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State School Finance Inequities and the Limits of Pursuing Teacher Equity through Departmental Regulation

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Abstract: New federal regulations (State Plans to Ensure Equitable Access to Excellent Educators)[1] place increased pressure on states and local public school districts to improve their measurement and reporting of gaps in teacher qualifications across schools and the children they serve. Yet a sole focus on resource disparities between schools within a state ignores an important driver of those disparities: district-level spending variations, particularly when accounting for differences in student populations. The analyses herein evaluate connections between district and school level spending measures and teacher equity measures (such as salary competitiveness and staff: student ratios), and

[1] https://www.federalregister.gov/articles/2014/11/10/2014-26456/agency-information-collection-activities-comment-request-state-plan-to-ensure-equitable-access-to

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specifically whether inequality in "access to excellent educators" at the school level is greater in states where funding inequalities between school districts are greater. We find that district spending variation explains an important, policy relevant share of school staffing expenditures in 13 states. In many states, including Illinois and New York, a nearly 1:1 relationship exists between district spending variation and school site spending variation. In California, Illinois, Louisiana, New York, Ohio, Pennsylvania and Virginia, district spending is positively associated with competitive salary differentials, average teacher salaries, and numbers of certificated staff per 100 pupils. In each of these states, district poverty rates are negatively associated with competitive salary differentials, average teacher salaries and numbers of certified staff per 100 pupils. As such, regulatory intervention without more substantive changes to state school finance systems, addressing district-level inequities, will likely achieve little. Current federal policy pressures state education agencies to report and attempt to regulate inequities that arise because of school finance systems over which those agencies have no direct influence. Our analysis suggests that the administration would be more likely to meet its goals if it attempted to more directly address state school finance system disparities, placing pressure on state legislatures to equitably and adequately fund schools, and following through with the requirement that state-to-district equity provisions translate into district-to-school equity.
Keywords: finance, equity, teacher quality

Desigualdades en el financiamiento de las escuelas estatales y los límites para buscar la equidad docente por medio de regulaciones departamentales

Resumen: Nuevas regulaciones federales indican la urgencia creciente en estados y distritos escolares públicos locales para mejorar la medición y notificación de brechas en las cualificaciones de los docentes en las escuelas. Sin embargo, enfocarse exclusivamente en las disparidades de recursos entre escuelas dentro de un estado omite el factor determinante de esas disparidades: la variación de gastos a nivel distrital, especialmente cuando se toma en consideración las diferencias entre los estudiantes. En este artículo evalúamos las conexiones entre medidas de gasto a nivel distrital o escolar y medidas de equidad docente, (por ejemplo, la competitividad salarial y proporción de docentes por estudiantes) y en particular, diferencias en 'acceso a educadores excelentes' al nivel escolar es mayor en estados donde la desigualdad entre distritos escolares es mayor. Encontramos que la variación en gastos distritales explica un porcentaje de gastos de personal escolar en 13 estados es importante y relevante políticamente. En muchos estados, incluyendo Illinois y Nueva York, existe una relación de casi 1:1 entre la variación de gasto distrital y variación de gastos escolares. En California, Illinois, Louisiana, Nueva York, Ohio, Pensilvania y Virginia, el gasto distrital se asocia positivamente con diferenciales competitivos salariales , salario medio docente y el número de personal certificado por cada 100 estudiantes. En cada uno de estos estados, la tasa de pobreza distrital se asocia negativamente con diferenciales competitivos salariales, salario medio docente el número de personal certificado por cada 100 estudiantes. Por lo tanto una intervención regulatoria sin cambios sustantivos en el sistema de financiamiento escolar estatal que resuelva la desigualdad a nivel distrital, probablemente logrará muy pocos resultados. La política federal actual presiona las agencias estatales de educación para reportar e intentar regular desigualdades que emergen por causa de los sistemas de financiamiento escolar sobre los cuales esas agencias no tienen influencia directa. Nuestro análisis sugiere que la administración tendría más éxito para lograr sus objetivos si intentara resolver disparidades en los sistemas de financiamiento escolar estatales, urgiendo a las legislaturas estatales para financiar las escuelas equitativamente y adecuadamente, y cumpliendo con el requisito que las provisiones de equidad estadual-distrital se transfieran a la equidad distrital-escolar.
Palabras-clave: financiamiento; equidad; calidad docente

Desigualdades no financiamento das escolas estatais e os limites de procurar a equidade docente por meio de regulações departamentales

Resumo: Novas regulações federais indicam a urgência crescente nos estados e os distritos escolares públicos locais para melhorar as medições e comunicação das brechas na qualificação docente em todas as escolas. Ainda mesmo, um foco exclusivamente nas disparidades de recursos entre as escolas dentro de um estado omite um fator determinante dessas disparidades: a variação em gastos ao nível distrital, especialmente quando se leva em consideração as diferencias nas populações estudantis. As análises neste artigo avaliam as conexões entre as medições de gasto ao nível do distrito escolar e as medições da equidade dos professores, (por exemplo, a competitividade do salário e a proporção de professores à alunos) e em particular, se a desigualdade em 'acesso a educadores excelentes' ao nível escolar é maior nos estados onde a desigualdade entre os distritos escolares é maior. Encontramos que a variação de gasto do distrito explica uma porcentagem das despesas pessoais escolares em 13 estados que é importante e relevante à política. Em muitos estados, incluindo Illinois e Nova York, existe uma relação quase de 1:1 entre a variação de gasto do distrito e a variação de gasto do sitio escolar. Em Califórnia, Illinois, Louisiana, Nova York, Ohio, Pensilvânia e Virginia, o gasto do distrito é associado positivamente com diferenciais competitivos salariais, salário meio docente e o números de docentes certificados por 100 alunos. Em cada um desses estados, índices distritais de pobreza são associados negativamente com diferenciais competitivos salariais, salário meio docente e o números de docentes certificados por cada 100 alunos. Como tal, a intervenção regulamentária sem mudanças substanciais no sistema de financiamento escolar estatal que resolva as desigualdades ao nível dos distritos, provavelmente vai conseguir poucos resultados. A política federal atual força as agencias estatais de educação para reportar e regular as desigualdades que emergem por causa dos sistemas de financiamento escolares embora eles não têm influência direta sobre essas agencias. Nossa análise sugere que a administração teria mais sucesso em alcançar seus objetivos se intentasse resolver as disparidades no sistema de financiamento escolar estatal, urgindo ás legislaturas estatais para financiar as escolas de forma equitativa e adequada, e continuando com o requisito que as provisões para a equidade de estado-ao-distrito se transmitam em equidade de distrito-á-escola.

Palavras-chave: finanças; equidade; qualidade docente

Introduction

New federal regulations (State Plans to Ensure Equitable Access to Excellent Educators)[2] place increased pressure on states and local public school districts to improve their measurement and reporting of gaps in teacher qualifications across schools and the children they serve. The ultimate goal of this improved reporting is to bring about changes in policies that would mitigate the revealed disparities. These new federal regulations, however, largely sidestep the extent to which availability of financial resources might influence the distribution of teachers. The Department of Education, in its "Frequently Asked Questions"[3] explaining the regulatory changes, points its finger instead at "root causes" (p.14) such as lack of effective leadership, lack of comprehensive human capital strategies and otherwise ineffective and inefficient personnel policies.[4] Failure to emphasize

[2] https://www.federalregister.gov/articles/2014/11/10/2014-26456/agency-information-collection-activities-comment-request-state-plan-to-ensure-equitable-access-to

[3] http://www.regulations.gov/#!documentDetail;D=ED-2014-ICCD-0146-0010

[4] The "Frequently Asked Questions" document states: "There are a number of possible root causes of equity gaps, including a lack of effective leadership, poor working conditions, an insufficient supply of well-prepared

the potential role of broader financial disparities as a root cause of inequitable access to excellent educators, and thus failure to mitigate those disparities, may undermine the federal administration's goals.

Despite a lack of explicit attention to inter-district fiscal disparities as possible root causes of inequitable access to excellent educators, the administration provides guidance on measuring teacher equity using existing data sources and measures which either directly or indirectly involve financial resources. While broadly referencing "inexperienced, unqualified, or 'out-of-field teachers' as a concern,[5] the administration's guidance also cites measures of teacher salaries and cumulative school site spending on teacher compensation (as reported in the recent CRDC collection).[6]

Coinciding with these new federal regulations are a series of legal challenges in states including California and New York which claim that state statutes providing due process protections and defining tenure status for teachers are a primary cause of deficiencies in teacher qualifications, specifically in districts and schools within districts serving disadvantaged minority populations (Black, 2016). Implicit in these legal challenges is an assumption that if statutorily defined tenure status and due process requirements pertaining to teacher dismissal did not exist, statewide disparities in teacher qualities between higher and lower poverty schools (under the statutes in question) would be substantially mitigated. Like the federal regulations, this approach fails entirely to consider that disparities in district financial resources may be substantial determinants of statewide variations in teacher qualifications.

As a basis by which inequality should be determined, the administration places significant emphasis on variations in concentrations of children in poverty across schools. That is, resources should be equitably distributed across children by their economic status.[7] Just what "equity" means under the circumstances is left to states to articulate in their proposals, but the language of the

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educators, insufficient development and support for educators, lack of a comprehensive human capital strategy (such as an over-reliance on teachers hired after the school year has started), or insufficient or inequitable policies on teacher or principal salaries and compensation. These are offered as examples of root causes; an SEA should examine its own data carefully to determine the root causes of the equity gaps identified in its State." (p. 14)

[5] For example, the FAQ document notes: "At a minimum, an SEA must identify equity gaps based on data from all public elementary and secondary schools in the State on the rates at which students from low-income families and students of color are taught by inexperienced, unqualified, or out-of-field teachers (see question A-1)." (p.12)

[6] Specific measures and data referenced in the FAQ document include: "For example, the Department encourages each SEA to carefully review the data submitted by its LEAs for the Civil Rights Data Collection (CRDC), district level per-pupil expenditures the SEA has submitted to the National Center for Education Statistics (NCES) via the F-33 survey, as well as data that the SEA has submitted to ED*Facts* regarding classes that are taught by highly qualified teachers (HQT)4 in developing the State Plan, and any other high-quality, recent data that the SEA has that are relevant to the SEA's State Plan. To assist in this review, the Department sent each SEA its own complete CRDC data file that has been augmented with selected information from other data sources (such as school-level enrollment by race and eligibility for free and reduced-price lunch)." (p. 12). Also, "Using data from the 2011–2012 school year, each Educator Equity Profile compares a State's high-poverty and high-minority schools to its low-poverty and low-minority schools, respectively, on the: (1) percentage of teachers in their first year of teaching; (2) percentage of teachers without certification or licensure; (3) percentage of classes taught by teachers who are not HQT; (4) percentage of teachers absent more than 10 days; and (5) average teacher salary (adjusted for regional cost of living differences)." (p. 13)

[7] The administration's guidance defines an "equity gap" as follows: "…an equity gap is the difference between the rate at which low-income students or students of color are taught by excellent educators and the rate at which their peers are taught by excellent educators." (p.12)

regulations suggests that, at the very least, children in high poverty settings should not be subjected to fewer total resources or teachers with lesser qualifications – that there should not be a negative correlation between poverty concentrations and resources.

