Unpacking the Consequences of Disparities in School District Financial Inputs: Evidence from Staffing Data in New York and Illinois

Bruce D. Baker

Department of Educational Theory, Policy and Administration
Rutgers, The State University of New Jersey
Bruce.baker@gse.rutgers.edu

Paper presented at the Annual Meeting of the
Association for Education Finance and Policy
Boston, MA
March 17, 2012

Introduction

Fiscal equity in K-12 public education remains an elusive goal in many states, especially those serving large economically and racially diverse student populations. The recent annual report *Is School Funding Fair* (Baker, Sciarra & Farrie, 2012) identifies Pennsylvania, New York and Illinois among the 10 least equitable states in terms of the distribution of state and local revenue for schools, applying an approach which identifies the predicted revenues per pupil for lower and higher poverty districts, controlling for a variety of cost factors. In 2008-09, an Illinois school district with 0% children in poverty was expected to receive approximately $11,300 per pupil while a school district with 30% poverty was expected to receive just over $8,707 per pupil. In New York, a district with 0% poverty was expected to receive $18,700 and a district with 30% poverty just over $16,200. While the average levels of financial inputs in New York and Illinois differ substantially, even after controlling for regional variations in competitive wages, the patterns of disparity are similar. Baker and Welner (2010) show that these disparities have persisted in New York and Illinois since at least the early 1990s, the start of period for which they evaluate income related disparity in state and local revenues.

If the primary goal of K-12 education is merely to provide equal opportunity for students to achieve minimally adequate scores on high school exit exams as defined in state regulations, then policymakers need only be concerned that suitable levels of resources are available in each school district such that sufficient portions of students achieve those test scores. Policymakers need not be concerned with variations above and beyond their minimum adequacy targets. But, if at least one valued goal of K-12 education is to provide high school graduates greater and more equal opportunity to attend and succeed in college, relative differences in secondary preparation across students and local public school districts matter (See Koski & Reich, 2006, Baker and Green, 2009).

Arguably, state policy has emphasized the former over the latter, with potentially significant implications for school district resource allocation including pressure for lower performing, cash strapped

school districts to allocate as many resources as possible toward achieving minimally adequate and narrowly measured state assessment outcomes. But, emphasis on the former may actually exacerbate inequities in the latter – college access – if districts sacrifice curricular depth and breadth in order to focus on minimum competency in a handful of tested subjects. This concern exists even where the minimum measured academic outcome standards under the former are assumed to be standards of college readiness. In a recent analysis of New York State assessments, tested achievement standards were found to fall well below college readiness standards. [1] While college readiness may be an absolute standard geared toward successful completion of introductory coursework at open-enrollment public higher education institutions, college access more broadly is relative, and should take into account access to the full range of higher education options. A fair and adequate system of public schooling would provide both equitable access to higher education, and readiness to succeed in college.

Lack of depth and breadth of high school curricular offerings may compromise both readiness and equality of access, but may not be revealed through measures of tested student outcomes on state assessments. Regarding access, Killgore (2009) explains the importance of high school students' academic and non-academic qualifications for acceptance to selective colleges. With regard to non-academic merit, Killgore explains: "Nonacademic merit becomes important to admissions officers at elite colleges because it offers them additional criteria to distinguish the best from among their large pool of applicants who are highly qualified in academic terms. Nonacademic merit consists of extracurricular involvement, such as sports, artistic activities, student organizations, and volunteerism."(p. 471)[2] Regarding readiness, a substantial body of research points to a positive relationship between highest level of math course taken in high school and persistence in college. Most recently, Long, Iatarola and Conger

[1] In a memo regarding the Koretz report, Everson explained: *"We see that students with Regents Math A passing scores of 65 typically do not meet the CUNY cut-score for placement into college-level Mathematics courses. Indeed, these students may have only a little better than a 50-50 chance of earning a grade of "C" or higher in CUNY's remedial Mathematics courses."* Everson, H.T. (2010) Memo to David Steiner: Relationship of Regents ELA and Math Scores to College Readiness Indicators. July 1, 2010

[2] Killgore, L. (2009) Merit and Competition in Selective College Admissions. *The Review of Higher Education* 32 (4) 469–488

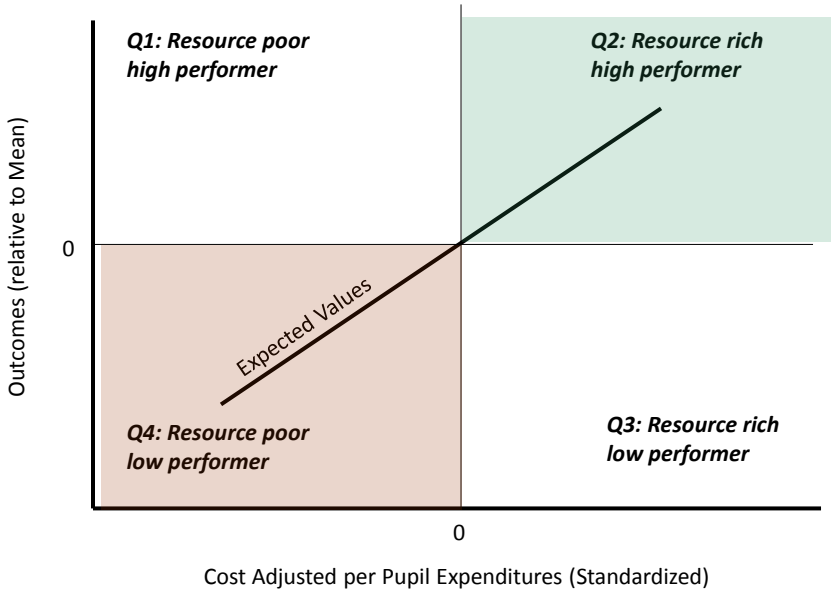
(2009) find: "Using data on students in Florida public postsecondary institutions, we find that differences among college-going students in the highest math course taken explain 28–35 percent of black, Hispanic, and poverty gaps in readiness and over three-quarters of the Asian advantage." (p.)

Inequity in fiscal inputs as presented by Baker, Sciarra and Farrie (2012) may or may not lead to predictable disparities in specific resources and opportunities. But fiscal constraints certainly limit districts' ability to provide broad and deep curricular opportunities. So too do accountability pressures. One might assume that all else equal in terms of fiscal constraints, districts facing greater accountability pressures are more likely to target available resources toward improving measured outcomes. Similarly, if two districts face similar accountability pressures, but have very different access to resources, it might be found that the district with fewer resources has channeled more of those resources directly toward measured outcomes. Thus, we have at least two dimensions to our resource allocation puzzle.[3]

Figure 1 provides a conceptual framing of the distribution of local public school districts in terms of resource allocation and re-allocation pressures. Along the horizontal axis are "cost-adjusted" expenditures per pupil and along the vertical axis are actual measured outcomes, with both measures standardized around statewide means. Per pupil expenditure are "adjusted" for the cost of achieving specific (state average district) outcomes, where factors that influence cost include district structural characteristics, geographic location (labor costs) and various student need factors. One would assume that if expenditure measures are appropriately adjusted for costs districts would cluster around the diagonal line of expected values – where districts with more resources on average have higher outcomes. To the extent that this relationship holds with real data on real districts, one can then explore differences in resource allocation between districts falling in different regions (or quadrants) of Figure 1.

[3] Additional dimensions influencing resource allocation include geographic and school structural constraints (size/economies of scale & grade ranges served), and student population characteristics each of which constrain and/or influence district resource allocation (Baker, 2003). These latter factors may be accounted for within appropriately cost-adjusted measures of expenditures (see Duncombe and Yinger, 2009).

Figure 1. Hypothetical Distribution of School Districts



This study explores the depth and breadth of curricular offerings in high need, underperforming, and resource constrained school districts in New York State and in Illinois compared with their lower need, high performing and better funded counterparts often operating within the same metropolitan area. As noted previously, both are large, geographically and demographically diverse states and both are states with substantial disparities in fiscal resources even when measured in nominal – not cost adjusted – terms (Baker, Sciarra & Farrie, 2011, 2012). That is, in both states, higher poverty districts have systematically lower state and local revenues per pupil. We take advantage of several data sources herein to explore the resource allocation and specific curricular offering disparities across districts in these states.

Specifically, we ask:

1) What are the aggregate differences in staffing, teacher salaries and school level resources per pupil in high spending, high outcome districts versus low spending, low outcome districts?

2) What are the differences in the distribution of staffing by course and grade assignments, per pupil in high spending, high outcome districts versus low spending, low outcome districts?
3) What is the distribution of students participating in advanced course offerings in Math and Science in high spending, high outcome districts versus low spending, low outcome districts?
4) How, if at all, have staffing allocation patterns changed during the NCLB period?

We ask the first question to lay the groundwork for understanding specific underlying staffing assignment and school site disparities. For example, while we know from Baker, Sciarra and Farrie (2011, 2012) that higher poverty districts in these states have lower state and local revenues per pupil, we do not necessarily know that higher poverty schools have lower spending per pupil, at each grade level and we do not know whether districts with lower cost adjusted spending per pupil have fewer or more total staff per pupil. Our central questions, however, are the second and third questions, in which we explore the staffing configurations of schools in each group to determine a) which staffing assignments are most disparate across districts if any, and b) how disparate are they? We follow up our staffing assignment disparity analysis with analyses of student enrollment and participation rates in specific, related courses. Finally, we evaluate the extent to which the *era of accountability* under No Child Left Behind has seen shifts in teacher assignment disparity across districts by group.

Related Literature on Resource Allocation

A number of studies over the past few decades have addressed the factors that influence the allocation of school district resources. In particular, Baker (2003) finds that school district size and availability of financial resources are primary drivers of the balance of spending between administration and instruction with larger districts and lower spending districts spending proportionately less on administration. Further, specific student populations were associated with allocation differences. Increased prevalence of students with disabilities was tied to significant increases in district staffing

levels, from classroom to central office. Increased limited English proficient and low-income populations led to increased allocations to instruction and instruction-related staff, including librarians and school counselors, but not to increases in classroom teachers.

