Kansas City Metropolitan Area Teacher Workforce

KC-AERC Team
Dr. Mark Ehlert
Sarah J. Frazelle
Dr. Donna Ginther
Dr. Michael J. Podgursky
Dr. Leigh Anne Taylor Knight

Technical Assistance
Emily J. Kennedy

Acknowledgments: This study was made possible by a grant from the Ewing Marion Kauffman Foundation and the cooperation of the Missouri Department of Elementary and Secondary Education (DESE) and the Kansas Department of Education (KDOE) who allowed KC-AERC to create a data set that permitted cross-state analysis of the teacher labor market in the Kansas City metropolitan region.

KC-AERC Overview

In April of 2009, the Ewing Marion Kauffman Foundation awarded one million dollars to social science, economics and education researchers at the University of Kansas, University of Missouri, Kansas State University and University of Missouri-Kansas City to establish the Kansas City Area Education Research Consortium (KC-AERC). KC-AERC conducts rigorous research using student achievement and teacher quality data to inform elementary and secondary education practice and policy, and to enhance postsecondary matriculation in the KC metro area. Thirty-two regional school districts, various private and charter schools, foundations, community colleges, economic development organizations, and the state Departments of Education in Kansas and Missouri are collaborating with KC-AERC in this effort. KC-AERC aspires to become a national laboratory for educational research as it studies education in a region that spans two states, includes rural, urban and suburban environments, and serves a diverse student population. Our shared goal is to provide all regional educational stakeholders, including school districts, community organizations, and private sector partners, with powerful tools for building a culture of data-driven educational policy research, evaluation, and implementation.

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Introduction

Long-term economic growth and quality of life in the Kansas City metropolitan region area are linked to the quality of public education available. Teachers represent a critical resource in preparing the area's youth for the future. The KC metro area is a large and diverse labor market, with workers in many industries and occupations moving freely across state lines to pursue employment opportunities. The teacher labor market was chosen as a pilot project because of the limited information available on the teacher workforce relative to the available regional employment data over the entire metro area. This report is the first in a series of upcoming reports and serves as a descriptive analysis of public school teachers across the bi-state, multi-county labor market. We begin by examining the numbers, distribution and characteristics of teachers across schools in this labor market at two points in time, 2006 and 2010. The Kansas City Metropolitan Area is comprised of multiple school districts in the states of Missouri and Kansas. In study year 2010, three Missouri counties of the region contain 22 public school districts and 21 public charter districts. Three Kansas counties are home to 15 different public school districts.[1] Over a quarter of a million students attend these school systems in the KC metro area, with over 19,000 teachers working in them. The districts are diverse, with students from a variety of ethnic and socio-economic backgrounds, and are contained in rural, suburban, and urban areas.

The state line that divides the metropolitan area is much more permeable than the boundaries separating student and teacher data sets. Separate data systems have made it difficult to examine the teacher labor market for the entire Kansas City metro area. Despite logistical difficulties, studies examining the metropolitan area are important precisely because the teacher labor market crosses the state line and is fairly porous. Teachers can live in one state and teach in another. They can and do cross state and district lines over a teaching career.

Our study seeks to answer some basic questions about the teaching workforce in Kansas City. How many teachers work in the public schools in the Kansas City area and how have these numbers changed over the last five years? How do these changes compare to changes in student enrollment? Do some teaching fields see larger growth than others? Have demographics and the average experience of teachers changed over the last five years?

A general overview of specific numbers provided in this report can be found in the Appendix, Table 3. For more information regarding aggregate numbers, please contact us at info@kcaerc.org.

[1] For a complete list of public districts, see Appendix Table 1. For a complete list of charter schools open in 2006 and 2010, see Appendix Table 2.

Teacher Employment and Student Enrollment Over Time

There has been an increase in the total number of teachers from 2006 to 2010 on both the Missouri and Kansas sides of the metropolitan area as seen in Figure 1. The increase can be seen at all but one building category as illustrated in Table 1.