Research Questions

The empirical analyses in this article attempt to address three broad research questions:

1. How much variation in school site aggregate resources is explained by variation in district resources, among districts at similar poverty concentrations and for schools serving similar grade ranges and of similar size?
2. To what extent does variation in district level spending influence variation in specific school site resources including a) total school site staffing expenditure, b) school site instructional expenditure, c) competitiveness of school site teacher salaries, d) average teacher salaries, and e) school staffing ratios?
3. Finally, to what extent does inter-district funding progressiveness explain statewide, inter-school resource progressiveness?

Conceptual Model

The conceptual model here, illustrated in Figure 1, is simple. The assumption herein is that financial resource availability is an important driver of access to teaching resources. The level of funding available to local public school districts plays a role in determining the level of specific school site spending on teacher related resources in the aggregate, including the relative competitiveness of teacher compensation and, quite possibly, resulting teacher qualifications. Further and central to the proposed investigation, inequities in financial resources across local public school districts may, in part, be a root cause of inequities in specific school site spending related to teaching, including competitiveness of salaries and qualifications.

Financial Resources→		**Teaching Resources**	
District Spending→	**School Site Instructional Spending →**	**Salaries →**	**Qualifications**

Figure 1. Conceptual Model Linking Resources to Teacher Attributes

The overall level of funding available in local public school districts determines both the qualities and quantities of staffing, which is realized in the breadth of course offerings at the secondary level and in class sizes. Local public school districts may leverage additional resources to either hire more staff – leading to expanded programs and reduced class sizes – or pay existing staff higher wages in the interest of recruiting and retaining more qualified staff. Further, these two choices interact in important ways, as smaller classes and lower total student loads create more desirable working conditions.

Organizational features of the public schooling system constrain what varies between districts versus within districts. Total budgets, for example, are district level concerns. While state aid formulas fund districts and help determine local tax policy, local property tax (and sales tax in some cases) revenues are raised by districts. These local budgets support district compensation structures, teacher contractual agreements including the structure of compensation, restrictions on assignments,

placements and related working conditions that vary across districts as bargaining units, but not across schools within districts. As such, the competitiveness of a salary guide is most likely not to vary across schools within any one district. Thus, when considering root causes of disparities across schools, one must consider what factors can and do vary only across districts and what others may also vary within them. It would be illogical, for example, to attribute disparities across schools within districts to contractual constraints in collective bargaining agreements that vary only between districts. As such, the "root causes" of within versus between district disparities are likely quite different.

Finally, but for a relatively small number of very large city or countywide school districts, individual districts tend not to have high and low poverty schools, or high and low minority concentration schools within their boundaries (Reardon and Owens, 2014). As such, evaluating equity, as framed above, exclusively across schools within districts may provide extremely limited information – reflecting, for example, only the variations in resources across high to very high poverty schools in one district, and across low to very low poverty schools in another, but ignoring entirely the disparities between the high and low poverty districts.

The Educator Equity regulations speak to a goal of achieving statewide equity across schools as the unit of analysis. That is, statewide, across schools, children in high poverty school setting should not be subjected to less quantity or quality instructional resources than children in lower poverty schools. Inequities in available resources persist both across school districts and across schools within districts, and there exist important relationships between the two. For example, if one district has far less total funding available than a neighboring district, it stands to reason that the average resources in the schools in that district will also be lower, even if there is variation among them within the district.

Very few school districts are geographically isolated islands that can alter their own spending levels or distributions without consideration for spending and distribution behavior of their neighboring districts. Figure 2 provides a hypothetical illustration of the intersection between within and between district resource disparities. Assume that a relatively high poverty urban core district spends, on average slightly less or about the same as neighboring districts having much lower poverty levels across most or all schools. Assume that the urban core district allocates greater resources to its own lower poverty schools (a regressive allocation, shown in the left panel of the figure), placing their spending levels slightly above those schools in neighboring districts. Under these initial conditions, the urban core district might be able to recruit and retain a small share of relatively high quality teachers into its lower poverty schools by providing almost comparable working conditions to those in neighboring districts, and perhaps even slightly better salaries or smaller class sizes. But, the internal allocation of the urban district, which leads to relatively competitive resources in lower poverty schools, puts its own high poverty schools at a substantial disadvantage.

If the urban district chooses to re-allocate resources "progressively" (positive slope across schools by poverty) within the same total budget constraint (pivoting on the same mean), the district may find itself in a more difficult position. The district's own low poverty schools would then have substantially fewer resources than lower poverty schools in neighboring districts, and the district's high poverty schools would have resources comparable to or slightly higher than much lower poverty schools in neighboring districts. Resources may remain insufficient in the highest poverty schools to recruit and retain quality teachers, and resources in the district's low poverty schools may be insufficient to compete with schools in neighboring districts. In short, context matters, and it is insufficient to evaluate only whether the urban core, or any single district, in isolation, has been able to achieve a desirable degree of equitable resource allocation.

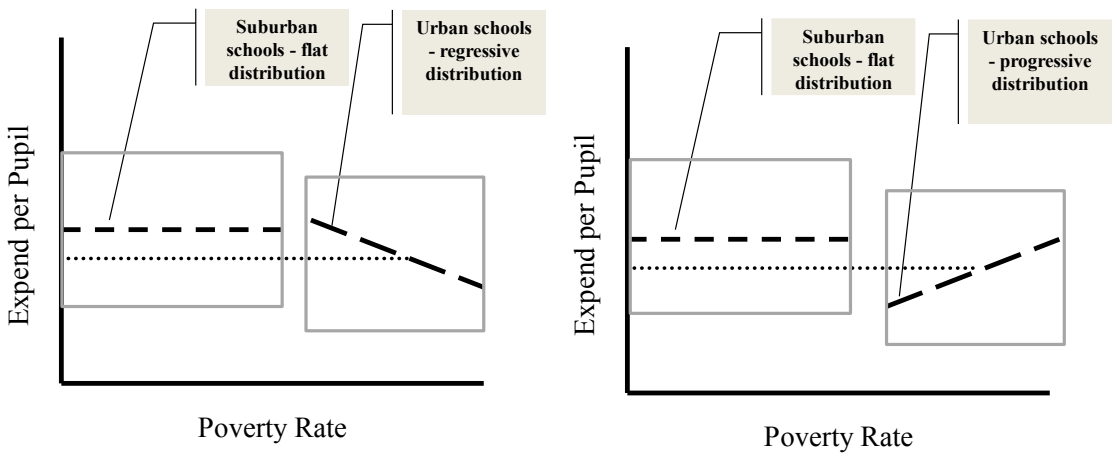

Figure 2. Contextual constraints on within district resource allocation across schools

The analyses herein evaluate the extent to which disparities in district level spending measures are associated with disparities in school level teacher equity measures, using data sources and measures cited in the department's recent policy guidance to states. Additionally, we ask whether inequality in "access to excellent educators" is greater in states where school funding inequalities are greater.

Related Literature

A significant body of literature explains that in order to strive for more equitable student outcomes, there in fact should be a positive – progressive – correlation between aggregate resources allocated and factors such as child poverty concentrations, disability concentrations and language barriers (Baker and Green, 2014). Baker, Sciarra and Farrie (2009, 2012, 2014) evaluate the relationship between district poverty concentrations and state and local revenues, controlling for other cost factors, to rate the relative equity of state school finance systems. Center for American Progress (2015) proposed several suggestions for federal intervention to improve inter-district fiscal equity, adopting the equity measures estimated by Baker, Sciarra and Farrie (2015).[8]

Others have similarly evaluated funding disparities across schools within districts, focusing on whether and to what extent school site budgets and related resources are targeted to schools with higher concentrations of low-income children (Ajwad 2006; Baker 2009a, 2012, 2014; Baker, Libby and Wiley, 2015; Chambers, Levin, and Shambaugh 2010; Levin et al. 2013). Baker (2012) simultaneously addresses variations across schools within districts, and across schools between districts.

The U.S. Department of Education released a report in 2011, based on a 2008-09 data collection similar to that used herein, in which the department characterized differences in spending between higher and lower poverty schools within districts (Heuer, R. & Stullich, 2011).[9] The report

[8] https://www.americanprogress.org/issues/education/report/2015/05/18/113397/a-fresh-look-at-school-funding/

[9] http://www2.ed.gov/rschstat/eval/title-i/school-level-expenditures/school-level-expenditures.pdf

was intended to inform deliberations over comparability regulations in Title I of the Elementary and Secondary Education Act. Comparability guidance, related to the distribution of Title I funding, focuses exclusively on comparability of resources across schools within districts. The report found a significant share of Title I schools within districts – those with relatively higher shares of low income students – having fewer total resources (total salaries per pupil) than the average for their district; however, it ignored entirely differences between the average level of resources available in the districts of those Title I schools compared to surrounding districts. The report also ignored whether and to what extent these differences might be explained by the distribution of children with other needs, including children with disabilities.

The Title I comparability study follows a long line of studies of within-district resource allocation produced mainly from the 1990s onward, including analyses of school site expenditures from financial data systems, school site personnel spending specifically, and in some cases specific characteristics of teachers across schools. Studies conducted in the 1990s found significant disparities in resources within districts (Burke, 1999; Steifel, Rubenstein & Berne, 1998). Rubenstein, Schwartz, Stiefel, and Bal Hadj Amor (2007) confirm and expand on earlier findings regarding the distribution of teachers by their qualifications across schools: "Using detailed data on school resources and student and school characteristics in New York City, Cleveland and Columbus, Ohio, we find that schools with higher percentages of poor pupils often receive more money and have more teachers per pupil, but the teachers tend to be less educated and less well paid, with a particularly consistent pattern in New York City schools." (p. 532)

Houck (2010) found similar patterns in Nashville, and Baker (2012) found similar patterns in some Texas school districts. Baker (2012) found, for example, that school site spending is relatively progressively distributed with respect to low income concentrations across schools in Austin and Houston (and Fort Worth), but less so in Dallas. In Austin, these school site spending differences translated to higher numbers of staff per pupil, but also higher shares of inexperienced staff. Austin and Houston schools on average had marginally higher per pupil spending than schools in surrounding, lower poverty districts, but this was not so for schools in Dallas, constraining that district's ability to reshuffle resources.

Ajwad (2006) also used data on Texas school level expenditures for elementary schools to evaluate whether Texas school districts have targeted greater resources toward schools in higher poverty neighborhoods. Using fixed effects expenditure functions, Ajwad shows that Texas school districts, on average, target additional resources toward elementary schools in higher poverty neighborhoods, using neighborhood resident population characteristics rather than school enrollments. Ajwad finds that, on average, the dollar differences in targeted funding are relatively small, and does not disaggregate findings for specific large districts or their neighbors.

Baker, Libby and Wiley (2015) explore how within jurisdiction equity is affected by the introduction of independently operated charter schools which induce uneven sorting of students by their needs, and also introduce potential financial inequalities through more aggressive private fundraising than is typical among individual district schools. Baker, Libby and Wiley (2015) find specifically regarding New York City that many charter schools simultaneously serve relatively low-need student populations and raise substantial philanthropy to boost their spending, resulting in a subset of higher spending, lower-need schools and disrupting equity.