Monk and Hussain (2000), Brent, Roellke and Monk (1997) and Monk, Brent and Roellke (1997) also show how location, school size and district wealth may lead to differences in the allocation of resources across specific educational programs. Among other things, these authors find that greater fiscal capacity provides greater opportunity to allocate resources to advanced curricular opportunities. That is, a variety of school district characteristics beyond district control, including district size and student demographic characteristics, appear to influence significantly internal resource allocation. Some of these influences, like increasing marginal costs of overhead or transportation in small districts, are unavoidable. Others, including the apparent escalation of middle level administrators and teaching support staff in higher poverty, urban districts may be *restructurable* in more productive and efficient ways. These findings make clear the potential problems of issuing one-size-fits all mandates regarding shares of budgets to be allocated to *instruction.*

Another area of fleeting interest was the equity and neutrality of the distribution of specific educational opportunities, as defined by resources, rather than total per pupil revenues or expenditures, across schools and districts. Some recent research has explicitly addressed this question, while other research on broader issues of resource allocation has revealed intriguing patterns of inequity of specific opportunities. For example, Brent, Roellke, and Monk (1997), in their human resource allocation studies in New York mentioned previously, found that the "small poor" district in their sample of case studies allocated no resources to advanced programs in any of five content areas and allocated comparable resources per pupil to regular and remedial programming in English, Social Studies, Math, and Science. In contrast, their "small wealthy" district allocated substantial resources to advanced programming in four of five content areas and no resources to remedial programming in two (English and Social Studies) of those four program areas (p. 220). This finding raises some concerns regarding horizontal equity and

fiscal neutrality of the availability of advanced programming opportunities across New York State high schools.

While there is much talk of the influence of No Child Left Behind and standards and testing on within district and within school resource allocation, there is little empirical research documenting shifts in resource allocation in response to testing regimes adopted by states under NCLB. The common perception is that overemphasis in state accountability systems specifically on reading and math between grades 3 and 8 has led to significant pressure for resource constrained school districts to re-allocate any and all resources to those areas, contracting or shedding other curricular opportunities.

A recent report on participation in the Arts found that participation in Arts education in particular has been in steady decline since 1982 (National Endowment for the Arts, 2011). That is, the decline of arts education began long before adoption of NCLB and the heavy emphasis on reading and math alone.

Numerous studies of school district resource allocation suggest that patterns of resource allocation, especially broad categories into which resources are allocated, are remarkably stable over time, and that even when additional resources are infused into district budgets they tend to be distributed largely across areas where previous resources had been distributed (See Firestone, Goertz & Natriello, 1997).

Dee and Jacob (2010) explore, among other things, changes in pupil to teacher ratios, teacher characteristics and time spent teaching core subject areas. Dee and Jacob found NCLB to be related to a modest uptick in instructional spending and support spending, while other areas remained relatively constant. They also found an increase in numbers of teachers with advanced degrees and found that teachers reported spending more time teaching math and reading (though not one or the other specifically, or academic subjects in general). While these findings imply some curricular narrowing based on time spent by individual teachers of core subject areas, they do not speak to whether actual changes to staffing and curricular offerings occurred, or whether there was differential impact across different types of school settings.

Ballou and Springer (2008) evaluate achievement tradeoffs under NCLB, finding that there appears to be some tradeoff between improving performance of low performing students and reduction of performance of high performing students. Ballou and Springer explore the shifts in outcome distribution, but do not explore underlying changes in resource allocation that may explain these shifts. Finally, Reback, Rockoff and Schwartz (2010) use the Early Childhood Longitudinal Studies from the National Center for Education Statistics to explore shifts in teacher time allocation and specific opportunities in schools they classify as on the margin for meeting Adequate Yearly Progress, or schools expected to feel the pressures of accountability sanctions. While they find that teacher' perceptions of the pressures and their principals' ability to deal with those pressures are affected and teaching time re-allocated, they also find that "these schools do not substantially alter their provision of physical education classes, recess, or gifted and talented programs, and are not changing the length of the school year." (p. 25)

Methods

Methods in this study are broken down into three steps: a) a preliminary step of estimating education cost function models for each state in order to generate cost adjusted spending measures and b) use of the cost adjusted spending measures along with aggregate outcome indices to identify districts falling into each group (quadrant) and c) exploration of staffing and other resources by district group.

Data

Data used in this study come from a variety of sources, in part in an effort to validate that the disparities observed are consistently observed across alternative measures. Cost function estimation alone, a preliminary step in this investigation, requires substantial information on all districts statewide in each state, most of which is gathered through either a) state department of education sources, b) the National Center for Education Statistics, Common Core of Data, or c) the U.S. Census Bureau. Model estimation and relevant measures are described in the following section.

Our analysis of staffing allocation herein relies on statewide personnel data from New York (Personnel Master File) and Illinois (Teacher Service Record). These data include information on each teaching assignment for each individual teacher in each state, across years. Individual teachers, especially at the secondary level, may teach across assignments, such as teaching a general English class, and an AP Literature course, or teaching introductory Biology as well as a basic general science course. These staffing files also include information on percent time allocated to each assignment, which may be used in *weighting* the analysis of full time equivalent assignments to any one specific course or field. Because there exist many possible course assignments we apply significant aggregation to teaching fields, for example, in our Illinois data, aggregating various advanced level math courses, including AP courses into a single category of "advanced math."

We supplement our analyses with data from two recently available data sources. First, in order to characterize aggregate differences in school level resources, by schools as they fall across our categories, we use the recently released U.S. Department of Education school site finance data set (USDOE, 2011).[4] Neither of the states in our study maintains a statewide school site expenditure reporting system. These data allow us to determine the school site distributions of resource inequity across districts that fall into different groups and to do so by grade level. For example, are elementary or secondary schools in low performing, cash strapped districts (vs. higher performing, resource rich districts) more disadvantaged? Finally, we use recent data collections from the Office of Civil Rights of the U.S. Department of Education to explore enrollment distributions across advanced placement courses.[5]

Cost Models

In order to identify resource rich and resource poor districts herein, we begin by estimating an education cost function model to account for the differences in a) regional competitive wage variation, b)

[4] *American Recovery and Reinvestment Act of 2009* (*ARRA*) required each school district receiving Title I, Part A, *ARRA* funds to report a school-by-school listing of per-pupil education expenditures from state and local funds for the 2008–09 school year to its state education agency and required states to report these data to the U.S. Department of Education. Data available at: *http://www2.ed.gov/rschstat/eval/title-i/school-level-expenditures/dataset-school-level-expenditures.zip*

[5] http://ocrdata.ed.gov/

economies of scale and population sparsity, c) a variety of student population characteristics that may influence the costs of achieving specific levels of educational outcomes. In addition, we attempt to correct for differences in the relative efficiency of districts in producing educational outcomes via commonly used indirect measures of the likelihood that districts spend inefficiently.

This approach – cost modeling with adjustment for indirect efficiency measures – is particularly appropriate for the exploratory analysis herein because the cost index estimates are based on the amount that "would be spent" to achieve "average outcomes" if a district had "average fiscal capacity" and "average local oversight, or public monitoring." Among districts having similar costs, needs and outcomes, but different spending due to variations capacity and monitoring, there may be differences in aggregate resource availability and allocation.

Consider, for example, two relatively high need districts in the Chicago metropolitan area, each with costs of achieving average outcomes at 25% above average, each achieving average outcomes. Let's assume that one district is right on target, actually spending about 25% above average and achieving average outcomes, and having average capacity to spend and public monitoring. The district may have achieved its targets by allocating an "average" mix of teacher assignments among districts facing similar cost pressures.

The other district may be spending 150% of average levels, because a) it can, or has the local capacity to do so, and b) the local public is willing to support such spending and either is specifically supporting spending to add programs/services that don't contribute directly to the measured outcomes, or the local public is willing to turn those resources over to local school officials to use in ways that may not contribute directly to measured outcomes. In either case, the result is the same, in that we have a second district that spends an additional 25% above the first, but still has average measured outcomes, and has other costs and needs similar to the first district. The difference is in the indirect efficiency measures, which more likely represent differences in demand preferences and capacity for spending differently, which is precisely what we intend to explore herein.

We estimate the "cost" faced by each district in order to achieve current state average outcomes, and more specifically to identify those cost targets holding constant community and contextual characteristics that may permit a school district to operate more or less efficiently. Costs of measured educational outcomes are assumed to vary across districts, settings, and children as a function of desired outcome levels, student population characteristics, school and district structural characteristics (economies of scale, grade ranges offered), prices of labor and other schooling inputs, and the relative efficiency with which school districts apply their resources toward achieving desired outcomes:

Spending = *f*(Outcomes, Students, District, Input Prices, Inefficiency)

where the dependent variable is the current spending of school districts. The cost of producing any given level of outcomes is the spending toward achieving those outcomes, less inefficiency in spending.

A growing body of recent education cost modeling literature seeks to identify exogenous characteristics of school districts to explain and ultimately control for inefficiency in school district spending. Those exogenous characteristics are typically grouped as factors associated with fiscal capacity – the ability to spend more, and spend less efficiently – and public monitoring – measures of the extent to which the local public has interest in the efficiency of the local public school district.

Outcomes in the estimated cost models are those measured outcomes most often used in state accountability systems – state assessments in reading and math. As such, the models estimated herein produce a cost target based on current district practices toward achieving specific narrowly measured outcomes. If some districts in the model spend more than others on objects not directly associated with the measured outcomes in the model, that spending will be identified as inefficiency (whether it should or not). In affluent communities with greater fiscal capacity, there may be local public preference for high quality music and arts programs with little concern over whether these programs affect the measured outcomes. These districts already exceed "average" outcome and spending levels. But, these districts might still be able to achieve their current levels on measured outcomes at lower than their current

spending, if they did not have the preference and capacity for spending not directly associated with the measured outcomes.

At the other end of the spectrum, there may be those districts with low fiscal capacity, and relatively high student needs among other cost pressures. Some of these districts may find a way to produce average student outcomes even with lower spending than would be predicted in models assuming average fiscal capacity and public monitoring. One explanation is that these districts may be substantially narrowing their curriculum and targeting resources toward the narrowly measured outcomes. To date, no-one has sought resource allocation explanations for why school districts land where they do with respect to cost function predictions of the cost of producing specific levels of student outcomes.

For each state, we estimate alternative cost model specifications, and generate cost indices for all districts from each cost model, taking the average across cost model predictions for use in subsequent analysis (model estimates reported in Appendix A). Cost indices are generated by using the cost function model to generate predicted values of spending holding outcome levels at the state average. That is, how much would each district spend to achieve state average outcome levels? Efficiency measures are also held at the average. Each district's cost index is generated by dividing the district's predicted spending to achieve average outcomes by the average district's predicted spending to achieve average outcomes, at average efficiency.

