



Teacher Quality: Equalizing Educational Opportunities and Outcomes

By

Gail L. Sunderman & Jimmy Kim

April 2005

Copyright © 2005 by President and Fellows of Harvard College

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval systems, without permission in writing from The Civil Rights Project.

This publication should be cited as:

Sunderman, G.L. and Kim, Jimmy (2005). *Teacher Quality: Equalizing Educational Opportunities and Outcomes*. Cambridge, MA: The Civil Rights Project at Harvard University.

Additional copies of this report may be obtained from our website at:
<http://www.civilrightsproject.harvard.edu/>

TABLE OF CONTENTS

LIST OF TABLES	3
LIST OF FIGURES	4
ACKNOWLEDGEMENTS	5
EXECUTIVE SUMMARY	6
Research Findings	6
Recommendations	8
INTRODUCTION	9
EQUITY IMPLICATIONS OF NCLB TEACHER QUALITY REQUIREMENTS.....	11
RESEARCH DESIGN	14
State and District Selection Criteria.....	14
Data Collection Methods	16
Research Questions	16
TEACHER QUALITY AND SCHOOL CHARACTERISTICS: DESCRIPTIVE ANALYSIS.....	17
Teacher Quality and Urban School Districts	17
The Relationship Between Teacher Quality and School Poverty Rates and the Percentage of Minority Students in California and Illinois	19
Teacher Quality and Schools Identified as “In Need of Improvement”	21
POLICY CONTEXT FOR IMPLEMENTING NCLB.....	26
Federal Policy Guidance on Teacher Quality	26
The State and Local Role in Reducing Teacher Quality Inequities.....	28
State Policy Context and Teacher Quality	28
State Policies to Increase the Recruitment and Retention of High-Quality Teachers ..	30
IMPLEMENTATION CHALLENGES.....	32
State Challenges.....	32
District Challenges.....	34
CONCLUSION AND RECOMMENDATIONS	37
Recommendations.....	38
REFERENCES	40

LIST OF TABLES

Table 1: Racial/Ethnic Breakdown of K-12 Enrollment in Arizona, California, Illinois, New York, Georgia, and Virginia, 2001-02.	14
Table 2: Total Enrollment and Percentage of Minority and Low-Income Students in 11 District Sample, 2001-02.	15
Table 3: Average Teacher Quality Characteristics in California (2002-03), Georgia (2001-02), and Illinois (2002-03), and Selected Urban School Districts.	18
Table 4: Percentage of Core Class Taught by Highly Qualified Teachers in all Schools in the State, in High- and Low-Poverty Schools, 2002-03	19
Table 5: Racial and Ethnic Composition of Schools Needing Improvement and Schools Meeting AYP in Illinois and California, 2003-04.	23
Table 6: NCLB sanctions will . . .Encourage teachers to transfer out of schools identified for improvement.....	23
Table 7: How long do you plan to continue teaching at this school?	24

LIST OF FIGURES

Figure 1: Mean Teacher Quality Characteristics in Lowest and Highest Quartile Poverty Schools (Percentage of Students Receiving Free Lunch), California Public Schools, 2002-03. 20

Figure 2: Mean Teacher Quality Characteristics in Lowest and Highest Quartile Minority Schools (Percentage of Non-white Students), California Public Schools, 2002-03. 21

Figure 3: Percentage of Teachers with Full Credentials in Illinois (2001-02) and California (2002-03) by the Number of Years in Program Improvement (SINI, Years) for 2002-03..... 22

ACKNOWLEDGEMENTS

The authors of this report are grateful to numerous individuals for their assistance with this study. Gary Orfield provided the leadership, counsel, and feedback that made this report possible. We are very grateful for our research assistants and volunteers, Tim Bazzle, Hannah Chang, Maya Harris, Sam Hwang, Joy Karugu, and Christopher Tracey, who provided countless hours of research assistance for the project. Andrew Grant-Thomas, William Hawley, Marcella Dianda and Rhonda “Nikki” Barnes provided enormously useful comments on the report. Thanks also go to Lori Kelley for editing the report and catching our errors, Jerry Monde for technical support, and Jennifer Blatz, Pamela Lomax, Karen McCree, Christina Safiya Tobias-Nahi, and Johanna Wald for administrative support. We are especially grateful to district education officials in Mesa Public Schools, Washington Elementary School District, Fresno Unified School District, Los Angeles Unified School District, Chicago Public Schools, Buffalo Public Schools, New York City Public Schools, Arlington Public Schools, Richmond Public Schools, Atlanta Public Schools, and DeKalb County Schools for answering questions about the teacher quality provisions of *No Child Left Behind*. The support of the Carnegie Corporation of New York, the Charles Stewart Mott Foundation, and the National Education Association (NEA) are gratefully acknowledged. However, the views and opinions expressed in this report are solely those of the authors.

EXECUTIVE SUMMARY

The No Child Left Behind (NCLB) teacher quality provisions recognize both the importance of teacher quality for improving student achievement and the unequal distribution of teachers across districts and schools. But the question of how to achieve the goal of a high quality teacher in every classroom is complicated because of the challenges of attracting and retaining teachers to schools serving large numbers of minority and low-income students, the schools most likely to have the least qualified teachers. Professional development, the primary mechanism in the law to improve teacher quality, is insufficient to overcome these challenges and insure a high quality teacher in every classroom. Moreover, the sanctions attached to the NCLB adequate yearly progress requirements create an additional disincentive for highly qualified teachers to remain in high-poverty schools.

This report examines the challenges of implementing the NCLB teacher quality provisions in six states—Arizona, California, Illinois, New York, Georgia, and Virginia—and eleven school districts. We examine how teacher quality varies by school characteristics, how each state’s policy context affects teacher policies, and the barriers to implementing the NCLB teacher quality requirements at the state and local level using both qualitative and quantitative data sources.

Research Findings

Implementing the NCLB teacher quality provisions is complex since managing teachers involves different levels of the school system—state, district, and school. Traditionally, each level has distinct responsibilities yet NCLB blurs these distinctions without providing additional resources or addressing the jurisdictional issues that govern teachers. Our research on the NCLB teacher quality provisions reveals the following findings:

- **States lacked sufficient capacity to collect data.** There was significant variability in state capacity to collect data on measures of teacher quality as well as considerable variation among states on the measures they collected. States did not have adequate data systems to track teacher qualifications according to the criteria outlined by the federal government. Tracking teacher qualifications by subject matter was particularly problematic for states.
- **Teacher quality was unevenly distributed between districts.** Large, urban districts and districts serving low-income students were more likely to have teachers that did not meet the NCLB teacher qualifications.
- **Schools identified as needing improvement had the lowest percentage of qualified teachers.** In two states, Illinois and California, the average percentage of teachers with full credentials was highest in schools that were not identified as needing improvement. As the number of years a school was in program improvement increased, the number of teachers with full credentials decreased.

- **NCLB sanctions encourage teachers to transfer out of schools identified for improvement.** Teachers responses on a teacher survey administered in Fresno, CA and Richmond, VA indicated that an unintended effect of the NCLB accountability system is that it will make it more difficult to attract and retain teachers to low-performing schools.
- **The NCLB approach to improving teacher quality does not take into consideration state and district context.** While improving teacher quality is important, the issues states and districts faced regarding teacher quality and the distribution of teachers are far different than those receiving attention in NCLB. These issues include the following.
 - **States faced very different labor markets issues.** Some states, such as California, had a statewide teacher shortage. Others, such as Virginia, faced shortages in some parts of the state. Georgia had a growing demand for teachers who can teach English as a second language. Illinois and New York had difficulties attracting teachers to large urban districts. Arizona had an overall surplus of teachers, but shortages in some regions of the state and subject matter areas.
 - **States deferred to districts to improve the unequal distribution of teachers.** There is little in the NCLB regulations that provide guidance on how to address the unequal distribution of teachers across districts and across schools, other than through professional development and recruitment. Few states had policies or programs in place to increase the recruitment and retention of high quality teachers. Because teacher recruitment is primarily a district responsibility, the states in our study deferred to districts to address the unequal distribution of teachers. This is consistent with the traditional role of states in establishing certification requirements.
 - **Districts faced very different implementation challenges that were related to differences in fiscal capacity, organizational characteristics, and state and district policies.** Some districts had a declining student population and ongoing budget shortfalls which made it difficult to attract and retain highly qualified teachers. Well-funded districts that were located in a desirable labor market had little difficulty attracting teachers. State policies sometimes created incentives for teachers to move out of districts serving low-income students. Small schools and districts where one teacher covers several subjects had special problems.

NCLB establishes the important goal of having a high quality teacher in every classroom, yet it does not provide the policies, support, or flexibility needed to meet this goal. By failing to recognize the local labor needs and differences in state policy context, some districts will have a more difficult time meeting these requirements than others. There is also the real potential that the negative consequences of the NCLB high stakes

accountability policies will create a more negative teaching environment and contribute to teachers wanting to leave, either the profession or those schools serving the most disadvantaged students.

Recommendations

To address the unequal distribution of teachers across schools and districts, the federal government should take a leadership role in understanding and correcting the factors that contribute to these distributional inequities. To meet the goal of having a high quality teacher in every classroom, we recommend:

- Direct federal and state incentives for improving teacher quality to high-poverty areas.
- Encourage states and districts to develop and support programs that create economic and racial diversity in the public schools.
- Provide additional federal funds to assist states to develop the technological infrastructure necessary to track teacher quality over time and manage the increased data collection responsibilities.
- Monitor other indicators of teacher quality in addition to the NCLB measures and assess the distribution of these characteristics across schools and districts.
- Reform the No Child Left Behind Act teacher quality provisions to expand the definition of a qualified teacher to include experience.
- Reform the No Child Left Behind Act to create recognition and rewards for teachers that make a difference and for schools that make improvement.

INTRODUCTION

The No Child Left Behind Act of 2001 (NCLB) includes provisions that require teachers to be “highly qualified” (“No Child Left Behind Act of 2001,” 2002). Each state and district receiving Title I funds must develop a plan to “ensure that all teachers teaching in core academic subjects . . . are highly qualified not later than the end of the 2005-06 school year” (NCLB, 2002, §6319 (a)(2)).¹ The statute defines highly qualified as a teacher who has obtained a full state certification, has a bachelor’s degree, and has demonstrated subject matter competency in core academic subjects (NCLB, 2002, § 7801(23)).² This definition of quality is based on meeting formal state certification requirements rather than about experience or other factors related to teacher qualifications. The broad goal of these provisions is to raise student achievement by improving teacher quality. Since schools serving low-income students are more likely to be taught by inexperienced teachers, NCLB requires states to report the average teacher quality measures for the schools with the lowest poverty rate and those with the highest poverty rate. To help teachers become highly qualified, school districts must use at least 5% of their Title I funds for professional development activities. States and local districts may also apply for *Improving Teacher Quality State Grants* to help with teacher training, recruitment, retention and professional development.

These requirements recognize both the importance of teacher quality for improving student achievement and the unequal distribution of teachers across districts and schools. They represent goals that all school districts should strive for. But the question of how to achieve the goal of having a high quality teacher in every classroom is difficult because of structural barriers in the teacher labor market that make it difficult to attract and retain teachers to some schools and the decision making process that governs the hiring, assignment, and utilization of teachers in particular kinds of schools (Ingersoll, 2004). The typical pattern is for qualified and experienced teachers to move from impoverished to more affluent schools as they achieve standing in the system. The law, which operates on the assumption that professional development is the primary mechanism that will improve teacher quality, may prove insufficient to address these structural barriers and may exacerbate state and district efforts to attract qualified teachers if it ignores local differences in the labor market.

There is also the potential that a fundamental conflict in the law, between the emphases on sanctioning included in the accountability provisions and the highly qualified teacher requirements will further exacerbate the uneven distribution of qualified teachers. Designating a school as in need of improvement may complicate efforts to meet the teaching needs of schools serving disadvantaged students if they work against teachers transferring into these schools or cause teachers to leave the more difficult schools. The

¹ The law defines core academic subjects as English, reading or language arts, mathematics, science, foreign languages, civics and government, economics, arts, history, and geography (NCLB, 2002, § 7801(11)). A teacher who teaches a subject or grade level for which they are not highly qualified is considered an “out-of-field teacher” (NCLB, 2002, § 6602(5)).