Baker and Welner (2009) explain that emphasis in the 1990s and 2000s on within district resource variations, and interest in federal policy tools like Title I Comparability regulations became somewhat of a distraction from the persistent between-district inequities of many states' education systems. A related body of largely non-peer reviewed, empirically problematic literature emerged by the late 1990s through the mid-2000s asserting that years of litigation and attention to state school

finance systems had largely resolved between district variations, leaving as the primary source of inequity – local district budgeting and teacher assignment practices (Baker and Welner, 2009).

Several recent reports have reaffirmed the extent of persistent poverty-related inequalities across districts within states and have illustrated that during the recession, many of those disparities worsened (Baker, 2014a, 2014b; Baker and Corcoran, 2012; Baker, Sciarra and Farrie, 2009, 2012, 2014). Baker (2014) identifies several districts around the nation where U.S. Census Bureau poverty rates are substantially higher (more than double) than those of surrounding districts and where per pupil state and local revenue is substantially lower (<90%) than in surrounding districts.

Teachers are inequitably distributed across districts as well. Findings from over a decade ago and from more recent years confirm that variations in the qualifications of teachers tend to vary as much, if not more, between districts than across schools within them (Goldhaber, Lavery & Theobald, 2014; Lankdford, Loeb and Wyckoff, 2002). In one of the first major studies kicking off the modern wave of "teacher equity" analyses, Lankford, Loeb and Wyckoff (2002) evaluated the distribution of teacher qualifications across schools and districts in New York State using statewide administrative data. They found that "lesser-qualified teachers teach poor, nonwhite students," and that "Much of these differences are due to differences in average characteristics of teachers across districts, not within urban districts; but differences among schools within urban districts are important as well." (p. 47) In more recent work, Goldhaber and colleagues explored the distribution of direct measures of teacher "effect" on student outcomes, along with measures of teacher qualifications, using administrative data on teachers in the State of Washington (Goldhaber, Lavery & Theobald, 2014). Specifically, Goldhaber and colleagues evaluated "teacher gaps" with respect to school level concentrations of low-income students (those qualifying for free or reduced priced lunch, or FRL), and minority students. The authors note:

> For example, the teacher quality gap for FRL students appears to be driven equally by teacher sorting across districts and teacher sorting across schools within a district. On the other hand, the teacher quality gap for URM (underrepresented minority) students appears to be driven primarily by teacher sorting across districts; i.e., URM students are much more likely to attend a district with a high percentage of novice teachers than non-URM students.[10]

Washington State differs from New York State in that 1) there exists far less variation in total available district resources across the state, reducing the potential for between district variation (Baker, Sciarra, Farrie, 2015) and 2) districts operate under a statewide salary structure, also reducing potential for between-district variation which might more severely disadvantage higher need districts.[11] Yet still, between-district variations in teacher characteristics with respect to low-income concentrations were equal to or greater than within district variations, and between district disparities with respect to minority concentrations were greater than within district disparities.

Finally, a substantial body of literature has accumulated over the decades to validate the conclusion that both teachers' overall wages and relative wages affect the quality of those who choose to enter the teaching profession, and whether they stay once they get in. For example, Murnane and Olson (1989) found that salaries affect the decision to enter teaching and the duration of the teaching career, while Figlio (1997, 2002) and Ferguson (1991) concluded that higher salaries are associated with more qualified teachers. Research on the flip side of this issue – evaluating

[10] http://www.cedr.us/papers/working/CEDR%20WP%202014-4.pdf
[11] http://www.k12.wa.us/LegisGov/SalaryAllocations.aspx

spending constraints or reductions – reveals the potential harm to teaching quality that flows from leveling down or reducing spending. For example, Figlio and Rueben (2001) note that, "Using data from the National Center for Education Statistics we find that tax limits systematically reduce the average quality of education majors, as well as new public school teachers in states that have passed these limits."

While several studies show that higher salaries relative to labor market norms can draw higher quality candidates into teaching, the evidence also indicates that relative teacher salaries across schools and districts may influence the distribution of teaching quality. For example, Ondrich, Pas and Yinger (2008) "find that teachers in districts with higher salaries relative to non-teaching salaries in the same county are less likely to leave teaching and that a teacher is less likely to change districts when he or she teaches in a district near the top of the teacher salary distribution in that county." Similarly, and most closely related to the questions addressed herein, Adamson and Darling-Hammond (2012) in an analysis of the distribution of teacher qualifications across California and New York school districts, found that "increases in teacher salaries are associated with noticeable decreases in the proportions of teachers who are newly hired, uncredentialed, or less well educated." (p. 1)

Methods

The goal herein is to understand variations in resources across schools within and across school districts. As such one must identify measures and construct appropriate models in order to parse the equitable variations from the inequitable ones. Among other factors, when evaluating resources across schools or districts, statewide or nationally, one must account for variations in labor costs. A relatively simple method for addressing the purchasing power of the school dollar is to compare school and district spending among districts and schools sharing the same labor market. We use the labor market delineations adopted by Taylor and Fowler (2005) for estimating the Education Comparable Wage Index. Instead of using the index itself, we re-express both spending and poverty measures (because they similarly depend on invariant income measures) for all districts and schools relative to (as a ratio to) the average of all districts and schools sharing the same labor market. Other measures used to explain school level spending variations include the shares of children with limited English language proficiency and shares of children classified for special education services under the Individuals with Disabilities in Education Act (IDEA) (Duncombe and Yinger, 2008). Table 1 identifies the various data sources and measures used herein.

Grade range disparities in resources and disparities due to school total enrollment size complicate equity analyses. In population dense metropolitan areas, the choice to subsidize small schools at a higher rate is just that, a policy choice, and one that creates unnecessary inequity. Nonetheless, we do choose to compare, herein, smaller schools to smaller schools and larger ones to larger ones using school size dummy variables. To capture spending differences associated with grade ranges served by schools, we use measures of the percent of students in a school falling in certain grade ranges. Again, it is a policy choice, not necessarily an uncontrollable cost that more or fewer funds are allocated to schools serving certain grade ranges. But for simplicity herein, we choose to compare schools serving similar grade ranges and leave for another day any critique of inequities induced by the choice to operate small schools and organize schools in certain ways by grade ranges.

Table 1
Data and Measures

Measure Type	Measure (Specification)	Data Source	Notes / Construction	Sample/ Link
District Geographic Location	Labor Market	Education Comparable Wage Index [1]	Based on Census Core Based Statistical Areas	District Universe
District Resource	Current Spending per Pupil (ratio to labor market average)	Census Fiscal Survey [2]	PPCSTOT	District Universe
District Poverty	Child Poverty Rate (ratio to labor market average)	Census Small Area Income and Poverty Estimates [3]		District Universe
School Resource	Total Salaries per Pupil (ratio to labor market average)	"Equitable Access to Excellent Educators" [4]	TOT_SALARIES/ member11	School Universe
	Instructional Salaries per Pupil (ratio to labor market average)	"Equitable Access to Excellent Educators" [4]	INST_SALARIES / member11	School Universe
	Average Teacher Salary (ratio to labor market average)	"Equitable Access to Excellent Educators" [4]	AVG_TEACH_SALARY	School Universe
	Certified Staff per 100 Pupils (ratio to labor market average)	"Equitable Access to Excellent Educators" [4]	FTE_CERT/ (member11/100)	School Universe
	Salary Competitiveness Index	Based on Schools and Staffing Survey data [5]	Regression based (see methods below)	School Sample
School Covariates	Enrollment Grade Distribution (%pk-5, %6-8, % 9-12)	NCES Common Core, Public School Universe [6]		School Universe
	% IDEA Classified Special Education	"Equitable Access to Excellent Educators" [4]	(M_DIS_IDEA_7_ENROL+F_DIS_IDEA_7_ENROL)/(M_TOT_7_ENROL+F_TOT_7_ENROL)	School Universe
	% Qualified for Free Lunch	Based on Schools and Staffing Survey data [5]	frelch/member	School Universe
	% ELL	"Equitable Access to Excellent Educators" [4]	(M_LEP_7_ENROL + F_LEP_7_ENROL)/(M_TOT_7_ENROL + F_TOT_7_ENROL)	School Universe

[1] Updated NCES Education Comparable Wage Index, provided by L. Taylor, http://bush.tamu.edu/research/faculty/taylor_CWI/ Documentation at: http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2006321
[2] U.S. Census Fiscal Survey of Local Governments, Elementary and Secondary Education Finances: http://www.census.gov/govs/school/
[3] U.S. Census Bureau Small Area Income and Poverty Estimates. http://www.census.gov/did/www/saipe/data/schools/data/index.html
[4] "Equitable Access to Excellent Educators" http://www2.ed.gov/programs/titleiparta/resources.html
[5] Schools and Staffing Survey, National Center for Education Statistics (NCES), Restricted Use Data (License #XXXXX) http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2014356
[6] Common Core of Data, Public School Universe, NCES. http://nces.ed.gov/ccd/pubschuniv.asp

Like the previous Title I Comparability study conducted by the Department of Education, our dependent measures of interest include the two major, aggregate school resource measures collected in 2011-12: Total Salaries per Pupil and Instructional Salaries per Pupil. We also explore two teacher compensation related measures and one teacher quantity measure. Relying on the equity profiles data, we include a measure of "average teacher salary" and a measure of the number of certified staff per 100 pupils. Our final measure is derived only for a sample of schools in each state, based on modeled data from the NCES Schools and Staffing Survey. In all cases, our school resource measures are expressed relative to all other schools in the same labor market.

To construct the Salary Competitiveness Index, we use data from the National Center for Education Statistics Schools and Staffing Survey (2011-12), which sampled approximately 50,000 teachers and is intended to achieve state representative samples. Our goal is to estimate an index of the extent to which teacher salaries vary, from one school or district to the next, for teachers of similar qualifications, under similar contracts and with similar jobs roles. We estimate a regression model (ordinary least squares) of teachers' salaries from teaching, as a function of their job classification, contract days per year, degree level and years of experience, with dummy variables for each labor market (within state) across the country.

Salary =*f*(Labor Market Fixed Effect, Job Classification, Contract Days, Degree Level, Years of Experience)

This allows us to then predict each teacher's salary, given their job and credentials, for each labor market – or the expected salary for a teacher like them, in their labor market. The ratio of each teacher's actual salary to the expected salary is the competitiveness index for that teacher's salary.

Competitiveness Index = Actual Teacher Salary/Predicted Teacher Salary

The average salary competitiveness index for all teachers in the same school or district is then the average salary competitiveness of teacher salaries under the negotiated agreement for any given school or district.

Upon constructing our various school level resource indices, the next step is to estimate both state by state and national models of the sensitivity of school site resource measures to district level spending measures. Again, all resource and spending measures are relative to labor market averages.

Exploring School Site Spending Variance Within and Between Districts

Our first goal is to understand the variance in total school site resources explained by district characteristics and populations served, while controlling for school grade ranges served and school size. This analysis involves only districts with at least 10 schools – those with sufficient numbers of schools to display within district variation. Many school districts around the country have no more than one or a few schools per grade level; in such cases, between-district variations are between school variations. This fact is often lost in conversations about "fixing" inequity by focusing on within district variation. Focusing on within-district, between-school variation is of little value for those districts not large enough to have multiple schools serving any particular grade level or range.

