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CHAPTER 3

Understanding Teacher Wages and Disparities in Teacher Qualifications in Predominantly Hispanic Micropolitan Schools

1.0 Introduction

In this third and final chapter in this report, I explore in greater depth, teacher labor market issues in rapidly changing micropolitan communities. I begin with a national analysis of urban and rural labor markets and national analysis of micropolitan teacher labor markets, using U.S. Census data and using data from a national survey of teachers. Next, I explore specific micropolitan labor markets in Nebraska, Washington, Missouri and Wisconsin.

This chapter addresses the following four questions:

1. How does teacher pay compare and what is the structure of teacher pay in micropolitan areas?

2. How do teacher qualifications compare across micropolitan and rural schools by school characteristics nationally?

3. What is the structure of teacher pay in micropolitan communities within agricultural states?

4. What is the distribution of teacher qualifications across schools within agricultural states?

1.1 General Issues of Teacher Labor Markets

A growing consensus among both researchers and policymakers holds that the most critical school factor related to student achievement and the closing of the achievement gap is teacher quality. Indeed, few educators, economists, or politicians would argue with the contention that, all other things being equal, well-qualified teachers elicit greater student achievement gains than those who are comparatively less qualified. For example, Ferguson (1991, p. 465)[1] concluded from his research in Texas and elsewhere, "Good teachers have distinguishable impacts on student exam scores."

[1] Ferguson, R.F. (1991). Paying for public education: New evidence on how and why money matters. *Harvard Journal of Legislation, 28*: 465-498.

Sanders and Horn (1998)[2] asserted that the "single largest factor affecting academic growth of populations of students is differences in effectiveness of individual classroom teachers" (p. 27). Sanders and Rivers (1996)[3] found that the difference between attending classes taught by high-quality teachers (highest quartile grouping) and taught by low-quality teachers (lowest quartile grouping) is substantial, approximately 50 percentile points in the distribution of student achievement (cited in Lankford, Loeb & Wyckoff, 2002).[4]

In an ideal situation, all schools would have a full complement of well-qualified teachers; however, this goal remains unattained and far from reach. There is a growing realization that a substantial number of teachers appear to be underqualified for their current teaching positions (Ingersoll, 1999).[5] Moreover, the distribution of high quality teachers is far from equitable both across and within school systems. Indeed, students in schools serving large percentages of poor and/or minority students have lower levels of teacher quality—regardless of the measure of quality employed. Specifically, researchers have found large disparities in teacher quality across schools in New York, California, and Texas (Lankford, Loeb and Wyckoff, 2002; Esch et al., 2004; Fuller, 2004).[6] Lankford, Loeb and Wyckoff raise significant equity concerns regarding teacher quality distribution, revealing primarily the weaker academic backgrounds and professional credentials of teachers concentrated in urban districts, serving higher percentages of poor, minority children. More recently, An Education Trust article (Peske & Haycock, 2006) concluded, "Unfortunately, rather than organizing our educational system to pair [low-income and minority] children with our most expert teachers, who can help 'catch them up' with their more advantaged peers, we actually do just the opposite.[7] The very children who most need strong teachers are assigned, on average, to teachers with less experience, less education, and less skill than those who teach other children" (see also Prince, 2002).

The primary reason for the inequitable distribution of teachers is partially the initial distribution of newly certified teachers, and partially the higher turnover rates in particular schools (Ingersoll, 1999, Hanushek, Rivkin, & Kain, 2004).[8] Existing research

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[2] Sanders, W. & Horn, S. (1998). Research findings from the Tennessee Value-Added Assessment System (TVAAS) Database Implications for evaluation and research. *Journal of Personnel and Evaluation in Education, 12*(3), 247-256.

[3] Sanders, W. L. and Rivers, J. C. (1996). Cumulative and residual effects of teachers on future student academic achievement. Knoxville, TN:University of Tennessee Value-Added Research and Assessment Center.

[4] Lankford, H., Loeb, S. & Wyckoff, J. (2002). Teacher sorting and the plight of urban schools. *Educational Evaluation and Policy Analysis 24*(1) 37-62

[5] Ingersoll, R. (1999). The problem of underqualified teachers in American Secondary schools. *Educational Researcher*, 28(2): 26-37.

[6] Esch, C.E., Chang-Ross, C.M., Guha, R.,Tiffany Morales, J.& Shields, P. (2004). California's teaching force. 2004: Key issues and trends. Santa Cruz, CA: The Center for Teaching and Learning. Fuller, E. (2004). Number and Percentage of Texas Public School Teacher Full-Time Equivalents Assigned In-Field, Out-of-Field, and Not Fully Certified (1995-2004). Unpublished manuscript. The University of Texas at Austin.

[7] Peske, Heather & Haycock, Kati. (2006). Teaching inequality: How poor and minority students are shortachanged on teacher quality. Washington, DC: The Education Trust.

[8] Hanushek, E. A., Kain, J. F., & Rivkin, S. G. (2004). Why public schools lose teachers. Journal of Human Resources, *39*(2).

strongly suggests that teachers migrate from less desirable schools to more desirable schools, leaving some schools with a chronic shortage of well-qualified teachers (Hanushek, Rivkin, & Kain, 2004). The reasons for this phenomenon that results in an inequitable distribution of teachers vary from working conditions and compensation issues to selection and placement practices. For example, economic research on the determinants of sorting of teachers of differing backgrounds typically identifies work environment factors, such as the make-up of the student population, or the desire to work near home or in familiar surroundings as dominant determinants of teacher job choices, with salary differentials playing a smaller, but still significant, role (Hanushek, Kain and Rivken, 1999; Murnane & Olsen, 1989).[9]

Economic research also suggests that wages may affect the decisions of individuals to enter the teaching profession, that higher salaries may lead to higher overall teacher quality, and that higher quality candidates are more likely to take positions that are better compensated (Murnane & Olsen, 1989; Figlio, 1997, 2002; Ferguson, 1991; Loeb & Page, 1998, 2000).[10] However, Imazeki (2001)[11] found that while "combat pay"-- or sufficient salary differentials -- may shift high-quality teachers to low-income urban schools, increases between 15 and 30% might be required to recruit a teacher of a given set of qualifications from the "average" school to the high-poverty school.

Studies of teacher labor markets emerging in the late 1990s and early 2000s focused on the ways in which teacher sorting resulted in disadvantages for poor, urban schools. Among the relevant findings were that teachers in poor urban schools were more likely to have failed certification exams and less likely to have attended selective undergraduate colleges, two background attributes that had previously been associated with student outcomes (Lankford, Loeb & Wyckoff, 2002).

Studies of teacher career moves have shown that teachers with higher certification exam scores and those who attended more selective undergraduate institutions were more likely to make upward moves between schools or districts (Lankford, Loeb and Wyckoff, 2002). This move behavior was then assumed to exacerbate the inequitable distribution of teachers across school settings. However, upward and outward moves explain only a portion of an inequitable distribution established through initial job matches of teachers.

Existing studies have not effectively parsed out the extent to which distribution inequity of teaching quality is established on initial match between teachers and schools and the extent to which further inequities emerge over time with career moves. While teacher quality distribution equity has been evaluated at the district and school level, the

[9] Hanushek, E.A., Kain, J.F. & Rivken, S.G. (1999). Do higher salaries buy better teachers? NBER working paper #7082. National Bureau of Economic Research. Murnane, R.J. & Olsen, R. (1989). The effects of salaries and opportunity costs on length of state in teaching. Evidence from Michigan. *Review of Economics and Statistics 71* (2) 347-352

[10] Figlio, D.N. (1997). Teacher Salaries and Teacher Quality. *Economics Letters 55*(August), 267-271.Figlio, D.N. (2002). Can Public Schools Buy Better-Qualified Teachers?" *Industrial and Labor Relations Review 55*(4), 686-699. Loeb, S. & Page, M. (2000). Examining the link between teacher wages and student outcomes: the importance of alternative labor market opportunities and non-pecuniary variation. *Review of Economics and Statistics 82* (3), 393-408. Loeb, S. & Page, M. (1998). Examining the link between wages and quality in the teacher workforce. Department of Economics, University of California, Davis.

[11] Imazeki, J. (2001). Moving On or Moving Out? Determinants of Job and Career Changes for Teachers. Working Paper, Department of Economics, San Diego State University.

types of career moves that may exacerbate inequality have been studied at individual teacher level, providing little insight into the rate at which a school or district level teacher workforce changes as a function of individual moves.

More recently, studies of individual teacher moves have shifted emphasis from indirect measures of teacher quality via teacher background attributes to more direct measures of teacher quality such as value added student outcomes. That is, recent papers have argued for measuring teacher quality by the aggregate student level value added achievement of students assigned to specific teachers, a notion introduced by Sanders and colleagues in the 1990s (Sanders, Wright & Horn, 1996). Findings of these recent studies include the seemingly contrary finding that teachers who show positive student value added, even those in higher poverty schools, are actually more likely to stay in those schools than to leave (Goldhaber, Gross and Player, 2007).[12] Meanwhile, teachers with higher test scores test scores and those from more selective undergraduate colleges remain more likely to leave.

These more recent findings have led to two potentially misinformed conclusions (Goldhaber et al. & Hanushek et al. *The Market for Teacher Quality*). One is the conclusion that this new finding suggests that previous findings regarding teacher's academic background and student outcomes were wrong. In fact, the more recent finding neither refutes nor supports this earlier finding. Rather, the more recent finding that those teachers who experience success regardless of setting are more likely to stay than leave is concluded independent of teachers' own academic background, using knowingly noisy measures of teachers' success with student outcomes. Further, these new findings come from data in Texas and Washington, where teacher backgrounds may differ quite significantly from teachers in New York State and other sites of previous studies.

Second and perhaps far more importantly, these new studies that find that teachers experiencing success are more likely to stay, even in high poverty schools, fail entirely to address the relative proportions of teachers who experience such success across school settings. Again, the aggregate effect on school or district workforce of individual teacher's career choices is not evaluated. That is, there may be 1 in 10 teachers in the high poverty urban setting who experiences success on student value added outcomes, and that teacher may be more likely to stay. But, he or she is still 1 in 10. By contrast there may be 7 or 8 of 10 teachers in low poverty settings who experience such success, and they too decide to stay. If this is the case, more recent findings do little to relieve previous concerns over teacher sorting and the plight of poor urban schools. In fact, while these more recent findings suggest an increased likelihood that high poverty schools may retain their successful teacher(s), these findings also suggest that successful teachers from low poverty schools aren't going anywhere either, and are unlikely to become available for hire in low poverty schools.

[12] Goldhaber, D. Gross, B., Player, D. (2007). Are Public Schools Really Losing Their Best? Assessing the Career Transition of Teachers and Their Implications for the Quality of the Teacher Workforce. A Paper Presented at the Annual Conference of the American Education Finance Association. Baltimore, MD.

1.2 What, if anything, do we know about rural teachers?

In short, we presently know little about the conditions or dynamics of rural and micropolitan teacher labor markets. A recent issue of *The Future of Children* focused generally on teacher labor market issues, including much of the literature cited in the introduction to this section. One chapter of the issue was specifically focused on rural teacher labor markets.