Figure 1: Total Teacher Employment by State and Total Metro Area

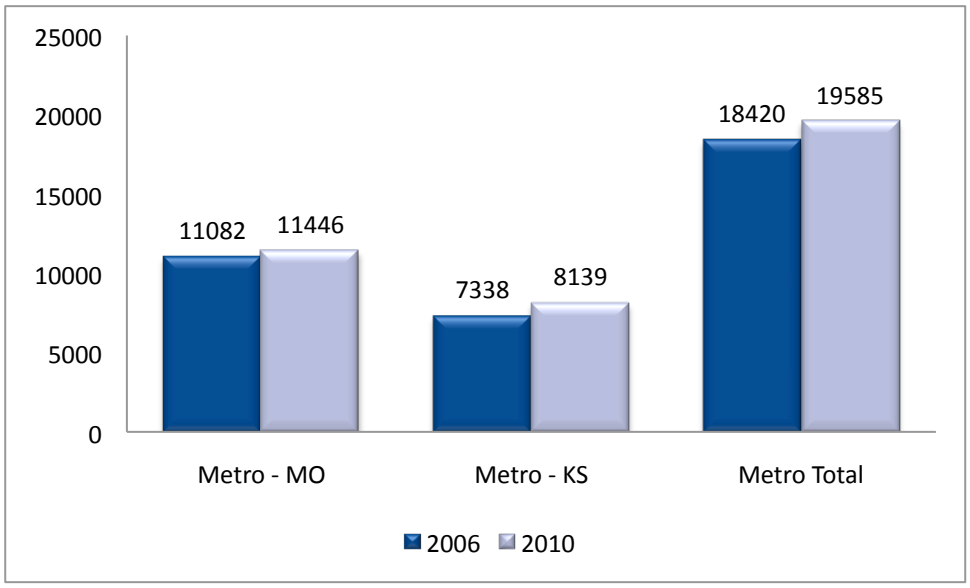


Table 1: Teacher Employment by School Type

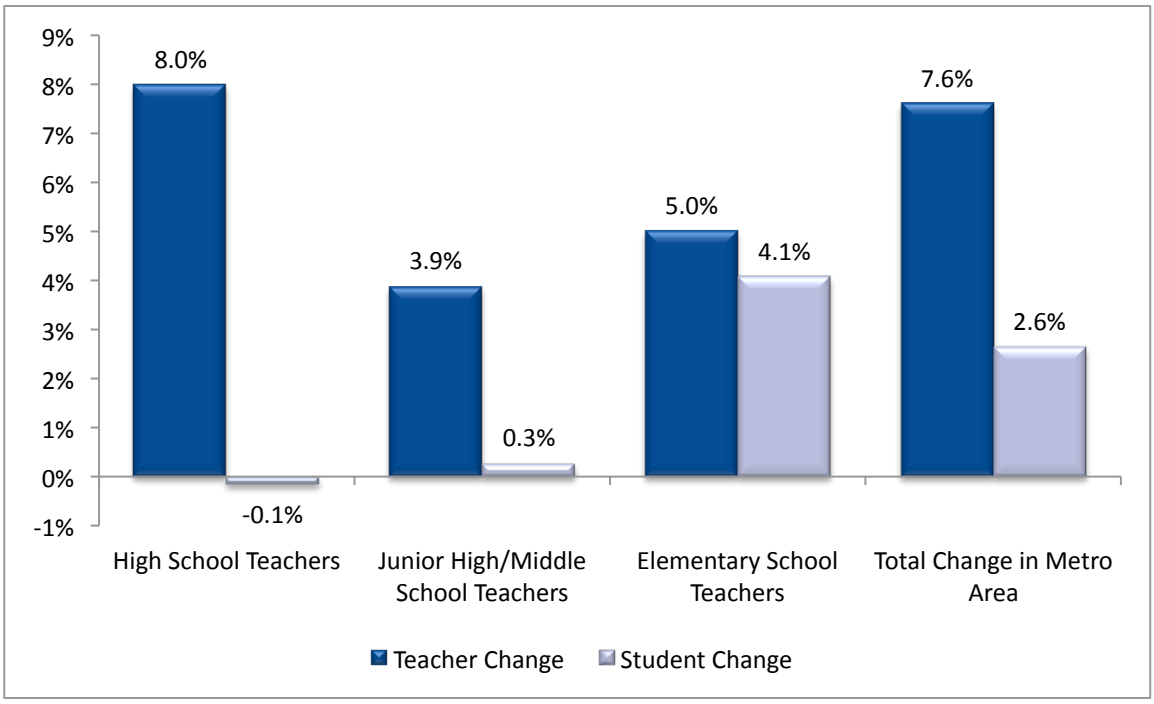
	Metro - MO			Metro - KS		
	2006	2010	Growth	2006	2010	Growth
High School Teachers	3038	3212	5.7%	1966	2191	11.4%
Junior High/Middle School Teachers	2178	2171	-0.3%	1541	1692	9.8%
Elementary School Teachers	5654	5783	2.3%	3706	4046	9.2%
Charter School Teachers	408	674	65.2%	n/a	n/a	n/a
Total Teachers[2]	11490	12120	5.4%	7338	8139	10.9%

The only category not displaying growth is Junior High/Middle School Teachers in the Missouri counties. The decline is less than one percent, while all other categories in both regions reflect growth between 2006 to 2010. In the public school districts, the growth ranges from 2.3% in metro-Missouri elementaries to 11.4% in metro-Kansas high schools. The charter school teacher growth in the same five-year period is at 65.2%. As two new charter schools opened in 2007 and another three new charter schools opened in 2009, this growth is likely attributable to hiring teachers for these new schools.

[2] The total number of teachers reflects teachers who were unable to be categorized into a traditional building type. Examples include teachers in alternative schools, technology centers, special education coops and those whose major teaching activity has been associated with the central office rather than a regular school building.

The growth in the region's teaching work force has been accompanied by increases in the number of students. Figure 2 illustrates the change in teachers compared to the change in students from 2006 to 2010 by building type. Teacher growth across the metro area has increased compared to student growth. Since the timeframe displayed in the two-point snapshot is from 2006 to 2010, it is important to consider the alleged differences in budgetary climates. Despite discussed budgetary cutbacks in some districts, the 2010 number of teachers is still greater than in 2006 across the metro area. Further research will need to be conducted to reveal the number of districts with actual budget reductions over this timeframe, as well as the budget and program decisions made to increase teachers being hired.