² Middle school and high school teachers can demonstrate subject matter knowledge either through passing a state academic test in each academic subject the teacher teaches or by completing an academic major or graduate degree in the subject.

law provides no incentives for teachers to stay in schools serving the most difficult students; rather, it may create disincentives for them to stay by holding schools to test-based standards they will likely not meet and labeling and sanctioning them when they do not, even when such schools might be eliciting achievement gains. When those schools lose teachers, NCLB then threatens to sanction districts for not meeting the highly qualified teacher requirements.

Finally, legislating improvements in teacher quality is extremely difficult. The current approach—focusing on raising standards and creating strict credentialing requirements—ignores the complex set of conditions that contribute to the substantial variation in teacher quality that exists today. Research has shown both wide variation in the performance of credentialed teachers on standardized tests and the importance of some significant experience for quality teaching.

In this study we examine the implementation of the NCLB teacher quality provisions, paying particular attention to the challenges of equalizing teacher qualifications across districts and within districts, across schools. Section one examines the equity implications of the NCLB teacher requirements, reviews the research on the relationship between teacher quality and student learning and explores issues related to attracting and retaining high quality teachers to schools serving low achieving, low-income, and minority students in the first section. In the second section we describe our research methods, including our criteria for selecting the states and districts included in the study and our data collection strategies. The third section examines how teacher quality varies depending on school characteristics. We examine the policy context for implementing NCLB in the fourth section and early implementation challenges in the fifth section. We conclude with an analysis of our findings and recommendations.

EQUITY IMPLICATIONS OF NCLB TEACHER QUALITY REQUIREMENTS

As recognized in NCLB, teacher quality is one factor that is likely to affect student learning. There is strong evidence that having a high-quality teacher affects learning and is an important factor in explaining student test score gains (Darling-Hammond, 2000; Darling-Hammond & Youngs, 2002; King Rice, 2003; Loeb, 2000; Wayne & Youngs, 2003). A growing body of research on the relationship between teacher characteristics and student achievement gains suggests that students learn more from skilled and experienced teachers. As a result, many policymakers and advocacy groups assume that improvements in teacher quality are likely to exert the strongest, most powerful effect on student learning gains. This assumption is backed up by a number of rigorous longitudinal studies underscoring the strong cumulative effect that teachers have on student learning (Kain & Singleton, 1996; Sanders & Horn, 1994). One widely cited study by economist Eric Hanushek (Hanushek, 1992) suggests that “the estimated difference in annual achievement growth between having a good and having a bad teacher can be more than one grade-level equivalent in test performance” (p. 107). Since the impact of teacher quality on student achievement is larger than effects from other education interventions, improving minority and low-income children’s access to skilled teachers could substantially reduce the achievement gap over the long-run. For instance, after accounting for the socioeconomic background of students, Ferguson (1991) found that the black-white test score gap in Texas was largely explained by variations in teacher quality (i.e., scores on a licensing exam, master’s degree, and experience) among different types of schools and districts. Such research findings on teacher quality have prompted many scholars and advocates to support policies that reduce teacher inequalities between low-income and middle-income students, on one hand, and White and minority students on the other. Indeed, the federal law also assumes that efforts to narrow the achievement gap will have to focus on narrowing teacher quality differences between high- and low-performing schools.

While having a high quality teacher is important for student learning, there is substantial evidence that teacher quality varies across schools and districts, with some better able to attract and retain high-quality teachers than others (Betts & Danenberg, 2002; Freeman, Scafidi, & Sjoquist, 2002; Lankford, Loeb, & Wyckoff, 2002; Loeb, 2000). In particular, teacher quality is associated with district characteristics (urban, suburban, or rural), student demographics (percentage of students that are low-income and/or minority), and recruitment and retention strategies. Typically, students in high-minority, high-poverty schools are more likely than other students to have teachers who are not certified, inexperienced, or lack an educational background in the subject they teach (Olson, 2003). Ensuring that low-income and minority students have access to high quality teachers is confounded by structural barriers to attracting and retaining teachers to schools. Teacher preferences for teaching in schools close to their hometown and in regions similar to those where they grew up make it difficult for urban areas to recruit new teachers (Boyd, Lankford, Loeb, & Wyckoff, 2003). These problems are compounded by the fact that the teaching force remains overwhelmingly white. Urban districts, which typically have more positions than qualified candidates, must induce teachers from other regions to take jobs in their district. The use of salary and incentive pay to attract teachers is subject to

the budgetary constraints of particular localities and the challenging working conditions of many urban schools make it difficult to retain high quality teachers.

To understand the extent of teacher quality differences among different types of schools and districts, NCLB requires all states to issue report cards indicating whether teachers have met state licensing and certification criteria and demonstrated subject matter expertise in the field of teaching. These measures of teacher quality, coupled with information on teachers' test scores, number of years teaching and the selectivity of their undergraduate institution, are strongly related to the demographic makeup of a district and school (Lankford et al., 2002) and explain some of the observed differences in achievement between predominantly white and minority schools (Hanushek, Kain, & Rivkin, 2001; Kain & Singleton, 1996).

If the achievement of low-income and minority students is to improve, it is clear that increasing access to high quality teachers is imperative. NCLB includes provisions that could have the potential to address the inequities in the distribution of teachers. It requires state educational agencies to develop a plan "to ensure that poor and minority children are not taught at higher rates than other children by inexperienced, unqualified, or out-of-field teachers" and to report their progress towards meeting this goal each year (NCLB, 2002, § 6311(b)(8)(C)).³ States must also disaggregate teacher qualifications by school level poverty and compare high-poverty schools with low-poverty schools.⁴ At the district level, the district plan must include "incentives for voluntary transfers, the provision of professional development, recruitment programs, or other effective strategies" to ensure that low-income and minority students are not taught at higher rates than other students by unqualified, out-of-field, or inexperienced teachers (NCLB, 2002, § 6312 (c)(1)(L)). Unlike many of the other accountability provisions in NCLB, which focus on achievement outcomes, these accountability provisions concern resource inputs.

While ensuring that all teachers are "highly qualified" is important, policies to disaggregate data by race and poverty are a crucial step in showing the unequal distribution of teachers. However, policies that focus exclusively on teacher skills without confronting the structural barriers inherent in the teacher labor market or the working conditions of schools are unlikely to improve student access to high quality teachers. Additionally, policies that increase the demand for highly skilled teachers or raise the criteria for entry into the profession may have the adverse affect of reducing the pool of qualified teachers available to low-achieving schools if teachers move to suburban or low-poverty districts (Hanushek et al., 2001; Hanushek, Kain, & Rivkin,

³ It should be noted that this requirement differs from the definition of highly qualified teachers. Whereas the definition of a highly qualified teacher is one with full state certification, a bachelor's degree, and demonstrated subject matter expertise, this requirement includes "inexperienced" teachers, something not included in the definition of a highly qualified teacher. It is unclear how states are to reconcile this requirement with the highly qualified teacher requirement.

⁴ NCLB requires the annual state report card to include "the professional qualifications of teachers in the state, the percentage of teachers teaching with emergency or provisional credentials, and the percentage of classes in the state not taught by highly qualified teachers, in the aggregated and disaggregated by high-poverty compared to low-poverty schools, which for the purposes of this clause, means schools in the top quartile of poverty and the bottom quartile of poverty in the state" (NCLB, 2002, § 6311(h)(1)(C)(viii)).

2004; Lankford et al., 2002). Screening standards may create short-term labor shortages unless salaries are adjusted accordingly, especially if some teachers cannot work because they do not meet the standards and those meeting them do not want the jobs.

Many of the problems related to attracting and retaining high quality teachers are only marginally, if at all, related to whether or not teachers meet the NCLB definition of “highly qualified.” The criteria that all teachers hold a bachelor’s degree represent the minimum requirement for becoming a teacher, one that the majority of teachers meet. The National Center for Education Statistics (NCES) reports that nationwide, only 0.6% of public school teachers hold less than a bachelor’s degree (U.S. Department of Education, 2002). This varies only slightly when the racial make-up of the school is taken into account (ranging from 0.6% to 0.8%, depending on the percentage minority enrollment). Moreover, there is debate in the literature over the relationship between certification and student achievement. Some researchers argue that where teachers receive their undergraduate training, teacher scores on college entrance examinations, or the percentage of inexperienced teachers in a school are more strongly related to student learning than teacher credentials (Darling-Hammond & Sykes, 2003; Greenberg, 2004; Hanushek & Rivkin, 2004; Hedges, Laine, & Greenwald, 1994; King Rice, 2003; Murnane, Singer, Willet, Kemple, & Olsen, 1991). Nonetheless, certification remains important because it is the primary gatekeeper available to policymakers to control access into the teaching profession.

Finally, while there is increasing evidence that students learn more from teachers with subject matter expertise (Goldhaber & Brewer, 2000), policies that impose more rigorous licensure standards may exacerbate teacher shortages in particular subject areas. State studies on teacher supply and demand report shortages in mathematics, special education, science, and foreign languages.⁵ These reports also indicate that teacher shortages are geographic, with rural and central city areas experiencing the most severe shortages. Also, policies that raise the criteria for entry into the teaching profession ignore important questions about the occupational characteristics of teaching (Dreeben, 1996). For example, research suggests that teacher turnover is an organizational phenomena—teachers leave teaching because of job dissatisfaction or to pursue better jobs or other careers—and out-of-field teaching is associated with the decision making process surrounding the hiring, assignment, and utilization of teachers in particular kinds of schools more so than the lack of teachers with subject matter expertise (Ingersoll, 2001, 2004). Moreover, NCLB may worsen inequities in the distribution of qualified teachers if skilled teachers avoid or leave low-performing schools that are identified as in need of improvement and subject to federal sanctions. One of the sanctions listed in NCLB that would remove all staff in a failing school, for example, could strongly discourage qualified teachers from joining such staffs.

⁵ See, for example, Illinois State Board of Education, (2002); Virginia Department of Education, (2000); Georgia Professional Standards Commission. (2002).

RESEARCH DESIGN

State and District Selection Criteria

This study is part of a larger study on the implementation of NCLB that includes six states—Arizona, California, Illinois, Georgia, New York, and Virginia. Each state offers a unique opportunity for understanding how the federal law affects schools with large minority enrollments. Four criteria guided the selection process. First, we chose six states that are geographically and politically diverse. At least one state is located in the West, Central, Northeast, and Southeast regions, including Arizona and California (West), Illinois (Central), New York (Northeast), and Georgia and Virginia (Southeast). Second, we chose states that have a large proportion of minority students. Minority students in California are the numerical majority, since Asian, Black, and Latino students comprise over half of the K-12 enrollment. Arizona has large Native American and Latino enrollments; New York and Illinois have large black and Latino enrollments; and, Georgia and Virginia have large black enrollments (Table 1).

Table 1: Racial/Ethnic Breakdown of K-12 Enrollment in Arizona, California, Illinois, New York, Georgia, and Virginia, 2001-02.

State	Native American	Asian	Black	Latino	White
Arizona	7%	2%	5%	35%	51%
California	1%	11%	8%	44%	35%
Illinois	<1%	3%	21%	16%	59%
New York	<1%	6%	20%	19%	55%
Georgia	<1%	2%	38%	5%	54%
Virginia	<1%	4%	27%	5%	63%

Source: Common Core of Data (2001-2002)

Third, we selected states in which the degree of state control over local education policy varies (Wirt, 1977). Some state governance systems are highly centralized (Virginia), some are highly decentralized (Arizona), and others are in between (California, Georgia, Illinois, and New York). In addition to each state's unique governance structure, there are important differences in each state's approach to improving student achievement, underscoring the different state policy contexts in which federal policies are being implemented. For example, Virginia has been cited as a leader in adopting state-mandated standards and testing requirements (Ravitch, 2002). Arizona, on the other hand, has relied more heavily on local districts to improve achievement through choice mechanisms and charter schools (Keegan, 1999).