> With respect to public policy, Monk asserts a need to focus on a subcategory of what might be called hard-to-staff rural schools rather than to develop a blanket set of policies for all rural schools. In particular, he recommends a focus on such indicators as low teacher qualifications, teaching in fields far removed from the area of training, difficulty in hiring, high turnover, a lack of diversity among teachers in the school, and the presence of migrant farm workers' children. (p. 155)

But Monk makes this assertion on little more than gut instinct – that problems in rural schools associated with migrant farm workers and non-English speaking children may present circumstances similar to those seen in more urban settings. Monk cites Grey (1997) explaining specifically the demographic shift that has occurred in rural Iowa communities in connection with the meatpacking industry.[13]

Jimerson (2003) argues that teacher salaries in rural areas are simply too low when compared with salaries of teachers in urban areas, across states. Jimerson then argues that cost-of-living type adjustments in state aid formulas might in fact exacerbate this problem, because rural costs of living are often estimated to be much lower than urban and suburban costs. Jimerson instead argues for an hedonic approach which might better capture the costs of recruiting and retaining similar quality teachers in rural areas. As shown in the previous chapter in this report, the 1993-94 NCES hedonic index did not provide substantially different support for rural areas than does the NCES Comparable Wage Index. Notably, neither is purely a cost-of-living index, but both yield significantly lower wage adjustment for rural areas.

Kreuz (2005) uses the NCES Schools and Staffing Survey to review the personal characteristics and qualifications of rural high school teachers. Kreuz finds significant concerns regarding out-of-field teaching in teacher's secondary areas of teaching, but makes no comparisons to determine whether rural teachers differ from other teachers in this regard. Kreuz finds rural teacher turnover rates to be comparatively low. McLure and Reeves (2004) present a limited review of a limited literature on rural teachers, reiterating many of Jimerson's concerns regarding low pay and difficult working conditions as defined by having to teach across multiple fields. Jimerson's (2004) analysis of the characteristics of Texas rural teachers also produces similar findings.

In some states, teacher salaries are relatively "flat" with respect to geographic location, including the state of Washington which uses a statewide teacher salary schedule. Taylor (2008) finds specifically in the state of Washington that teacher salaries

[13] Mark A. Grey, "Secondary Labor in the Meatpacking Industry: Demographic Change and Student Mobility in Rural Iowa Schools," *Journal of Research in Rural Education* 13, no. 3 (1997): 153–64.

are relatively non-competitive in the Seattle metropolitan area, but are competitive in eastern Washington.

Taylor (2008) explains that as a portion of labor markets, teachers play a larger role in rural communities than in urban ones. In addition, teacher wages are more comparable to private sector worker wages in rural communities. Taylor explains how this distribution may skew statewide or national comparisons of teacher and private sector wages – showing that the disproportionate representation of teachers in lower wage labor markets tends to overstate the gap between teacher pay and private sector pay (if one fails to control for wage variation across labor markets).

Synthesis

The little research that does exist on teachers in rural schools appears most focused on the plight of teachers in small, geographically isolated schools. Rural teacher research has yet to focus on a) remote, larger rural town hubs – micropolitan schools, or b) the role of demographic differences and rapid demographic change in micropolitan or remote rural schools. The issue of teachers having to be utility players is certainly specific to smaller rural schools, but not necessarily relevant in the larger town hubs, where school sizes and total district enrollments are sufficiently large to provide more logical staffing assignments. Yet, many of these towns like Lexington, Nebraska (221 miles from Omaha) and Dodge City, Kansas (154 miles from Wichita) are still a long distance from the nearest major metropolitan areas and may also be quite far from major teacher producing institutions. Teacher job choices in these rural and micropolitan areas differ from those in metropolitan areas, in that the available choices may be to work either in a demographically changing, larger in-town school, or work as a utility player in a small rural school in the surrounding area. This chapter attempts to shed new light on micropolitan teacher labor markets in general and specifically in demographically changing micropolitan communities.

2.0 National Perspective on Teachers, Wages and Micropolitan Schooling

In this section, I provide an overview of rural teacher wages nationally using data from the U.S. Census bureau, specifically with the intent of comparing teacher wages to non-teacher wages across settings, exploring patterns already validated by Taylor (2008). Next, using data from the 2003-04 Schools and Staffing Survey, I explore the structure of teacher wages specifically in micropolitan areas. Specifically, I evaluate the relative pay of teachers in high Hispanic student concentration schools compared to other schools in the same micropolitan area. I conclude this section with an exploration of teacher attributes in micropolitan schools, again focusing on comparisons between schools with high Hispanic student concentrations with other schools in the same micropolitan area.

2.1 Teacher and Non-Teacher Wages in Rural and Urban Areas

In this section, I use data from the U.S. Census 2000 and American Community Surveys of 2005 to 2007 to estimate the relative wages of individuals identifying themselves as elementary and secondary education (industry) teachers (occupation) compared to workers in other occupations and industries. The model is relatively simple, comparing wages from income for teachers versus other individuals at constant age, degree level, gender, hours worked per week and weeks worked per year. The model compares non-metro "other" workers with non-metro area teachers, metro area "other" workers with metro area teachers and so on:

$$\mathbf{Wage = b_0 + b_1Metro + b2K12Teacher + b_3(Metro \times K12Teacher) + b_4Age + b_5Gender + b_6Hours + b_7Weeks + b_8Education + b_9Year + e}$$

Where "wage" is the income from wages reported by individuals, Metro is a series of dummy variables indicating metro status, K12Teacher is a dummy variable indicating that the individual is a teacher elementary or secondary schools, Age is the individual's age, Female is a dummy indicator that the individual is Female, Weeks indicates the weeks worked per year, Hours indicates the hours worked per day, Education is a dummy variable indicating that the individual holds a masters degree and Year includes dummy variables for each year in the data set. The data included only employed individuals between the ages of 23 and 65 who hold a bachelors degree or masters' degree.

Table 1 shows the results of the regression estimation of wages including metro and non-metro areas and then separately by metro status. The first model includes the interaction terms between metro status and teacher status. The first model shows that individuals – teachers and others – not in metro areas make, on average 10,380 less than those in metro areas in central cities. Teachers on average, across metro status, make $8,725 less than non-teachers.

Clearer insights regarding the differentials between teachers and non-teachers by metro status can be gained from the separate models. In the non-metro model, teachers, on average, make about $1,700 less than non-teachers with similar characteristics. In cities, however, teachers make about $9,500 less and in suburbs, over $10,000 less. In this relatively simple set of models, we are able to observe similar effects to those observed by Taylor (2008) – that teachers in rural settings have more competitive wages with their non-teaching counterparts.

Table 1
Metropolitan Status and the Competitiveness of Teacher Wages among Adults with a BA or MA Degree

	Global, Interaction			Non Metro			Metro City			Metro Burb		
	Coef.	*Std. Err.*	*P>t*	*Coef.*	*Std. Err.*	*P>t*	*Coef.*	*Std. Err.*	*P>t*	*Coef.*	*Std. Err.*	*P>t*
Metropolitan Status												
Not Identified	-5,144	242	*									
Non-Metro	-10,380	197	*									
In Metro, Outside City	7,318	174	*									
Central City Status Unknown	2,345	175	*									
K-12 Teacher	-8,725	217	*	-1,743	154	*	-9,501	223	*	-11,515	144	*
Teacher x Not Identified	4,087	329	*									
Teacher x Non-Metro	8,544	275	*									
Teacher x Metro, Outside City	-3,973	253	*									
Teacher x City Status Unknown	-2,069	255	*									
Age	510	4	*	320	10	*	470	12	*	576	7	*
Female	-15,793	94	*	-10,049	206	*	-11,523	266	*	-18,966	162	*
Has Masters	9,903	112	*	6,115	233	*	10,285	313	*	11,440	191	*
Weeks Worked per Year	757	4	*	601	9	*	761	11	*	812	8	*
Usual Hours Worked per Week	1,181	5	*	633	12	*	1,336	16	*	1,346	9	*
Year												
Year = 2000	-8,161	107	*							-9,080	186	*
Year = 2005				5,966	222	*	7,852	294	*			
Year = 2006	413	142	*	6,300	238	*	8,546	308	*	-35	244	
Year = 2007	3,325	146	*	8,617	262	*	12,422	334	*	3,346	251	*
Constant	-48,222	399	*	-29,953	823	*	-63,406	1,029	*	-50,560	690	*
	0.1836			0.149			0.1561			0.1873		

Data Source: Integrated Public Use Micro Data System (Census 2000 & American Community Survey 2005 to 2007
*p<.05

However, the findings in Table 1 crudely lump together all teachers and non-teachers in non-metro areas, without consideration for the types and locations of those metro areas, or the types of schools within which those teachers work. Census data are insufficient for such fine grained analyses.

2.2 Structure of Micropolitan Wages

This subsection takes a brief look at the structure of teacher wages within Micropolitan areas using data from the 2003-04 National Center for Education Statistics Schools and Staffing Survey. The specific goal of this subsection is to identify determinants of teacher salary and salary variation within micropolitan areas. The sample is limited to teachers within micropolitan areas. The purpose of the statistical analyses, while applying regression modeling, is to provide a descriptive picture of the structure of micropolitan teacher wages. The model takes the form:

School Earnings = f(Student Population, School Type and Level, School Size, Teacher Personal Characteristics, Teacher Professional Background, Teacher Job Characteristics, Regional Wage Variation)

Specifically regarding student population characteristics, we are interested in whether there are positive or negative wage differentials associated with teaching in a school with large Hispanic student population within the micropolitan area.

Table 2 displays two versions of the micropolitan teacher wage model. In the first, no control is included for regional variations in competitive wages. In the second, we use the NCES Comparable Wage Index to account for regional wage variation and to correct for the possibility that teachers in high Hispanic concentration schools might be concentrated in higher or lower wage labor markets.

Table 2 shows that, controlling for a variety of other factors, teachers in micropolitan schools that have 20% or more Hispanic children tend to earn, on average, $2,400 more, or $3,300 more when controlling for regional wage variation. Teachers in schools with higher poverty tend to earn less when not controlling for competitive wage variation, but more when controlling for competitive wage variation, indicating that the lower average wages in higher poverty schools are partly a function of teachers in lower wage labor markets. The differences, however, are non-significant.

Teachers in the smallest schools have lower school earnings. All else equal, older teachers and male teachers earn more. A masters' degree is worth about $4,000 per year in additional salary and union membership about $3,000 more. Coaches appear to earn average stipends on the order of $1,700. Teachers who attended less or non-competitive undergraduate colleges appear to earn less than those who attended competitive or very competitive colleges (the middle, baseline group for the analysis), but teachers who achieved National Board certification do not earn a premium, on average, in micropolitan schools. Teachers who failed one or more areas of PRAXIS (teacher licensure exam) earned less than those who did not.