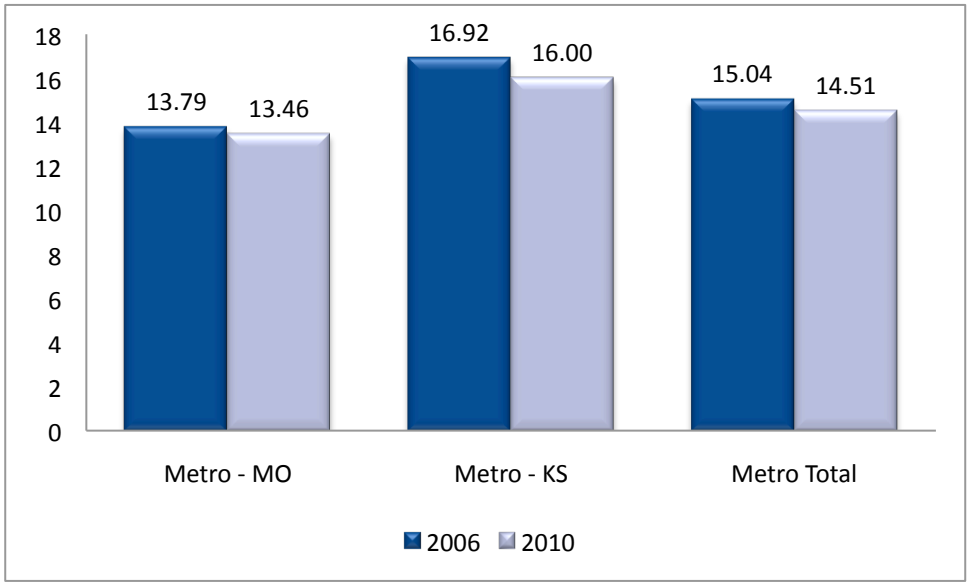
Figure 2: Average Percent Change in Teachers Employed and Student Enrollment by Building Level



High school teacher hiring numbers compared to high school student enrollment show an interesting difference, relative to the other grade levels. High school teachers grew by the greatest percent change (8%) among the categories, while high school student enrollment decreased by less than a percent. With that one exception, overall there were increases in each category for both students and teachers.

Given the differences in the growth of teachers versus the growth of students illustrated in Figure 2, it is not surprising the average student to teacher ratio was lower in 2010 than in 2006 in both states as pictured in Figure 3. The relative stability illustrated in the figure depicts the Kansas City metro area did not dramatically increase the student-teacher ratio over the five years.

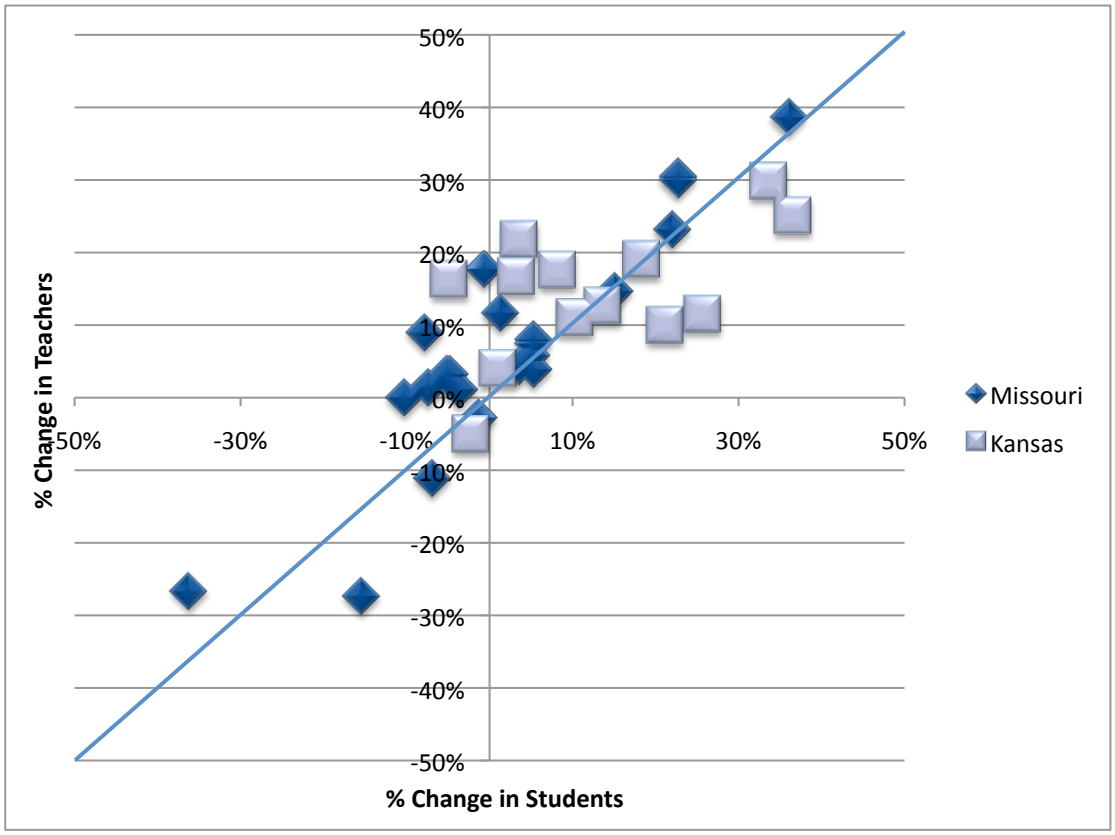
Figure 3: Student-Teacher Ratio by State and Total Metro Area