We then use the cost indices to generated adjusted expenditure measures (current expenditure/cost index) for each district in each state. Then, we standardize those adjusted expenditure measures around a mean of "0." Next, in a form of weak validation test (Baker, 2006) we plot the relationship of adjusted expenditures per pupil and aggregated outcomes across state assessments, also standardized around a mean of "0." Plotting the districts in this way allows us to a) evaluate the extent to which adjusted spending measures relate to aggregate outcome measures, and b) identify districts that

have below average outcomes and adjusted spending, and above average outcomes and adjusted spending, the two groups of primary interest in this investigation.

Staffing and Curricular Opportunities

To evaluate staffing disparities, once we have assigned districts to outcome-resource categories, we tally the numbers of staff by assignment category across all districts in the outcome-resource quadrant. We then divide total numbers of staff in each assignment category by enrollments (in thousands) across all districts in the category, resulting in an "assignments per 1,000 pupils" estimate for each assignment category. Our tabulations are weighted for the % time for each teacher allocated to each assignment. We construct our estimates with two year samples, with some differences across the two states. In Illinois, because of the complex distribution of elementary, secondary and unified districts in the Chicago metro area, we explore each district type separately, with particular interest in disparities across secondary districts. In Illinois, our pre-NCLB data come from 1999-2000 & 2000-2001, and post-NCLB data are from 2006-07 and 2008-09. In New York, our pre-NCLB data are from 1998-1999 and 1999-2000 and our post NCLB data are from 2008-2009 and 2009-2010.[6] New York City is excluded from our New York State analysis, due to lacking staffing data in some years.

We determine disparities between high resource, high outcome and low resource, low outcome districts by calculating the ratio of staffing per 1,000 pupils in each assignment area between the two groups. WE might find, for example, that high resource, high outcome districts have 1.5 times the number of AP math teachers per 1,000 pupils as do low resource, low outcome districts. The inverse might be true for teachers assigned to remedial or basic math. We refer to these ratios as disparity ratios. To visualize disparities and shifts in disparities over time, we plot the relationship between pre-NCLB

[6] While inclusion of 2009-10 in our NY analysis means that federal fiscal stabilization funds are included, these funds were merely used to supplant lost state revenues and, in fact, in New York State as in many other states, did not even fully supplant reduced state aid. In NY State, higher poverty districts, and most of the resource disadvantaged districts in our analysis received larger per pupil cuts in aid than the more advantaged districts in our analysis. That is, during this period, despite infusion of Fiscal Stabilization aid, disparities between our two groups increased, though perhaps less than they might have in the absence of stabilization aid. See Baker (2011).

staffing disparity ratios by assignment category with post-NCLB staffing disparity ratios by assignment category.

We supplement our analyses of staffing assignment distributions with data on student participation rates in key courses, from the Office of Civil Rights Data collection. We compare student enrollment/participation rates in AP classes generally and in advanced Math and Science courses across high schools in districts from our outcome-resource quadrants.

Additional Resource Equity Analyses

Resource allocation in schools involves numerous tradeoffs, but the majority of school spending is tied up in personnel, and the majority of personnel spending is tied up in certified staffing expenditures. In simple terms, total staffing costs are determined by the quantities of staff multiplied by the average prices (wages and benefits) for staff. Our primary interest herein lies in understanding the quantities of staff allocated across curricular areas, specifically advanced academic curriculum in math and science, as well as allocations to programs such as music, art and foreign languages. But when evaluating the extent to which districts have allocated staff to these areas we must also consider the overall resource allocation of the district. Are resources diminished in these areas because they are much higher in others – such as increased numbers of elementary classroom teachers to reduced elementary class sizes, or increased numbers of administrators? Do low performing, less well funded districts have fewer total staff per pupil, comparable, or even more? Further, we must consider the prices paid by districts for teachers with constant characteristics (for example, a science teacher with 10 years of experience and a masters' degree)? A district might have deficits in teachers assigned to advanced courses partly as a function of paying higher than expected wages to teachers across the board.

As such, we use additional data sources to determine whether school districts have higher total certified staffing salaries per pupil but are trading off having teachers assigned to advanced courses to pay higher salaries, or allocate teachers elsewhere. We use our staffing data to estimate a wage model of the relative teacher salaries for teachers with fixed credentials and assignments, and we use school site

staffing expenditure data from 2009, from the recent USDOE school site expenditure data collection to compare staffing expenditures per pupil across districts by type and schools by grade level.

Findings

Figure 2 depicts the distribution of our Illinois school districts by outcome-resource quadrant, and by grade ranges served. Both the cost adjusted spending measure and the outcome index are standardized around a mean of "0." On average, districts in Illinois cluster around the expected values and therefore are concentrated in the expected quadrants. Unified K-12 districts are least spread out across the quadrants. That is, there are fewer extremes among Unified K-12 districts. It should also be noted that the low resource, low outcome group of Unified K-12 districts is heavily influenced by the presence of Chicago City schools. The greatest extremes exist for secondary districts, primarily in the Chicago metropolitan area. In the case of outcome measures, districts are standardized around the mean for their grade range (district type).

Figure 2. Distribution of Illinois School Districts

Table 1 characterizes the Illinois districts in each quadrant. There are 146 high spending high outcome elementary districts serving over 250 thousand children and 120 low spending low outcome districts serving about 150 thousand children. There are 41 high spending high outcome secondary districts serving up to 150 thousand children and 25 low spending low outcome secondary districts serving about 50 thousand children. For unified districts, there are 82 that are high spending and high outcome, serving 250 thousand children and 156 that are low spending with low outcomes, serving over 800 thousand children, with about half of those children attending Chicago Public Schools.

Even without any adjustment for costs or needs, the average per pupil operating expenditures are lower in low spending, low outcome districts. After adjustment, they are substantially lower. The percent of children who are low income is substantially higher in low spending, low outcome districts. Further, low spending, low outcome districts have fewer total staffing assignments per 1,000 students than their more affluent peers, and have lower teacher salaries at given levels of experience and degree level. Overall, lower spending low outcome districts in Illinois face substantial deficits from the outset.

Table 1. Descriptive Characteristics of Illinois School Districts

	High Spending - High Outcome			Low Spending - Low Outcome		
	Elementary	Secondary	Unified	Elementary	Secondary	Unified
Districts	146	41	82	120	25	156
Enrollment						
2001	266,760	133,075	219,357	149,963	45,518	835,814
2009	261,869	150,754	251,432	148,739	51,790	813,820
Operating Expenditure per Pupil	$10,881	$14,215	$10,054	$9,175	$11,780	$10,505
Adj. Operating Expenditure per Pupil	$13,123	$13,681	$11,208	$7,485	$7,880	$7,290
% Low Income	15%	14%	13%	64%	57%	68%
Assignments per 1,000 Pupils						
2001	76.66	76.01	71.76	70.31	73.50	68.56
2009	85.81	79.38	79.07	78.59	72.21	70.70
Relative Teacher Salaries				-$7,000	-$7,511	-$220

[1] based on regression model, where salary = f(experience, degree level, assignment, contract months, core based statistical area, spending/outcome category, year) and including only full time certified staff

.

Figure 3 depicts the distribution of New York State school districts. As with the Illinois districts, the New York district spending and outcome measures are standardized around a mean of "0." Again, districts tend to fall clustered around expectations (correlation, weighted for district enrollment = 0.63). High spending, high outcome districts spread far into the upper right corner of Figure 3, whereas disadvantaged districts tend to be more clustered toward the center of the Figure. However, some notable exceptions fall well into the lower left quadrant, including mid-size cities of Utica and Poughkeepsie along with the larger upstate cities of Syracuse, Rochester and Buffalo.

Figure 3. Distribution of New York School Districts

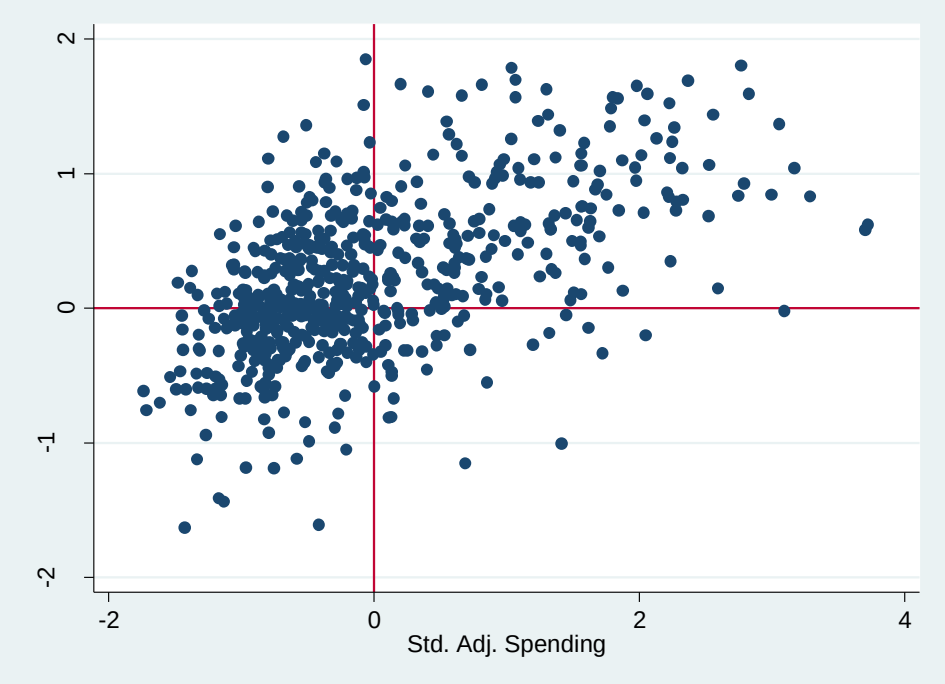


Table 3 summarizes the characteristics of New York State school districts in the low spending, low outcomes and high spending, high outcomes quadrants. There are 186 districts serving nearly 580 thousand children in the high spending high outcomes quadrant and 194 districts in the low spending, low outcomes quadrant serving just over 450 thousand children. Low spending, low outcome districts have significantly higher rates of children in poverty, significantly lower nominal spending per pupil and substantially lower need and cost adjusted spending per pupil, lower teacher salaries (at similar degree and experience), but they do have slightly more total teacher assignments per 1,000 pupils.