Table 2
Structure of Teacher Wages in Micropolitan Areas

	Model 1			Model 2		
	Coef.	Std. Err.	P>t	Coef.	Std. Err.	P>t
Hispanic Pop. Over 20%	2397.07	654.32	*	3352.30	701.94	*
% Free/Reduced	-801.08	1152.36		658.58	1338.02	
% Disability (with teacher)	836.78	630.97		917.40	616.00	
Pupil to Teacher Ratio	23.74	48.39		17.23	47.93	
School Grade Level/Type						
Secondary Teacher	-273.24	568.37		-594.08	596.73	
Elem/Comp. School						
Secondary School	184.64	582.20		311.05	624.03	
Special School	-154.23	1443.87		-679.07	1458.71	
Vocational School	-187.83	1523.81		-162.84	1665.86	
Alternative School	4497.24	3993.38		4856.66	4179.09	
School Size						
Enrollment Under 100	-3971.24	2195.56	**	-3875.86	2156.22	**
Enroll 100 to 500	-1277.66	1123.46		-913.43	1110.16	
Enroll 501 to 1000	233.72	1184.80		863.91	1195.32	
Enroll 1001 to 2000	-723.53	1168.27		-139.44	1161.80	
Teacher Personal						
Nonwhite	-779.20	636.89		-1041.21	671.64	
Age (ln)	3810.23	984.75	*	3760.34	974.96	*
Male	2738.67	459.13	*	2857.39	502.18	*
Teacher Professional						
Total Experience (ln)	4779.74	279.29	*	4738.48	274.05	*
Masters Degree	4267.40	412.45	*	3970.92	426.57	*
Specialist Degree	1259.80	1108.80		1232.61	1042.71	
Doctorate	4866.93	2814.69	**	3987.86	2639.21	
Probationary Certification	2195.23	1150.63	**	2120.29	1266.25	
Other Certification	605.84	557.52		302.42	554.93	
Union Member	3035.39	412.99	*	2925.97	430.00	*
NBPTS Certification	-460.48	401.55		-411.47	413.08	
Failed one or more PRAXIS	-1841.76	1131.53		-2307.17	1169.76	*
Hours per Week (ln)	3747.45	987.02	*	3803.52	950.25	*
Department Chair	415.70	382.61		341.08	420.21	
Curriculum Leader	-334.99	559.38		-62.52	663.70	
Coach	1796.25	462.65	*	1690.96	470.73	*
Club Sponsor	-574.43	332.58	**	-468.89	341.06	
Highly/Most Competitive College	253.73	800.42		533.82	1006.48	
Less/Non-Competitive College	-1255.94	413.66	*	-1252.11	410.36	*
NCES Comparable Wage Index	23102.84	4098.94	*			
Constant	-25279.39	5900.09	*	-2974.40	5035.03	
Adj. R-squared	0.4145			0.3815		

Data Source: NCES Schools and Staffing Survey 2003-04
*p<.05

2.3 Distribution of Micropolitan Teacher Qualifications

The follow-up question is whether this apparent positive wage differential on teachers in schools with higher Hispanic population concentration is sufficient to aid in balancing teacher characteristics across these schools and predominantly white neighboring schools. Table 3 presents a series of logistic regression models to test whether teachers in high Hispanic concentration micropolitan schools are a) equally or less likely to have attended highly or most competitive colleges, b) more ore less likely to

have attended a less or non-competitive college, c) more or less likely to be in their first three years of teaching, or d) more or less likely to hold a masters degree or higher.

Table 3 shows that there is neither a higher nor lower rate of teachers who attended highly or most competitive colleges in high Hispanic concentration schools. However, there is an elevated rate of teachers who attended less or non-competitive colleges. Teachers in schools with greater than 20% Hispanic population were 50% more likely to have attended less or non-competitive colleges than teachers in other schools in the same micropolitan area. High Hispanic concentration schools do not appear to have higher concentrations of novice teachers, but do have significantly lower likelihood that a teacher holds a Master's degree.

Teachers in higher poverty schools within a micropolitan area are much less likely to have attended a highly or most competitive college and far more likely to have attended a less or non-competitive college. Teachers in higher poverty schools are also more likely to be novice. These findings are consistent with findings in metropolitan labor markets – or in national analyses where metropolitan labor markets generate the dominant effects.

Table 3
Distribution of Teacher Characteristics between High Hispanic Population Schools and Other Schools in Micropolitan Areas

	Barrons High/Most			Barrons Less/Non			Novice			Masters		
	Odds Ratio	Std. Err.	P>t	Odds Ratio	Std. Err.	P>t	Odds Ratio	Std. Err.	P>t	Odds Ratio	Std. Err.	P>t
Hispanic Pop. Over 20%	1.140	0.494		1.501	0.248	*	1.178	0.213		0.709	0.096	*
% Free/Reduced	0.398	0.188	**	2.050	0.429	*	2.406	0.688	*	0.932	0.178	
% Disability (with teacher)	2.409	0.901	*	0.623	0.140	*	1.007	0.266		1.082	0.186	
School Grade Level/Type												
Secondary Teacher Elem/Comp. School	1.389	0.532		0.786	0.117		1.388	0.232	**	0.767	0.088	*
Secondary School	0.976	0.393		1.229	0.176		0.910	0.110		1.194	0.151	
Special School	0.250	0.239		0.761	0.253		1.202	0.576		0.818	0.249	
stype_voca~l	1.294	0.949		0.525	0.237		1.304	0.458		0.694	0.196	
Alternative School	2.087	2.344		1.663	1.138		3.143	2.407		1.683	0.581	
School Size												
Enrollment Under 100	0.438	0.449		2.674	6.371		0.319	0.185	**	0.472	0.212	**
Enroll 100 to 500	0.568	0.347		1.502	3.668		0.529	0.233		0.765	0.265	
Enroll 501 to 1000	0.423	0.254		1.780	4.298		0.647	0.286		0.816	0.285	
Enroll 1001 to 2000	0.639	0.344		1.079	2.602		0.605	0.272		0.949	0.316	
NCES Comparable Wage Index	0.446	1.064		0.513	0.416		0.516	0.415		7.978	5.350	*

n=6649

Data Source: NCES Schools and Staffing Survey 2003-04

*p<.05

Synthesis

Together, the findings of the three analyses in this section provide important baseline information for understanding micropolitan teacher labor markets. First, consistent with the findings of Taylor (2008) teachers in non-metro areas – which include micropolitan areas – earn wages that are more comparable to their non-teaching counter parts than do teachers in metropolitan areas. Within micropolitan areas, teachers in high Hispanic concentration schools appear to earn a modest wage premium. But, despite this positive news, teacher qualifications remain disparate for high Hispanic concentration schools and poorer schools within micropolitan areas. Within a micropolitan area, high Hispanic concentration schools are more likely to have teachers with a bachelors degree only and teachers who attended less or non-competitive colleges.

3.0 States with Rapidly Emerging Hispanic Micropolitan Schools

For the remainder of this chapter, we explore in greater depth, micropolitan teacher labor markets in major agricultural states and specifically in agricultural states that have experienced dramatic demographic changes in micropolitan areas, as discussed in Chapter 1 of this report. In part, the states selected for this analyses are those for which we were able to obtain detailed teacher level data for evaluating labor markets. We were able to obtain data on teachers in Washington and Nebraska, two states identified as having burgeoning rural Hispanic populations in Chapter 1. We also include in this analysis Missouri and Wisconsin, two significant agricultural states which have particularly good teacher level data systems, and for which we have a variety of additional teacher characteristics.

For each state in this section, we begin with a review of the locations of demographically changing micropolitan schools. Next, we review the demographic composition of the teacher workforce in those schools and whether and to what extent it has changed over time. Next, we estimate a wage model for teachers in the micropolitan areas of the state to determine whether teachers in high Hispanic concentration micropolitan schools have wages competitive with their peers in the same labor market. Next, we evaluate the distribution of teacher qualifications between high Hispanic concentration schools and other schools in the same micropolitan area. Finally, in a wage model excluding the high Hispanic indicator, we evaluate the residuals of teacher wages statewide to identify geographic low and geographic high spots. We use spatial statistics for this final analysis.

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3.1 Nebraska (#4 in value of production)

We begin with Nebraska, a state with a handful of very rapidly changing micropolitan areas. Figure 1, drawn from Chapter 1 of this report displays the locations of high Hispanic concentration schools in Nebraska and surrounding states. Outside of the Omaha metropolitan area, high Hispanic concentration schools are scattered through small to midsized towns along the Platte River. Several of those communities are micropolitan agricultural communities, most notably, Lexington where 30% of schools had become majority Hispanic by 2004 (home to Tyson Fresh Meats).

Figure 1
Distribution of Schools Enrolling over 20% Hispanic Children in Plains States

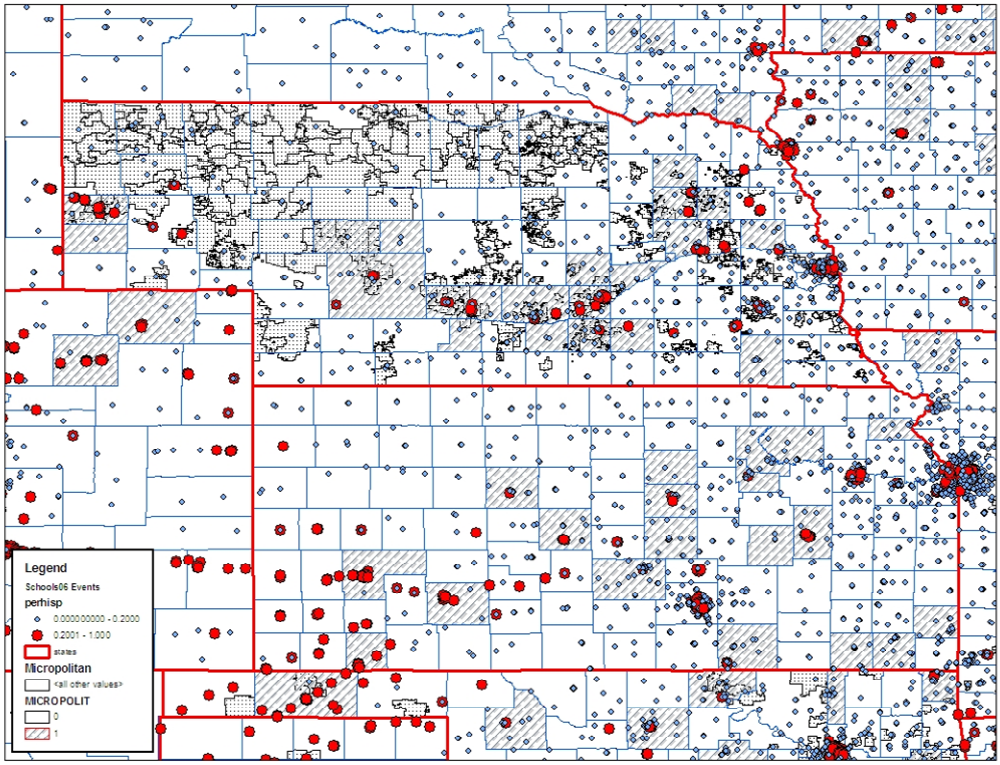


Figure 2 focuses on the Lexington area, with majority Hispanic schools shown in red and other schools shown in blue. Along the river valley towns and in other nearby town hubs are a number of majority Hispanic schools. But, in outlying areas, few schools are majority Hispanic. This creates somewhat of a mix of employment opportunities for teachers seeking jobs in the area.

Figure 2
Distribution of Schools Enrolling over 50% Hispanic Children in Central Nebraska

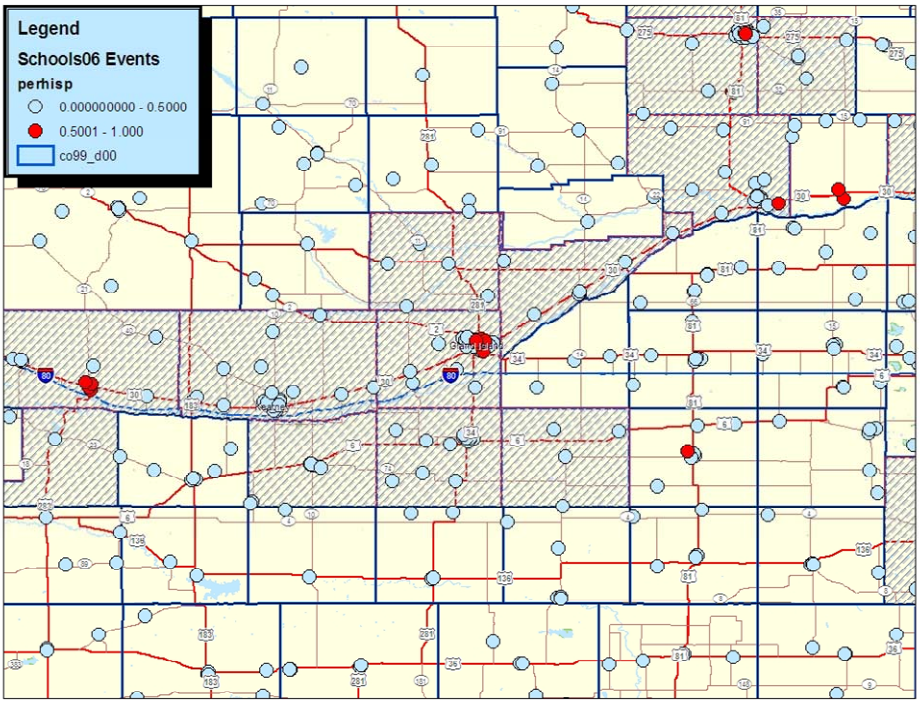


Figure 3 presents an even closer look at Lexington, indicating in bars, the different shares of Hispanic populations by school. Lexington schools in the figure, range from about 65% Hispanic to over 90% by 2006. Just north of town, Hispanic population shares drop to 26% to 35%. Thos schools do lie within the Lexington school district. But, up the river to the northwest (a little over 10 miles), schools in Cozad, a separate school district, have a much lower average share of Hispanic children.