For example, Table 2 shows that 21 states have less than one-half of students attending districts with 10 or more schools. Vermont has none. Fifteen states have more than one-third of their students attending districts with fewer than five schools (meaning likely fewer than three at any grade level, three elementary, one middle, one secondary, or single high school regional districts).

Table 2 provides important context for our parsing of within versus between district variations, since we focus only on those districts with sufficient numbers of schools (10+).

Table 2
Distribution of Students by Numbers of Schools per District (schools in data set)

		Districts with <5 Schools		Districts >10 Schools	
State	**Total Students**	**Number**	**Share**	**Number**	**Share**
AK	128,500	13,325	10.4%	110,218	85.8%
AL	715,618	105,756	14.8%	494,717	69.1%
AR	467,372	216,091	46.2%	170,500	36.5%
AZ	1,030,659	224,630	21.8%	657,757	63.8%
CA	6,067,005	513,735	8.5%	4,844,091	79.8%
CO	834,909	69,625	8.3%	716,041	85.8%
CT	550,112	155,430	28.3%	266,437	48.4%
DC	66,304	15,426	23.3%	43,530	65.7%
DE	127,615	22,369	17.5%	84,207	66.0%
FL	2,615,008	14,351	0.5%	2,565,337	98.1%
GA	1,656,816	197,258	11.9%	1,285,984	77.6%
HI	179,493			179,493	100.0%
IA	473,258	231,584	48.9%	170,372	36.0%
ID	271,398	56,209	20.7%	176,645	65.1%
IL	2,034,620	771,708	37.9%	998,525	49.1%
IN	1,014,850	322,583	31.8%	460,774	45.4%
KS	470,430	144,963	30.8%	240,674	51.2%
KY	666,217	133,387	20.0%	390,523	58.6%
LA	666,595	33,696	5.1%	583,557	87.5%
MA	928,826	307,105	33.1%	338,025	36.4%
MD	849,176	240*	0.0%	833,812	98.2%
ME	173,079	72,860	42.1%	21,323	12.3%
MI	1,463,719	485,479	33.2%	580,359	39.6%
MN	765,971	268,359	35.0%	353,087	46.1%
MO	897,145	319,563	35.6%	413,777	46.1%
MS	474,942	155,462	32.7%	182,525	38.4%
MT	137,716	98,984	71.9%	27,625	20.1%
NC	1,471,917	85,196	5.8%	1,321,518	89.8%
ND	94,792	41,239	43.5%	42,924	45.3%
NE	294,883	96,787	32.8%	161,453	54.8%
NH	184,248	104,941	57.0%	36,659	19.9%
NJ	1,324,287	511,489	38.6%	457,087	34.5%
NM	325,813	31,959	9.8%	266,834	81.9%
NV	434,314	3,042	0.7%	417,825	96.2%
NY	2,651,363	761,881	28.7%	1,400,489	52.8%
OH	1,681,521	743,631	44.2%	512,413	30.5%
OK	637,140	273,295	42.9%	270,207	42.4%
OR	524,470	73,271	14.0%	346,619	66.1%
PA	1,729,448	662,191	38.3%	631,841	36.5%
RI	134,681	24,786	18.4%	61,513	45.7%
SC	698,472	44,381	6.4%	586,258	83.9%
SD	121,062	55,107	45.5%	40,851	33.7%
TN	981,295	65,538	6.7%	753,632	76.8%
TX	4,865,252	766,257	15.7%	3,659,655	75.2%

Table 2 cont'd

Distribution of Students by Numbers of Schools per District (schools in data set)					
UT	578,186	47,322	8.2%	507,033	87.7%
VA	1,240,510	89,808	7.2%	1,026,530	82.8%
VT	78,804	75,183	95.4%		
WA	1,026,819	131,305	12.8%	732,068	71.3%
WV	276,028	14,481	5.2%	224,178	81.2%
WY	86,629	16,026	18.5%	51,065	58.9%

Note: SEED School listed as independent of district governance

Our baseline model for each state characterizes the variance explained, across all schools statewide, by school grade ranges served and school size alone. The intent here is to provide baseline information regarding the variance in total salaries per pupil among schools serving similar grade range distributions of similar student population size. Subsequent models can then be compared against these baseline figures.

Total Salaries (ctr) = *f*(Grade Ranges Served, Student Population Size)

Next, we evaluate the extent that inter-district variations in current spending per pupil explain additional variance in school site total salaries per pupil.

Total Salaries (ctr) = *f*(District Spending(ctr), Grade Ranges Served, Size)

Next, we replace the district spending measure with a district fixed effect (series of district dummy variables) to explain all cross-district variations in school site spending associated with district characteristics, including spending as well as unobserved differences between districts.

Total Salaries (ctr) = *f*(District Fixed Effect, Grade Ranges Served, Size)

To the extent that the district fixed effects models explain more variance in school site resources than did the previous model, unobserved district characteristics are explaining differences in school site spending, beyond that explained by district spending. Left behind in the residuals of this model are between-school, within-district variations in school site spending. Comparisons between the current spending and district fixed effects model provide insights into the extent that these unobserved district characteristics influence school site spending.

We conclude this analysis by determining the extent that remaining within-district disparities in total salary resources are explained by differences in student characteristics, specifically low income concentrations, children with limited English language proficiency and children with disabilities.

Total Salaries (ctr) = *f*(District Fixed Effect, School Needs, Grade Ranges Served, School Size)

At this point, the residuals of the OLS regression include variations in school site resources that are not explained by district characteristics, and not explained by differences in student needs across schools. Notably, in most states in this analysis the only student need factor positively associated with school site staffing expenditure is the percent of children with disabilities, but the magnitude of

this effect varies widely across states. Comparing variance explained between this and the previous model reveals the extent to which within district spending variation is sensitive to school level differences in student needs.

Estimating Sensitivity of School Resources to District Spending & Poverty

The next analysis explores the sensitivity of various school level resources to variations in district level spending and district level rates of children from families in poverty. We estimate models both state by state and nationally, with state fixed effect. Here, using all districts and schools, our intent is to evaluate the extent to which school resources – including total salary expenditures, instructional salary expenditures, competitiveness of salaries, average salaries and staffing ratios – vary as a function of differences in district spending and district poverty rates:

School Resource(ctr) = f(District Spending(ctr), Poverty(ctr), Grade Ranges Served, School Size, State)

Where each school resource measure is expressed relative to labor market averages, as are district spending and poverty rates. Again, grade ranges served are expressed as the percentages of students in grades pk-5 and grades 6-8. School size is expressed with two "small school" dummy variables. As noted above, we first run state by state models and then run a nationwide model with state fixed effects.

Estimating within State Fairness Indices

Our final analysis involves constructing "fairness" indices of school site resources with respect to concentrations of low income children, and relating those school site fairness indices to inter-district fairness indices. Fairness indices compare the resources available in a high poverty district or school to the resources available in a low poverty school or district in the same labor market. Fairness indices are expressed at the state level, and generated via regression models. The first step is to estimate the following model for each resource measure.

Resource = *f*(State x Income Status, Grade Ranges Served, School Size)

Where, for each of our school level resource measures, we use school level concentrations of children qualified for free lunch (<130% income threshold for poverty) as our measure of income status, expressed for each school as a ratio to the labor market average. As with our resource measures, this puts our poverty measures and thus poverty variation on a common scale across states and labor markets. The underlying unit – the dollar – varies in value from one state or labor market to the next, affecting the value of the school spending input, or the value of family income similarly (Baker, Taylor, Levin, Chambers & Blankenship, 2013). For our district spending per pupil, we use district level census poverty rates as our measure of income status.

The second step is to generate predicted values for the resource measures at ends of the poverty/income spectrum. Here, we generate predicted values for each resource measure – total salaries per pupil, instructional salaries per pupil, certificated staff per 100 pupils, our competitive salary index, and average teacher salary – at 0% low income, and at the percentage of low income that is twice the average for a district or school's labor market. Our fairness ratio is then the ratio of resources available at twice the labor market average of low income student concentration to

resources available at 0% low income; in other words, the numerator of our fairness ratio predicts the resources available for a school or district serving many low income students, and the denominator predicts the resources for a school or district with no low income students A ratio above 1, therefore, would show a progressive distribution, where schools or districts with higher concentrations of low income students deploy more resources; conversely, a ratio below 1 would show a regressive distribution. We then evaluate the correlations between district level fairness in the distribution of current spending per pupil (inter-district spending fairness), and our fairness indices for school-level resource measures. That is, we ask: to what extent is fairness of resources across schools statewide correlated with fairness of district spending statewide?

Findings

This section begins with a decomposition of the variation in school site total staffing expenditures per pupil. Next, we explore the sensitivity of several school site resource indicators to variations in inter-district spending, both for each state and across all states. Finally, we evaluate whether the overall "fairness" of distribution of school site resources is associated with the overall "fairness" of distribution of district spending across states.

Explaining Statewide Variance in School Site Resources

Table 3 summarizes the variance in school site total salaries per pupil, explained first as a function of school grade range and size alone, then including district spending per pupil, then adding a district fixed effect, and finally including student population characteristics. Recall that this analysis includes only those districts with at least 10 schools. Residual standard deviations indicate the extent of variation left behind in our residuals, where the dependent measure was expressed as a ratio to labor market averages such that .5 would indicate total salaries per pupil at 50% of labor market average, and 1.5 would indicate total salaries per pupil at 50% above labor market average. One would expect that where current spending explains additional variance in school site staffing expenditures, the residual standard deviations would decline from the first to the second model (as the model is a better "fit"), and the r-squared would increase. In many states, grade ranges served and school size explain a substantial portion of the variance in staffing expenditure per pupil.[12]

Table 3.
Decomposition of Variance in Total Salaries Per Pupil and Variance Explained by District Factors

	Conditioned on Grade Level & School Size Only [1]		Conditioned on District Spending [2]		Conditioned on District Fixed Effect [3]		Conditioned on District Fixed Effect & Student Needs [4]	
State	Residual SD	R-squared	Residual SD	R-squared	Residual SD	R-squared	Residual SD	R-squared
AK	0.265	38.3%	0.265	38.2%	0.253	47.8%	0.246	50.7%
AL	0.217	33.4%	0.207	37.4%	0.171	51.3%	0.167	59.6%
AR	0.200	39.0%	0.189	41.6%	0.155	60.2%	0.145	64.1%
AZ	0.285	17.6%	0.288	17.7%	0.242	30.8%	0.229	35.3%
CA	0.343	25.7%	0.339	32.0%	0.293	44.0%	0.293	44.1%
CO	0.357	16.5%	0.323	27.4%	0.314	32.9%	0.312	36.3%

[12] Note that Hawaii (HI) is not included in this table as it has only one statewide school district.

Table 3 cont'd.