Once again, in the presumed climate of budget declines, the metro area has done an impressive job of slightly improving student teacher ratios in the window between 2006 and 2010. Future research is recommended to learn about how the local school leaders and boards of education in different districts managed to accomplish this, as such research could enlighten future practice and policy development.

To examine whether particular districts skew the results from figure 3, changes in teachers and students by individual districts are available. Figure 4 plots the change in students, on the horizontal axis, and the change in teachers, on the vertical axis, from 2006 to 2010 for each district[3] in the Kansas City metro region. The diagonal line represents a perfect proportional change in students and teachers. Districts lying on or near the diagonal line, thus, have kept their student-teacher ratio relatively constant over the past five years. Districts above the diagonal line have decreased their student-teacher ratio while districts below have increased their student teacher ratio. The greater the distance a district is from the diagonal line (above or below) the greater the student-teacher ratio has changed. Figure 4 shows, that while most districts kept a relatively constant student-teacher ratio between 2006 and 2010, many districts did in fact decrease their student to teacher ratios. Two districts are seen as outliers with decreases in both students and teachers.

Figure 4: Percent Change in Student Enrollment and Teacher Employment from 2006 to 2010 by District



[3] All Charter schools were combined to create one charter "district" point on the diagram.

Changes in Mathematics and Science Teacher Employment

Math and Science teachers have been an area of specific focus in the United States over the last 10 years. During a speech to the National Academy of Sciences in spring of 2009, President Obama called science "more essential for our prosperity, our security, our health, and our environment than it has ever been."[4] However, a shortage of math and science teachers has been predicted. For example, in 2007, the Business-Higher Education Forum projected that the United States "will need more than 280,000 new mathematics and science teachers by 2015" and that the shortage was most pronounced in "classrooms that serve [the] nation's poorest students."[5] We next examine whether changes in the number of teachers in math and science have kept pace with the overall increase in teachers we reported above. Figure 5 and Figure 6 show the changes in the numbers of math and science teachers, respectively, from 2006 to 2010 by building level. There has been an increase in the number of math and science teachers in elementary and high schools.

Figure 5: Total Math Teacher Employment in KC Metro Area by Building Level

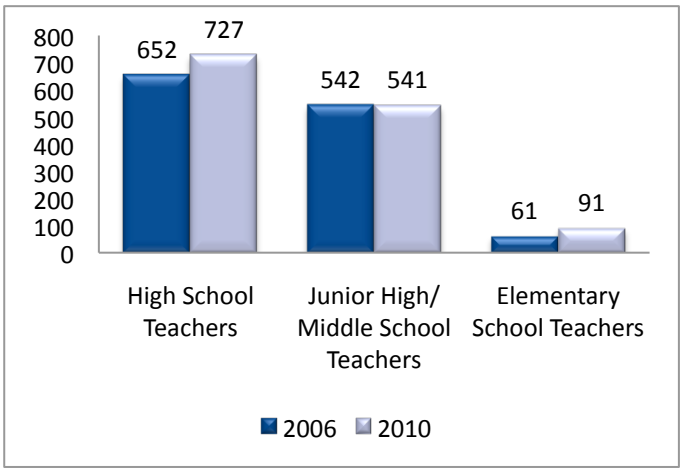
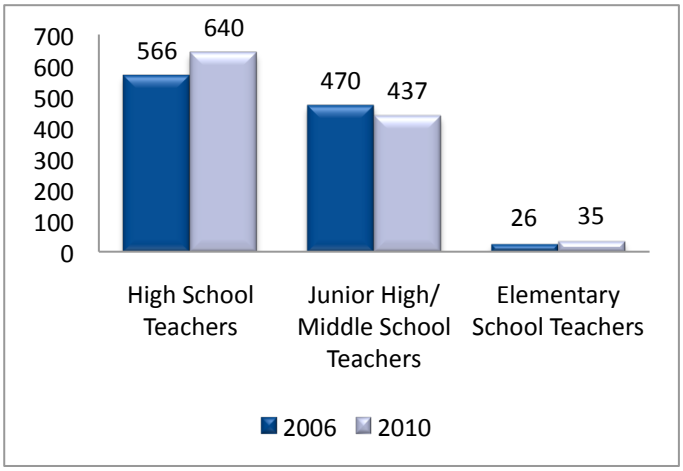