Figure 3
Distribution of Schools by Hispanic Enrollment Share in Lexington, Nebraska

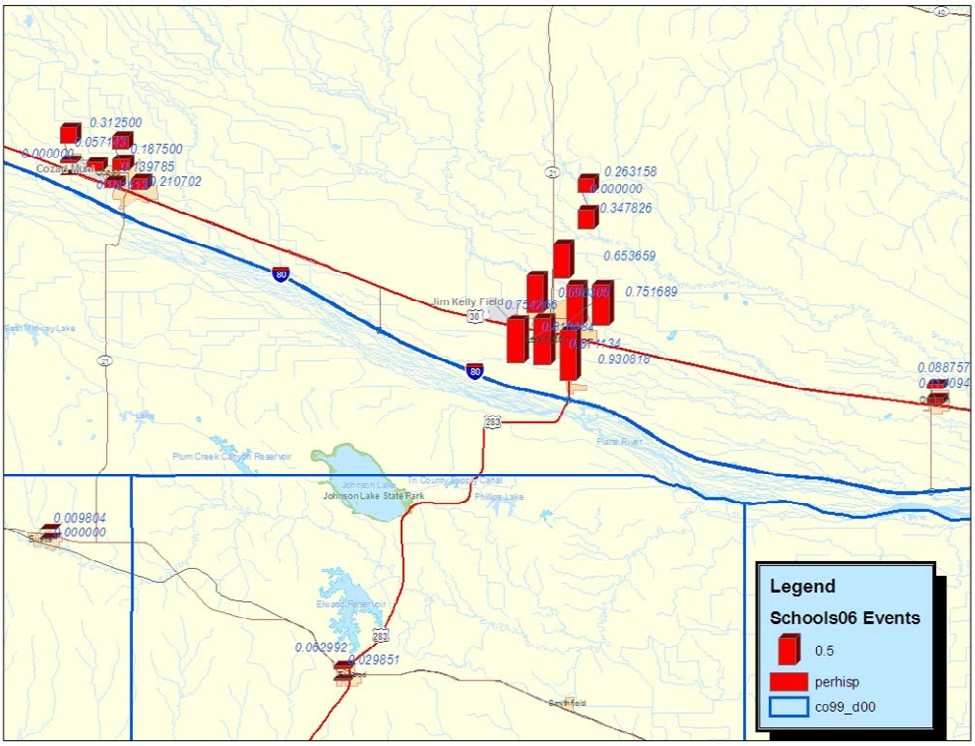


Table 4 summarizes the numbers of teachers in metropolitan and micropolitan areas in Nebraska by the student ethnic composition of schools – where ">white" indicates Hispanic population greater than white population and "< white" is Hispanic population less than white population. This table was previously presented in Chapter 1. The numbers of teachers in both metropolitan and micropolitan schools where Hispanic students outnumber white students has grown dramatically from 72 to 1,600 in metropolitan schools and from 64 to 600 in micropolitan schools.

Table 4
Distribution of Teachers by Metropolitan Status and School Hispanic Enrollment in Nebraska

year	Rural	Metro	Micro	Metro Hisp<White	Metro Hisp>White	Micro Hisp<White	Micro Hisp>White
1999	7,066	12,828	6,565	12,756	72	6,501	64
2000	7,304	13,314	6,646	12,803	511	6,337	309
2001	7,527	13,530	6,990	12,973	557	6,647	343
2002	7,708	13,580	7,085	12,960	620	6,724	361
2003	7,749	13,746	7,237	12,877	869	6,789	448
2004	7,849	13,832	7,191	12,920	912	6,708	483
2005	8,110	14,127	7,225	12,827	1,300	6,670	555
2006	8,463	14,826	7,368	13,214	1,612	6,778	590

Data Source: Nebraska Dept. of Education Fall Staffing Reports

Table 5 summarizes the ethnicity of teachers in high Hispanic concentration micropolitan schools in Lexington and Grand Island, compared to the ethnicity of teachers in the state's one major metropolitan area – Omaha. The number of teachers in the Lexington and Grand Island districts from 2000 to 2006 grew modestly from 1700 to about 1900. In Omaha the number grew from about 9500 to 10,500. The number of teachers in Lexington and Grand Island micropolitan areas working in schools with more Hispanic than white students grew from 238 to 424. The number of Omaha metro area teachers in predominantly Hispanic schools grew even more, but Omaha public schools includes a more complicated racial/ethnic dynamic, where in some schools Hispanic populations outnumber white populations, but may not outnumber black populations.

In schools with greater Hispanic than white populations in Omaha, about 90% of teachers are white. In Lexington and Grand Island, that number climbs to 97%. Among new teachers, in their first three years, in Omaha, teachers are 91% to 93% white and in Lexington and Grand Island, new teachers are 93% to 97% white (nearly 98% in 2005). There is little sign that teacher ethnic composition is changing or will in the near future to better match student populations.

Table 5
Distribution of Teachers by Metropolitan Status and School Hispanic Enrollment in Nebraska - Specific CBSAs

						All Teachers		New Teachers	
year	*Teachers*	*Grand Island and Lexington Teachers*	*Omaha Metro Teachers*	*GI & Lex Teachers in High Hispanic Schools*	*Omaha Metro Teachers in High Hispanic Schools*	*% White GI & Lex Teachers in Hispanic Schools*	*% White Omaha Metro Teachers in Hispanic Schools*	*% White GI & Lex Teachers in Hispanic Schools*	*% White Omaha Metro Teachers in Hispanic Schools*
2000	27,420	1,715	9,470	238	440	97.4%	88.9%	93.0%	93.8%
2001	28,173	1,803	9,599	244	477	96.7%	88.6%	92.6%	91.2%
2002	28,476	1,819	9,626	245	495	96.3%	88.9%	93.8%	92.9%
2003	28,819	1,850	9,678	334	756	94.6%	90.4%	93.6%	91.9%
2004	28,951	1,867	9,702	337	781	95.5%	89.5%	92.8%	92.3%
2005	29,497	1,891	9,931	392	1,037	96.6%	90.5%	97.9%	92.8%
2006	30,664	1,925	10,435	424	1,267	96.2%	90.7%	93.2%	91.8%

Data Source: Nebraska Dept. of Education Fall Staffing Reports

Table 6 shows the wage model and distribution of teacher characteristics with respect o school characteristics for Nebraska schools in micropolitan areas. In the wage model, teachers in schools with more Hispanic than white children, in the same micropolitan area, appear to earn about $2,000 more in salary. That is, there is at least some salary premium associated with working in a higher Hispanic concentration school. However, the teacher characteristics logistic regressions indicate that this wage premium is not sufficient to correct for inequities. A teacher in a school with more Hispanic than white students is only 83% as likely to hold a Masters' degree as a teacher in a "whiter" school in the same micropolitan area. A teacher in a school with more Hispanic white children is 55% more likely to be a novice (first 3 years) than a teacher in a "whiter" school in the same micropolitan area.

Table 6
Teacher Wage Variation and Teacher Attribute Variation in High Hispanic Concentration Micropolitan Nebraska Schools

	Wage Model			**MA or Higher**			**Novice**		
	Coef.	Std. Err.	P>t	Odds Ratio	Std. Err.	P>z	Odds Ratio	Std. Err.	P>z
Hispanic>White	2079.96	177.75	*	0.83	0.04	*	1.55	0.09	*
Male	328.07	105.07	*	1.16	0.02	*	0.97	0.03	
Nonwhite	60.12	454.81		1.04	0.10		1.54	0.17	*
Experience (ln)	5414.81	55.61	*						
MA or Higher	8491.65	95.46	*						
Constant	20369.20	261.14	*						
adj-R-Squared	0.6061								

Data Source: Nebraska Dept. of Education Fall Staffing Reports
Includes Core Based Statistical Area, Year and Grade Range of School fixed effects
*p<.05

Figure 4 includes a spatial analysis of the residuals of a salary model not including the Hispanic school characteristic, but including experience, degree level, race, gender and fixed effects for year and core based statistical area. The residuals of the regression model identify how much a teacher's salary varies from the expected salary for a teacher of given experience and degree level in a specific labor market. Averaged to the school level, the residual indicates the relative competitiveness of teachers' salaries in a school within the labor market. Spatial analysis of the school aggregated salary residuals seeks to identify "hot spots" and "cold spots" of salary competitiveness. That is, those locations where school aggregate salaries are higher than predicted – therefore relatively competitive – and those areas where school aggregate salaries are lower than expected – therefore relatively non-competitive. Each dot represents a school and the school average salary model residual. Red dots indicate relatively competitive salaries and blue dots indicate relatively non-competitive salaries. Yellow dots indicate relatively average salaries. Recall, however, that relatively average salaries in high Hispanic population schools are likely insufficient to balance the distribution of teaching quality.

Figure 4 reveals that salaries in the Lexington area in particular are relatively average. So too are most salaries in surrounding districts. To the east along the Platte, salaries in Grand Island are more competitive.