Decomposition of Variance in Total Salaries Per Pupil and Variance Explained by District Factors

CT	0.323	22.5%	0.312	23.8%	0.225	53.9%	0.222	54.9%
DE	0.284	45.7%	0.282	46.4%	0.215	66.2%	0.115	91.3%
FL	0.260	7.7%	0.260	7.8%	0.262	9.3%	0.243	23.4%
GA	0.179	28.1%	0.171	32.3%	0.161	38.3%	0.157	41.7%
IA	0.280	11.9%	0.249	24.0%	0.217	33.4%	0.181	64.6%
ID	0.293	41.4%	0.200	57.6%	0.194	60.2%	0.188	63.6%
IL	0.304	27.8%	0.283	31.5%	0.252	42.4%	0.234	52.0%
IN	0.192	23.7%	0.185	25.9%	0.160	35.0%	0.159	34.9%
KS	0.217	14.6%	0.217	14.8%	0.188	29.9%	0.181	37.4%
KY	0.292	38.3%	0.288	40.7%	0.288	46.9%	0.281	50.6%
LA	0.283	37.9%	0.279	38.4%	0.260	43.7%	0.244	51.2%
MA	0.297	43.8%	0.257	54.1%	0.222	61.5%	0.188	72.4%
MD	0.260	8.2%	0.262	8.7%	0.207	25.4%	0.210	30.1%
ME	0.157	13.8%	0.137	48.1%	0.124	47.7%	0.125	61.8%
MI	0.312	16.7%	0.300	19.5%	0.266	26.9%	0.239	51.0%
MN	0.361	15.2%	0.393	31.8%	0.352	43.7%	0.341	45.1%
MO	0.266	20.1%	0.262	20.4%	0.194	43.0%	0.196	43.0%
MS	0.195	26.6%	0.194	27.1%	0.187	35.2%	0.173	54.3%
MT	0.162	15.2%	0.149	32.0%	0.100	69.7%	0.097	70.2%
NC	0.262	32.3%	0.262	32.4%	0.245	39.7%	0.236	46.8%
ND	0.276	6.1%	0.254	15.9%	0.254	24.7%	0.254	23.4%
NE	0.194	6.5%	0.178	18.5%	0.146	43.0%	0.132	50.9%
NH	0.153	5.0%	0.119	33.9%	0.108	33.4%	0.093	42.2%
NJ	0.271	19.8%	0.236	37.4%	0.199	50.0%	0.192	51.8%
NM	0.250	22.3%	0.249	25.9%	0.220	34.0%	0.225	37.1%
NV	0.247	38.0%	0.253	40.8%	0.264	45.0%	0.266	44.9%
NY	0.298	12.2%	0.296	12.6%	0.267	23.9%	0.182	63.6%
OH	0.274	21.1%	0.253	27.5%	0.204	39.1%	0.197	44.8%
OK	0.279	31.9%	0.276	33.3%	0.194	61.8%	0.182	65.4%
OR	0.199	12.2%	0.183	20.1%	0.168	32.3%	0.154	39.9%
PA	0.239	17.8%	0.214	27.8%	0.156	50.2%	0.156	50.5%
RI	0.265	21.4%	0.236	34.8%	0.217	44.2%	0.209	45.4%
SC	0.205	16.5%	0.198	24.6%	0.178	33.6%	0.166	52.4%
SD	0.189	21.6%	0.209	23.5%	0.202	22.1%	0.199	41.0%
TN	0.247	29.9%	0.246	29.9%	0.249	34.0%	0.243	41.1%
TX	0.246	34.3%	0.243	34.5%	0.211	41.4%	0.209	42.1%
UT	0.489	24.9%	0.488	24.8%	0.474	29.2%	0.472	29.1%
VA	0.274	5.5%	0.255	15.4%	0.180	52.8%	0.170	56.5%
WA	0.228	7.9%	0.217	11.8%	0.184	21.7%	0.181	23.4%
WV	0.270	15.4%	0.266	16.4%	0.223	33.1%	0.221	36.3%
WY	0.219	47.1%	0.232	47.4%	0.234	49.2%	0.254	49.6%

Note: Includes only districts with greater than 10 schools

The following scatterplots reveal the substantial changes that occur when only district spending is included in the model, then district fixed effect is added, followed by school level student needs. For states in the lower left corner of Figure 3, relatively little variance in school site spending is explained by school structural characteristics (size and grade levels) and/or district spending. District spending variation adds little to the explanation of school site spending variation

in Florida, for example. By contrast, including district spending in the model appreciably increases its ability to explain the variations in school site spending in New Hampshire, Nebraska, North Dakota and Virginia. Toward the mid-range of the figure, district spending variation appears to explain a substantial additional amount of variation in school site resources in Maine, New Jersey, Rhode Island, Pennsylvania, Colorado, Montana and Minnesota. District spending variation also explains noticeable additional variation in Massachusetts and Idaho, two states where school structural characteristics already explained much of the variation in total salaries per pupil. For these states in particular, inter-district spending disparities appear to substantively affect statewide inter-school spending disparities, thus limiting the efficacy of within-district only equity solutions.

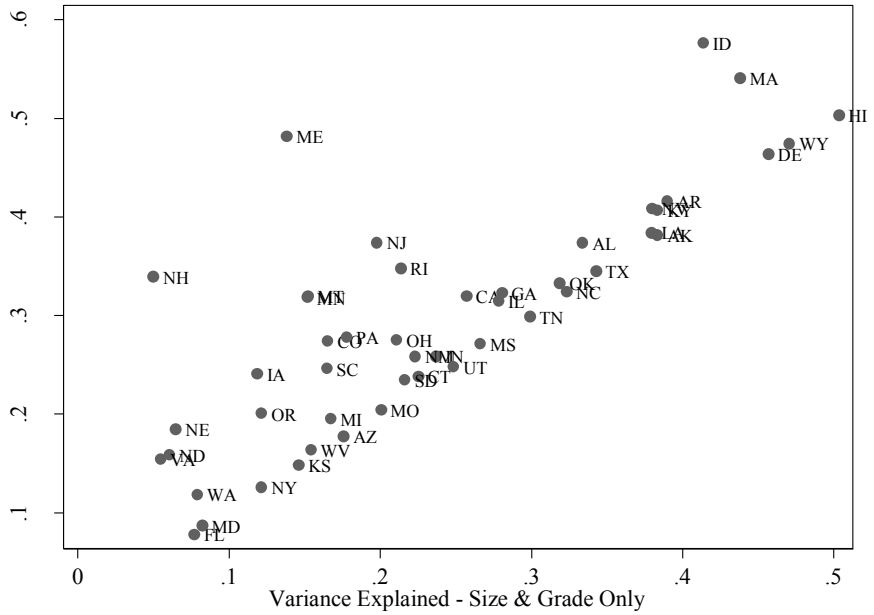

Figure 3. Additional Variance Explained by District Spending

Figure 4 reveals the additional variance explained by replacing the district spending measure with a district fixed effect. As noted previously, the district fixed effect model evaluates the extent to which any district characteristics explain statewide, inter-school disparities. This might include some districts, on average, allocating significantly more or less to school site spending. These differences may occur either by choice, or as a function of structural constraints that vary across districts, such as shares of children with disabilities, or shares of funding received from federal or other restricted revenue sources (see Baker, 2003). Still, very little statewide variation in inter-school spending is explained in Florida. Whatever the unobserved characteristics, district fixed effects explain substantial additional variation in school site spending in Virginia, Connecticut, Montana, Nebraska, Missouri and Pennsylvania. That said, it is difficult to know at this stage what share of that variation is within versus outside the control of local school officials.

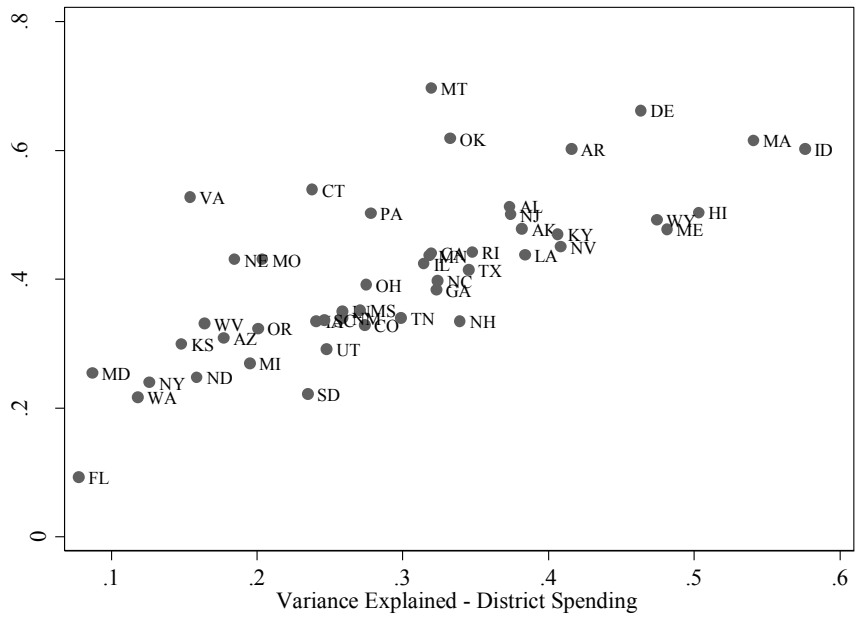

Figure 4. Additional Variance Explained by District Fixed Effect

Figure 5 shows the effect if school level student population characteristics are included in the model. We include this model to show the extent that the remaining within district variations in staffing expenditure may be explained by school level cost factors, including the distribution of special education programs and children. Like school size and grade configurations, distributions of special education programs and children may be influenced by district policy choices, though the aggregate numbers of children to be served district-wide may not be. Here we see, for example, that including student characteristics changes substantially the amount of variation in school site spending explained in New York State, where one-third of the student population attends a single district – New York City – but a district in which special education population shares alone explains substantial variation in spending across schools (see Baker, Libby & Wiley, 2015).

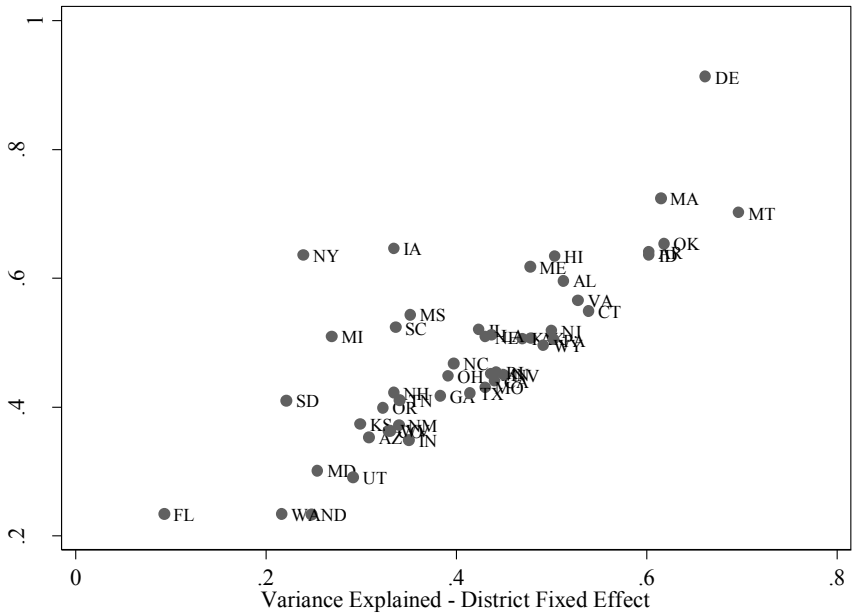

Figure 5. Additional Variance Explained by School Level Student Needs

Estimating Sensitivity of School Resources to District Spending

Table 4 and Table 5 summarize the state by state relationships between district spending and school resource measures and between district census poverty rates and school resource measures. In only one state (Delaware) are school total salaries per pupil not statistically significantly associated with district spending variation. Recall that both the district spending measure and the school spending measure have been rescaled as ratios to labor market averages, and are, therefore, on the same scale. We see here that in many states, including large diverse states like Illinois and New York, there exists a nearly 1:1 relationship between district spending variation and school site spending variation. In most states, school level total salaries per pupil remain negatively associated with district poverty rates. That is, where district poverty rates are higher, total salaries per pupil are lower.