Table 3. Descriptive Characteristics of New York School Districts

	High Spending, High Outcome	Low Spending, Low Outcome
Total Districts	186	194
Enrollment 2000	561,229	496,438
Enrollment 2010	577,457	453,822
Instructional Spending per Pupil	$15,951	$13,153
Adj. Instructional Spending per Pupil	$17,410	$11,094
Census Poverty	5.9%	23.8%
Assignments per 1,000 Pupils		
1999-2000	66.31	67.25
2009-2010	83.45	86.61
Relative Teacher Wage		-$2,516

[1] Complete data including cost indices available for a total of 612 NY state school districts. Excludes NYC.
[2] Based on regression model, where salary = *f*(experience, degree level, assignment, contract months, core based statistical area, spending/outcome category, year) and including only full time certified staff.

Table 4 and Table 5 present summaries of the school site expenditure measures provided in the new national school level expenditure data from the U.S. Department of Education. The virtue of these data for purposes herein is that they provide some insights regarding aggregate resources available by grade level. School districts may allocate and re-allocate resources both across schools of the same grade level within district and across grade levels. Some districts may have a practice of leveraging more per pupil resources at the elementary level and other districts at the secondary level. These are tradeoffs, and with finite resources, when more are allocated to one level they are not available for the other. As such, it is worth evaluating whether the by-grade-level distributions of per pupil funding are similar or different between high spending, high outcome districts and low spending, low outcome ones. For example, is reduced access to breadth of curricular options a function of increased effort at the elementary level? Or are their simply not enough resources to achieve equity at any grade level?

Table 4 displays the school site per pupil spending differences by grade level for Illinois, for schools in districts that are low spending with low outcomes and for those that are high spending with high outcomes. These tables report nominal, not need or cost adjusted expenditures. In Illinois, elementary and secondary schools in low spending, low outcome districts spend less than those in high

spending, high outcome districts. At the middle level, per pupil expenditures in low spending, low outcome districts are marginally higher. The greatest gaps, however are at the secondary level, and are gaps that likely could not be made up by resource allocation from the other two levels.

Table 4. Nominal Per Pupil Spending (School Site) in Illinois

Group	Elementary	Middle	High
High Spending, High Outcome	$4,820	$4,802	$6,118
Low Spending, Low Outcome	$4,228	$5,266	$4,420

Data Source: http://www2.ed.gov/rschstat/eval/title-i/school-level-expenditures/dataset-school-level-expenditures.zip

Table 5 shows that in New York State, per pupil spending at the school site is higher at all grade levels for high spending, high outcome districts. In short, in New York State, low spending low outcome districts cannot re-allocate resources from any one grade level to another to catch up with their better resourced peers, without falling even further behind in some grade levels. In both higher and lower resource schools, per pupil spending appears highest in middle schools in New York State. But, even elementary schools in high spending, high outcome districts spend as much as middle schools in low spending low outcome districts, and spend more than elementary or high schools in low spending districts.

Table 5. Nominal Per Pupil Spending (School Site) in New York

Group	Elementary	Middle	High
High Spending, High Outcome	$6,304	$7,504	$7,102
Low Spending, Low Outcome	$4,914	$6,381	$6,074

Data Source: http://www2.ed.gov/rschstat/eval/title-i/school-level-expenditures/dataset-school-level-expenditures.zip

The next several graphs explore staffing allocation disparities between schools in disadvantaged (low spending, low outcomes) and advantaged (high spending, high outcomes) districts, and compare those staffing disparities from the outset of No Child Left Behind to the most recent available years.

We address Illinois disparities first, and address those disparities by the grade ranges served by each district. We begin with unified school districts, where Chicago Public School district carries disproportionate weight in the disadvantaged category. The upper panel of Figure 4 relates the disparity

ratios by course assignment in 2001 to the disparity ratios in 2009. Recall that a disparity ratio is the ratio of FTE weighted assignments per 1,000 pupils between advantaged and disadvantaged districts, for teachers assigned to any category. So, a disparity ratio of 4 would mean that in an advantaged district, there are 4 times the number of assignments per pupil in that category than in a disadvantaged district. Figure 4 contains many dimensions. The circle sizes represent the overall numbers of teachers in each category, such that we may consider the "weight" of any category of teachers relative to others. Circle sizes also provide insights into re-allocation possibilities. One might, for sake of argument, see that disadvantaged schools are disproportionately allocating resources to cheerleading or ceramics to the detriment of elementary school class sizes. But, if the circles for cheerleading and ceramics are relatively small and the circle for elementary classroom teachers much larger, absorbing those positions into elementary classrooms would likely have negligible effects.

The diagonal line at 45 degrees represents the "no change" line. That is, if disparity ratios in 2009 stayed as they were in 2001, assignment categories would land on that line. The horizontal and vertical red lines indicate parity in each year, or where the disparity ratio is 1.0. Categories above the horizontal red line are those where advantaged districts have more than disadvantaged districts in 2009. Categories to the right of the vertical line are those where advantaged districts had more than disadvantaged districts in 2001. Assignments in the upper right quadrant are those where advantaged districts had and continue to have more assignments per pupil than their disadvantaged peers. Finally, assignments in the upper right, but below the diagonal are those that were and are disparate, but where disparities have lessened over time, and assignments in the upper right and above the diagonal are those that were disparate and have gotten worse over time.

We have also added a general "shift" line to the figure which indicates the overall shift in resource allocation, relative to the "no change" line, over the roughly 10 year period. If the "shift" line has tilted to less than 45 degrees, resource distributions have become more similar between advantaged and disadvantaged districts. But, if the shift has tilted to greater than 45 degrees, resources have become more disparate.

Figure 4 presents the disparity ratios for staffing assignments for Illinois unified districts. In 2001, advanced math assignments (Trig, Calculus and all AP Courses) were nearly 4 times as common in advantaged districts than in disadvantaged ones. The case was similar for advanced social science courses and even for algebra and geometry. At the other end of the spectrum, alternative education programs, bilingual education and at risk programs were more common in disadvantaged districts by about a 2:1 ratio. Perhaps the most interesting feature of Figure 4, however, is that across Illinois unified districts, the disparities at both ends have lessened. Staffing patterns have converged somewhat. Disparity ratios for advanced courses dropped to around 1.5:1 by 2009. Staffing assignments to advanced math courses increased in both groups, but increased more in disadvantaged districts, closing the gap significantly. Meanwhile, opportunities at the other end also became more similar. In general, it appears that these assignments also increased in quantity, but more so in advantaged districts. The overall convergence in staffing patterns between advantaged and disadvantaged Illinois unified districts conflicts with expectations, given a) the persistence of funding inequities in Illinois and b) the additional pressures of NCLB.

Figure 4. Changes in Illinois Resource Allocation 2001 to 2009 (Unified – Full Range)

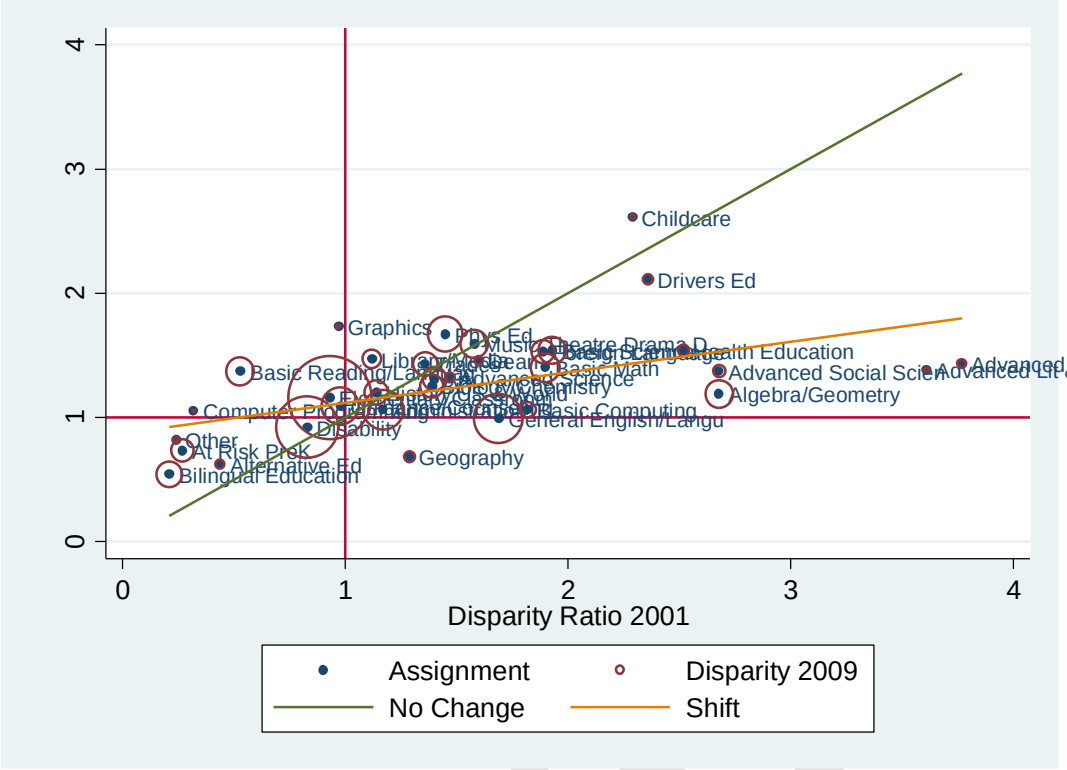


Figure 5. Changes in Illinois Resource Allocation 2001 to 2009 (Unified – Limited Range)