Figure 6: Total Science Teacher Employment in KC Metro Area by Building Level

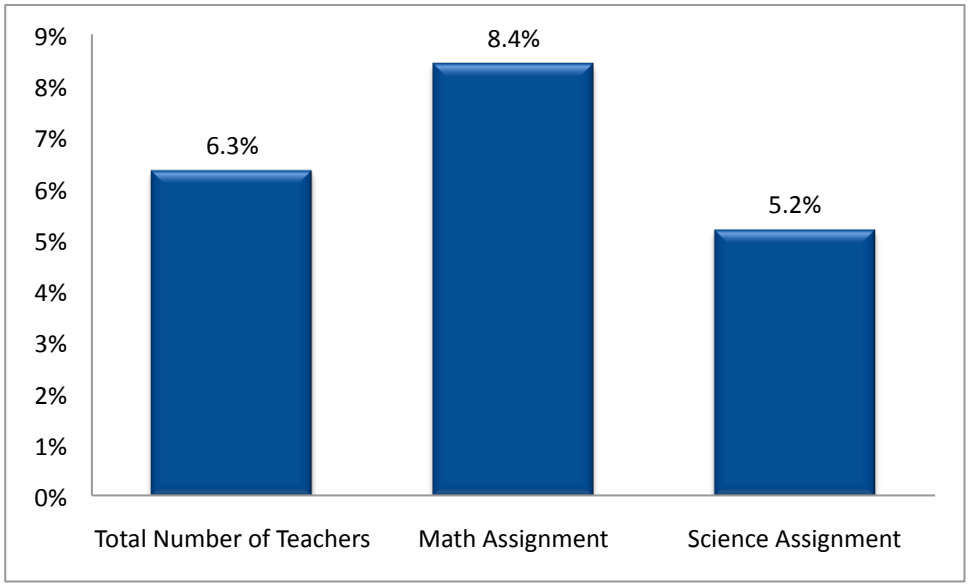


[4] http://www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=20090427

[5] "An American Imperative: Transforming the Recruitment, Retention, and Renewal of our Nation's Mathematics and Science Teaching Workforce". Business-Higher Education Forum. 2007.

To put the growth of teaching positions in the Kansas City metro region in perspective, Figure 7 shows the growth rate of all teachers compared to the growth rate of math teachers and science teachers from 2006 to 2010. Math teachers have grown at a faster rate than the total number of teaching positions, while science teachers have grown at a slower rate. While the United States is predicted to have a shortage of math and science teachers by 2015, the Kansas City metro area appears to have increased the number of math teaching positions. It is important to note, however, that these measures do not address issues of teacher quality nor how many teachers are scheduled to retire in the near future. The explanation for this increase in positions could be further explored.

Figure 7: Growth Rate of Teacher Employment by Math & Science from 2006 to 2010



Federal predictions of shortages are broad measures. It would make sense that a regional snapshot might vary from federal predictions. Future research could better contextualize the Kansas City metropolitan area in relation to predicted federal trends with respect to local projected employment growth trends in science and math-related industries, as well as in relation to high school graduation requirements in each state.

Teacher Age and Level of Experience

Overall, the average teacher on the Kansas side of the metropolitan area has been older than the average teacher on the Missouri side. However, over the past five years, both Missouri and Kansas have seen a decrease in the average age of their teachers by about four years (see Figure 8). There are three retirement systems that encompass the public school systems in the Kansas City Metropolitan area. Each system has its own requirements and incentives for retiring. Thus, differences in the pension systems could cause differences in the ages and years of experience in teachers. With the decrease in the average age of teachers, the percent of teachers older than 50 has decreased by approximately 10% across the entire metro area as illustrated in Figure 9.