The second section of Table 4 conveys the relationship between district spending and poverty and school level instructional salaries per pupil. All but three states have positive significant relationships between district spending and school site instructional spending, validating the rather obvious conclusion that schools in districts with more money tend to spend more on instruction. The relationship is negative for Tennessee and Arkansas and, again, non-significant in Delaware. Once again, in many cases the relationship between district spending variation and school site instructional spending variation is nearly 1:1, including Missouri, Ohio and Virginia, and marginally lower in Illinois and Pennsylvania.

Table 5 takes the analysis to the next level, asking to what extent intra-district spending disparities and poverty variation predict differences in a) the competitiveness of teacher wages (at constant assignment and qualifications), b) the average teacher salary and c) the number of teachers per 100 pupils. It is conceivable in this case that spending would be positively associated with "a" and "b," but negatively with "c," or vice versa, because teacher quantity measures can be traded for teacher price/salary measures. However, to the extent that intra-district spending positively affects

both staffing ratios and competitive wages in any given state, schools in lower spending districts have an insurmountable disadvantage. That is, if their district spending is lower, and in turn their salaries are less competitive and they have fewer staff per pupil, they cannot trade their way – increasing staff per pupil by decreasing salary competitiveness, or vice versa – to a resource advantage. To the extent that resources are also negatively associated with district poverty rates, we are faced with a scenario in which higher poverty districts have lower than average resourced schools, which in turn likely have lower staffing ratios and less competitive salaries. Consequently, resolving statewide disparities between income status and resources requires substantive inter-district intervention.

In California, Illinois, Louisiana, New York, Ohio, Pennsylvania and Virginia, district spending is positively associated with competitive salary differentials, average teacher salaries and numbers of certified staff per 100 pupils. And in each of these states, district poverty rates are negatively associated with competitive salary differentials, average teacher salaries and numbers of certified staff per 100 pupils (with significance minimally at $p<.10$). That is, for each of these states, higher poverty and lower spending districts have, on average, less competitive wages for teachers in schools, lower average salaries and fewer staff per pupil in their schools.

Overall, 18 states show positive significant relationships between competitive wage indices and district spending levels ($p<.05$). Only 10 states do not have positive significant relationships between average salaries and district spending levels and only one (Delaware) does not show a positive significant relationship between staffing ratios and district spending levels. That is, districts in states seem to most consistently be translating current spending into staffing ratios, or quantities, and less so into wage differentials.

New Jersey shows a positive significant relationship between staffing ratios and district poverty. That is, schools in higher poverty New Jersey districts have more advantageous staffing ratios compared to schools in lower poverty districts. However, schools in higher poverty New Jersey districts still face competitive wage and average salary deficiencies, on average. This, again, suggests higher poverty New Jersey school districts use whatever resource advantages they have to increase staffing ratios as opposed to making wages more competitive.

Table 4
Within State Associations between District Spending & School Resources

State	Total Salaries School Level			Instructional Salaries School Level		
	Current Spending per Pupil (District)	Census Poverty Rate	Adjusted R2	Current Spending per Pupil (District)	Census Poverty Rate	Adjusted R2
AK	0.925***	-0.160**	0.243	1.058***	-0.275***	0.220
AL	0.900***	-0.025	0.164	0.671***	-0.013	0.097
AR	0.795***	0.069*	0.152	-0.317***	-0.009	0.061
AZ	0.521***	-0.014	0.046	0.433***	-0.040**	0.028
CA	0.358***	-0.124***	0.029	0.382***	-0.091***	0.039
CO	1.378***	0.000	0.182	1.175***	-0.049***	0.202
CT	1.183***	-0.033***	0.250	1.058***	-0.037***	0.199
DE	0.387	-0.006	0.001	0.374	0.303***	0.111
FL	0.465***	-0.068*	0.100	0.465***	-0.068*	0.100
GA	0.608***	-0.018	0.096	0.445***	0.009	0.098
IA	0.789***	0.095***	0.080	0.646***	0.119***	0.064
ID	1.155***	-0.013	0.523	1.152***	-0.130***	0.470
IL	0.915***	-0.036***	0.287	0.784***	-0.024**	0.191
IN	0.221***	0.042**	0.066	0.149**	0.035	0.019
KS	0.720***	-0.016	0.131	0.671***	-0.058***	0.096
KY	0.887***	-0.094**	0.057	0.873***	-0.122***	0.043
LA	0.852***	-0.140***	0.078	0.824***	-0.230***	0.094
MA	0.929***	-0.097***	0.276	0.842***	-0.015	0.179
MD	1.014***	-0.258***	0.159	1.407***	-0.332***	0.289
ME	0.516***	-0.203***	0.167	0.483***	-0.169***	0.096
MI	0.708***	-0.120***	0.084	0.731***	-0.131***	0.118
MN	0.738***	-0.124***	0.036	0.882***	-0.143***	0.063
MO	0.934***	-0.111***	0.127	0.941***	-0.115***	0.157
MS	0.408***	-0.004	0.059	0.329***	-0.035	0.029
MT	0.610***	-0.093**	0.127	0.451***	-0.148***	0.081
NC	0.649***	-0.102***	0.031	0.652***	-0.075**	0.053
ND	1.152***	-0.150***	0.176	1.002***	-0.172***	0.176
NE	1.046***	-0.077***	0.216	0.947***	-0.126***	0.181
NH	0.429***	-0.150***	0.187	0.473***	-0.074**	0.088
NJ	0.670***	-0.018**	0.206	0.558***	0.016*	0.151
NM	1.057***	-0.106*	0.160	0.799***	-0.090	0.130
NV	0.983***	-0.220*	0.061	0.703***	-0.031	0.067
NY	1.077***	-0.181***	0.198	4.070***	-1.048***	0.325
OH	0.831***	-0.087***	0.194	0.841***	-0.085***	0.201
OK	0.501***	0.078***	0.051	0.364***	0.111***	0.059
OR	0.693***	0.042**	0.186	0.868***	-0.159***	0.182
PA	0.752***	-0.007	0.182	0.777***	-0.045***	0.166
RI	0.916***	-0.063***	0.326	0.893***	-0.039*	0.244
SC	0.763***	-0.061*	0.117	0.792***	0.102**	0.078
SD	1.570***	-0.175***	0.170	1.299***	-0.147***	0.170
TN	0.482***	-0.059**	0.053	-0.752***	-0.406***	0.173
TX	0.575***	-0.013	0.079	0.513***	-0.002	0.057
UT	1.196***	-0.248***	0.105	0.869***	-0.559***	0.276
VA	0.910***	-0.146***	0.172	0.900***	-0.114***	0.191
VT	0.138**	-0.021	0.030	0.169**	-0.053	0.016
WA	0.929***	-0.051***	0.144	0.856***	-0.063***	0.155
WV	0.845***	0.185**	0.061	0.632***	0.057	0.031
WY	0.777***	0.061	0.202	0.550***	0.040	0.098

note: *** p<0.01, ** p<0.05, * p<0.1

Table 5
Within State Associations between District Spending & School Resources

State	Salary Competitiveness Ratio			Average Teacher Salary			Certified Staff per 100 Pupils		
	Current Spending per Pupil	Census Poverty Rate	Adjusted R2	Current Spending per Pupil	Census Poverty Rate	Adjusted R2	Current Spending per Pupil	Census Poverty Rate	Adjusted R2
AK	0.170**	0.010	0.032	0.035	-0.151***	0.042	0.923***	-0.068	0.280
AL	0.208*	-0.046	0.007	0.375***	0.041***	0.095	0.356***	-0.026	0.183
AR	0.217	-0.083	0.020	0.181***	0.060***	0.052	0.309***	-0.035	0.100
AZ	0.209*	0.026	0.106	0.135***	0.043***	0.081	0.545***	-0.016	0.116
CA	0.170***	-0.046**	0.069	0.035***	-0.100***	0.047	0.291***	-0.028***	0.029
CO	0.257**	-0.006	0.069	0.331***	0.005	0.055	0.683***	-0.106***	0.107
CT	0.070	-0.005	-0.022	0.304***	-0.050***	0.084	0.518***	-0.018**	0.168
DE	0.305***	-0.120**	0.162	-0.153	0.299***	0.165	0.342102	-0.14917	0.025
FL	0.227	-0.042	-0.011	0.129***	-0.030***	0.083	0.060	0.003	0.197
GA	0.071	-0.081**	0.053	0.150***	-0.074***	0.029	0.481***	-0.041**	0.101
IA	0.186	-0.073	0.011	0.079	0.049***	0.031	0.360***	-0.017	0.007
ID	0.209***	-0.036	0.038	0.361***	-0.103***	0.300	0.625***	-0.004	0.320
IL	0.415***	-0.039*	0.344	0.491***	-0.021***	0.242	0.380***	-0.069***	0.125
IN	0.020	-0.009	0.000	0.007	-0.047***	0.042	0.237***	0.084***	0.139
KS	0.251	-0.108***	0.082	-0.139***	0.044***	0.068	0.942***	-0.084***	0.140
KY	0.156*	-0.006	0.004	0.193***	0.012	0.035	0.513***	0.001	0.052
LA	0.221**	-0.113*	0.043	0.289***	-0.084***	0.096	0.291***	-0.108***	0.017
MA	-0.030	-0.014	0.025	0.273***	-0.034***	0.069	0.388***	-0.021*	0.055
MD	0.122	0.043	0.052	0.737***	-0.021**	0.117	0.416***	-0.155***	0.098
ME	0.063	0.004	-0.033	0.337***	-0.057**	0.124	0.158***	-0.151***	0.097
MI	0.089	-0.045**	0.015	0.130***	-0.064***	0.034	0.479***	-0.029***	0.114
MN	0.275***	-0.014	0.091	0.314***	-0.033***	0.047	0.533***	-0.042*	0.059
MO	0.071	-0.055*	0.002	0.119***	-0.056***	0.050	0.449***	-0.082	0.002
MS	0.038	-0.046	-0.025	0.076*	-0.029	0.031	0.237***	0.025	0.100
MT	0.357***	-0.145**	0.224	-0.114***	-0.110***	0.073	0.690***	-0.028	0.160
NC	-0.324	0.076	0.031	-0.039	-0.083***	0.025	0.539***	0.044	0.036
ND	0.231**	-0.062*	0.022	-0.053	0.015	-0.002	0.971***	-0.024	0.201
NE	-0.015	-0.103**	0.033	-0.156***	0.165***	0.099	1.211***	-0.261***	0.185
NH	0.010	0.017	-0.040	0.163***	-0.020	0.042	0.289***	-0.010	0.087
NJ	0.214***	-0.021**	0.136	0.194***	-0.042***	0.063	0.364***	0.024***	0.135
NM	0.016	0.035	0.004	0.148***	-0.001	0.042	0.673***	-0.098*	0.098
NV	0.182	0.109	0.119	0.138***	0.069	0.096	0.463***	-0.136	0.088
NY	0.337***	-0.063***	0.145	0.361***	-0.094***	0.129	0.582***	-0.090***	0.142
OH	0.249***	-0.048***	0.115	0.314***	-0.064***	0.095	0.396***	-0.026***	0.076
OK	0.251	-0.066	-0.014	-0.036	-0.101***	0.029	0.629***	-0.056***	0.083
OR	-0.060	0.077***	0.053	0.100***	0.037***	0.036	0.617***	-0.048**	0.160
PA	0.287***	-0.035***	0.144	0.230***	-0.044***	0.088	0.919***	-0.169***	0.358
RI	0.123*	-0.019	0.041	0.159**	-0.025**	0.028	0.630***	-0.060***	0.201
SC	0.157	-0.135*	0.007	0.086**	-0.088***	0.031	0.384***	0.053*	0.068
SD	0.557**	0.002	0.098	0.004	0.048	0.008	1.296***	-0.165***	0.186
TN	0.414***	-0.100**	0.038	0.610***	-0.060***	0.095	-0.357***	0.005	0.055
TX	-0.069	0.010	-0.003	0.106***	0.002	0.022	0.432***	-0.056***	0.055
UT	0.269**	0.006	0.047	0.154***	-0.030*	0.028	0.770***	-0.159***	0.126
VA	0.256**	-0.119***	0.068	0.423***	-0.113***	0.182	0.727***	-0.090***	0.192
VT				0.241***	-0.131***	0.348	0.068	0.045	0.041
WA	0.138*	-0.027	0.006	0.279***	-0.067***	0.034	0.710***	0.015	0.188
WV	-0.161	-0.029	-0.025	0.219**	-0.069*	0.016	0.318***	0.016	0.079
WY	-0.126*	-0.035	0.093	-0.056	-0.010	0.001	0.782***	0.057	0.164