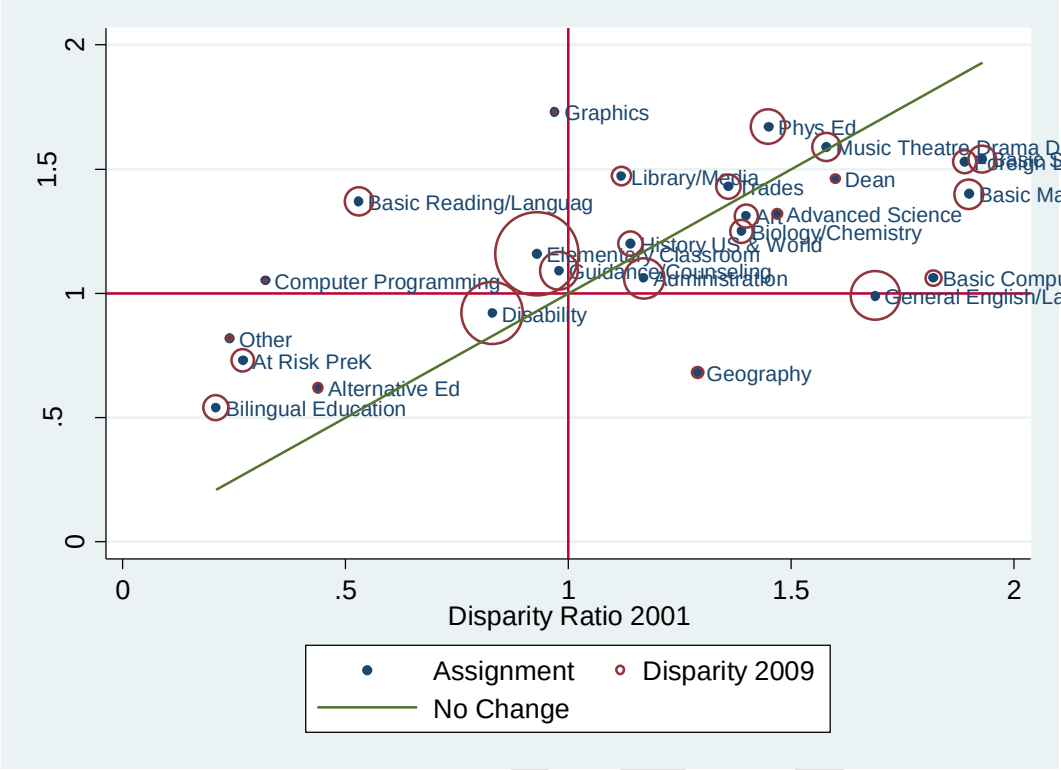


Figure 5 focuses on a narrower range of staffing distributions within Illinois Unified Districts. Among other things, we can see that Music, Physical Education, Advanced Science and Biology and Chemistry offerings have remained comparably disparate over time, with a 1.5:1 advantage for advantaged districts. Library/Media assignments have become more disparate.

Figure 6. Changes in Illinois Resource Allocation 2001 to 2009 (Elementary)

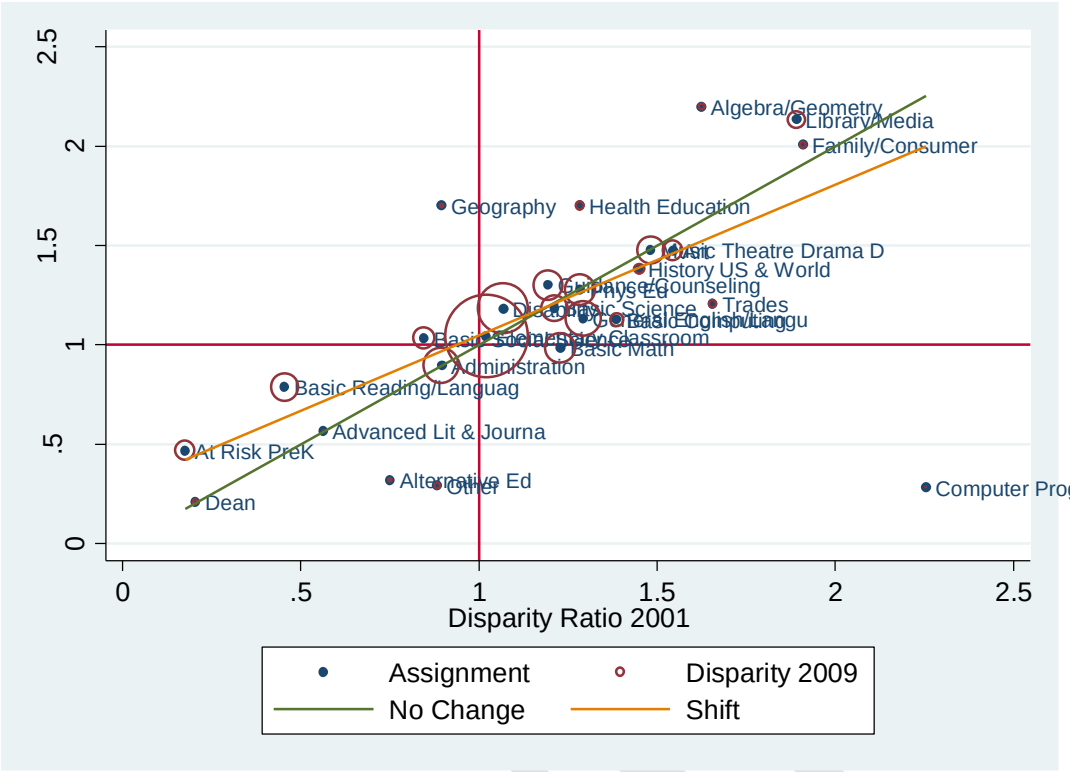


Figure 6 presents the disparity ratios for Elementary districts in Illinois. Among the most disparate assignments and becoming slightly more disparate over time are assignments in Library/Media and in Algebra/Geometry. It is consistent with expectations that Algebra assignments shows up as disparate across K-8 school districts (over 2:1 in 2009), where more advantaged districts are more likely to have available resources to offer early access to algebra to larger numbers of students, and where demand for such courses is likely higher. Art/Theatre & Drama and Health assignments are also disparately distributed, and remain that way over time (at about 1.5:1). Some unexpected assignments in Figure 6 may be miscoded, such as the presence of advanced literature and journalism in disadvantaged districts. Administration is slightly heavier in disadvantaged districts and elementary classroom assignments (the bowling ball in the cross-hairs) are relatively equitably distributed and stable over time.

Figure 7. Changes in Illinois Resource Allocation 2001 to 2009 (Secondary)

Figure 7 displays the disparity ratios for secondary districts in Illinois. Teaching assignments in Advanced Science remain at a 2:1 margin for advantaged school districts, declining somewhat from a 2.5:1 ratio in 2001. Foreign Languages, Music/Theatre & Drama remain at approximately 1.5:1. Some assignments such as algebra and geometry approach parity by the end of the time period.

Figure 8. Changes in New York Resource Allocation 2000 to 2010 (All Ranges)

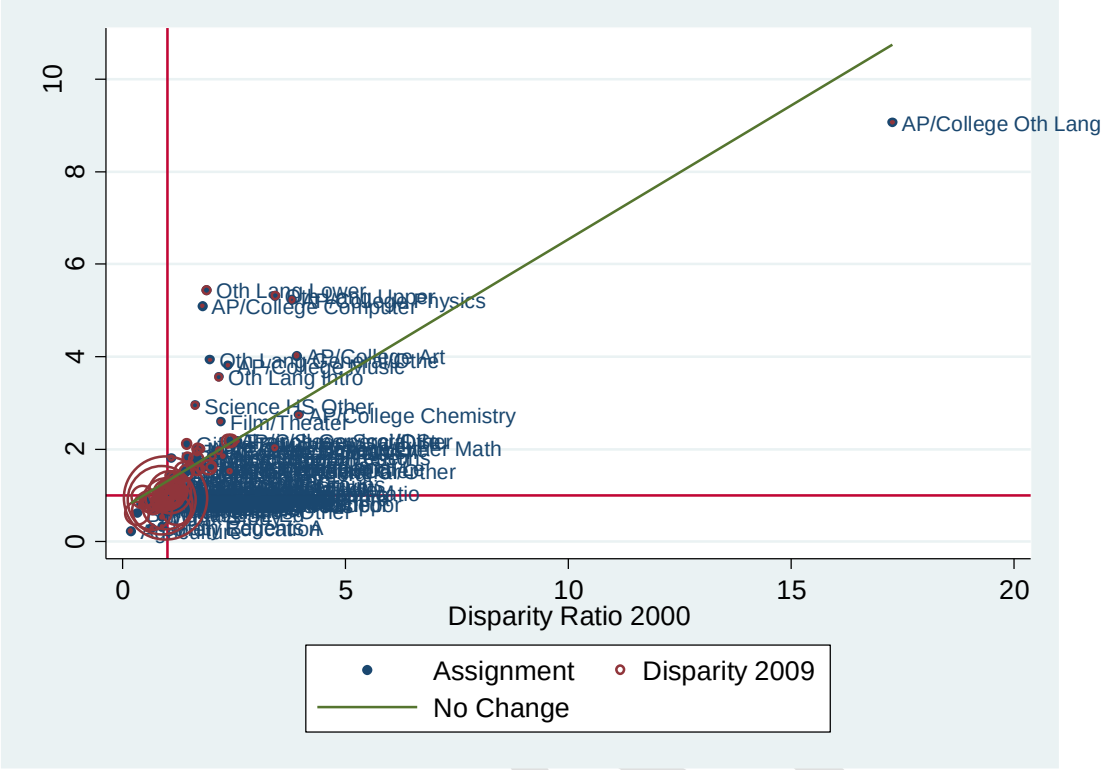


Figure 8 shows the full range of disparity ratios for teacher assignments in New York State districts. Clearly standing out is the fact that AP "other language" course assignments are nearly 20 times more available in advantaged than disadvantaged districts in 2000, reduced to under 10 times more prevalent in 2010. But most other assignments are clustered together with disparity ratios between 1 (parity) and 5 (5:1 ratio between advantaged and disadvantaged).

Figure 9. Changes in New York Resource Allocation 2000 to 2010 (Disparity<5x)

Figure 9 focuses in on teaching assignments where the disparity ratio is less than 4. In New York State, few teacher assignments are more prevalent in disadvantaged districts than in advantaged ones (lower left hand corner). Most teacher assignments are more prevalent (per 1,000 pupils) in more advantaged districts, but certain types of assignments are much more prevalent. Specifically, AP courses of various types including Math, Chemistry, Art, Music are much more prevalent in advantaged districts than in disadvantaged ones. In some cases, disparities have reduced over the past decade (Chemistry and Math) but in other cases, disparities have increased (Art, Music).