Fourth, we selected states based on where they were in the reform process as it relates to the new federal requirements. To compare states with different starting points, we included states where some elements of the state policy align with NCLB's accountability requirements and other states where few policies meet the requirements. We used state compliance with the 1994 Improving America's Schools Act (IASA) as a measure of the status of state accountability policy. Two states in our sample—Virginia and New York—fully complied with the 1994 IASA mandate that assessments be aligned with

content standards. The other four states received waivers from the federal government, allowing them extra time to comply with the 1994 requirements.⁶

We purposefully selected 11 districts that are located in one of the six states in the study and enroll large numbers of minority and low-income students. As shown in Table 2, our sample is diverse with respect to location and size. The sample includes the nation’s three largest public schools districts: Los Angeles Unified School District, the Chicago Public Schools, and the New York City Public Schools. Together, these three districts enroll over 2 million students in 1,807 schools. Three districts—Mesa, AZ, Fresno, CA, and DeKalb County, GA—are among the nation’s 50 largest school districts (Sable & Young, 2003). The five remaining districts are located in the “central-city” portion of the Metropolitan Statistical Area (MSA) in Phoenix, AZ (Washington Elementary), Buffalo, NY, Washington, DC (Arlington County, VA), Richmond, VA, and Atlanta, GA.

Table 2: Total Enrollment and Percentage of Minority and Low-Income Students in 11 District Sample, 2001-02.

District	Total Enrollment	% Minority	% Low-Income*
Mesa Unified, AZ**	74,808	36	36
Washington Elementary District, AZ	24,811	42	49
Fresno Unified, CA	81,058	81	75
Los Angeles Unified, CA	735,058	90	73
City of Chicago Public Schools, IL	437,418	91	84
Buffalo Public Schools, NY	44,849	72	82
New York City Public Schools, NY	1,049,831	85	76
Arlington County Public Schools, VA	19,109	58	41
Richmond City Public Schools, VA	24,840	93	64
Atlanta Public Schools, GA	56,586	93	80
DeKalb County School District, GA	97,501	89	56

Source: National Center for Education Statistics, Common Core Data, <http://nces.ed.gov/ccd/districtsearch/>

*We defined "low-income" as the percentage of students receiving free- and reduced-price lunch.

**Data on free- and reduced price lunch for Mesa was provided by the district.

These districts enroll a large percentage of low-income and minority students. Minority students make up over 90% of the total enrollment in Los Angeles, Chicago, Richmond, and Atlanta, and over 80% in Fresno, New York City, and DeKalb County (Table 2). Buffalo enrolls 72% minority students. Over half of all students in these districts receive a federal meal subsidy. The two Arizona districts (Mesa and Washington) and Arlington County, Virginia have comparatively lower poverty rates and a smaller proportion of minority students. But since they do have a diverse student population, they are

⁶ The waiver expired on December 31, 2002 for Illinois, June 30, 2003 for Georgia, August 31, 2003 for Arizona, and November 30, 2003 for California.

representative of many districts across the nation undergoing racial and socio-economic changes in K-12 enrollment.

Data Collection Methods

We used both qualitative and quantitative sources of data for this study. To examine implementation of the teacher quality provisions of NCLB, we conducted interviews with state and district officials responsible for implementing NCLB generally and the teacher quality provisions specifically, including state and district superintendents, human resource directors, administrators responsible for assessment, accountability, and information technology, directors of federal programs, research and evaluation, and teacher staffing, and members of the state boards of education. In addition to interview data, we reviewed federal guidance governing the teacher quality provisions of NCLB and collected each state's criteria for meeting the NCLB requirements for highly qualified teachers. We reviewed the final regulations on NCLB, federal guidance on teacher quality, the state accountability workbooks submitted to the U.S. Department of Education, and district Title I plans. We supplemented information from these documents with local and national newspaper articles and district press releases and letters. Second, we collected data on teacher characteristics from each state, including certification status and number of years teaching. We also collected quantitative data for all public schools in each state on Title I program status and number of years in school improvement, student background characteristics; and achievement outcomes.⁷ We constructed six state databases that included information on these variables for all public schools in the state. Data collection took place between October 2002 and June 2004. In spring 2004, we also administered a survey to teachers in two of our districts.

Research Questions

Prior research on teacher quality and the federal law's equity provisions for disaggregating teacher qualifications motivate several questions for this report. In this study, we examine how teacher quality varies by school characteristics, how each state's policy context affects teacher policies, and the barriers to implementing NCLB's teacher quality requirements at the state and local level. Our research questions are as follows:

1. How are teacher quality measures related to school characteristics, including the poverty rate, the percentage of minority students, and the number of years a school has been identified as "in need of improvement"?
2. What is the policy context at the federal, state, and local level for implementing NCLB's teacher quality requirements?
3. What are the challenges to implementation at the state and district level?

⁷ These files were obtained from different divisions from each state department of education and merged with the three other data sources. See Appendix 1 for a complete description of the state data files.

TEACHER QUALITY AND SCHOOL CHARACTERISTICS: DESCRIPTIVE ANALYSIS

Teacher Quality and Urban School Districts

Since NCLB requires that all classes be taught by highly qualified teachers by 2005-06, establishing baseline measures of teacher quality is important in order to gauge how far states have to go to meet the requirements. However, we found that significant variability in state data collection efforts and capacity to track teacher quality existed prior to No Child Left Behind, and thus establishing baseline measures of teacher quality proved elusive.⁸ Indeed, our search of state and district report cards to obtain data on teacher quality found considerable variation among states on the measures of teacher quality states collected and reported. California, for example, provided extensive data on teacher qualifications across all levels of the educational system (state, district, and school) while other states reported little or no data at all. With fifty different systems of credentialing, none of which were designed for NCLB purposes, this should not be surprising since a single federal requirement was simply superimposed on all these preexisting systems created to implement varying priorities and to work in widely differing contexts.

Changes in the federal guidance also added to the difficulty of accurately reporting on the number of teachers that were highly qualified. The U.S. Department of Education changed the criteria for determining whether some categories of teachers were highly qualified, causing state officials to recount some groups of teachers (General Accounting Office, 2003). It also did not provide information on the criteria for special education teachers, making it difficult for state officials to know how to apply the requirements to special education teachers (Government Accountability Office, 2004).

Table 3 presents data on three measures of teacher quality—average number of years teaching, percentage first year teachers, and percentage of teachers with full credentials—in three states and 5 districts. It shows the variability that exists in teacher qualifications between states, and within states, between selected districts in our state sample. Underscoring the difficulty of attracting highly qualified teachers to large, urban districts are the differences between the percentage of teachers with full teaching credentials in Chicago and Los Angeles and teachers in the rest of the state. In Chicago, 92.4% of teachers had full credentials compared to 97.5% of teachers in the rest of the state; 76.4% of teachers in Los Angeles were fully certified compared to 88.0% in California. The situation is similar in New York. Statewide, 87% of public school teachers were teaching with appropriate certification, but 71% of the teachers in New York City were certified (The University of the State of New York/The New York State Education Department,

⁸Authors of one report (General Accounting Office, 2003), which examined state efforts to track teacher qualifications, concluded that “we could not develop reliable data on the number of highly qualified teachers because states did not have the information needed to determine whether all teachers met the criteria” (p.2).

2003).⁹ There were few differences in the percentage of teachers with full credentials in Atlanta or DeKalb and the state average. However, the percentage of first year teachers was higher in both Atlanta and DeKalb than in the state (14.2% of teachers in Atlanta and 11.1% in DeKalb were first year teachers compared to 7.3% in the state).

Table 3: Average Teacher Quality Characteristics in California (2002-03), Georgia (2001-02), and Illinois (2002-03), and Selected Urban School Districts.

Level	# of Teachers	Average Years		% Full Credentials
		Teaching Experience	% 1 st Year	
California 2002-03	309,773	12.7	5.8	88.0
Fresno	4,078	14.2	4.8	95.2
LAUSD	36,185	11.2	5.0	76.4
Georgia 2001-02	97,280	12.5	7.3	83.1
Atlanta	3,942	11.7	14.2	85.0
DeKalb	6,488	10.5	11.1	84.1
Illinois 2002-03	129,068	13.9	N/A	97.5
Chicago	24,552	13.6	N/A	92.4

Source: CA: <http://www.ed-data.k12.ca.us/welcome.asp>

GA: <http://techservices.doe.k12.ga.us/reportcard>

IL: <http://webprod1.isbe.net/ereportcard/publicsite/getsearchcriteria.aspx>

Note: Illinois and Chicago report the percentage of teachers with emergency or provisional credentials. We obtained the percentages above by subtracting this from 100. Illinois reports 2.5% and Chicago reports 7.6% of teachers with emergency or provisional credentials.

Since aggregate measures of teacher quality can often mask disparities between high- and low-poverty schools, the law specifically requires state reports to include average teacher quality measures in the lowest poverty schools and the highest poverty schools. Table 4 shows the percentage of core academic classes taught by highly qualified teachers. There is considerable variation among states in the percentage of classes taught by qualified teachers, ranging from 52% in California to 97.9% in Illinois. In California, Illinois, and Virginia, the three states reporting data, low-poverty schools have a higher percentage of core academic classes taught by highly qualified teachers than high-poverty schools. States also differed in how they reported the data, which complicates comparability across states. Arizona and Georgia reported the percentage of teachers in the state that were highly qualified rather than the percentage of classes taught by highly qualified teachers. Georgia disaggregated the data by Title I status rather than by poverty level. Data for New York was not available.

⁹ These percentages include those who were not certified and those who were teaching subjects not covered by their certification.

Table 4: Percentage of Core Class Taught by Highly Qualified Teachers in all Schools in the State, in High- and Low-Poverty Schools, 2002-03

State	Statewide	High-Poverty Schools	Low-Poverty Schools
Arizona*	84.0	N/A	N/A
California	48.0	35.0	53.0
Georgia*	94.0	N/A	N/A
Illinois	97.9	94.6	99.5
New York	N/A	N/A	N/A
Virginia	83.5	77.1	87.4

Source: AZ, ((The Education Trust, 2003).

CA: 2002-03 California's Consolidate State Performance Report,

<http://goldmine.cde.ca.gov/nclb/sr/rt/documents/cspr.pdf>;

<http://www.cde.ca.gov/nclb/sr/sa/documents/yr04csa0901.pdf>

GA: http://www.gapsc.com/nclb/Admin/admin_fedreport.html

IL: 2003 Illinois State Report Card and 2003 Illinois District (Chicago) Report Card;

http://206.230.157.60/publicsite/reports/2003/state/English/2003_StateReport_E.pdf

NY: (The Education Trust, 2003).

VA: Professional Qualifications of Teachers, 2002-03, <http://www.pen.k12.va.us/VDOE/src/vasrc-pqt.pdf>

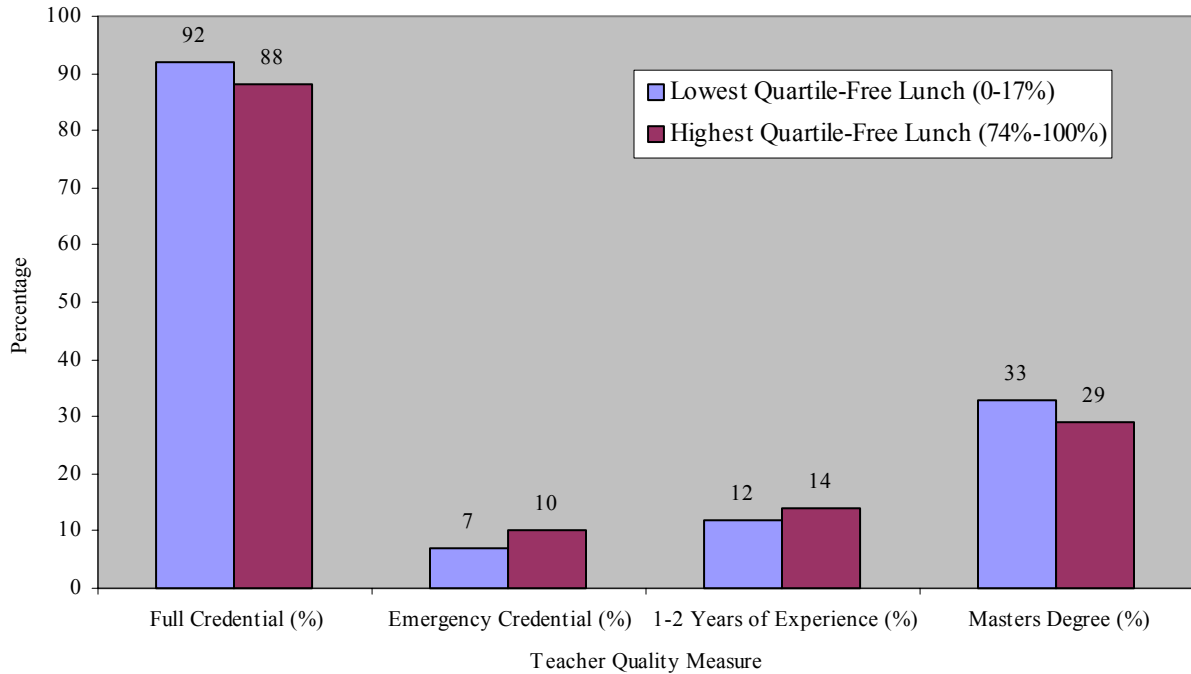
* Reflects the percentage of teachers statewide that meet state and federal criteria required to be considered highly qualified rather than the percentage of classes taught by highly qualified teachers.