note: *** p<0.01, ** p<0.05, * p<0.1

Table 6 reveals the results of the national model with state fixed effects. As one might expect, when the state level spending relationships above are aggregated, district spending variation

and district poverty rates continue to significantly predict school level variations in key teacher resource measures. District spending variation is positively associated with the competitiveness of teacher wages, average teacher salaries and overall staffing ratios. Also, on average nationally, higher poverty districts tend to have less competitive salaries, lower average salaries and lower staffing ratios, even at comparable per pupil spending.

The spending relationships here strongly suggest that teacher wage parity and staffing ratio parity is highly unlikely in the absence of more equitable district level spending. Further, even more progressive targeting of funding to higher poverty districts is likely required to offset the regressive distribution of existing resources with respect to district poverty rates.

Table 6
National Model of School Site Resources & District Expenditures

	Salary Competitiveness Index		**Average Teacher Salary**		**Cert Staff per 100 Pupils**	
	coef	**se**	**coef**	**se**	**coef**	**se**
District Ratio to Labor Market Mean						
Current Spending per Pupil	0.183***	0.013	0.209***	0.004	0.490***	0.008
Census Poverty Rate	-0.032***	0.004	-0.045***	0.001	-0.058***	0.002
Grades Served						
% in Grade 6 to 8	0.021***	0.005	-0.000	0.002	0.016***	0.003
% in Grade 9 to 12	0.041***	0.005	0.028***	0.001	-0.044***	0.002
Constant	0.737***	0.017	0.831***	0.006	0.579***	0.011
Adjusted R2	0.167		0.046		0.049	

note: *** p<0.01, ** p<0.05, * p<0.1

Evaluation of State Level Disparities

Finally, Figures 6 through 8 and Table 7 explore the relationships between statewide progressiveness of district level funding and statewide progressiveness of school site resources. Figure 6 shows that states where district spending per pupil is higher in higher poverty districts – in other words, states where school funds are progressively distributed – tend to have higher school level total salaries per pupil in schools serving more low income children. With the exception of New York, Figure 7 shows a similarly strong relationship between district spending progressiveness and school-level instructional spending progressiveness statewide. The New York finding raises some question about the comparability of the measure of instructional spending between New York City schools and schools statewide. With such a large number of schools, and over one-third of all children enrolled in a single district, differences in reporting between New York City and other districts statewide can result in seemingly illogical estimates. Again, progressiveness of district level spending is strongly associated with statewide progressiveness of school level teacher resources. Figure 8 reflects the same for the relationship between district-level spending and school-level staffing ratios. In states where district spending is progressive, school level staffing ratios tend to be progressively distributed.

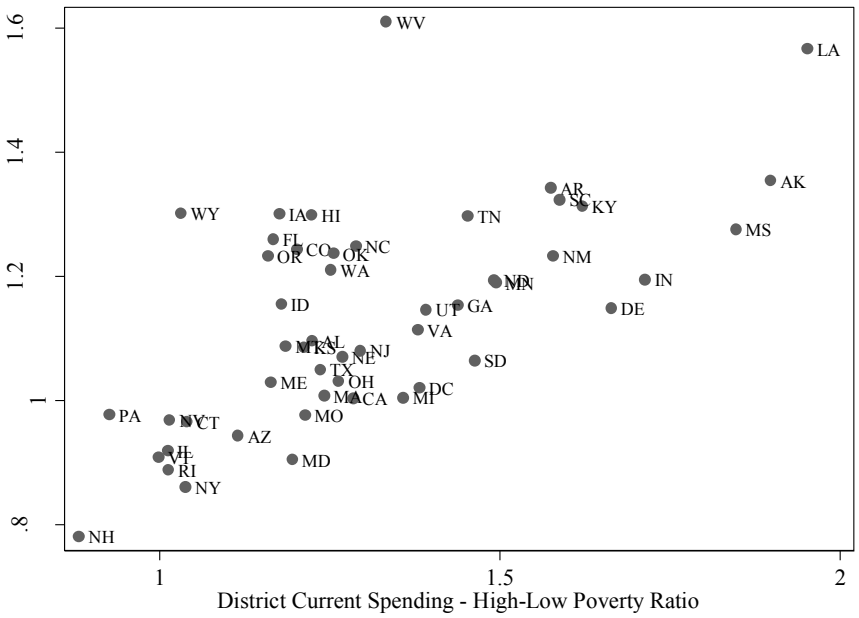

Figure 6. Progressiveness of District Resource & Total School Salaries by State

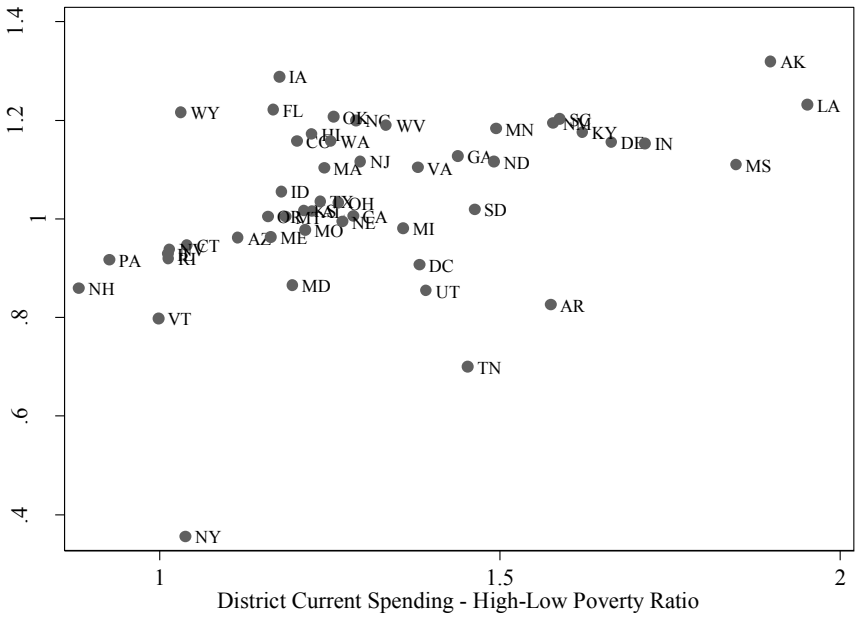

Figure 7. Progressiveness of District Resource & Instructional School Salaries by State

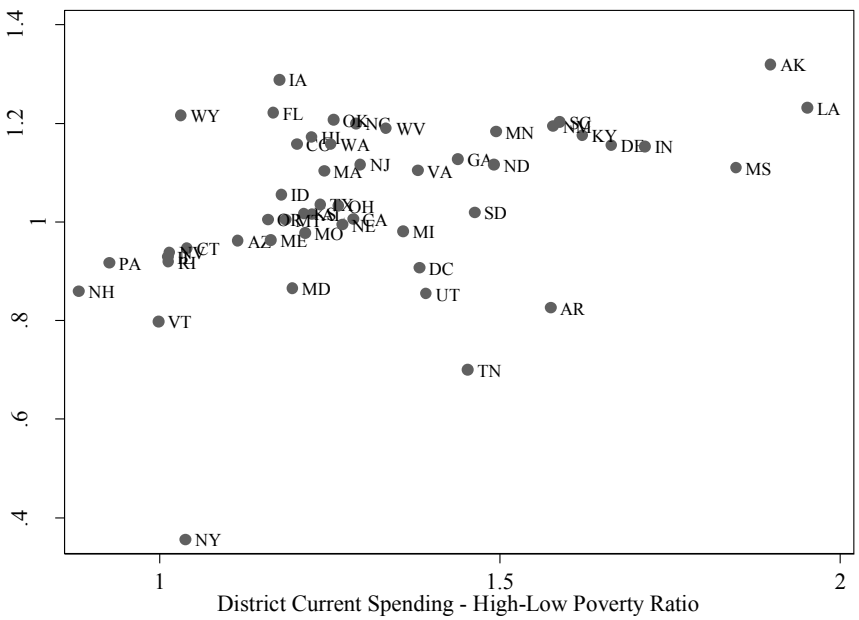

Figure 8. Progressiveness of District Resource & Staffing Ratios by State

Table 7 summarizes the cross-state correlations between each "fairness" measure. District current spending fairness is positively, significantly correlated across states with several school-level resource measures: a) total salaries per pupil, b) instructional salaries per pupil and c) staffing ratios. Fairness ratios constructed for average teacher salaries and salary competitiveness are not positively associated with the other resource measures; however, the analyses above do find these measures to be predictable as a function of district-level current spending and poverty rates.

Table 7
Correlations of State Level Progressiveness of District Resource & School Resource Distributions with Respect to Poverty

Progressiveness Ratios	Current Spending (District)	Total Salaries (School)	Instructional Salaries (School)	Cert Staff per 100 Pupils (School)	Competitive Salary Index (School)
Total Salaries (School)	0.635*				
Instructional Salaries (School)	0.435*	0.626*			
Cert Staff per 100 Pupils (School)	0.585*	0.744*	0.602*		
Competitive Salary Index (School)	0.158	0.012	0.041	0.242	
Average Teacher Salary (School)	0.068	0.074	0.004	-0.175	0.224

Conclusions and Policy Implications

Findings herein raise significant concerns about the effectiveness of attempting to improve statewide equity of teacher resources through federal pressure on state education agencies, as found in the State Plans to Ensure Equitable Access to Excellent Educators. State education agencies generally lack budget authority, or substantial authority to alter distributions of state school aid to achieve greater progressiveness of state school finance systems. The purse strings and tax policy are

governed by state legislatures. Absent any ability to improve inter-district spending equity, state education agencies have little ability to create the conditions necessary to improve the distribution of teaching resources across higher and lower poverty schools.