Figure 10. Changes in New York Resource Allocation 2000 to 2010 (Large Fields)

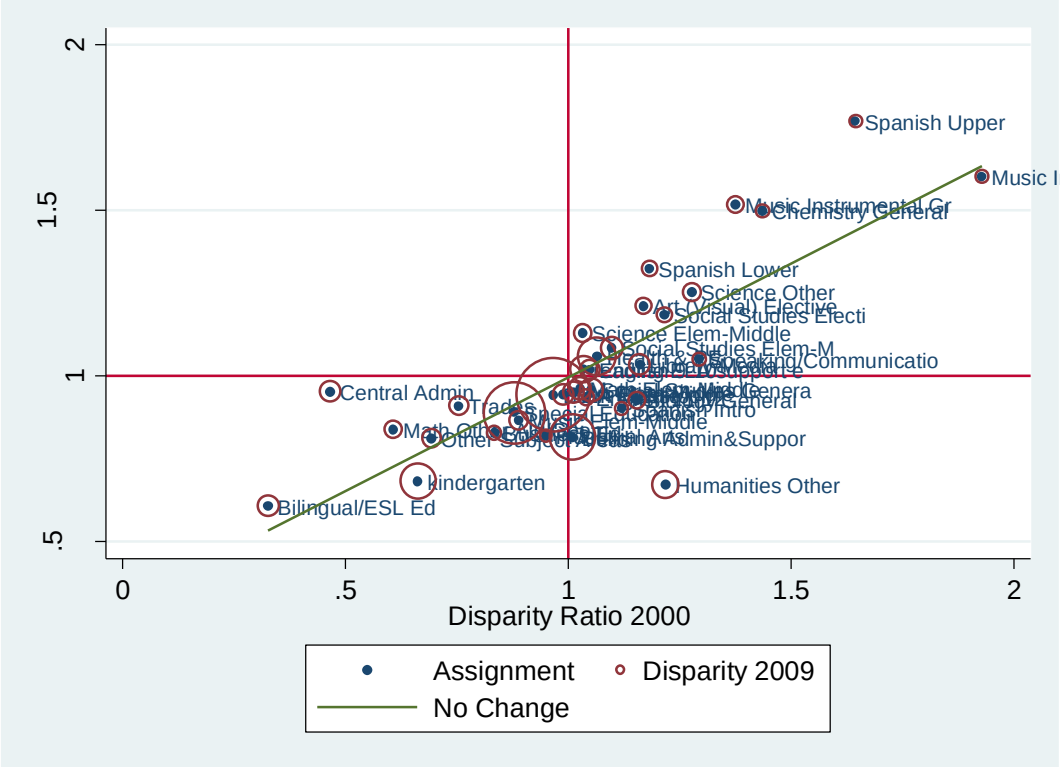


Figure 10 focuses on those areas where there were at least 1,000 total assignments across districts in each year. Upper level Spanish courses, Chemistry and instrumental music instruction and groups were most disparately distributed, with advantaged districts having between 1.5 and 2 times the assignments per thousand students. In most of these cases, disparities became marginally worse over the past decade.

Finally, Table 5 shows differences in participation rates in AP and Advanced Math and Science courses across high schools from advantaged and from disadvantaged districts in both states, using data from the Office of Civil Rights of the Department of Education, from 2009. Table 5 shows that for Illinois districts, participation rates in AP courses were substantially higher in advantaged than in disadvantaged districts, as were participation rates in Chemistry & Physics classes and in Advanced Math Classes. Consistent with the staffing data, disparities in AP course participation are much greater in New York than in Illinois. Advanced science teacher

assignments were very disparately distributed across Illinois high school districts and participation gaps appear consistent with this finding.

Table 5. AP and Advanced Math & Science Course Participation in Illinois Districts (2009)

	Illinois		New York	
Course	*High Spending, High Outcome*	*Low Spending, Low Outcome*	*High Spending, High Outcome*	*Low Spending, Low Outcome*
% in AP Classes	21.70%	14.00%	24.60%	9.00%
% in Chemistry/Physics	24.20%	11.10%	18.30%	8.90%
% in Advanced Math	15.50%	3.30%	14.90%	5.50%

http://ocrdata.ed.gov/

Conclusions & Policy Implications

The analyses presented herein paint a relatively straightforward and unsurprising picture of funding inequities and the consequences of these inequities across districts in large diverse states. In both states investigated herein, districts serving poorer, needier student populations simply have less money to work with. As a result, they generally hire fewer total staff per pupil and pay them less well, all else equal. And when push comes to shove in resource allocation, these districts simply provide fewer "frills" like arts programs, foreign languages or advanced math and science courses. In addition, these districts do not have hugely disproportionate staffing allocations to the "basics." As a result, far fewer of their students are able to, or actually do participate in such opportunities. These seem like rather obvious conclusions, and should come as no surprise. Further, these disparities are important as they stand to significantly disadvantage students attending resource constrained districts in their quest to gain access to higher education.

Yet, while unsurprising, these findings run in sharp contrast with current rhetoric on resource allocation in low performing, high need districts, where some authors have gone so far as to argue that

these districts invariably have more than enough money to provide what is needed and are instead squandering resources on high per pupil cost programs such as cheerleading and ceramics.[7] Data herein show that these schools and districts already offer far fewer options for students to engage in foreign languages, arts, music and theatre and that even then those districts are not able to allocate substantially more resources to basic and remedial programs.

Seemingly in contrast with expectations, we did not find strong evidence that resources have become significantly more targeted toward basic and remedial courses in disadvantaged districts, thus increasing disparities between advantaged and disadvantaged districts. The lack of change over time in resource allocation, at least in New York State districts is consistent with the findings of Reback, Rockoff and Schwartz (200?), who also found that while teachers indicated feeling the pressures of accountability, resource allocation did not seem to change. However, the findings herein also point out that the lack of change in resource allocation may be partly a function of the fact that in high need, low resource districts, resources were already targeted toward the narrowest bottom line and severely limiting other offerings. That is, inequities and fiscal constraints prior to implementation of No Child Left Behind, at least in these states created conditions where those who may have faced pressure to reallocate resources had little latitude to do more than they already had. Further, those facing little or no pressure under NCLB, kept doing as they do and offering a wide array of advanced and enriched courses. Some evidence on Illinois districts suggests that advantaged districts may have felt some increased pressure to allocate to basic and remedial programming, but not so in New York.

[7] see: http://www.urban.org/books/educationaleconomics/index.cfm

References

Baker, B.D. (2011a) Exploring the Sensitivity of Education Costs to Racial Composition of Missouri School Districts. *Peabody Journal of Education*

Baker, B.D. (2011b) School Funding Fairness in New York State. Working paper prepared for the New York State Association of Small City School Districts. http://schoolfinance101.files.wordpress.com/2010/01/ny-aid-policy-brief_fall2011_draft6.pdf

Baker, B.D. (2003) State Policy Influences on the Internal Allocation of School District Resources: Evidence from the Common Core of Data. *Journal of Education Finance* 29 (1) 1-24

Baker, B.D., Green, P.C. (2009) Conceptions, Measurement and Application of Educational Adequacy Standards. In D.N. Plank (ed) AERA Handbook on Education Policy. New York: Routledge

Baker, B. D., & Welner, K. G. (2010). "Premature celebrations: The persistence of interdistrict funding disparities" *Educational Policy Analysis Archives, 18*(9). Retrieved [date] from http://epaa.asu.edu/ojs/article/view/718

Ballou, D., Springer, M. (2008) Achievement Tradeoffs and No Child Left Behind. Working paper.

Bedard, K., Brown, W.O. (2000) The Allocation of Public School Expenditures. Working Paper. Department of Economics. Claremont Colleges.

Brent, B.O., Roellke, C.F., Monk, D.H. (1997) Understanding Teacher Resource Allocation in New York State Secondary Schools: A Case Study Approach. *Journal of Education Finance* v23 n2 p207-33

Brewer, D.J. (1996) Does More School Administration Lower Educational Productivity? Some Evidence on the "Administrative Blob" in New York Public Schools. Economics of Education Review 15 (2) 111-125

Duncombe, W. and Yinger, J.M. (2008) Measurement of Cost Differentials In H.F. Ladd & E. Fiske (eds) pp. 203-221. Handbook of Research in Education Finance and Policy. New York: Routledge.

Duncombe, W. and Yinger, J.M. (2007a) Understanding the Incentives in California's Education Finance System. http://irepp.stanford.edu/documents/GDF/STUDIES/04-Duncombe-Yinger/4-Duncombe-Yinger(3-07).pdf

Duncombe, W. and Yinger, J.M. (2007b) A Comment on School District Level Production Functions Estimated Using Spending Data. Maxwell School of Public Affairs. Syracuse University.

Duncombe, W. and Yinger, J.M. (2006) *Estimating the Costs of Meeting Student Performance Outcomes Mandated by the Kansas State Board of Education*. (Topeka, KS: Kansas Legislative Division of Post Audit, 2006 – January) Retrieved March 1, 2006 from http://www.kslegislature.org/postaudit/audits_perform/05pa19a.pdf

Duncombe, W., Yinger, J. (2005) How Much more Does a Disadvantaged Student Cost? *Economics of Education Review* 24 (5) 513-532

Duncombe, W. and Yinger, J.M. (2000). Financing Higher Performance Standards: The Case of New York State. *Economics of Education Review, 19* (3), 363-86.

Duncombe, W. and Yinger, J.M. (1999). Performance Standards and Education Cost Indexes: You Can't Have One Without the Other. In H.F. Ladd, R. Chalk, and J.S. Hansen (Eds.), *Equity and Adequacy in Education Finance: Issues and Perspectives* (pp.260-97). Washington, DC: National Academy Press.

Duncombe, W. and Yinger, J.M. (1998) "School Finance Reforms: Aid Formulas and Equity Objectives." *National Tax Journal* 51, (2): 239-63

Duncombe, W. and Yinger, J.M. (1997). Why Is It So Hard to Help Central City Schools? *Journal of Policy Analysis and Management, 16*, (1), 85-113.

Ferguson, Ronald F. and Helen F. Ladd (1996), "How and Why Money Matters: An Analysis of Alabama Schools," in *Holding Schools Accountable: Performance Based Education*, Helen F. Ladd (editor), The Brookings Institution: Washington D.C.