Figure 4
Spatial Clustering of Salary Model Residuals Aggregated to School Level (Local Indicators of Spatial Association)

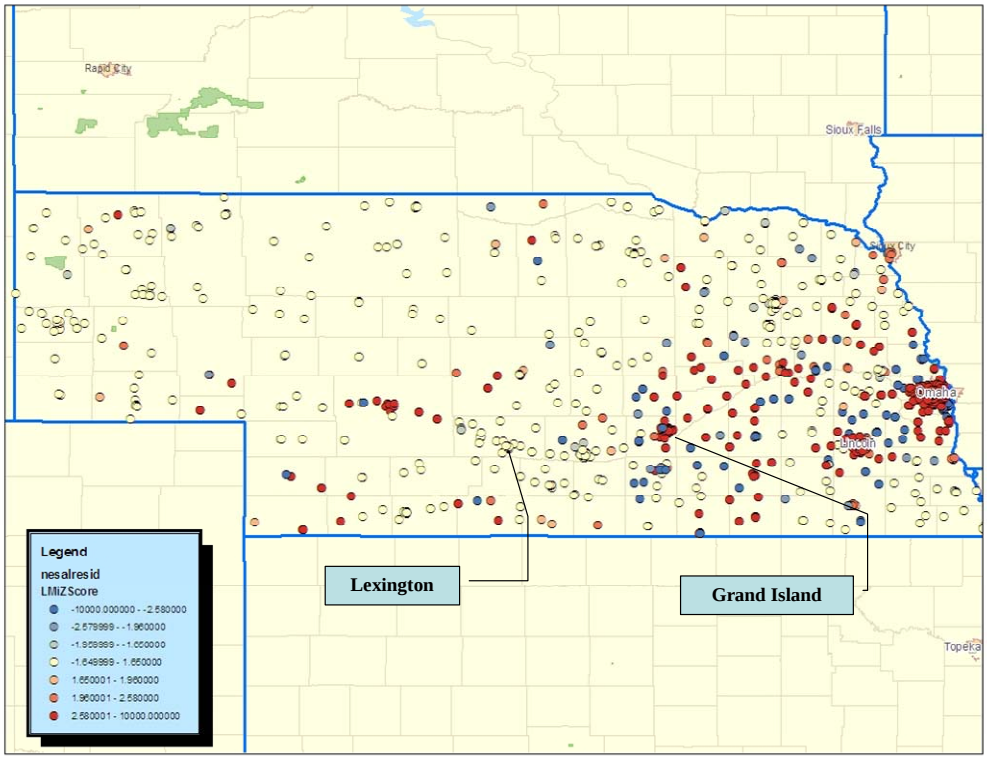
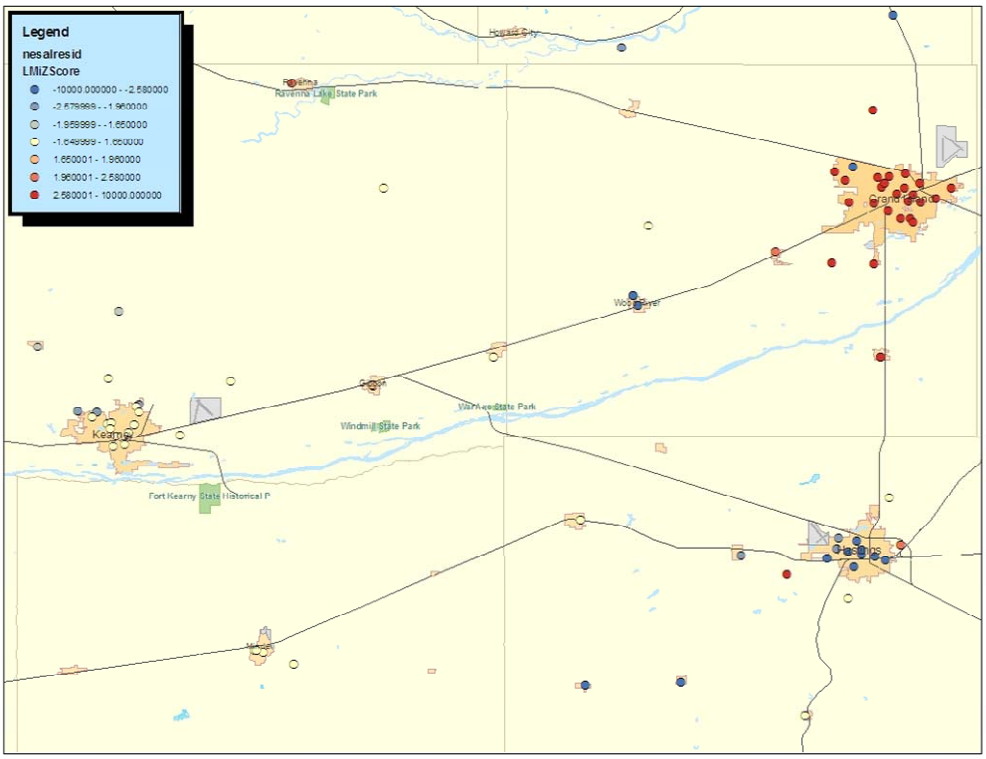


Figure 5 provides a closer look at individual schools from Kearny (east of Lexington) to Grand Island, and Hastings (south of Grand Island). In this triangle, Kearny is the point along the Platte where salaries become relatively average and continue as such out to Lexington, including communities in between and surrounding. In Grand Island, school aggregate salaries appear relatively competitive, higher than those in surrounding areas. By contrast, in Hastings, another relatively poor community but with fewer Hispanic children, salaries are relatively non-competitive.

Figure 5
Spatial Clustering of Salary Model Residuals Aggregated to School Level (Local Indicators of Spatial Association)



3.2 Washington (14th in Agricultural Production)

Figure 6 revisits the distribution of high Hispanic concentration schools in the State of Washington. The majority of the state's schools with greater Hispanic student population than white population occur through central Washington with several in the micropolitan area around Moses Lake, as discussed in Chapter 1 of this report. Large clusters of high Hispanic concentration schools are also located in and around Yakima, to the south of Moses Lake.

Figure 6
Distribution of Schools by Hispanic Enrollment Share in the Pacific Northwest

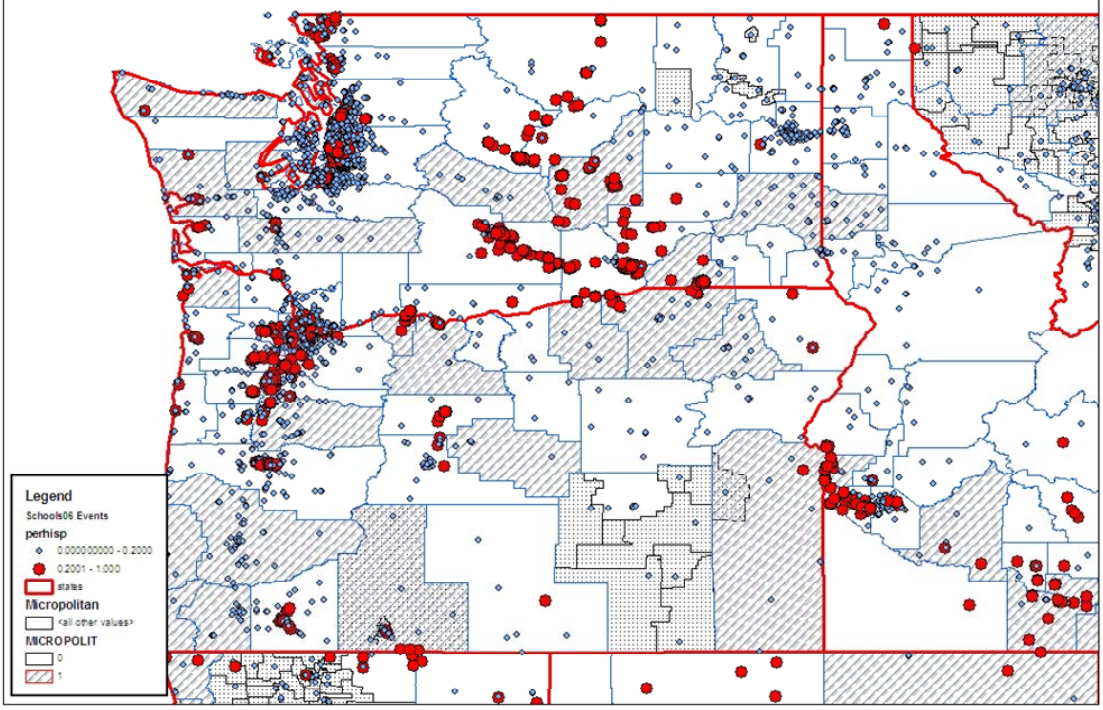


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Figure 7 shows the distribution of Hispanic populations by school in the Moses Lake area. To the lower right is Moses Lake, with moderate but rapidly increasing Hispanic populations. To the center is Ephrata with somewhat lower Hispanic concentrations. To the West, is Quincy with very high Hispanic concentration. These three towns and sets of schools each lie in separate school districts. Notably, surrounding small metro areas of Kennewick/Pasco, Wenatchee and Yakima also have several schools with very high Hispanic population concentrations.

Figure 7
Distribution of Schools by Hispanic Enrollment Share near Moses Lake, WA

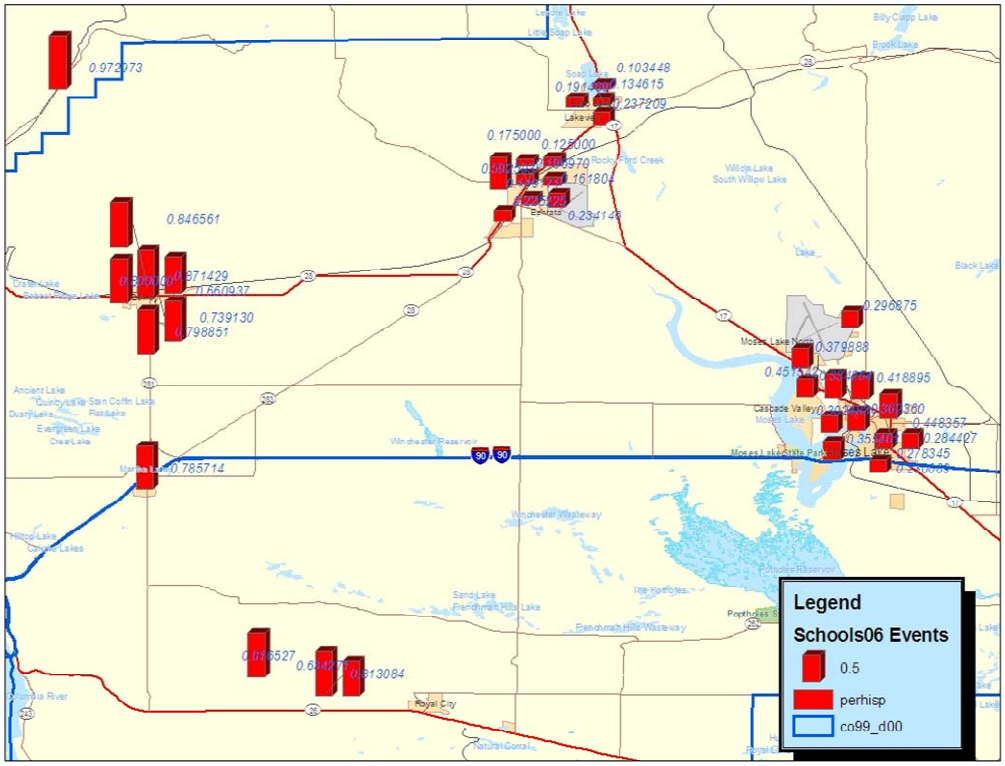


Table 7 summarizes the numbers of metropolitan and micropolitan teachers over time in schools in Washington where there are more Hispanic children in attendance than white children. Little substantial change has occurred in the last six years, but numbers of teachers in Hispanic metropolitan and Hispanic micropolitan schools have continued to climb. Note that the metropolitan schools that have become predominantly Hispanic in Washington are those around mid-size and smaller cities (just above micropolitan status) in central Washington, not generally in the Seattle/Tacoma metro area. These communities in many ways are more like micropolitan communities.

Table 7
Distribution of Teachers by Metropolitan Status and School Hispanic Enrollment in Washington

year	Rural	Metro	Micro	Metro Hisp<White	Metro Hisp>White	Micro Hisp<White	Micro Hisp>White
2001	2,013	44,427	4,746	41,358	3,069	4,438	308
2002	2,010	45,703	4,792	42,138	3,565	4,442	350
2003	1,987	46,377	4,791	42,791	3,586	4,383	408
2004	1,982	46,058	4,756	42,464	3,594	4,352	404
2005	1,976	46,787	4,809	42,858	3,929	4,367	442
2006	1,932	46,634	4,851	42,415	4,219	4,343	508

Data Source: State of Washington, Personnel Master Files

Table 8 addresses the demography of teachers in high Hispanic concentration schools in Washington micropolitan areas and in Washington metropolitan areas, specifically Walla Walla and Moses Lake micropolitan area, and Seattle/Tacoma metropolitan area. Like the Nebraska analysis, I address all teachers and new teachers in an attempt to determine whether a more diverse population of new teachers is entering the labor market. Among all teachers, the percent of teachers in Hispanic schools in Walla Walla and Moses Lake micropolitan areas that are white is 93% to 94%. In Seattle/Tacoma predominantly Hispanic schools, the teacher population is substantially less white, though not necessarily more Hispanic.