The Relationship Between Teacher Quality and School Poverty Rates and the Percentage of Minority Students in California and Illinois

Analyses of teacher quality by school poverty rates indicate that the teachers with the lowest level of formal qualifications tend to teach students in the most economically disadvantaged schools. To illustrate this, we disaggregated three widely reported measures of teacher quality—credentials, experience, and degree status—by two categories of schools based on the percentage of students receiving free lunch in California schools. In conducting this analysis, teachers were categorized as those with full credentials or those with emergency credentials. We used teacher experience (whether teachers were in their first or second year of teaching) since that is one measure of teacher quality that research suggests is related to student achievement. Since the number of teachers who do not hold a bachelor's degree is too small to support reliable statistical comparisons, we used assessed differences in teachers with a master's degree.

Figure 1 shows that lowest quartile poverty schools in California in the 2002-03 school year had a larger percentage of teachers with full credentials, on average, than the highest quartile poverty schools (schools where at least 74% of students receive free lunch). The highest poverty schools have more teachers with emergency credentials, employ a larger percentage of inexperienced teachers, and have a smaller proportion of teachers with master's degrees than the lowest poverty schools. Taken together, students in the highest poverty schools are more likely to be taught by teachers who lack full credentials, are inexperienced, and have less education than their classmates in the lowest poverty schools.

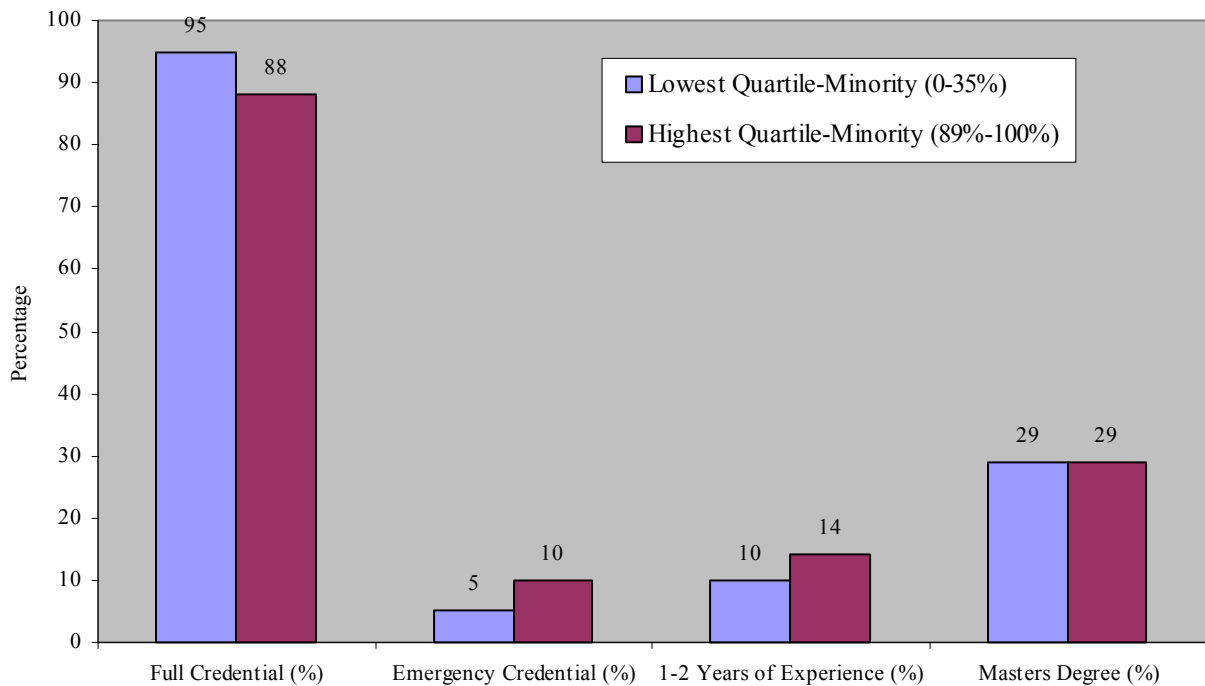
Figure 1: Mean Teacher Quality Characteristics in Lowest and Highest Quartile Poverty Schools (Percentage of Students Receiving Free Lunch), California Public Schools, 2002-03.



Source: California Department of Education, PAIF files (Professional Assignment Information Forms). Calculations are our own. Note: Sample size for lowest quartile-free lunch, n = 2,112, for highest quartile-free lunch, n = 2,208

Moreover, the degree of teacher inequality between schools in California with the highest and lowest minority enrollments was similar to or greater than the differences between teacher qualifications in the highest and lowest poverty schools. Schools serving the highest percentage of minority students had fewer teachers with full credentials, twice as many teachers with emergency credentials, and more inexperienced teachers than schools serving the fewest minorities (Figure 2). There was little difference in the percentage of teachers with a master degree between the two types of schools.

Figure 2: Mean Teacher Quality Characteristics in Lowest and Highest Quartile Minority Schools (Percentage of Non-white Students), California Public Schools, 2002-03.



Source: California Department of Education, PAIF files (Professional Assignment Information Forms). Calculations are our own. Note: Sample size for lowest quartile-minority, n = 2,191, for highest quartile-free lunch, n = 2,213.

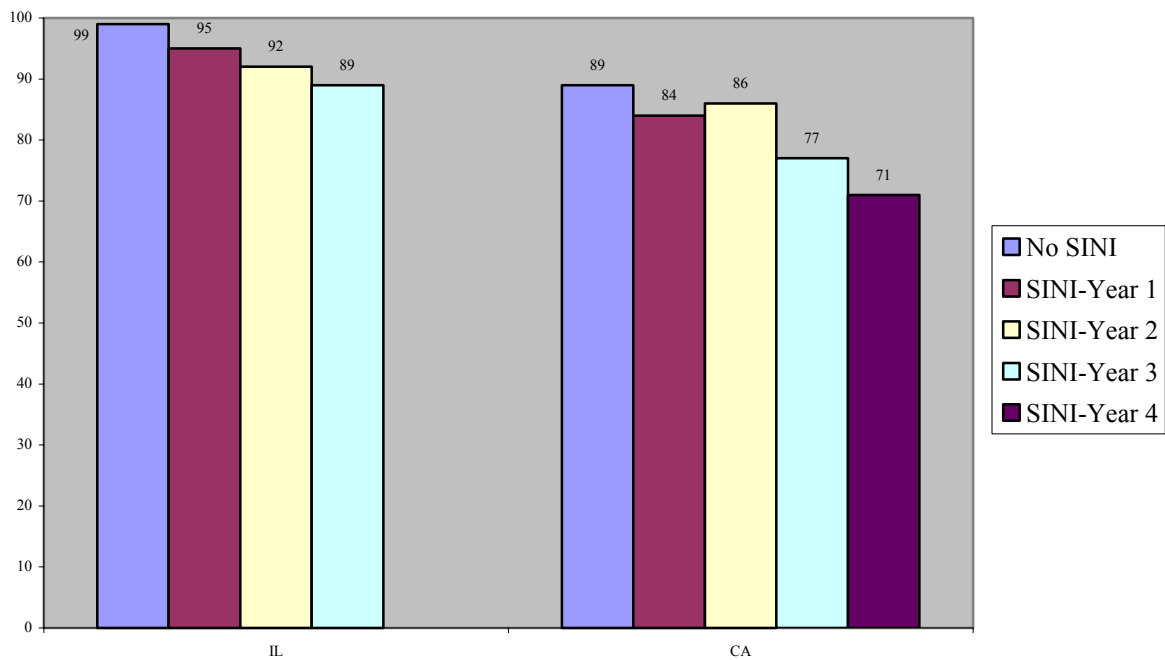
The teacher quality disparities in California were also apparent in Illinois, a Midwestern state with a large number of minority and low-income students, who are largely concentrated in the state’s largest school district (Chicago Public Schools). In the state’s lowest quartile poverty schools (0-11% free lunch), less than 1% of teachers had an emergency or provisional teaching certificate in 2001-02 (Illinois State Board of Education, 2004). In the highest quartile poverty schools, where 60-100% of students receive free lunch, an average of 6% of teachers had emergency or provisional certificates. While both low- and high-poverty schools had a relatively small proportion of teachers lacking full credentials, the percentage of teachers without full credentials was over six times higher in high-poverty schools than low-poverty schools.

Teacher Quality and Schools Identified as “In Need of Improvement”

Our analysis also found that teacher inequities are related to the number of years a school has failed to make adequate yearly progress and has been identified as “in need of improvement.” Figure 3 shows the average percentage of teachers with full credentials in Illinois (2001-02 school year) and California (2002-03 school year) in schools that were

in different years of program improvement for the 2002-03 school year.¹⁰ Under NCLB, schools enter their first year of program improvement if they fail to make adequate yearly progress (AYP) for two or more years. Schools remain in program improvement if they continue to fail to make AYP. In both Illinois and California, the average percentage of teachers with full credentials is highest in schools that have not been identified as in need of improvement. Schools in year 3 and 4 of program improvement have, on average, the lowest percentage of fully certified teachers.

Figure 3: Percentage of Teachers with Full Credentials in Illinois (2001-02) and California (2002-03) by the Number of Years in Program Improvement (SINI, Years) for 2002-03.



Note: Sample sizes by year of program improvement (2002-03) for Illinois are: Year 0 (n = 3,276), Year 1 (n = 24), Year 2 (n = 476), Year 3 (n = 26). Sample sizes by year or program improvement (2002-03) for California are: Year 0 (n = 7,684), Year 1 (n = 641), Year 2 (n = 222), Year 3 (n = 331), Year 4 (n = 11)
Source: California Teacher credential data are from the California Basic Education Data System's Professional Assignment Information Form (PAIF): <http://www.cde.ca.gov/ds/sd/cb/fspaift.asp>. California school improvement data are from the Title I schools and Program Improvement data files for 2002-03: <http://www.cde.ca.gov/ta/ac/ay/tidatafiles.asp>. Illinois teacher credential data are from the Illinois State Board of Education school report card: http://www.isbe.net/research/htmls/reports.htm#Reports_Data. School improvement data are from the Illinois state report card for 2002-03: <http://206.230.157.60/publicsite/getSearchCriteria.aspx>.

¹⁰ Illinois found errors in the number of schools that were identified as needing improvement in the 2002-03 school year. Nonetheless, we used the original list of schools identified as needing improvement in the 2002-03 school year because these schools were required to undergo the sanctions outlined in the federal law.