Goertz, M.E. & Natriello, G. (1999) Court-Mandated School Finance Reform: What Do the New Dollars Buy? In Ladd, Chalk and Hansen (Eds.) pp. 99-135 Equity and Adequacy in Education Finance: Issues and Perspectives. Committee on Education Finance, Commission on Behavioral and Social Sciences and Education, National Research Council (Washington, DC: National Academy Press)

Jane Hannaway, Shannon McKay and Yasser Nakib (2002) Reform and Resource Allocation: National Trends and State Policies. *Developments in School Finance 1999 – 2000.* Office of Educational Research and Improvement, National Center for Education Statistics (Washington, DC: U.S. Department of Education).

Huang, G.G., Yu, B. (2002) District Fiscal Policy and Student Achievement: Evidence from Combined NAEP-CCD Data. *Education Policy Analysis Archives* 10 (38)

Jacques, C., Borsen, B.W. (2002) Relationship between types of school district expenditures and school district performance. *Applied Economics Letters* 2002 (9) 997-1002

Killgore, L. (2009) Merit and Competition in Selective College Admissions. *The Review of Higher Education* 32 (4) 469–488

Koski, W. S., & Reich, R. (2006). When "adequate" isn't: The retreat from equity in educational law and policy and why it matters. *Emory Law Journal, 56*, 545–617.

Krueger, A. (2001) Would Smaller Class Sizes Help Close the Black-White Achievement Gap. Working Paper #451, Industrial Relations Section. Department of Economics, Princeton University. http://www.irs.princeton.edu/pubs/working_papers.html

Lankford, H. & Wyckoff, J. (1999) The Allocation of Resources to Special Education and Regular Instruction in New York State. In Parrish, Chambers & Guarino (Eds) pp. 147-175 Funding Special Education (Thousand Oaks, CA: Corwin Press)

Levin, H.M. (2006) The Public Returns to Public Educational Investments in African American Males. *Dijon Conference*, University of Bourgogne, France. May 2006. http://www.u-bourgogne.fr/colloque-iredu/posterscom/communications/LEVIN.pdf

Long, D.C., Iatarola, P., Conger, D. (2009) Explaining gaps in readiness for college level math: The role of high school courses. *Education Finance and Policy*

Marlow, M.L. (2001) Bureaucracy and Student Performance in US Public Schools. *Applied Economics* 33 (10) 1341-1350.

Monk, D.H., Brent, B.O., Roellke, C. (1997) Teacher Resource Use within New York Secondary Schools. In U.S. Department of Education. National Center for Education Statistics. 1997. *Developments in School Finance, 1996*. Ed. W. Fowler, Jr. Washington, D.C.

Monk, D.H., Hussain, S. (2000) Structural Influences on the Internal Allocation of School District Resources: Evidence from New York State. *Educational Evaluation and Policy Analysis* 22 (2000) 1 – 26

Richard Rothstein with Karen Hawley Miles, Where's the Money Gone? Changes in the Level and Composition of Education Spending (Washington, DC: Economic Policy Institute, 1995).

Odden, A.R. (2007) Linking School Resources to Strategies to Double Performance and Close the Achievement Gap. http://www.nysut.org/files/nysut_gap_071026_Odden.pdf

U.S. Department of Education, Office of Planning, Evaluation and Policy Development, Policy and Program Studies Service, Comparability of State and Local Expenditures Among Schools Within Districts: A Report From the Study of School-Level Expenditures, by Ruth Heuer and Stephanie Stullich, Washington, D.C., 2011.

Wenglinsky, H. (1997) How Money Matters: The effect of school district expenditure on academic achievement. *Sociology of Education* 70 (3) 221-237

Table A1. New York Cost Function Models[8]

	% Scoring at Level 3 or 4			% Score at Level 4 Only		
DV = Expenditure per Pupil [1]	*Coef.*	*Std. Err.*	*P>t*	*Coef.*	*Std. Err.*	*P>t*
Teacher Labor Cost [2]	1.511	0.124	*	1.804	0.083	*
Outcome Index [3]	2.611	0.824	*	0.778	0.165	*
Student Needs						
% Free or Reduced (2yr Avg.)	0.012	0.003	*	0.008	0.002	*
% Severe Disability (2yr Avg.)	0.009	0.002	*	0.010	0.002	*
Enrollment Size						
Enroll >250 and <500	-0.257	0.112	*	-0.301	0.138	*
Enroll >500 and <1000	-0.343	0.112	*	-0.399	0.138	*
Enroll >1,000 and <1,500	-0.386	0.112	*	-0.453	0.138	*
Enroll >1,500 and <2,000	-0.423	0.113	*	-0.502	0.139	*
Enroll >2,000 and <2,500	-0.411	0.113	*	-0.481	0.139	*
Enroll >2,500 and <3,000	-0.460	0.114	*	-0.540	0.140	*
Enroll >3,000 and <5,000	-0.474	0.114	*	-0.569	0.140	*
Enroll >5,000 and <7,500	-0.479	0.115	*	-0.570	0.141	*
Enroll >7,500 and <10,000	-0.511	0.116	*	-0.611	0.141	*
Enroll >10,000 and <15,000	-0.520	0.122	*	-0.646	0.144	*
Enroll >15,000	-0.513	0.188	*	-0.672	0.165	*
Indirect Efficiency Controls						
% Owner Occupied Housing Units (2000)	-0.002	0.001	*	-0.002	0.001	*
Per Pupil Adjusted Gross Income	2.089	0.562	*			
Per Pupil Adjusted Gross Income (squared)	-0.079	0.023	*			
Tax Share [4]	-0.180	0.024	*	-0.141	0.021	*
Total Aid Rate [5]	0.803	0.198	*	0.305	0.127	*
Year						
yr2003	0.014	0.011		0.032	0.009	*
yr2004	0.010	0.013		0.027	0.011	*
yr2005	0.010	0.016		0.021	0.012	**
yr2006	0.046	0.018	*	0.091	0.016	*
yr2007	0.065	0.021	*	0.112	0.020	*
Constant	-31.490	6.778	*	-12.160	1.038	*
Centered R2 = 0.2424				Centered R2 = 0.2532		

[1] Total spending without tuition, transportation, debt service and other undistributed expenses

[2] Estimated teacher salary for teachers with 1 to 5 years of experience, with average experience and average share with a graduate degree

[3] Outcome index combines percentages of students scoring above threshold on state assessments in elementary (math, ELA and social studies), middle (Math, ELA and Science) and high school (math, English, global history, US History, Geography), and cohort 4 year graduation rates

[4] Ratio of value of median residential value in each district divided by property values (with correction for STAR exemptions)

[5] State Aid share (total aid rate, excluding building and transportation)

Note: Teacher Wages and Outcome Index treated as endogenous. Instruments include average characteristics of other districts sharing labor market, including population density (based on county data), enrollment, percent nonwhite students, median house values and percent limited English Proficient Students.

*p<.05, **p<.10

[8] Models estimated by William Duncombe, Syracuse University.

Table A2. Illinois Cost Function Models

	Model 1 - No ECWI* in Instruments			Model 1 - ECWI in Instruments		
DV = Oper. Exp. Per Pupil	*Coef.*	*Std. Err.*	*P>z*	*Coef.*	*Std. Err.*	*P>z*
Outcomes	0.875	0.162	*	0.799	0.159	*
Regional Salary	0.839	0.130	*	0.550	0.117	*
Student Population						
% Low Income	0.570	0.069	*	0.538	0.067	*
% Special Education	0.812	0.138	*	0.747	0.133	*
% LEP/ELL	0.222	0.109	*	0.305	0.106	*
% Black	0.366	0.073	*	0.396	0.070	*
Year (Inflation)						
Year = 2003						
Year = 2004	-0.028	0.005	*	-0.020	0.005	*
Year = 2005	-0.053	0.014	*	-0.028	0.013	*
Year = 2006	-0.052	0.015	*	-0.022	0.014	
Year = 2007	-0.054	0.020	*	-0.014	0.019	
Year = 2008	-0.055	0.025	*	-0.003	0.023	
District Grade Range						
Elementary						
Secondary	0.273	0.028	*	0.244	0.026	*
Unified	0.215	0.015	*	0.200	0.014	*
District Size (Enrollment)						
Enrollment Under 300	0.227	0.027	*	0.192	0.026	*
Enrollment 300 to 599	0.129	0.022	*	0.102	0.022	*
Enrollment 600 to 999	0.077	0.018	*	0.057	0.018	*
Enrollment 1000 to 1599	0.037	0.017	*	0.024	0.016	
Enrollment 1600 to 1999	0.021	0.018		0.013	0.017	
Enrollment over 1999						
Efficiency Factors [1]						
% Pop betw. 5 & 17	0.374	0.193	**	0.370	0.189	**
District Market Share	0.166	0.089	**	0.016	0.079	
State Aid Share	0.000	0.000		0.000	0.000	
Assessed Value per Pupil (ln)	0.177	0.018	*	0.195	0.017	*
Alternative Formula	0.023	0.017		0.027	0.016	**
Constant	-2.475	1.285	**	0.383	1.160	
Instrument Diagnostics [2]						
Partial F - Outcomes	25.040			21.320		
Partial F - Wages	175.050			202.540		
Hansen J	0.103			0.000		
Model Prediction Tests						
MAPE (All)	0.124			0.118		
MAPE (Large)	0.115			0.104		
Correlation (All)	0.729			0.750		
Correlation (Large)	0.789			0.816		
Centered R-square	0.517			0.556		

[1] Efficiency Controls: Public monitoring factors: District market share or percent of children in the labor market (based on NCES ECWI labor markets) who attend the observed district), Percent of population between 5 and 17 or percent of total district population that is between the ages of 5 and 17, State share of funding or percent of total revenues per pupil that are from state sources, On alternate formula or indicator of whether the district receives its state aid from the "alternate" aid formula (which alters otherwise expected aid ratio for a district given taxable property wealth) District Fiscal Capacity factors: Taxable assessed value per pupil, State share of funding: Same as above, and included only once, but may play either or both roles of reducing public monitoring and/or increasing fiscal capacity

[2] Instruments: Natural log of household income among neighboring districts in same region, Natural log of Hispanic population among neighboring districts in same region, Average percent of adults with college education among neighboring districts in same region, Natural log of assessed value per pupil among neighboring districts in same region, Ratio between district share of adults with college education and average share among neighbors in same region