There appears to be some, though not much change when looking at new teachers in Hispanic micropolitan schools. The percent of those teachers who are white ranges from 88 to 93% from year to year, but does not appear to be trending toward greater diversity in the past 6 years. New teachers in Seattle/Tacoma also remain about as white as teachers of all experience levels.

Table 8
Distribution of Teachers by Metropolitan Status and School Hispanic Enrollment in Washington

						All Teachers		**New Teachers**	
year	*Teachers*	*Moses Lake & Walla Walla Teachers*	*SeaTac Metro Teachers*	*ML & WW Teachers in High Hisp Schools*	*SeaTac Teachers in High Hisp Schools*	*% White ML/WW Teachers in Hisp Schools*	*% White SeaTac Teachers in Hisp Schools*	*% White ML/WW Teachers in Hisp Schools*	*% White SeaTac Teachers in Hisp Schools*
2001	51,186	1,392	24,224	303	678	93.07%	75.81%	88.2%	74.89%
2002	52,505	1,416	24,819	352	856	94.32%	76.17%	93.6%	77.89%
2003	53,155	1,437	25,107	410	925	94.63%	75.78%	92.3%	75.68%
2004	52,796	1,433	24,831	404	948	94.55%	74.37%	93.2%	73.74%
2005	53,572	1,493	25,207	434	1,176	93.78%	76.28%	91.9%	77.37%
2006	53,417	1,511	24,772	458	1,291	92.79%	76.22%	89.9%	74.93%

Data Source: State of Washington, Personnel Master Files

Table 9 presents the wage models and distribution of qualifications across high Hispanic concentration schools compared with other schools within micropolitan areas in Washington. In Washington, unlike the national model or the Nebraska model, there does not appear to be a wage premium for working in a high Hispanic concentration school. A such, one might expect significant disparities in qualifications across high Hispanic micropolitan schools and other schools in the same micropoltan area. Table 9 shows these disparities. A teacher in a Hispanic micropolitan school is only 63% as likely to hold a masters degree as a teacher in a majority white school. A teacher in a Hispanic micropolitan school is nearly twice as likely to be novice as a teacher in a non-hispanic school.

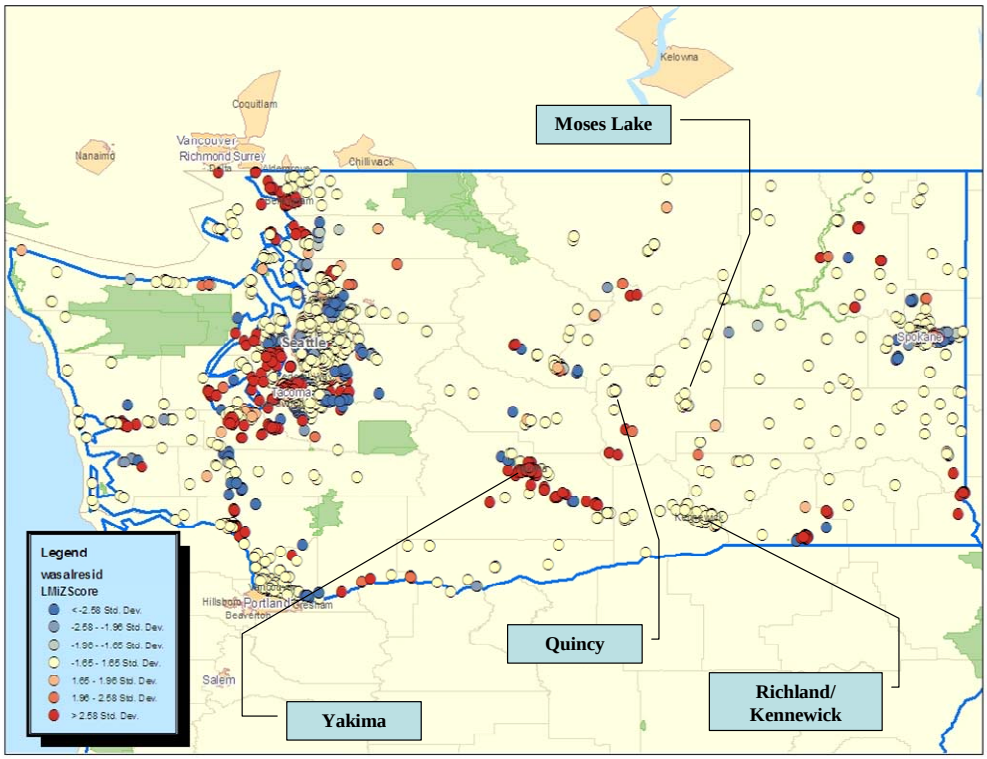
Table 9
Teacher Wage Variation and Teacher Attribute Variation in High Hispanic Concentration Micropolitan Washington Schools

	Wage Model			**MA or Higher**			**Novice**		
	Coef.	Std. Err.	P>t	Odds Ratio	Std. Err.	P>z	Odds Ratio	Std. Err.	P>z
Hispanic>White	-127.81	199.11		0.63	0.03	*	1.94	0.13	*
Male	2693.50	96.73	*	1.13	0.03	*	0.91	0.03	*
Nonwhite	-195.72	258.65		0.67	0.05	*	1.74	0.15	*
MA or Higher	5434.26	97.08	*						
Experience (ln)	7866.38	50.28	*						
Constant	24339.72	472.55	*						
adj-R-Squared	0.580								

Data Source: State of Washington, Personnel Master Files
Includes Core Based Statistical Area, Year and Grade Range of School fixed effects
*p<.05

Figure 8 presents the same type of salary model residual analyses previously presented for Nebraska. As in Nebraska, salaries in the Moses Lake and Quincy area are relatively average. Salaries are only relatively higher in the Yakima area.

Figure 8
Spatial Clustering of Salary Model Residuals Aggregated to School Level (Local Indicators of Spatial Association)



4.0 Other Major Agricultural States

In this section, we take a look at teacher salaries and qualification distributions in Missouri and Wisconsin, applying methods similar to those used for evaluating teacher distributions in Nebraska and Washington, but with additional measures included.

4.1 Missouri (13th in Agricultural Production)

Figure 9 displays schools within Missouri that have greater than 20% Hispanic population. Few have more Hispanic children than white children, except for some in the two major urban centers where the remainder of the population is black, and both black and Hispanic children outnumber white children. A handful of schools with high Hispanic population concentrations exist in micropolitan areas to the east of Kansas City. Other rural high Hispanic concentration schools are located in the southwestern corner of the state.

Figure 9
Distribution of Schools by Hispanic Enrollment in Missouri

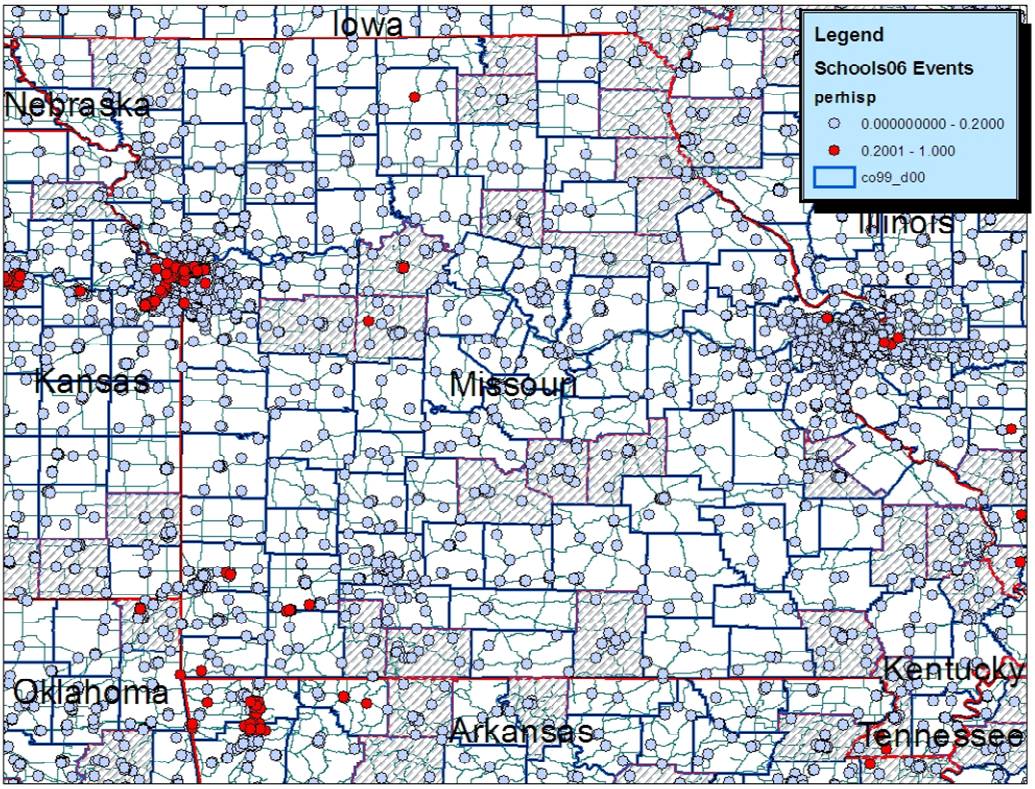


Table 10 shows the numbers of teachers working in metropolitan and micropolitan schools with greater than 20% Hispanic student population. These numbers are growing but relatively small. Metropolitan teachers in schools with greater than 20% Hispanic students increased from 336 to nearly 900 by 2006. In 1999, there were no micropolitan teachers in schools that were greater than 20% Hispanic. By 2006, there were over 100.

Table 10
Distribution of Teachers by Metropolitan Status and School Hispanic Enrollment in Missouri

year	Rural	Metro	Micro	Metro <20% Hispanic	Metro >20% Hispanic	Micro <20% Hispanic	Micro >20% Hispanic
1999	9,329	41,219	8,738	40,883	336	8,738	0
2000	9,582	42,775	9,182	42,290	485	9,182	0
2001	9,641	44,293	9,402	43,716	577	9,402	0
2002	9,885	45,292	9,853	44,637	655	9,832	21
2003	9,999	47,075	9,993	46,246	829	9,955	38
2004	9,525	45,769	9,604	44,879	890	9,563	41
2005	9,768	46,525	9,749	45,562	963	9,614	135
2006	10,120	48,130	10,129	47,232	898	10,026	103

Data Source: State of Missouri, Personnel Master Files

Table 11 provides the wage model and distribution of teacher characteristics across Missouri micropolitan schools. In Missouri, it would appear that teachers in micropolitan schools with over 20% Hispanic children are paid slightly higher than teachers in other micropolitan schools. In this analysis, like the national analysis, we are also able to evaluate the selectivity of undergraduate institutions attended by teachers. Our logistic regression models of teachers in the top and bottom two groups of undergraduate college competitiveness, however, reveal no disadvantage (or advantage) for micropolitan schools with over 20% Hispanic children. However, we do find that teachers in high Hispanic concentration schools are only 55% as likely as other teachers in the same micropolitan area to hold a masters degree and are 76% more likely to be novice. These findings are surprisingly consistent with our Nebraska and Washington findings.