Schools identified for improvement are overwhelmingly black and Latino (Table 5). Black and Latino students comprise 96% of the students in schools identified for improvement in Illinois and 80% of the students in California. In contrast, white and Asian students are more likely to attend schools making AYP in both states (in schools meeting AYP, 71% of the students are white and 4% are Asian in Illinois; 40% are white and 9% are Asian in California). These descriptive statistics suggest that students in under-performing schools, which also serve black and Latino students, are more likely to be taught by teachers without full credentials. Since this data is cross-sectional, it is difficult to understand how the distribution of teachers has changed over time or to what extent accountability requirements cause teachers to leave under-performing schools. Nonetheless, the lowest-performing schools are likely to have the greatest difficulty attracting and retaining credentialed teachers, who are needed to improve instruction and achievement in schools that have been identified as in need of improvement.

Table 5: Racial and Ethnic Composition of Schools Needing Improvement and Schools Meeting AYP in Illinois and California, 2003-04.

State	School Improvement Status	%				Total (N)
		Black	Latino	Asian	White	
IL	Needing Improvement	59	37	1	3	271,408
	Meeting AYP	12	13	4	71	1,651,377
CA	Needing Improvement	12	68	5	15	1,154,633
	Meeting AYP	8	42	9	40	4,616,208

Source: State Department of Education websites for Illinois and California. Calculations are our own.

Contributing to the difficulty of attracting and retaining teachers to low performing schools is the potential for high-stakes accountability to cause teachers to leave these schools. In a survey we administered in spring 2004 to a sample of teachers in Fresno and Richmond,¹¹ teachers agreed that NCLB sanctions would encourage teachers to transfer out of schools identified for improvement (Table 6). About half of teachers in both districts, and in both schools identified for improvement and schools making adequate progress, agreed that sanctions would encourage teachers to transfer out of schools identified for improvement.

Table 6: NCLB sanctions will . . . Encourage teachers to transfer out of schools identified for improvement.

School Improvement Status	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Sum Agree	Sum Disagree
Fresno Need Imp.	23.8	23.2	26.4	15.7	10.9	47.0	26.6
Richmond Need Imp.	31.1	24.3	28.0	9.5	7.1	55.4	16.6
Fresno Adeq. Prog.	25.0	29.0	23.5	11.8	10.7	54.0	22.5
Richmond Adeq. Prog.	31.0	25.5	25.8	9.6	8.1	56.5	17.7

Source: *No Child Left Behind: The Teachers' Voice* survey, question 6f (Fresno) and 4f (Richmond).

¹¹ For information on survey design, administration and sampling methodology, see *Listening to teachers: Classroom realities and No Child Left Behind* (Sunderman, Tracey, Kim, & Orfield, 2004).

Our survey data on how long teachers plan to remain in teaching lends credence to the idea that an unintended effect of the NCLB accountability system is that it will make it more difficult to attract and retain teachers to low-performing schools (Table 7). When teachers were asked how long they plan to continue teaching in their present school, teachers indicated in large numbers that they plan to leave within 5 years, with teachers in improvement schools (Fresno, 51.5%; Richmond, 75.5%) more likely to leave within 5 years than teachers in adequate progress schools (Fresno, 40.5%; Richmond, 67.3%). In improvement schools in Richmond, only 24.5% of teachers plan to remain at their current school for more than 5 years. To compare, data from a national study found that 44% of teachers would likely be in the same school for five years (Luekens, Lyter, & Fox, 2004). Fresno compares favorably with the national statistics (48.5% of teachers in improvement schools; 59.7% in adequate progress schools plan to continue teaching in the same school for more than five years) whereas Richmond compares unfavorably (24.5% of teachers in improvement schools; 32.7% in adequate progress schools plan to continue teaching in the same school for more than five years). This data is consistent with other research showing that school-based accountability systems exacerbated the challenges that schools serving low-performing students face in retaining and attracting high-quality teachers (Clotfelter, Ladd, Vigdor, & Diaz, 2004). Even good teachers in weak schools face possible sanctions that could harm them and their careers if they stay in those schools since the accountability is at the level of the school rather than the classroom, painting all teachers with the same brush.

Table 7: How long do you plan to continue teaching at this school?

School Improvement Status	0-5 years	More than 5 years
Fresno Need Imp.	51.5	48.5
Richmond Need Imp.	75.5	24.5
Fresno Adeq. Prog.	40.5	59.7
Richmond Adeq. Prog.	67.3	32.7

Source: *No Child Left Behind: The Teachers' Voice* survey, question 32 (Fresno) and 31 (Richmond)

Discussion: We found considerable variability between the states in our study in the reported percentage of highly qualified teachers. Even so, it is difficult to compare states because of different certification requirements. While each state indicated that the term "highly qualified" was based on the NCLB standard, state requirements for certification and for demonstrating subject matter competency differ between states, and, when approving state definitions, the U.S. Department of Education accepted whatever definition the state used. For example, Virginia requires the highest score in the nation on the Praxis exam to be certified. Other states use different tests to determine certification. New York requires teachers to achieve qualifying scores on the New York Teacher Certification Examination (NYSTCE) program and teachers in Arizona must pass the AEPA Professional Knowledge Test. To demonstrate subject matter competency, Arizona teachers must pass the Subject Knowledge Test in the content area in which they are teaching while teachers in Georgia must pass a Praxis II examination.

Our analysis also found inequities in teacher qualifications between high-poverty schools and low-poverty schools, and between schools with the highest and lowest minority enrollments. Teacher inequities were also related to the number of years a school had failed to make adequate yearly progress, and increased the longer a school remained in improvement status.

The NCLB teacher quality reporting requirements highlight the teacher quality gap between high- and low-performing schools in much the same way that the disaggregated reporting of test score data is focusing attention on the achievement gap between different groups of students. However, if schools that have been identified as needing improvement are to improve student achievement, they need access to better teachers who, at minimum, meet state certification requirements. External accountability pressures are unlikely to turn around under-performing schools until teacher quality improves in the lowest performing schools. Moreover, we found evidence that the sanctions required by NCLB may exacerbate the situation in the lowest performing schools by discouraging highly qualified teachers from moving to or staying in these schools. Upgrading teacher quality is the central challenge facing many schools identified as needing improvement. As more schools begin to enter year 3, 4, and 5 of school improvement, some may be required to replace existing staff. For these reconstitution efforts to work well, skilled teachers and administrators must be recruited to work in schools identified for improvement and they must be given the time, resources, and support to upgrade instruction and achievement (Elmore, 2004a, 2004b; Malen, Croninger, Muncey, & Redmond-Jones, 2002; Mintrop, 2004).

POLICY CONTEXT FOR IMPLEMENTING NCLB

The data on teacher quality illustrates the challenge of equalizing teacher quality across districts and, within districts, across schools. In this section we examine the focus of implementation efforts by the federal government and the challenges to meeting the teacher quality requirements in states and districts. We pay particular attention to the different policy context of each state in the study and how teacher recruitment and retention policies and programs may affect the distribution of teachers across districts and schools.

Federal Policy Guidance on Teacher Quality

Federal officials devoted little attention to the NCLB provisions addressing inequities in the distribution of teachers or the requirement that low-income and minority students are not taught by unqualified teachers more often than other students. While the law specifies that the state and district plans must address questions about access to high quality teachers in low-income or high-minority schools, the June 2002 consolidated state accountability plan did not require states to include these elements. Instead, the consolidated plan, which all states completed instead of separate program plans, focused on the elements of the state's accountability and assessment system. States were required to report in the aggregate and for high-poverty schools the percentage of classes taught by high quality teachers in the September 2003 submission of the consolidated application. The U.S. Department of Education did not require states to report the percentage of high-quality teachers in low-poverty schools, even though this reporting was specified in the law. This has the effect of masking differences between high- and low-poverty schools, which tend to be larger than comparisons between high-poverty schools and state averages.

Changes in the federal guidance on the criteria for a highly qualified teacher complicated implementation at the state level. The criteria changed between December 2002 when the teacher quality guidance on NCLB was initially released, September 2003 when the teacher quality guidance was revised, and January 2004 when the final guidance was released (U.S. Department of Education, 2002, December 19; 2003, September 12; 2004, January 16). This meant states changed their policies or had to recalculate the percentage of teachers meeting the requirements.

To meet the teacher quality requirement, the guidance released by the U.S. Department of Education on teacher quality encouraged states to expand alternative routes to teacher licensure and “to remove any unnecessary requirements that inhibit, rather than encourage, the entrance of qualified people into the teaching profession” (U.S. Department of Education, 2004, January 16). It emphasized programs for preparing, training, recruiting and rewarding high quality teachers, and relied heavily on professional development to improve teacher knowledge and instructional practices. The guidance also required the “equitable participation” of private school teachers and other educational personnel in Title II, Part A professional development activities. Since the guidance is regulatory, it included extensive information on the definition of a high

quality teacher and reporting requirements. This guidance suggests that ED believes it can address the unequal distribution of teachers by getting more people into the teaching profession. It ignores important questions about working conditions, especially in high-poverty areas, what it will take to attract teachers to schools and districts serving low-income and minority students, or how to retain teachers once they have been recruited.

On March 15, 2004, in response to public concern about some of the teacher provisions, the administration relaxed the regulations governing the teacher quality provisions of the law in three ways. First, teachers in rural districts who were certified in one subject were allotted three years to gain certification in the other subjects that they teach. Second, science teachers can be certified across science-related subjects (i.e., biology, chemistry, etc.) instead of needing to be certified in each science subject area. Third, teachers who teach multiple subjects will be allowed to prove mastery by passing a test that covers multiple subjects. In the past, they had been required to pass a test in each subject. Though rural areas were targeted for increased flexibility in implementing the teacher quality provisions by such changes, no such relief was directly targeted at the challenges facing urban school districts as they attempted to comply with the law.

Other areas of the guidance raised concerns because of the perception that different standards were applied to teachers in charter schools and the supplemental educational service program. Under these guidelines, teachers in charter schools do not have to be fully certified and supplemental service providers were not required to meet the highly qualified teacher requirements. This was accomplished by differentiating between instructors in an “after-school program,” which included supplemental services providers, and those in an “extended learning time program,” which included public school teachers. The non-regulatory guidance defined an extended learning time program as “instruction in core academic subjects designed to help students meet State or local academic standards” and that “extend or continue the school’s instructional day using the same or similar curricula” whereas an after-school program was one that offers “academic enrichment, tutoring and homework assistance, including supplemental educational services” (U.S. Department of Education, 2004, January 16). This distinction is artificial and conforms to the administration’s practice of promoting policies that fit with their ideological preferences.

Federal assistance to states for implementing the new requirements was uneven. The federal stance was to provide feedback to states as they struggled to implement what administration acknowledges was a “complex” implementation process (U.S. Department of Education, 2003, July 28). As states approached implementation issues, the federal government provided technical assistance upon request, largely in the form of state visits by members of the “Teacher Assistance Corps.” The Corps is a group of key U.S. Department of Education officials and “leaders in the field of teacher quality” who have been charged with assisting states with implementation issues (U.S. Department of Education, 2003, July 28). Federal officials entered into agreements with twenty-six states when those states were unable to adequately report the percentage of classes taught by highly qualified teachers by the September 1, 2003 deadline (U.S. Department of Education, 2004, June 4). Federal officials claimed that continued failure to report such

data will result in the delay of the release of federal funding, but there is no evidence that such action has been taken.

The State and Local Role in Reducing Teacher Quality Inequities

It is unclear how likely states will be to intervene, or if they should, with policies that address the unequal distribution of teachers across districts and within districts. Teacher policy has traditionally been primarily a district responsibility, with little outside intervention by the state. States generally set minimum certification requirements, and select states have adopted incentives focused on attracting and retaining teachers, although few of these efforts are focused on securing teachers for high-poverty, high-minority, or low-performing schools (Lankford et al., 2002; Olson, 2003). Other efforts focus on expanding entry into the teaching profession through alternative certification programs. Very few states, if any, have addressed the issue of how teachers are distributed across districts or allocated to schools. When it comes to teacher assignment practices, states generally defer to district officials and rely on district-level training and support to improve teacher skills. A recommendation to the Maryland State Department of Education exemplifies this state preference for deferring to districts:

Most importantly, local districts and employee unions should work closely to ensure that local district policies and provisions of the collective bargaining agreement permit and support assignment policies needed to staff low-performing schools with the most qualified teachers and principals. Specific recruitment strategies and incentive programs must follow these agreements. Opportunities to work in such schools must be made more attractive and satisfying to excellent teachers. (Maryland State Department of Education, 2002, January).