In several large, heterogeneous states, including New York, Pennsylvania and Illinois, districts serving more children in poverty have fewer total resources; their schools in turn have fewer total resources, less competitive teacher compensation and less desirable staffing ratios. In several states identified herein, district level variations in spending are significant determinants of statewide inequity in school site resources. Thus, school site resource variation is unlikely to be resolved by regulation, absent any correction to inter-district spending disparities. At best, states may pressure districts to improve within-district disparities in aggregate and specific teaching resources. While relevant and important, this policy objective misses the larger picture of persistent disparities in total resources between local public school districts that are highly segregated both socioeconomically and racially (Baker, Sciarra & Farrie, 2015; Reardon & Owens, 2014).

Early evidence suggests that state education agency plans to comply with federal teacher equity regulations are likely to be little more than window dressing. In the spring of 2015, we began to see the first signs of how states intend to respond to new Federal regulations. For example, in response to the new Federal regulations, the New York State Education Department released a memo in April, 2015, which explained that their review of equity profile data provided by ED revealed:

> According to the USED published equity profile, the average teacher in a highest poverty quartile school in New York earns $66,138 a year, compared to $87,161 for the average teacher in the lowest poverty quartile schools. (These numbers are adjusted to account for regional differences in the cost of living.) Information in the New York profile also suggests that students in high poverty schools are nearly three times more likely to have a first-year teacher, 22 times more likely to have an unlicensed teacher, and 11 times more likely to have a teacher who is not highly qualified.[13]

Despite mention of substantial salary disparities, NYSEDs proposals for improving the distribution of teacher qualifications are paradoxically silent with respect to substantial funding disparities that persist between the state's higher and lower poverty school districts (Baker & Corcoran, 2012; Baker, Sciarra, Farrie, 2015). In the portion of the memo addressing "root causes" of disparities in qualifications, NYSED officials instead list "talent management struggles" including: "Preparation, hiring and recruitment, professional development and growth, selective retention, extending the reach of top talent to the most high-need students." Indeed, the department (NYSED) has little authority over the state school finance system that yields these disparities.

The findings herein also raise questions regarding the validity of claims that state laws regarding teacher tenure and due process protections are a significant cause of disparities in teaching resources available across differing poverty and minority concentration settings. It seems unlikely at best (or even entirely illogical) that contractual protections applied uniformly across all local public school districts within a state could be a significant factor in creating these disparities. Across schools and districts, student characteristics, working conditions and resources vary, but due process requirements and tenure procedures do not. Findings herein suggest that between district disparities in spending are a substantial determinant of total staffing expenditures, instructional expenditures,

[13] http://www.regents.nysed.gov/meetings/2015Meetings/April/415p12hed2.pdf

average salaries and staffing ratios in schools. These factors contribute to the relative competiveness of staff wages and working conditions. Coupled with related studies showing that between-district variations in teacher qualifications are as great or greater than within-district, cross-school variations, it seems far more likely that factors such as spending, which vary significantly across districts, are the more likely culprits inducing disparities in teacher qualifications, and not state laws applied uniformly across districts. Findings herein suggest as much, directly and consistently.

Put simply, the amount of funding available to any school district determines the amount it can spend on its schools and, in turn, the combination of wage competitiveness and staffing ratios the district can provide. Those with more can spend more; those without can't. Where inter-district inequities persist – especially where districts serving needier student populations have substantially lower spending – so too will inequities in the various indicators suggested for review by the U.S. Department of Education. Regulatory intervention without more substantive changes to state school finance systems will likely achieve little. So too will legal challenges to statutes and regulations which fail to correct inter-district disparities in available funding.

Federal policy should attempt to more directly address state school finance system disparities, placing pressure on state legislatures to equitably and adequately fund schools, rather than pressuring state education agencies to regulate inequities that arise because of systems over which they have no direct influence. Federal policy might also attempt to more directly improve inter-district equity by redirecting larger shares of federal funds through need-targeted formulas instead of competitive grants. But federal influence will likely always be limited due to limited resources and limited influence over state legislatures. Responsibility for equitable and adequate provision of resources, programs and services to children is laid out in state constitutions, rendering state courts the ultimate arbiters of fairness. State policy change must begin with the provision of equitable and adequate funding to school districts, a prerequisite condition for all that follows. State policy must also follow through with requirements that equity provisions built into state aid formulas, for targeting funds to needier districts and children, translate to district allocation provisions achieving similar targeting. It remains the state responsibility to ensure that districts uphold state constitutional requirements. State education agencies, in conjunction with U.S. Department of Education can then exert their role in providing guidance and technical assistance in the monitoring of equity.

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APPENDIX A

	Ed Equity Files		Public School Universe		Data Coverage Estimate		SASS Based Salary Index		Data Coverage Estimate	
State	Schools	Enrollment	Schools	Enrollment	School Share	Enrollment Share	Schools	Enrollment	School Share	Enrollment Share
Alabama	1,296	715,618	1,343	731,725	96.5%	97.8%	152	95,862	11.3%	13.1%
Alaska	482	128,500	509	131,166	94.7%	98.0%	82	21,807	16.1%	16.6%
Arizona	1,833	1,030,659	2,046	1,078,249	89.6%	95.6%	131	128,453	6.4%	11.9%
Arkansas	1,050	467,372	1,080	483,114	97.2%	96.7%	117	67,646	10.8%	14.0%
California	9,365	6,067,005	9,893	6,202,862	94.7%	97.8%	424	478,478	4.3%	7.7%
Colorado	1,757	834,909	1,810	853,669	97.1%	97.8%	122	75,369	6.7%	8.8%
Connecticut	1,058	550,112	1,133	553,990	93.4%	99.3%	138	100,767	12.2%	18.2%
Delaware	195	127,615	211	128,946	92.4%	99.0%	60	44,521	28.4%	34.5%
District of Columbia	191	66,304	216	73,609	88.4%	90.1%	25	10,442	11.6%	14.2%
Florida	3,646	2,615,008	3,920	2,668,113	93.0%	98.0%	230	245,162	5.9%	9.2%
Georgia	2,253	1,656,816	2,321	1,685,016	97.1%	98.3%	140	114,695	6.0%	6.8%
Hawaii	286	179,493	286	182,705	100.0%	98.2%	16	14,404	5.6%	7.9%
Idaho	672	271,398	712	279,494	94.4%	97.1%	113	61,068	15.9%	21.8%
Illinois	4,104	2,034,620	4,235	2,073,721	96.9%	98.1%	181	133,675	4.3%	6.4%
Indiana	1,804	1,014,850	1,866	1,037,560	96.7%	97.8%	156	117,588	8.4%	11.3%
Iowa	1,373	473,258	1,403	485,358	97.9%	97.5%	127	60,609	9.1%	12.5%
Kansas	1,329	470,430	1,351	481,519	98.4%	97.7%	128	61,058	9.5%	12.7%
Kentucky	1,341	666,217	1,409	681,643	95.2%	97.7%	160	87,674	11.4%	12.9%
Louisiana	1,341	666,595	1,415	702,301	94.8%	94.9%	123	80,276	8.7%	11.4%
Maine	614	173,079	579	178,989	106.0%	96.7%	85	36,990	14.7%	20.7%
Maryland	1,383	849,176	1,422	854,295	97.3%	99.4%	68	53,273	4.8%	6.2%
Massachusetts	1,770	928,826	1,829	953,369	96.8%	97.4%	120	87,012	6.6%	9.1%
Michigan	3,257	1,463,719	3,514	1,533,660	92.7%	95.4%	235	140,751	6.7%	9.2%
Minnesota	1,808	765,971	2,186	839,645	82.7%	91.2%	220	157,645	10.1%	18.8%
Mississippi	868	474,942	899	490,619	96.6%	96.8%	94	60,788	10.5%	12.4%
Missouri	2,200	897,145	2,269	916,300	97.0%	97.9%	189	109,795	8.3%	12.0%
Montana	789	137,716	826	142,409	95.5%	96.7%	69	29,817	8.4%	20.9%
Nebraska	988	294,883	1,009	301,296	97.9%	97.9%	136	67,891	13.5%	22.5%
Nevada	616	434,314	642	439,128	96.0%	98.9%	100	109,804	15.6%	25.0%
New Hampshire	464	184,248	476	191,012	97.5%	96.5%	47	37,709	9.9%	19.7%
New Jersey	2,394	1,324,287	2,471	1,352,571	96.9%	97.9%	188	156,629	7.6%	11.6%
New Mexico	797	325,813	855	335,236	93.2%	97.2%	111	69,658	13.0%	20.8%
New York	4,513	2,651,363	4,647	2,702,503	97.1%	98.1%	154	115,900	3.3%	4.3%
North Carolina	2,457	1,471,917	2,508	1,499,541	98.0%	98.2%	129	79,167	5.1%	5.3%
North Dakota	492	94,792	476	97,534	103.4%	97.2%	109	41,848	22.9%	42.9%
Ohio	3,582	1,681,521	3,638	1,738,861	98.5%	96.7%	211	127,511	5.8%	7.3%
Oklahoma	1,703	637,140	1,773	666,011	96.1%	95.7%	114	59,054	6.4%	8.9%
Oregon	1,214	524,470	1,258	553,232	96.5%	94.8%	145	89,525	11.5%	16.2%
Pennsylvania	3,123	1,729,448	3,109	1,747,825	100.5%	98.9%	170	122,946	5.5%	7.0%

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State	Schools	Enrollment	Schools	Enrollment	School Share	Enrollment Share	Schools	Enrollment	School Share	Enrollment Share
Rhode Island	286	134,681	299	141,564	95.7%	95.1%	52	35,106	17.4%	24.8%
South Carolina	1,112	698,472	1,174	726,003	94.7%	96.2%	103	81,844	8.8%	11.3%
South Dakota	641	121,062	695	127,979	92.2%	94.6%	90	38,672	12.9%	30.2%
Tennessee	1,703	981,295	1,739	987,830	97.9%	99.3%	135	94,503	7.8%	9.6%
Texas	7,995	4,865,252	8,557	5,000,193	93.4%	97.3%	262	200,572	3.1%	4.0%
Utah	913	578,186	995	598,294	91.8%	96.6%	116	98,589	11.7%	16.5%
Vermont	386	78,804	304	83,803	127.0%	94.0%				
Virginia	1,849	1,240,510	1,873	1,255,551	98.7%	98.8%	122	105,142	6.5%	8.4%
Washington	2,089	1,026,819	2,277	1,045,321	91.7%	98.2%	186	124,243	8.2%	11.9%
West Virginia	696	276,028	723	282,870	96.3%	97.6%	96	54,803	13.3%	19.4%
Wisconsin	423		2,222	870,282	19.0%	0.0%				
Wyoming	338	86,629	350	89,894	96.6%	96.4%	83	33,454	23.7%	37.2%

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