Table 11
Teacher Wage Variation and Teacher Attribute Variation in High Hispanic Concentration Micropolitan Missouri Schools

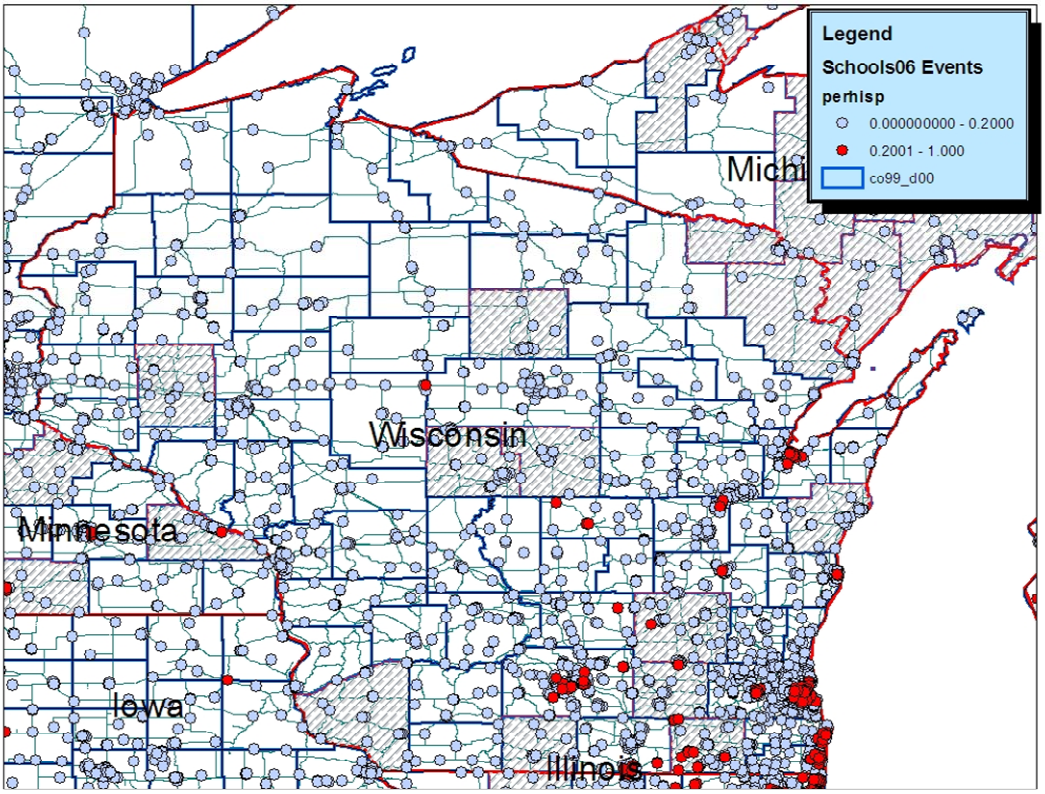
	Wage Model			**Highly/Most Competitive**			**Less/Non-Competitive**			**MA or Higher**			**Novice**		
Indep. Var.	Coef.	Std. Err.	P>t	Odds Ratio	Std. Err.	P>z	Odds Ratio	Std. Err.	P>z	Odds Ratio	Std. Err.	P>z	Odds Ratio	Std. Err.	P>z
Hispanic over 20%	556.388	210.472	*	0.671	0.394	0.497	0.983	0.367	0.964	0.548	0.077	0.000	1.761	0.221	0.000
Male	2174.507	34.787	*	0.899	0.040	0.017	1.772	0.081	0.000	0.921	0.019	0.000	1.091	0.027	0.000
Nonwhite	-427.516	134.319	*	0.444	0.102	0.000	8.457	0.763	0.000	0.656	0.053	0.000	1.457	0.118	0.000
Experience (ln)	4401.553	15.125	*												
MA or Higher	4380.207	31.019	*												
Highly/Most Competitive	-254.221	61.948	*												
Less/Non-competitive	458.339	71.053	*												
School Enrollment	3.591	0.051	*												
School Free/Reduced	-1.734	0.345	*												
School % Black	69.394	1.789	*												
Constant	15053.140	145.130	*												
	0.7366														

*grade range, year and CBSA
Data Source: State of Missouri, Personnel Master Files
Includes Core Based Statistical Area, Year and Grade Range of School fixed effects
*p<.05

4.2 Wisconsin (9th in Agricultural Production)

Figure 10 displays the locations of schools with greater than 20% hispanic population in Wisconsin. The largest number within micropolitan areas are those between the Madison and Milwaukee metropolitan areas along the southeastern border of the state.

Figure 10
Distribution of Schools by Hispanic Enrollment in Wisconsin



In Wisconsin, the number of teachers in schools with greater than 20% Hispanic population in metropolitan areas has grown from under 5,000 to over 8,000 in a ten year period. The number of micropolitan teachers in schools with over 20% Hispanic population has grown from about 500 to over 800. Wisconsin, despite having fewer total teachers and students (small system overall) than Missouri, has significantly greater concentration of Hispanic students in general and Hispanic students in micropolitan areas specifically.

Table 12
Distribution of Teachers by Metropolitan Status and School Hispanic Enrollment in Wisconsin

year	Rural	Metro	Micro	<20% Hispanic	>20% Hispanic	<20% Hispanic	>20% Hispanic
1997	4,859	21,889	4,493	17,223	4,666	3,988	505
1998	4,939	22,669	4,604	17,758	4,911	4,122	482
1999	5,376	23,970	4,906	18,871	5,099	4,310	596
2000	5,608	25,429	5,008	19,673	5,756	4,367	641
2001	5,845	26,282	5,047	20,085	6,197	4,397	650
2002	5,950	27,875	5,420	20,746	7,129	4,724	696
2003	5,909	28,270	5,263	20,673	7,597	4,523	740
2004	5,962	28,594	5,281	20,675	7,919	4,537	744
2005	5,853	28,529	5,171	20,227	8,302	4,423	748
2006	5,733	27,981	5,218	19,612	8,369	4,408	810

Data Source: State of Wisconsin, Personnel Master Files

Table 13 displays the wage model and the distribution of teacher qualifications for Wisconsin schools. Like Nebraska and the national models, teachers in higher Hispanic population schools in Wisconsin appear to have some wage premium – about $1,500. However, when it comes to the distribution of qualifications, Wisconsin bucks the trend of other states in the analyses herein and of the national models. Specifically, teachers in schools with over 20% Hispanic population are 16% more likely than other teachers in the same micropolitan area to have attended a highly or most competitive college and only 78% as likely to have attended a less or non-competitive college. Further, teachers in schools with higher Hispanic student populations are 25% more likely to hold a masters degree than their counterparts in the same micropolitan area in lower Hispanic concentration schools. There were no differences in the likelihood of being a novice teacher.

Table 13
Teacher Wage Variation and Teacher Attribute Variation in High Hispanic Concentration Micropolitan Wisconsin Schools

	Wage Model			Highly/Most Competitive			Less/Non-Competitive			MA or Higher			Novice		
Indep. Var.	Coef.	Std. Err.	P>t	Odds Ratio	Std. Err.	P>z	Odds Ratio	Std. Err.	P>z	Odds Ratio	Std. Err.	P>z	Odds Ratio	Std. Err.	P>z
Hispanic over 20%	1520.18	121.74	*	1.16	0.10	**	0.78	0.06	*	1.25	0.07	*	1.10	0.09	
Male	360.71	90.57	*	1.07	0.07		1.11	0.05	*	1.12	0.05	*	0.85	0.06	*
Nonwhite	890.87	553.01		3.41	0.93	*	0.60	0.22		0.66	0.18		1.55	0.48	
Experience (ln)	6817.55	48.32	*												
MA or Higher	5456.47	89.88	*												
Highly/Most Competitive	-24.29	138.89													
Less/Non-competitive	94.37	99.23													
Constant	15233.03	918.61	*												
	0.744														

Data Source: State of Wisconsin, Personnel Master Files
*p<.05

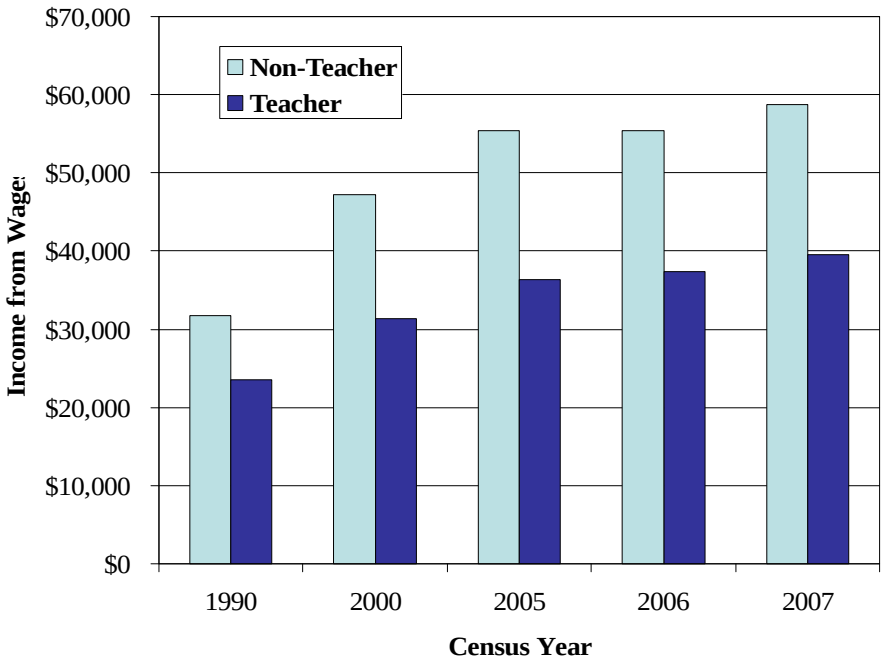
5.0 Implications for Rural Tennessee

At the time of the drafting of this report, data on Tennessee teachers at the individual teacher level remained unavailable. This section makes use of two national data sources in order to characterize teachers and teacher wages in Tennessee. I begin with analysis of U.S. Census data in order to characterize the relative wages of urban, suburban and rural teachers with their non-teaching peers. Next, I explore teacher salaries using data from the 2003-04 National Center for Education Statistics Schools and Staffing Survey of 2003-04.

Evaluation of Teacher and Non-Teacher Wages: Evidence from Census

Figure 11 is based on data from the decennial census of 1990 and 2000 and from the 2005, 2006 and 2007 American Community Surveys of the U.S. Census, and includes workers with bachelors or masters degrees between the ages of 23 and 65. The figure shows the gap between average teacher and average non-teacher pay remaining constant over time in Tennessee.