At the district level, teacher distribution is governed by seniority rules, teacher preferences, and principal discretion. Thus, it is common for the quality of teachers to vary between schools within a district. For example, there is evidence that teachers favor higher achieving, non-minority, non-low-income students, a preference which extends across districts (i.e., teachers prefer suburban over urban districts) as well as to schools within a district, resulting in teachers moving to better schools when the opportunity arises (Hanushek et al., 2001). The distribution of teachers as well as the quality of teachers will need to be addressed if students in low performing schools are to have access to high quality teachers.

State Policy Context and Teacher Quality

There is considerable variation across states regarding the teacher labor market and in the state policies and programs designed to address challenges presented by the marketplace. This variation is related to changes in student demographics (some states are experiencing large influxes of new students), the geographic distribution of students across urban, suburban, and rural districts, and differences in state policies designed to attract, train, and retain teachers. Changes in the demand for teachers, which can affect teacher quality, are subject to enrollment fluctuations and financial constraints. In this

section, we review some of the major issues facing each of the six states and the state approach to dealing with them.

California. The proportion of teachers in California lacking full credentials has increased steadily since the early 1990s in large part because of a statewide teacher shortage. The teacher shortage has been exacerbated by the state's 1996 class size reduction program, a popular but costly program. This legislation, which aimed to reduce average class size from 30 to 20 students in kindergarten through third grade, created thousands of additional teaching positions. New teachers with less experience joined the teaching force and many teachers in economically disadvantaged communities left their schools to fill vacancies created in other schools (Jepsen & Rivkin, 2002). While there were few differences among schools in teacher qualifications in the early 1990s, by 1999 there were large gaps in teacher qualifications between schools attended by low-income and non-white students and other schools (Jepsen & Rivkin, 2002). In addition to the class size reduction initiative, California enacted the 1999 Public School Accountability Act (PSAA), which rewards and sanctions schools based on annual achievement targets for all students and subgroups. There is some preliminary and tentative evidence that the PSAA has exacerbated differences in teacher quality between lowest- and highest-performing schools. In particular, the percentage of un-credentialed and inexperienced teachers has increased in the lowest-performing schools, leading some researchers (Betts & Danenberg, 2002) to speculate that "the accountability system, with its sanctions for bottom-performing schools, has discouraged highly educated and experienced teachers from moving to, or staying at, such schools" (p. 162). At the middle school level, Betts and Danenberg (2002) add that the percentage of un-credentialed teachers is six times higher in schools with low average scores than in schools with average scores.

Virginia. Virginia has a teacher shortage in some parts of the state, although it is not overwhelming. The more immediate issue is that the state must import teachers from other states because it does not graduate enough teachers from state colleges and universities to meet demand. The Virginia Department of Education (2000, November) reports that 58% of all newly hired teachers received their most recent degree from out of state. Out of state recruitment is complicated because the state requires the highest minimum score in the nation on the Praxis teacher examination for certification. However, the state is now considering lowering the cut score and has allowed teachers to pass the tests with a composite score rather than a passing score on each test (Rado, 2004). There are also regional differences in the ability of districts to recruit teachers, with the Washington, DC suburbs better able to attract and retain high quality teachers than some other areas of the state.

Georgia. In Georgia, significant numbers of teachers, particularly those teaching in low-performing schools, are reaching retirement age. In addition, enrollment increases and class size reduction mandates have contributed to the demand for more teachers. This enrollment growth reflects a change in the composition of the student body, with Latino student enrollment increasing by 17% between 1998 and 2002 and the white student enrollment declining and has contributed to a growing demand for teachers who can teach English language learners (Georgia Professional Standards Commission, 2002).

Between 1991 and 2002, the enrollment of Limited English Proficient students increased by 670.0% (Padolsky, 2002). The growing population of students learning English represents a significant change in the educational challenges facing districts in Georgia and created a demand for teachers with language skills. Out-of-state recruitment in Georgia is also increasing, with 32.5% of new teachers hired in 2002 from outside the state (Georgia Professional Standards Commission, 2002).

New York and Illinois. Other states, including both New York and Illinois, have difficulties attracting teachers to teach in their large urban districts. In Illinois, districts serving minority and low-income students have the largest number of teacher vacancies. Half of the unfilled positions in Illinois were in the Chicago Public Schools and 32% were in the surrounding suburban counties, which include the inner ring suburbs serving high numbers of minority and low-income students (Illinois State Board of Education, 2002). New York City, which enrolls 36.9% of the state's public school students, had the highest annual teacher turnover rate in the state. Not surprising, it also had the least experienced teachers and the largest percentage of teachers teaching out of their area of certification (The University of the State of New York/The State Education Department, 2002). Other factors, including difficult working conditions, lower per pupil spending, and lower teacher salaries relative to those in other districts in the same region, exacerbate district recruitment and training efforts in New York City. In its 2001 report on the state of learning, the New York State Department of Education reported, "Schools with the highest percentages of minority children—who are frequently also poor—have the least experienced teachers, the most uncertified teachers, the lowest-salaried teachers, and the highest rates of teacher turnover" (The University of the State of New York/The State Education Department, 2001).

Arizona. The issue in Arizona is less one of teacher shortages—the state has an overall surplus of teachers—than one of teacher shortages in specific regions and subject matter areas. More teachers are needed in the Western region of the state, some exurban Phoenix areas (locales beyond the suburbs experiencing rapid urban growth), and, to a lesser extent, in urban Phoenix school districts (Gau, Palmer, Melnick, & Heffernon, 2003). These "exurban" areas are experiencing rapid population growth, both from an influx of residents from other states and from immigration. At the same time, there is a demand for teachers in remote rural areas and on Indian reservations. The changing demographics of the state create a demand for teachers who can teach students with limited English proficiency. Latino children, who are the fastest growing segment of Arizona's school-age population, are projected to become the majority of the state's K-3 students by 2009-2010 (Gau et al., 2003). Finally, there are shortages in subject-matter specialties, particularly special education.

State Policies to Increase the Recruitment and Retention of High-Quality Teachers

States varied in the extent to which they have adopted state level policies and programs designed to recruit, train, and retain teachers. Some of the states we visited had policies and programs to address teacher recruitment and retention issues, while others left it primarily up to the districts. In Arizona, a strong preference for local control coupled

with the state's fiscal difficulties meant there were virtually no state programs aimed at the recruitment, retention, or training of teachers. Proposition 301, which raised the sales tax 0.06 % to help pay for education, reinforced district autonomy by allowing districts to decide whether to use a portion of the money for teacher salaries, merit pay, or other programs. In May 2004, State Superintendent Horne submitted a proposal to the Arizona State Board of Education that would allow teacher applicants with a bachelor's degree to obtain certification through an intensive summer program (Arizona State Department of Education, 2004, May 25). If passed, this initiative would allow teachers to teach while working to obtain their certification.

Illinois, Georgia, and Virginia have a small number of programs designed to improve the teaching force. These include alternative programs for teacher certification, mentoring and induction programs for new teachers, and, in Illinois and Virginia, some form of financial assistance for teacher training. Since the state proportion of education spending is low in these three states, wealth differences between districts influence the ability of districts to attract and retain teachers and contribute to the disparities between districts.

California and New York have done more than the other four states in our study to develop programs to attract and train teachers. Both states have taken steps to provide incentives for teachers to teach in poorly performing schools. California established six regional recruiting centers to recruit certified teachers to low-income, low-achieving schools. The state also provides grants to needy districts for signing bonuses, housing assistance, or smaller classes for new teachers. New York requires that schools under registration review (low performing schools identified by the state) be certified, although it is unclear how they will enforce this requirement. Many of the programs in New York have targeted New York City, such as the alternative teacher certification program, or other urban districts, such as a pilot program that pairs new teachers with experienced teachers (Olson, 2003).

Discussion: By ignoring local labor market constraints, NCLB is unlikely to improve student access to highly qualified teachers and may create short-term teacher shortages in some subject areas and some areas of the country, particularly in rural, urban and low-income districts. These policies risk reducing the pool of highly qualified teachers in low-performing schools if teachers transfer to suburban or low-poverty districts. Since few states have policies or programs that address the distribution of teachers, this is an area where states could provide additional incentives to attract teachers to low-performing schools and districts. Even so, teacher recruitment, school assignment, and retention will remain a district and school responsibility, subject to the rules and practices operating at the local level and influenced by local working conditions.

IMPLEMENTATION CHALLENGES

Both state and district officials encountered a number of conditions that limited their ability to implement the teacher quality provisions. State departments of education had difficulty meeting the data requirements and labor market constraints complicated the process of developing criteria for a highly qualified teacher. In the end, states adopted policies that conformed to the NCLB definition of a highly qualified teacher. At the district level, implementation of the teacher quality provisions was related to district fiscal capacity, organizational characteristics, and policy environments.

State Challenges

States did not have adequate data systems to track teacher quality according to the criteria outlined by the federal government. Tracking teacher qualifications by the subject matter taught was particularly problematic and efforts to develop data systems and track teacher qualifications was confounded because states did not have the information they needed to determine whether teachers met the criteria. According to a study conducted by the General Accountability Office,

State officials did not know the criteria for some of their teachers. Education's draft guidance on the criteria for teachers in alternative certification programs changed between June and December of 2002, which meant that states had to reassess their teachers' qualifications. Guidance for special education teachers was not available until December 2002, and it was contained in an appendix to the Title I regulations, but not in the federal regulations. Also, states did not have the information they needed to develop methods to evaluate subject area knowledge of their current teachers (General Accounting Office, 2003)

In developing criteria for a definition of "highly qualified," state officials had to balance the demands of NCLB with the reality of local needs and conditions. The issue of including teachers who were certified under emergency or temporary license was among the most contentious because it limited state and district flexibility when hiring teachers. Since states depend on these types of certificates to address teacher shortages or as a transition for new teachers until they receive full credentials, states kept them but limited their duration or added criteria that holders of an emergency or temporary license must meet. For example, California's definition of a highly qualified teacher was rejected by the U.S. Department of Education because it included teachers with emergency credentials and interns (i.e., college graduates who passed state credentialing tests and were working towards an emergency credential). The state revised its definition to require that teachers have full credentials, eliminated the emergency credential for interns, and limited the amount of time a person could remain in an intern program. Since about 15%, or 1 in 7 teachers lack a full teaching credential in California (California State Department of Education, 2003), the state depends on the emergency credential to help address teacher shortages, which are particularly severe in the lowest performing schools (Asimov, 2003; Olson, 2003). Eliminating or reducing the number of teachers with emergency credentials means that other measures of teacher quality, such

as teacher experience, will become more important in monitoring teacher quality differences across districts and schools.

Illinois faced a similar issue with its *Transitional Bilingual Certificate*, or Type 29 certification. This certificate was issued to address the shortage of bilingual teachers with subject matter expertise. It was a temporary certificate, valid for all grades (K-12) that allowed certified subject matter teachers that do not hold a *Bilingual Education and English-as-a-Second Language Certificate* to teach in the bilingual and English as a Second Language (ESL) program. It was intended to help meet the demand for bilingual teachers, but did not meet the NCLB subject matter requirements. Under pressure from advocacy groups, teacher unions, and districts, the Illinois State Board of Education voted to continue the Type 29 certification if a holder met certain criteria. These criteria included provisions that the holder of a Type 29 certificate demonstrate subject-area competence, participate in an induction, mentoring, or professional development program, and be continuously enrolled in a certification program (Illinois State Board of Education, 2003).

States also recognized that improving the quality of the teaching force was a multifaceted task that would require cooperation across organizations over time. For example, a state board member in Illinois pointed out the steps the state had taken to improve the quality of teachers.

We have been trying to improve the quality of the work force for some time. Mandating that colleges have quality programs – requiring that education standards be used to measure the performance of colleges of education, mandating that we have toughened our content area, certain requirements – and requiring that every teacher be certified in certain content areas. Raising the bar on the basic entrance exam to the teaching profession – I mean we have been doing all of those things – so that at least on paper, we don't have to make a lot of changes in order to accommodate No Child Left Behind with respect to the regimen with which we recruit teachers (R. Gidwitz, personal communication, July 16, 2003).