Figure 8: Average Age of All Teachers by State and Total Metro Area

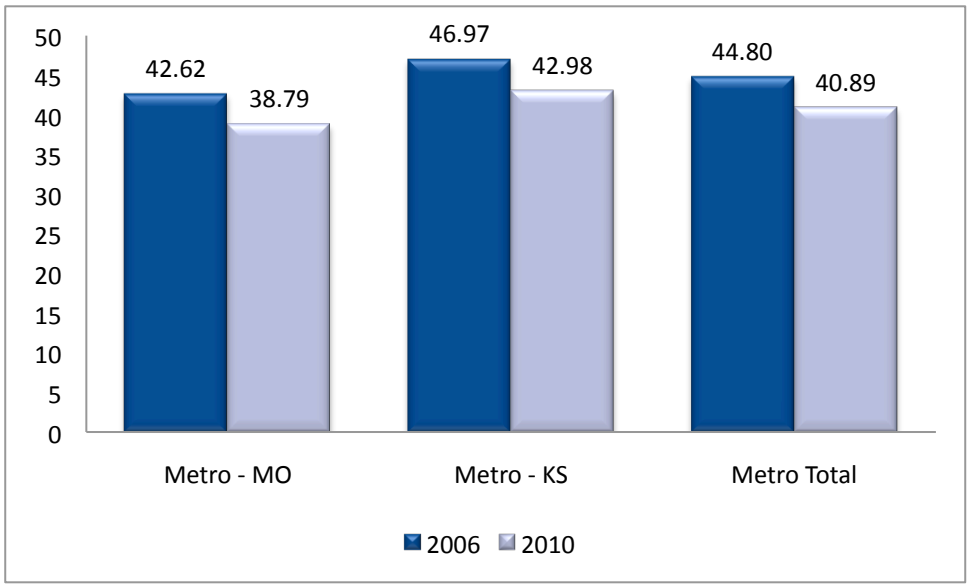
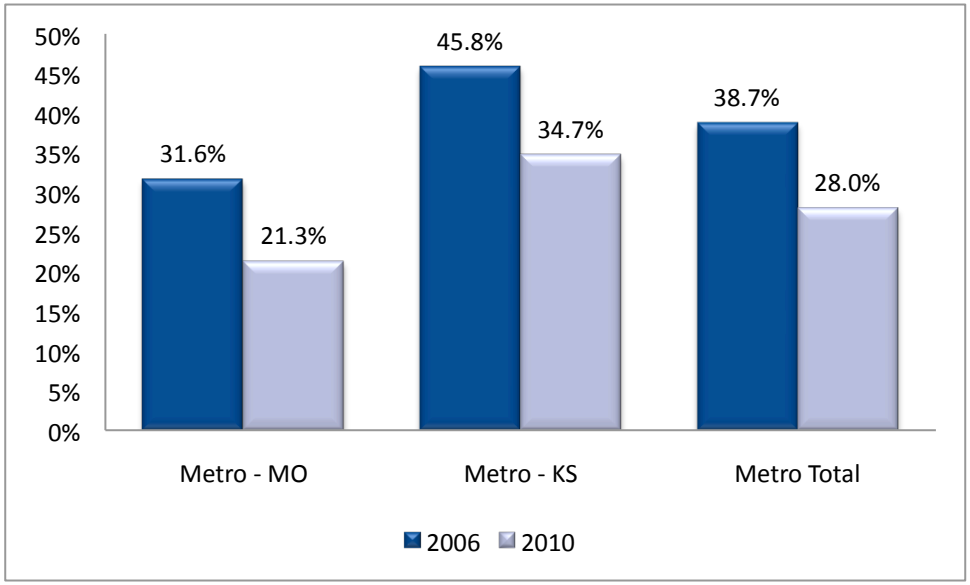
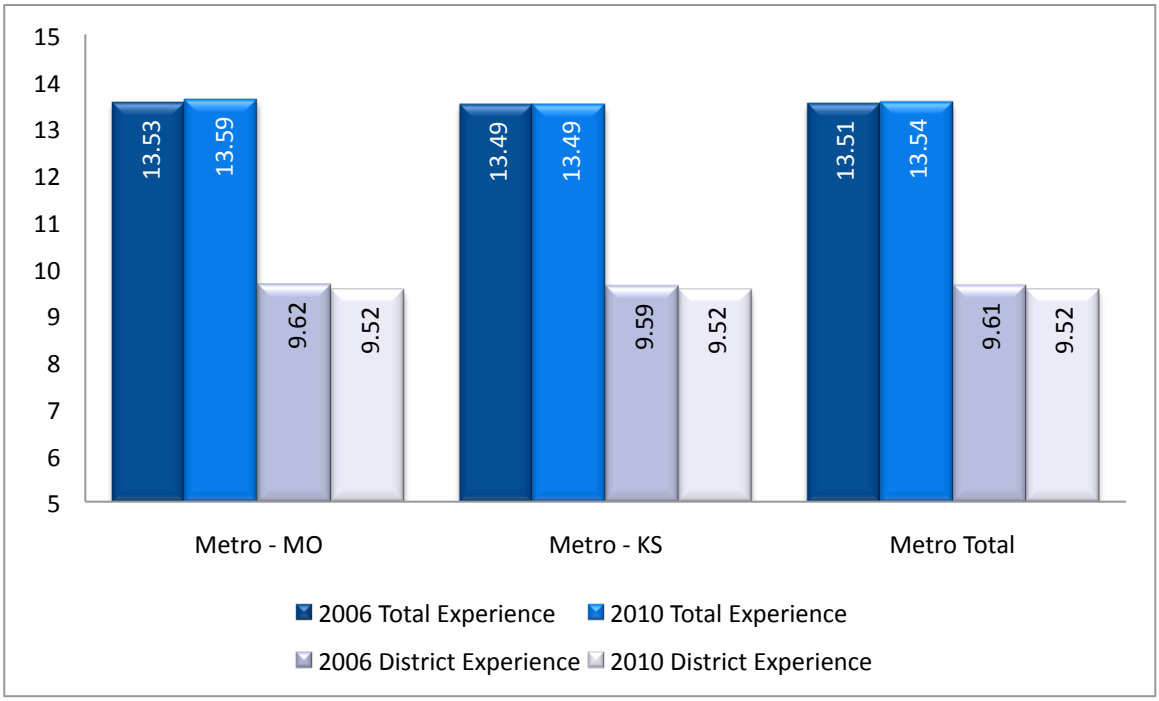


Figure 9: Percent of Teachers 50 Years of Age or Older by State and Total Metro Area



Despite the decline in average age of teachers across the metro area over the past five years, experience measures have stayed relatively constant. Average total K-12 experience stayed approximately the same for teachers across the region, while average experience within the same district decreased slightly (see Figure 10). In subsequent reports, KC-AERC will investigate potential explanations of why the teacher labor market has become younger while average experience has remained relatively constant.