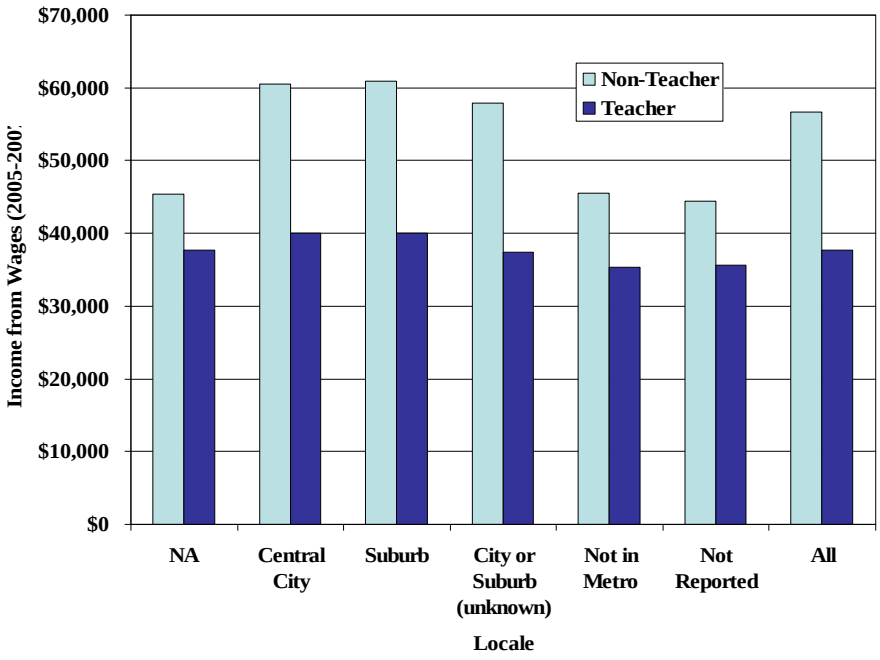
Figure 11
Income from Wages for Teachers and Non-Teachers in Tennessee



Data Source: U.S. Census 2000 and American Community Surveys of 2005 to 2007

Figure 12 displays the mean teacher and non-teacher wages for the same group of teachers, from the ACS 2005 to 2007 by locale within Tennessee. As in other states and nationally, teacher wages in non-metropolitan areas in Tennessee are closer to non-teacher wages. Teacher wages in suburbs and cities are less comparable.

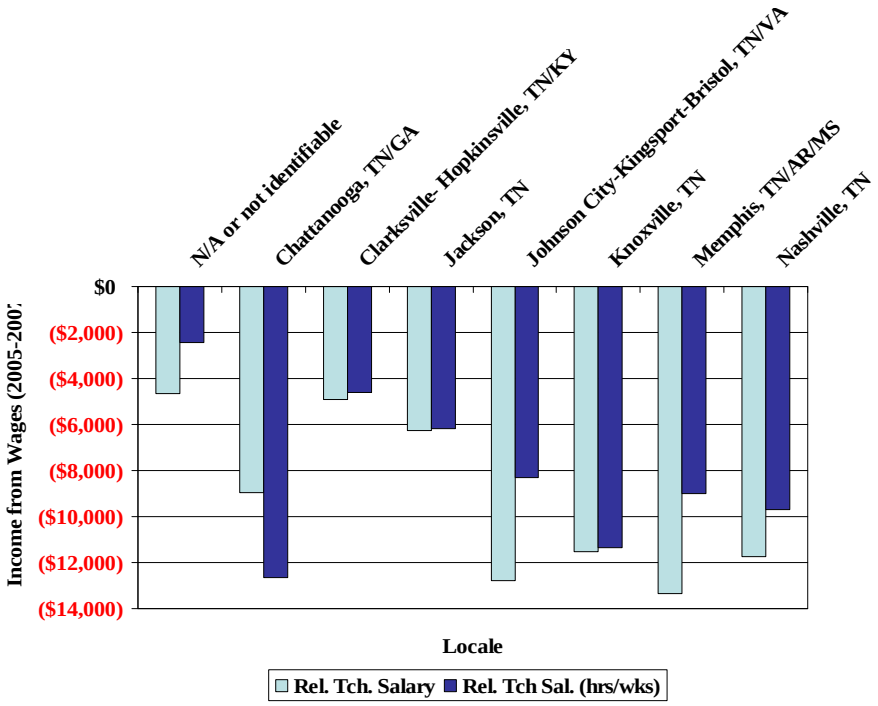
Figure 12
Within Tennessee Locale Variation in Teacher-Non-Teacher Wage Gaps



Data Source: American Community Surveys of 2005 to 2007

Figure 13 provides model based estimates of the relative annual salary of teachers compared to non-teachers across major cities within Tennessee. These relative salaries take into account age, degree level, weeks worked per year, hours worked per week and worker race and gender. Light blue bars do not take into account hours per week and weeks per year. On average, teachers in Chattanooga earn just over $8,000 less per year than other same age, same education level workers. Interestingly, for the same number of hours worked, teacher salaries drop relative to other workers in Chattanooga (indicating that teachers work more weeks per year and hours per week than other workers). Teacher salaries are most comparable, though still lower than other workers in Clarksville and Jackson as well as for those in undefined areas (mainly rural, smaller city and town areas). Teacher pay is particularly non-competitive in the major cities, whether accounting for hours and weeks or not.

Figure 13
Regression Model Based Wage Gaps for Teachers Compared to Non-Teachers in Tennessee



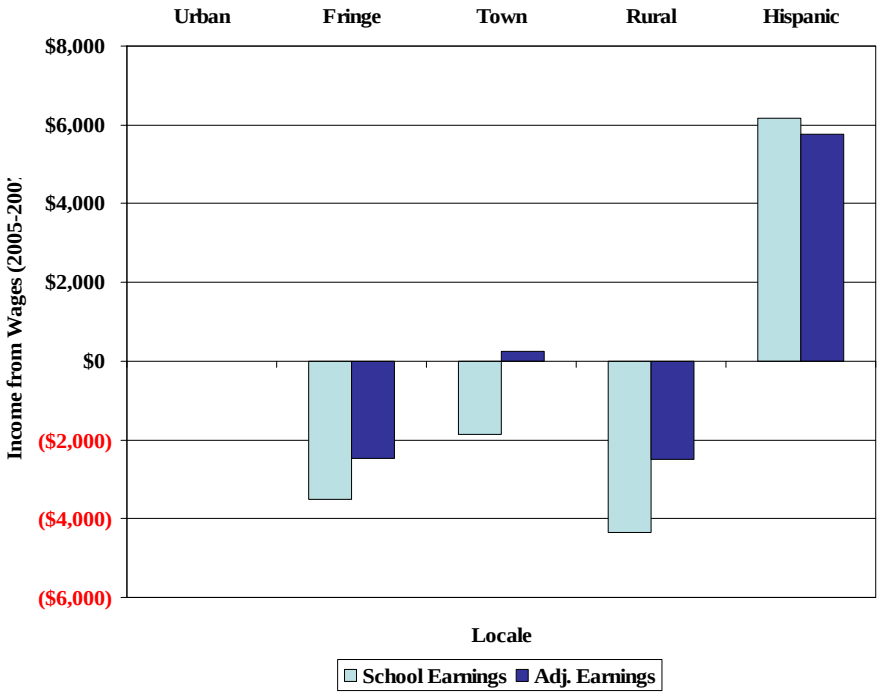
Data Source: American Community Surveys of 2005 to 2007

Geographic Distribution of Teacher Wages: Evidence from SASS

Figure 14 presents the relative income from earnings of teachers in Tennessee in 2003-04, based on data from the NCES Schools and Staffing Survey. Light blue bars include nominal (not regionally adjusted) school earnings whereas darker blue bars include adjustment for regional wage variation (2004 NCES Comparable Wage Index). Salaries are compared to urban teachers. Whether controlling for regional variation or now, teachers in fringe (suburb) districts earn less than those in urban core districts. The differential is lessened when controlling for regional wage variation. Teachers in rural schools also earn less than teachers in urban settings. Teachers in town districts, when controlling for regional wage variation earn slightly more than teachers in urban districts, but less when not accounting for regional variation.

The model estimates in Figure 14 also include an indicator of the salary premium associated with working in a school with greater than 20% Hispanic student population. This premium appears sizeable in Tennessee, whether controlling for geographic wage variation or not.

Figure 14
Regression Model Based Wage Gaps for Teachers Compared to Non-Teachers in Tennessee

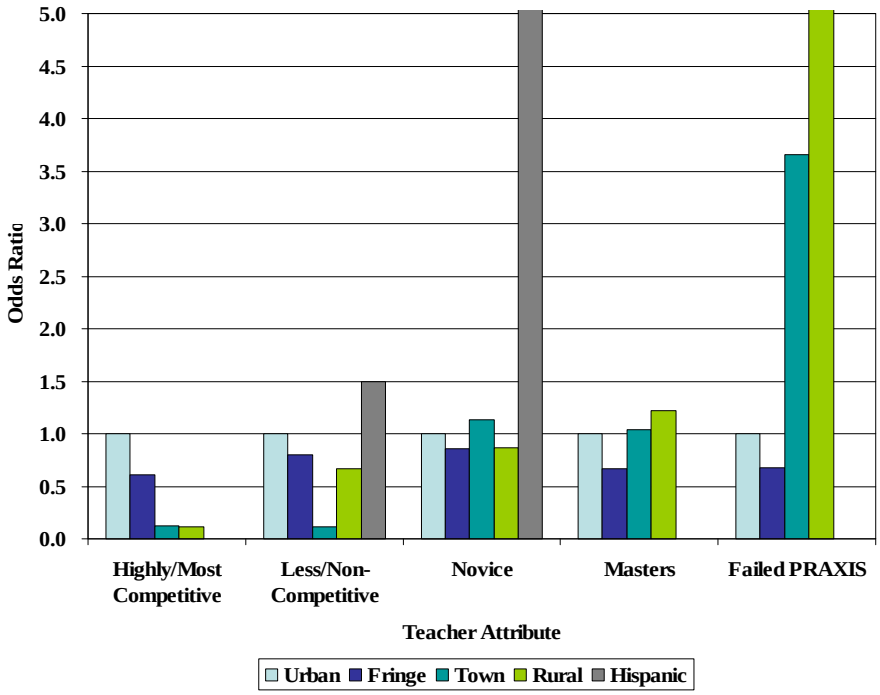


Data Source: NCES Schools and Staffing Survey of 2003-04[14]

Figure 15 compares teacher qualification by locale within Tennessee, using a logistic regression model where each factor is conditional on all others, plus a variety of teacher personal attributes and school characteristics. On the vertical axis, 1.0 indicates "even odds." For example, regarding the likelihood that a teacher attended a highly or most competitive undergraduate college, locales are compared against "urban" teachers. Suburban (fringe) teachers are only slightly more than half as likely as urban teachers to have attended a highly or most competitive college. Rural teachers are even less likely. Regarding the likelihood of attending the least competitive colleges, rural teachers are also less likely than urban teachers. Rural and suburban teachers appear more likely than urban teachers to have attended colleges in the middle of the pack on Barron's Guide ratings of competitiveness whereas urban teachers come from both ends of the spectrum. Rural and town teachers are far more likely than urban teachers to have failed at least one portion of the PRAXIS exam.

[14] Model: EARNSCH d_fringe d_town d_rural hisp_over20 s_perfrpl t_persped s_puptch tlev_secondary slev_secondary stype_special stype_vocational stype_alternative s_enrollunder100 s_enroll100to500 s_enroll500to1000 s_enroll1000to2000 t_nonwhite ln_age t_male ln_totexper t_masters t_specialist t_doctorate t_certprobation t_certother t_union t_nbpts t_failpraxis ln_hrswk t_depchair t_leadcurric t_coach t_clubsponsor t_barronshimost t_barronslessnon d_cwi_2004 if state=="Tennessee"

Figure 15
Variations in Teacher Qualifications by Locale within Tennessee



Data Source: NCES Schools and Staffing Survey of 2003-04[15]

Teachers in schools with greater than 20% Hispanic population are far more likely than other teachers to (a) have attended a less competitive college and (b) to be novice. Despite the apparent wage premium received by these teachers, disparities in qualifications persist.

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[15] Model: logit t_barronshimost d_fringe d_town d_rural hisp_over20 s_perfrpl t_persped tlev_secondary slev_secondary stype_special stype_vocational stype_alternative s_enrollunder100 s_enroll100to500 s_enroll500to1000 s_enroll1000to2000 d_cwi_2004 if state=="Tennessee", or

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