The unequal distribution of teachers across districts and schools was more difficult for states to address. State officials were aware that districts serving high numbers of minority and low-income students had difficulty attracting and retaining quality teachers, but they were unlikely to see this as within their domain. For example, state officials in Arizona recognized that dealing with the movement of teachers to better districts would involve changing state statutes, state board policies, and union agreements. However, they were constrained because “local control is extraordinarily important in Arizona and that is a local control issue” (P. Loughrin, personal communication, June 6, 2003).

District Challenges

Implementing the highly qualified teacher provisions falls primarily to district officials since that is where hiring takes place and teacher assignments are determined. The districts in our sample faced very different implementation challenges that were related to differences in fiscal capacity, organizational characteristics, and policy environments. Three districts—Buffalo, Arlington, and Fresno—illustrate how differences in fiscal capacity and organizational characteristics affected their approach to meeting the NCLB teacher requirements. Richmond, Washington Elementary (AZ), and Los Angeles illustrate the effect of state and district policies on school district recruitment and retention efforts.

Fiscal and Organizational Constraints on Teacher Recruitment. In Buffalo, district officials focused on addressing ongoing budget shortfalls and the implications of a budget deficit on staffing decisions. They were less concerned with meeting the NCLB teacher qualification requirements because, as one district administrator said, “we are not hiring new teachers because we have no money. We have been cutting for the last couple of years, so because of that our staff won’t change” (district official, personal communication, 2-6-03). The district laid off almost 200 teachers in 2001-02 because of a mid-year budget shortfall, 176 in 2002-03, (Buffalo City School District 2002-03 Budget) and another 370, or 9% of the city’s teaching staff, in order to balance the 2003-04 budget (Buffalo City School District Four Year General Fund Financial Plan, 2003-2004 to 2006-2007, September 1, 2003). Layoffs were based on seniority and resulted in the transfer of teachers between schools and programs. In 2001-02, these occurred during the middle of the school year. In spite of the staff layoffs, the district was concerned about shortages of subject matter specialists, particularly in the areas of special education, mathematics, bilingual education, and foreign languages. Combined with enrollment declines and a growing charter school enrollment (charter schools have attracted over 2,000 students, or about 5%, from the Buffalo schools since 2000), the ongoing financial difficulties meant the district will continue to confront the need to close schools, increase class size, and reduce the teaching staff. This environment is likely to hamper efforts to recruit and retain skilled teachers because of job uncertainty and unfavorable working conditions.

The situation in the Arlington Public Schools, a district that is well funded and has a strong teacher recruitment and retention program, was very different. Because the district was financially stable, it could allocate \$150,000 in the 2003-04 budget to automate all personnel files to generate the reports required by NCLB. Although this allocation did not include personnel costs, it did allow the district to begin to meet the data reporting requirements of the law. Additionally, the district did not anticipate it would have a difficult time meeting the higher teacher qualifications mandated by NCLB. They had a very favorable recruitment environment for hiring teachers for the 2003-04 school year and thus could recruit teachers that already met the requirements. Furthermore, Arlington County offers the highest average salary in Virginia for teachers who are starting their

careers.¹² The district's competitive salary scale, its proximity to Washington, DC, its strong professional development and teacher mentoring programs, and the favorable working environment made it easy to attract teachers to the district. Recruitment efforts also benefited from the financial problems of other states. For example, the district recruits in New York State, where many districts were not hiring teachers for 2003-04 because of its huge budget deficits.

Fresno Unified School District also did not have difficulty attracting qualified teachers. The city has a low cost of living and is considered a more attractive place to live than the rural districts that surround Fresno. Thus, few districts compete with Fresno for the teachers coming out of the area's three local teacher-training programs. As a result, even though they are the fourth largest district in the state, 95% of the teachers are certified compared to a statewide average of 88% (see Table 3). However, attracting teachers to low-performing schools and year-round schools was more difficult since these schools were perceived as less desirable. When openings arise, union contracts require that principals must first consider lateral transfers (thus giving priority to more senior teachers) before hiring new teachers from outside the district or teachers who are new to the profession (district official, personal communication with J. Jellison Holme, 8-1-03).

Impact of State and District Policies on Teacher Recruitment. With 95% of their teachers fully licensed, Richmond believed it was well positioned to meet the NCLB teacher requirements. In recent years, they had concentrated on reducing the number of provisionally licensed teachers and expanding their recruitment efforts. Nonetheless, Richmond officials were concerned that the state's high certification requirements coupled with an inadequate supply of teachers coming from state colleges would complicate future recruitment efforts. Like many other districts in Virginia, Richmond imports teachers from other states, a task that was becoming increasingly more difficult because the state requires one of the highest pass rates on the Praxis exam to meet its certification requirements.

In Arizona, high-poverty districts have to contend with state incentives for teachers to move to other school systems after a few years teaching. This was the case for Washington Elementary District, which is located next to several "high growth" areas in Phoenix. Arizona provides extra money to districts experiencing high rates of growth to help them contend with the influx of new residents to the state. These areas are rarely where there is a high level of poverty. This creates incentives for teachers to move to these "high growth" areas since salaries are higher and school districts are homogeneous with predominately white and better off students.

Los Angeles Unified School District is an example of a district that changed its recruitment practices to address the distribution of highly qualified teachers. District officials examined teacher demographics in each of the 11 local districts and identified the ones with the highest percentages of non-credentialed teachers. In preparation for the 2003-04 school year, the district held job fairs specifically for those local districts, giving

¹² In 2002-03, the starting salary was \$36,281 for teachers with a bachelor's degree and \$40,000 for teachers with a master's degree (Virginia Education Association, 2002).

them the first pick of newly credentialed teachers. In the past, new teachers were referred directly to schools where they wanted to teach for interviews with the principals. This change meant that the local districts with the greatest need for teachers were able to improve the number of certified teachers (district official, personal communication with J. Wing, 1-15-04). However, the policy did not address the distribution of teacher experience across the district, so while some schools may have increased the number of certified teachers, they may not have increased the number of experienced teachers, another important measure of teacher quality not included in the NCLB requirements.

Discussion: Local context is influencing districts' ability to meet the NCLB highly qualified teacher requirements, something that was not considered in the legislation. At the state level, states have focused on developing criteria for a definition of "highly qualified" that meets the NCLB requirements. Improving the unequal distribution of teachers across schools and districts has received much less attention and will continue to challenge states and districts because of differences in the fiscal and organizational capacity of districts to attract and retain teachers.

CONCLUSION AND RECOMMENDATIONS

Ensuring that all students have access to high quality teachers is clearly important for narrowing the achievement gap between minority and low-income students and their more advantaged peers. By illuminating existing inequities between schools in teacher quality, the NCLB teacher quality provisions are the first step towards narrowing a similar teacher quality gap. However, the task of ensuring quality teachers in every classroom, particularly those serving low-income, minority students, extends beyond insuring that all teachers meet these requirements. Since states and districts operate under very different conditions, they face very different challenges in attracting and retaining highly qualified teachers.

Our research indicates that the one-size-fits-all approach of NCLB does not address many of the challenges states and districts face and may actually divert attention from them. Many schools and districts have difficulty attracting and retaining teachers that are unrelated to teacher qualifications. In particular, teacher qualifications are unequally distributed, with schools serving low-income and minority students, and schools identified as needing improvement under NCLB most likely to have the least qualified teachers. We found that state recruitment and retention policies are as likely to reinforce this disparity in teacher qualifications as they are to reverse it and few of the states in our study had programs that addressed the issue of the unequal distribution of teachers. The NCLB requirement that states report teacher quality by poverty quartile has the potential to direct attention to the disparities in teacher qualifications. However, ED has not required districts to report the percentage of highly qualified teachers in low-poverty schools, even though this reporting was specified in the law. Unless this reporting requirement is enforced and coupled with policies that recruit teachers to high-poverty districts and focus on improving working conditions in these districts, things are unlikely to change dramatically.

If teacher quality is to improve, policymakers will need to devote attention to other aspects of teaching as well as to understanding how schools work to promote change. This includes paying attention to the occupational characteristics of teaching that influence who enters teaching as a profession and how long they stay. Low salaries as well as the flatness of the salary scale over time reflect the low esteem paid to teaching and the lack of a professional career trajectory over time. While increasing salaries may help, improving the working conditions in high-poverty, low achieving schools may have an even greater impact. Attention will need to be devoted to the intellectual talent of those entering the teaching profession. Additionally, policies will have to be designed that better reflect the labor market needs of local districts and that address the changes in student demographics that require a different set of teaching skills. Focusing on how schools work will help us better understand how teachers are assigned to schools and what might be done to improve the unequal distribution of teachers.

But a central concern with NCLB is the potential for the law to exacerbate the uneven distribution of qualified teachers. The negative consequences of NCLB and its high stakes accountability policies are creating a more negative teaching environment and

contributing to teachers wanting to leave, either the profession or those schools serving the most disadvantaged students. This means that the unintended consequences of the law need to be closely monitored to make sure the law does not increase the likelihood that teachers leave. It also suggests that a close examination of the assumptions underlying NCLB is needed to understand whether they work as proponents argue they will. In the effort to improve teacher quality, the law's reliance on testing to gauge quality may exclude otherwise good teachers and reduce the number of minorities entering the teaching profession.

Recommendations

While NCLB establishes the important goal of having a high quality teacher in every classroom, it does not yet provide the policies or support that are needed to meet this goal. To assure that teacher qualifications are more evenly distributed across schools and districts, the federal government should take a leadership role to understanding and correcting the factors that contribute to these distributional inequities. To meet these goals, we recommend:

1. **Direct federal and state incentives for improving teacher quality to high-poverty areas.** Federal incentives for teachers should be directed to high-poverty areas and state departments of education should be encouraged to develop programs and incentives targeted on areas that serve large numbers of low-income and minority students. State and federal incentive programs that pay experienced teachers who meet high standards to stay in schools serving disadvantaged students could increase overall teacher quality. Investment in high quality induction programs and smaller classes could improve the working conditions and help retain teachers who teach in high-poverty areas. In addition, placing good teachers and administrators in cohorts to work in low-performing schools can help create the environment and support needed for school improvement to occur and be sustained.
2. **Encourage states and districts to develop and support programs that create economic and racial diversity in the public schools.** The federal government should encourage states and districts to develop and support programs that create economic and racial diversity in our public schools. These may include expanding magnet school programs, adopting inter-district transfer programs, or modifying school attendance boundaries. Investment in programs that recruit and prepare people who have served as paraprofessionals may help retain more diverse teachers in hard-to-staff schools. Since research suggests that teachers have a preference for teaching in schools with higher income and higher achieving students, this would help to offset the inequities in the distribution of teacher quality. The very serious under-representation of minority students in teacher training programs exacerbates the problems caused by the tendency of white teachers to leave segregated high-poverty schools more rapidly. In some cases the test-driven certification process has compounded this problem.

3. **Provide additional federal funds to assist states to develop the technological infrastructure necessary to track teacher quality over time and manage the increased data collection responsibilities.** While NCLB Title II provides considerable funds for professional development, there are no federal funds for states to develop the technological infrastructure to keep track of teacher quality over time or to manage the increased data collection responsibilities under NCLB. We recommend additional federal funds directed towards developing the technology infrastructure and data management needed to monitor teacher quality. Additionally, universities and academic researchers could play a key role in helping states develop the infrastructure to keep track of teacher quality over time, as they have done in New York and Texas.
4. **Monitor other indicators of teacher quality in addition to the NCLB measures and assess the distribution of these characteristics across schools and districts.** Researchers should monitor other indicators of teacher quality, including experience, teacher preparation programs and degrees, teacher coursework, and teachers' test scores as well as the distribution of these characteristics across schools and districts. These measures in addition to the NCLB measures can be used to gauge the success of states and districts in their efforts to improve teacher quality. We also need baseline data on teacher quality in different types of schools and monitor how this changes as accountability pressures are ramped up.
5. **Reform the No Child Left Behind Act teacher quality provisions to expand the definition of a qualified teacher.** The definition of a qualified teacher should be expanded to include more measures of teacher quality, including giving teachers credit for experience.
6. **Reform the No Child Left Behind Act to create recognition and rewards for teachers that make a difference and for schools that make improvement.** The NCLB accountability mechanisms and sanctions are producing negative reactions, especially when teachers are working hard and making gains, and needs to be balanced by a focus on the positive work teachers do. Accountability should provide rewards and explicit recognition of teachers and schools that are making high levels of progress, especially teachers in those schools that start far behind. To attract good teachers to low-performing schools, attention needs to be directed to improving the working conditions in schools and addressing the structural barriers that affect teacher decisions about where they teach.