Figure 10: Average Total K-12 Teaching Experience and Average Teacher District Experience by State and Total Metro Area



Demographic Composition of Teachers Across the Metro

The overall demographic composition of teachers in the metropolitan area has not changed significantly over the past five years, with the majority of teachers being white women. Figure 11 and Figure 12 show the demographic makeup of all teachers in the Kansas City Metropolitan Area in 2010. These distributions reflect the same proportions observed in the 2006 metropolitan teaching workforce.

Figure 11: 2010 Gender Distribution of Teachers

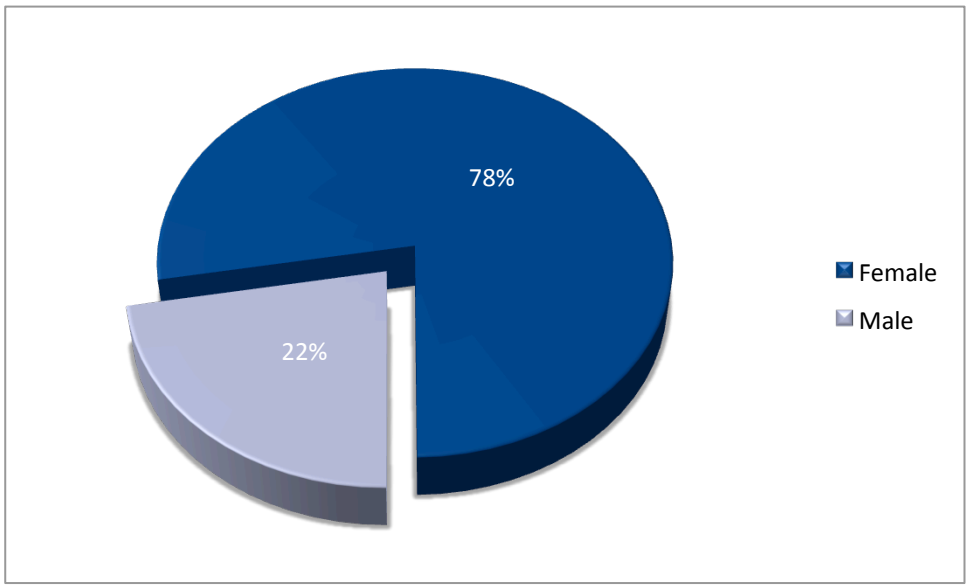
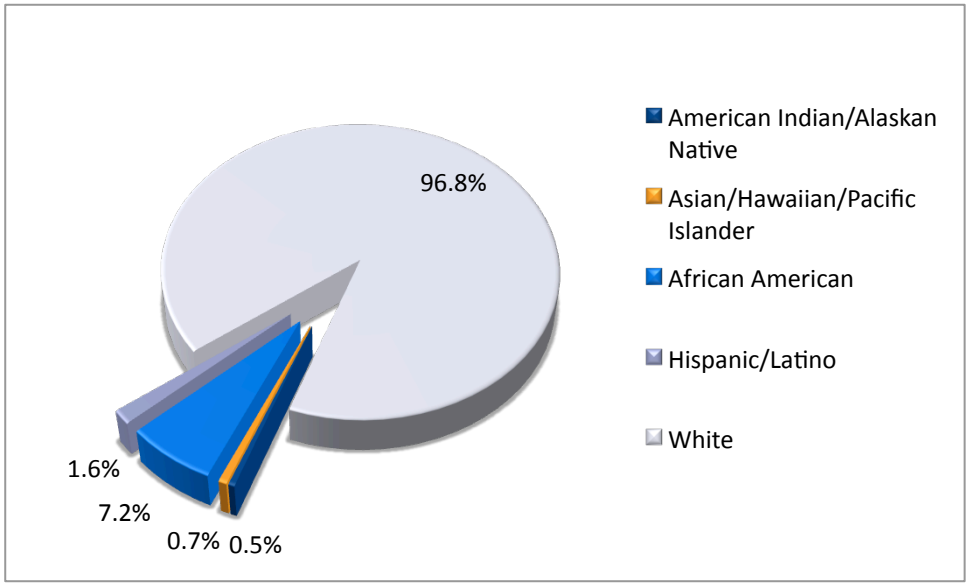


Figure 12: 2010 Race and Ethnicity Distribution of Teachers



These observed characteristics could benefit from future research that contextualizes the demographics of the Kansas City metropolitan teacher workforces within national teacher workforce trends. The findings could be further illuminated by comparisons with student and region demographics. These data invite future research and policy implications on a number of levels.

Summary

The Kansas City Area Education Research Consortium's Statistical Portrait of the Teacher Workforce has examined the change in teaching positions over time and the demographic composition of teachers. The number of teachers has increased, with the largest growth occurring in Missouri charter schools and metro-area public school districts of the Kansas counties. Student-teacher ratios have decreased for the majority of districts between 2006 and 2010, in elementary, middle, and high schools. Compared to other teacher positions, math teachers have been hired at a faster rate and relatively speaking, science teachers have been hired at a slower pace.

Overall, the gender, race, and years of experience of teachers has not changed significantly from 2006 to 2010, however the average age of teachers has decreased by approximately four years. Future KC-AERC teacher labor market studies will examine inter- and intra- state mobility of teachers.

Appendix – Table 1: School Districts in Kansas City Metropolitan Area

School Districts in Kansas City Metropolitan Area	
MISSOURI	
County	**Public School Districts**
Clay	Excelsior Springs 40
	Kearney R-I
	Liberty 53
	Missouri City 56
	North Kansas City 74
	Smithville R-II
Jackson	Blue Springs R-IV
	Center 58
	Fort Osage R-I
	Grain Valley R-V
	Grandview C-4
	Hickman Mills C-1
	Independence 30
	Kansas City 33
	Lee's Summit R-VII
	Lone Jack C-6
	Oak Grove R-VI
	Raytown C-2
Platte	North Platte Co. R-I
	West Platte Co. R-II
	Platte Co. R-III
	Park Hill
KANSAS	
Johnson	Blue Valley 229
	De Soto 232
	Gardner-Edgerton 231
	Olathe 230
	Shawnee Mission 512
	Spring Hill 230
Leavenworth	Basehor 458
	Bonner Springs-Edwardsville 204
	Fort Leavenworth 207
	Lansing 469
	Tonganoxie 464
Wyandotte	Bonner Springs 204
	Kansas City, KS 500
	Piper 203
	Turner 202

Appendix – Table 2: Charter Schools

Charter Schools in the Kansas City Metropolitan Area		
MISSOURI		
County	**Charter Schools**	**Year Opened**
Jackson	University Academy	2000-2001
	Alta Vista Charter School	1999-2000
	Don Bosco Education Center	1999-2000
	Hogan Preparatory Academy	1999-2000
	Genesis School Incorporated	1999-2000
	Urban Community Leadership Academy	1999-2000
	Academy of Kansas City	1999-2000
	Allen Village School	1999-2000
	Lee A. Tolbert Community Academy	1999-2000
	Benjamin Banneker Academy	1999-2000
	Della Lamb Elementary	1999-2000
	Gordon Parks Elementary	1999-2000
	Academie Lafayette	1999-2000
	Scuola Vita Nuova Charter School	1999-2000
	Brookside Charter School	2002-2003
	Derrick Thomas Academy	2002-2003
	KIPP: Endeavor Academy	2007-2008
	Imagine Renaissance Academy of	2007-2008
	Hope Academy	2009-2010
	Pathway Academy	2009-2010
	Frontier School of Innovation	2009-2010

Appendix – Table 3

A Picture of the Kansas City Metropolitan Area Teacher Workforce: 2006 and 2010 by State						
	2006			2010		
	MO	KS	Total	MO	KS	Total
Total Number of Teachers	11490	7338	18828	12120	8139	20259
Female	9394	5699	15093	9731	6368	16099
Male	2740	1639	4379	2861	1771	4632
American Indian/Alaskan Native	21	33	54	25	76	101
Asian/Hawaiian/Pacific Islander	63	64	127	82	50	132
African American	1305	236	1541	1160	251	1411
Hispanic/Latino	136	96	232	166	145	311
White	10609	6938	17547	11159	7795	18954
Multiple Races Selected[6]		35	35		178	178
Average Salary Base[7]	$46,273	$47,306	$47,029	$48,546	$50,038	$49,292
Average Salary Total	$48,628	$52,503	$50,566	$50,446	$55,573	$53,010
Difference	$1,877	$5,197		$1,900	$5,536	
Average Total Experience	13.53	13.49	13.51	13.59	13.49	13.54
Average District Experience	9.62	9.59	9.61	9.52	9.52	9.52
Average Age	42.62	46.97	44.80	38.79	42.98	40.89
Share aged 50+	32%	46%	39%	21%	35%	28%
High School Teachers	3038	1966	5004	3212	2191	5403
Junior High/Middle School Teachers	2178	1541	3719	2171	1692	3863
Elementary School Teachers	5654	3706	9360	5783	4046	9829
Other Teachers	212	125	337	280	210	490
Charter School Teachers[8]	408		408	674		674
All Teacher Math Assignments	669	592	1261	747	620	1367
All Teacher Science Assignments	591	472	1063	626	492	1118

[6] Reported only by Kansas Department of Education

[7] All 2006 salaries have been adjusted for inflation based on the BLS figures for CPI, All Urban Consumers, Kansas City Metropolitan Statistical Area. Source: http://data.bls.gov/pdq/SurveyOutputServlet?data_tool=dropmap&series_id=CUURA214SA0,CUUSA214SA0

[8] Charter school numbers are only reported in Missouri

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For more information about KC-AERC or this report email:
lknight@kcaerc.org
www.kcaerc.org/