REFERENCES

- Arizona State Department of Education. (2004, May 25). *Horne wins preliminary approval for destruction of barriers to entry into teaching profession*. Retrieved June 4, 2004, from <http://www.ade.state.az.us/pio/Press-Releases/2004/pr05-26-04.pdf>
- Asimov, N. (2003, January 24). State faces lawsuit over teachers' qualifications. *The San Francisco Chronicle*, p. A22.
- Betts, J. R., & Danenberg, A. (2002). School accountability in California: An early evaluation. In D. Ravitch (Ed.), *Brookings papers on education policy 2002* (pp. 123-198). Washington, D.C.: Brookings Institution.
- Boyd, D., Lankford, H., Loeb, S., & Wyckoff, J. (2003). *The draw of home: How teachers' preferences for proximity disadvantage urban schools*. Albany, New York: Working Paper.
- California State Department of Education. (2003). *State of California Education Profile*. Retrieved September 2, 2003, from <http://www.ed-data.k12.ca.us/profile.asp?Tab=2&level=04&reportnumber=16>.
- Clotfelter, C. T., Ladd, H. F., Vigdor, J. L., & Diaz, R. A. (2004). Do school accountability systems make it more difficult for low-performing schools to attract and retain high-quality teachers? *Journal of Policy Analysis and Management*, 23(2), 251-271.
- Darling-Hammond, L. (2000). Teacher quality and student achievement: A review of state policy evidence. *Education Policy Analysis Archives*, 8(1).
- Darling-Hammond, L., & Sykes, G. (2003). Wanted: A national teacher supply policy for education: The right way to meet the "Highly qualified teacher" challenge. *Education Policy Analysis Archives*, 11(33), Retrieved [October 1, 2003] from <http://epaa.asu.edu/epaa/v11n33>.
- Darling-Hammond, L., & Youngs, P. (2002). Defining "Highly Qualified Teachers": What does "Scientifically-Based Research" actually tell us? *Educational Researcher*, 31(9), 13-25.
- Dreeben, R. (1996). The occupation of teaching and educational reform. In K. K. Wong (Ed.), *Advances in Educational Policy: Rethinking School Reform in Chicago (Vol. 2, pp. 251)*. Greenwich, CT: JAI Press, Inc.
- Elmore, R. F. (2004a). The problem of stakes in performance-based accountability systems. In S. H. Fuhrman & R. F. Elmore (Eds.), *Redesigning accountability systems for education*. New York: Teachers College Press.
- Elmore, R. F. (2004b). *School reform from the inside out: Policy, practice and performance*. Cambridge, MA: Harvard Education Press.
- Ferguson, R. F. (1991). Paying for public education: New evidence on how and why money matters. *Harvard Journal of Legislation*, 28, 465-498.
- Freeman, C., Scafidi, B., & Sjoquist, D. L. (2002). *Racial segregation in Georgia public schools, 1994-2001: Trends, causes, and impact on teacher quality*. Paper presented at the Resegregation of Southern schools? A crucial moment in the history (and the future) of public schooling in America, University of North Carolina at Chapel Hill.

- Gau, R., Palmer, L. B., Melnick, R., & Heffernon, R. (2003). *Is there a teacher shortage? Demand and supply in Arizona*. Tempe: Morrison Institute for Public Policy.
- General Accounting Office. (2003). *No Child Left Behind Act: More information would help states determine which teachers are highly qualified*. Washington D.C.: Author.
- Georgia Professional Standards Commission. (2002). *The Georgia educator workforce 2002: A report of the supply, demand, and utilization of teachers, administrative, and student services personnel in Georgia public schools*. Atlanta: Author.
- Goldhaber, D. D., & Brewer, D. J. (2000). Does teacher certification matter? High school teacher certification status and student achievement. *Educational Evaluation and Policy Analysis*, 22, 129-145.
- Government Accountability Office. (2004). *Special Education: Additional assistance and better coordination needed among education office to help states meet NCLBA teacher requirements*. Washington, DC: Author.
- Greenberg, E., Rhodes, D., Ye, X. & Stancavage, F. (2004, April 12-16). *Prepared to teach: Teacher preparation and student achievement in eighth-grade mathematics*. Paper presented at the American Educational Research Association, San Diego.
- Hanushek, E. A. (1992). The trade-off between child quantity and quality. *Journal of Political Economy*, 100, 84-117.
- Hanushek, E. A., Kain, J. F., & Rivkin, S. G. (2001). *Why public schools lose teachers*. (No. Working Paper No. 8599). Cambridge, MA: National Bureau of Economic Research.
- Hanushek, E. A., Kain, J. F., & Rivkin, S. G. (2004). The revolving door. *Education Next*(Winter), 77-82.
- Hanushek, E. A., & Rivkin, S. G. (2004). How to improve the supply of high-quality teachers. In D. Ravitch (Ed.), *Brookings papers on education policy: 2004* (pp. 7-44). Washington, DC: Brookings Institution Press.
- Hedges, L. V., Laine, R. D., & Greenwald, R. (1994). Does money matter? A meta-analysis of studies of the effects of differential school inputs on student outcomes. *Educational Researcher*, 23, 5-14.
- Illinois State Board of Education. (2002). *Educator supply and demand in Illinois: 2002 annual report*. Springfield, IL: Author.
- Illinois State Board of Education. (2003). *Illinois criteria for meeting the NCLB requirements for highly qualified teachers*. Retrieved June 14, 2004, from www.isbe.state.il.us/nclb/pdfs/highly_qualified_teacher_criteria.pdf
- Illinois State Board of Education. (2004). *School Report Card, 2001-02*, from <http://206.230.157.60/pyblicsit/getSearchCriteria.aspx>
- Ingersoll, R. M. (2001). *Teacher turnover, teacher shortages, and the organization of schools*. Seattle, WA: Center for the Study of Teaching and Policy, University of Washington.
- Ingersoll, R. M. (2004). Why some schools have more underqualified teachers than others. In D. Ravitch (Ed.), *Brookings papers on education policy: 2004*. Washington, DC: Brookings Institution Press.

- Jepsen, C., & Rivkin, S. (2002). *Class size reduction, teacher quality, and academic achievement in California public elementary schools*. San Francisco, CA: Public Policy Institute of California.
- Kain, J. F., & Singleton, K. (1996). Equality of educational opportunity revisited. *New England Economic Review*, May/June 1996, 87-114.
- Keegan, L. G. (1999). The empowerment of market-based school reform. In A. Gresham (Ed.), *School choice in the real world, lessons from Arizona charter schools* (pp. 189-197). Boulder, CO: Westview Press.
- King Rice, J. (2003). *Teacher quality: Understanding the effectiveness of teacher attributes*. Washington, DC: Economic Policy Institute.
- Lankford, H., Loeb, S., & Wyckoff, J. (2002). Teacher sorting and the plight of urban schools: A descriptive analysis. *Educational Evaluation and Policy Analysis*, 24, 37-62.
- Loeb, S. (2000, November 27-28, 2000). *Teacher quality: Its enhancement and potential for improving pupil achievement*. Paper presented at the National Invitational Conference, Improving Educational Productivity: Lessons from Economics, Washington, D.C.
- Luekens, M. T., Lyter, D. M., & Fox, E. E. (2004). *Teacher attrition and mobility: Results from the Teacher Follow-Up Survey, 2000-01*. Washington, DC: U.S. Department of Education, National Center for Education Statistics, Government Printing Office.
- Malen, B., Croninger, R. G., Muncey, D., & Redmond-Jones, D. (2002). Reconstituting schools: "Testing" the "theory of action." *Education Evaluation and Policy Analysis*, 24(2), 113-132.
- Maryland State Department of Education. (2002, January). *Achievement matters most, the final report of the visionary panel for better schools*. Baltimore: Author.
- Mintrop, H. (2004). *Schools on probation: How accountability works (and doesn't work)*. New York: Teachers College.
- Murnane, R. J., Singer, J. D., Willet, J. B., Kemple, J. J., & Olsen, R. J. (1991). *Who will teach? Policies that matter*. Cambridge, MA: Harvard University Press.
- No Child Left Behind Act of 2001, 6301 et seq. (2002).
- Olson, L. S. (2003). The great divide. *Education Week, Quality Counts 2003*, 22, 9-16.
- Padolsky, D. (2002). *How has the limited English proficient student population changed in recent years?* Retrieved July 21, 2004, from <http://www.ncela.gwa.edu/expert/faq/08leps.htm>
- Rado, D. (2004, August 1). *Teacher standards ease amid reforms: States roll back licensing rules*. Retrieved August 15, 2004, from www.chicagotribune.com/news/local/chi-0408010384aug01,1,3690426.story?coll=chi-news-hed
- Ravitch, D. (2002). Introduction. In D. Ravitch (Ed.), *Brookings papers on education policy 2002* (pp. 1-12). Washington, DC: Brookings Institution.
- Sable, J., & Young, B. A. (2003). *Characteristics of the 100 largest public elementary and secondary school districts in the United States: 2001-02, NCES 2003-353*. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

- Sanders, W. L., & Horn, S. P. (1994). The Tennessee value-added assessment system (TVAAS): Mixed-model methodology in educational assessment. *Journal of Personnel Evaluation in Education*, 8, 299-311.
- Sunderman, G. L., Tracey, C. A., Kim, J., & Orfield, G. (2004). *Listening to teachers: Classroom realities and No Child Left Behind*. Cambridge, MA: The Civil Rights Project at Harvard University.
- The Education Trust. (2003). *Telling the whole truth (or not) about highly qualified teachers*. Washington, DC: Author.
- The University of the State of New York/The New York State Education Department. (2003). *Updated state plan to enhance teacher quality*. Albany: Author.
- The University of the State of New York/The State Education Department. (2001). *New York the state of learning: A report to the Governor and the Legislature on the educational status of the state's schools*. Albany, NY: Author.
- The University of the State of New York/The State Education Department. (2002). *New York the state of learning: A report to the Governor and the Legislature on the educational status of the state's schools*. Albany, NY: Author.
- U.S. Department of Education. (2002). *The condition of education 2002, NCES 2002-025*. Washington, D.C.: U. S. Department of Education, National Center for Education Statistics.
- U.S. Department of Education. (2002, December 19). *Improving teacher quality state grants: Title II, Part A non-regulatory draft guidance*. Washington, DC: Author.
- U.S. Department of Education. (2003, July 28). *Memo to chief state school officers*. Washington, DC: Author.
- U.S. Department of Education. (2003, September 12). *Improving teacher quality: Non-regulatory guidance*. Washington, DC: Author.
- U.S. Department of Education. (2004, January 16). *Improving teacher quality state grants Title II, part A*. Washington, DC: Author.
- U.S. Department of Education. (2004, June 4). *Responses to questions about NCLB implementation*. Washington, DC: Author.
- Virginia Department of Education. (2000, November). *Report on supply and demand of instructional personnel in Virginia: 1999-2000*. Richmond, VA: Author.
- Virginia Education Association. (2002). *2002-03 Salary Schedules for Teachers*. Richmond, VA: Virginia Education Association, Research Service.
- Wayne, A. J., & Youngs, P. (2003). Teacher characteristics and student achievement gains: A review. *Review of Educational Research*, 73, 89-122.
- Wirt, F. M. (1977). School policy culture and state decentralization. In J. D. Scribner (Ed.), *The politics of education, the seventy-sixth yearbook of the National Society for the Study of Education, part 2* (pp. 164-187). Chicago: University of Chicago Press.