*p<.05, **p<.10

Appendix B

Table B1: Illinois Unified District Staffing by Assignment

	Staffing 2009			Staffing 2001			
Assignment	Assignments per 1,000 High Spending High Outcomes	Assignments per 1,000 Low Spending Low Outcomes	Disparity Ratio	Assignments per 1,000 High Spending High Outcomes	Assignments per 1,000 Low Spending Low Outcomes	Disparity Ratio	Disparity Ratio Change
Administration	4.34	4.11	1.06	3.24	2.77	1.17	-0.11
Advanced Lit & Journa	0.08	0.06	1.38	0.05	0.01	3.61	-2.23
Advanced Math	0.28	0.20	1.43	0.04	0.01	3.77	-2.35
Advanced Science	0.33	0.25	1.32	0.17	0.11	1.47	-0.15
Advanced Social Scien	0.52	0.38	1.37	0.10	0.04	2.68	-1.31
Algebra/Geometry	2.17	1.83	1.19	1.46	0.54	2.68	-1.50
Alternative Ed	0.16	0.26	0.62	0.05	0.12	0.44	0.18
Art	1.72	1.31	1.31	1.62	1.16	1.40	-0.09
At Risk PreK	1.05	1.44	0.73	0.28	1.02	0.27	0.46
Basic Computing	0.64	0.60	1.06	0.72	0.39	1.82	-0.76
Basic Math	2.72	1.95	1.40	2.58	1.35	1.90	-0.51
Basic Reading/Languag	2.49	1.81	1.37	1.42	2.70	0.53	0.85
Basic Science	2.54	1.65	1.54	2.31	1.20	1.93	-0.39
Basic Social Science	1.21	1.40	0.87	0.00	0.00	0.00	0.87
Bilingual Education	1.16	2.16	0.54	0.40	1.91	0.21	0.33
Biology/Chemistry	1.61	1.29	1.25	1.22	0.87	1.39	-0.14
Childcare	0.12	0.04	2.61	0.11	0.05	2.29	0.32
Class Size Reduc	0.00	0.00	0.00	0.06	0.30	0.19	-0.19
Computer Programming	0.02	0.02	1.05	0.05	0.15	0.32	0.73
Curriculum Specialist	0.33	0.69	0.48	0.00	0.00	0.00	0.48
Dean	0.27	0.19	1.46	0.31	0.19	1.60	-0.14
Disability	9.61	10.41	0.92	8.35	10.07	0.83	0.09
Drivers Ed	0.44	0.21	2.11	0.43	0.18	2.36	-0.24
Early Childhood	0.00	0.00	0.00	0.55	0.44	1.27	-1.27
Elementary Classroom	19.41	16.79	1.16	19.86	21.39	0.93	0.23
English Other	0.00	0.00	0.00	0.06	0.10	0.66	-0.66
Family/Consumer	0.48	0.11	4.23	0.32	0.14	2.33	1.90
Foreign Language	1.97	1.29	1.53	1.84	0.98	1.89	-0.36
General English/Langu	6.30	6.39	0.99	5.11	3.02	1.69	-0.71
Geography	0.24	0.35	0.68	0.17	0.13	1.29	-0.61
Gifted	0.00	0.00	0.00	0.65	0.23	2.82	-2.82
Graphics	0.06	0.03	1.73	0.05	0.05	0.97	0.77
Guidance/Counseling	4.16	3.82	1.09	3.43	3.51	0.98	0.11
Health Education	0.48	0.31	1.54	0.44	0.17	2.52	-0.97
History US & World	1.69	1.41	1.20	1.12	0.98	1.14	0.06
Library/Media	1.22	0.83	1.47	1.06	0.95	1.12	0.35
Math Other	0.00	0.00	0.00	0.20	0.87	0.22	-0.22
Math Remedial	0.00	0.00	0.00	0.01	0.01	0.87	-0.87
Music Theatre Drama D	2.73	1.72	1.59	2.58	1.64	1.58	0.01
Other	0.06	0.08	0.82	0.69	2.91	0.24	0.58
Phys Ed	4.37	2.61	1.67	4.03	2.79	1.45	0.22
Reading Specialist	0.14	1.41	0.10	0.00	0.00	0.00	0.10
Reading Remedial	0.00	0.00	0.00	0.71	0.31	2.29	-2.29
Science Other	0.00	0.00	0.00	0.12	0.19	0.62	-0.62
Social Science Genera	0.00	0.00	0.00	1.71	1.08	1.59	-1.59
Technology	0.19	0.05	4.24	0.00	0.00	0.00	4.24
Trades	1.76	1.23	1.43	2.08	1.53	1.36	0.07

Table B2: Illinois Elementary District Staffing by Assignment

	Staffing 2009			Staffing 2001			
Assignment	Assignments per 1,000 High Spending High Outcomes	Assignments per 1,000 Low Spending Low Outcomes	Disparity Ratio	Assignments per 1,000 High Spending High Outcomes	Assignments per 1,000 Low Spending Low Outcomes	Disparity Ratio	Disparity Ratio Change
Administration	5.13	5.73	0.90	3.86	4.31	0.90	0.00
Advanced Lit & Journalism	0.00	0.01	0.57	0.00	0.00	0.56	0.00
Advanced Science	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Algebra/Geometry	0.18	0.08	2.20	0.09	0.06	1.62	0.57
Alternative Ed	0.04	0.13	0.32	0.01	0.01	0.75	-0.43
Art	1.85	1.25	1.48	1.73	1.12	1.54	-0.07
At Risk PreK	1.12	2.39	0.47	0.22	1.24	0.18	0.29
Basic Computing	0.75	0.66	1.13	1.08	0.78	1.39	-0.26
Basic Math	3.73	3.79	0.98	2.42	1.97	1.23	-0.24
Basic Reading/Language	2.63	3.34	0.79	1.15	2.53	0.45	0.33
Basic Science	3.01	2.54	1.18	2.18	1.80	1.21	-0.03
Basic Social Science	1.95	1.89	1.03	1.28	1.51	0.85	0.19
Bilingual Education	2.35	2.89	0.81	0.00	0.00	0.00	0.81
Biology/Chemistry	0.00	0.00	0.00	0.07	0.01	5.21	-5.21
Childcare	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Class Size Reduction	0.00	0.00	0.00	0.09	0.06	1.45	-1.45
Computer Programming	0.00	0.01	0.28	0.01	0.01	2.25	-1.97
Curriculum Specialist	0.40	0.14	2.78	0.00	0.00	0.00	2.78
Dean	0.04	0.19	0.21	0.04	0.22	0.20	0.00
Disability	11.34	9.60	1.18	10.45	9.79	1.07	0.11
Early Childhood	0.00	0.00	0.00	0.65	0.74	0.89	-0.89
Elementary Classroom	28.62	27.41	1.04	29.06	28.46	1.02	0.02
English Other	0.00	0.00	0.00	0.02	0.02	1.13	-1.13
Family/Consumer	0.17	0.09	2.01	0.20	0.10	1.91	0.10
Foreign Language	1.49	0.25	6.00	1.33	0.17	7.86	-1.85
General English/Language	5.39	4.76	1.13	3.89	3.01	1.29	-0.16
Geography	0.05	0.03	1.70	0.05	0.06	0.90	0.81
Gifted	0.00	0.00	0.00	1.08	0.42	2.60	-2.60
Graphics	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Guidance/Counseling	4.14	3.19	1.30	3.24	2.71	1.19	0.10
Health Education	0.34	0.20	1.70	0.23	0.18	1.28	0.42
History US & World	0.42	0.31	1.38	0.27	0.19	1.45	-0.07
Library/Media	1.58	0.74	2.13	1.17	0.62	1.89	0.24
Math Other	0.00	0.00	0.00	0.11	0.04	2.68	-2.68
Math Remedial	0.00	0.00	0.00	0.02	0.01	3.66	-3.66
Music Theatre Drama D	3.42	2.32	1.48	3.22	2.17	1.48	-0.01
Other	0.06	0.19	0.29	0.67	0.76	0.88	-0.59
Phys Ed	4.20	3.28	1.28	3.76	2.92	1.29	-0.01
Reading Specialist	0.89	0.80	1.12	0.00	0.00	0.00	1.12
Reading Remedial	0.00	0.00	0.00	0.91	0.63	1.43	-1.43
Science Other	0.00	0.00	0.00	0.03	0.05	0.60	-0.60
Social Science Genera	0.00	0.00	0.00	1.69	1.42	1.19	-1.19
Technology	0.27	0.20	1.37	0.00	0.00	0.00	1.37
Trades	0.25	0.21	1.21	0.36	0.22	1.66	-0.45

Table B3: Illinois Secondary District Staffing by Assignment

	Staffing 2009			Staffing 2001			
Assignment	Assignments per 1,000 High Spending High Outcomes	Assignments per 1,000 Low Spending Low Outcomes	Disparity Ratio	Assignments per 1,000 High Spending High Outcomes	Assignments per 1,000 Low Spending Low Outcomes	Disparity Ratio	Disparity Ratio Change
Administration	5.39	5.15	1.05	3.07	3.52	0.87	0.18
Advanced Lit & Journa	0.36	0.26	1.37	0.23	0.33	0.68	0.69
Advanced Math	1.22	0.40	3.10	0.31	0.06	4.81	-1.72
Advanced Science	1.66	0.79	2.10	1.34	0.52	2.58	-0.48
Advanced Social Scien	1.86	1.56	1.19	0.63	0.36	1.76	-0.57
Algebra/Geometry	7.04	6.65	1.06	6.65	4.68	1.42	-0.36
Alternative Ed	0.37	0.59	0.63	0.07	0.00	0.00	0.63
Art	1.75	1.54	1.13	1.87	1.85	1.01	0.12
Basic Computing	0.34	0.65	0.53	0.68	0.58	1.16	-0.64
Basic Math	0.61	0.98	0.62	0.71	2.71	0.26	0.36
Basic Reading/Languag	0.58	1.25	0.47	0.56	0.97	0.58	-0.11
Basic Science	1.36	1.20	1.13	1.50	1.84	0.81	0.31
Bilingual Education	0.84	0.97	0.87	0.71	0.84	0.85	0.02
Biology/Chemistry	5.49	4.62	1.19	4.80	3.44	1.40	-0.21
Childcare	0.35	0.48	0.73	0.38	0.55	0.69	0.04
Class Size Reduc	0.00	0.00	0.00	0.01	0.04	0.17	-0.17
Computer Programming	0.05	0.03	1.84	0.11	0.05	2.06	-0.22
Curriculum Specialist	0.11	0.02	5.53	0.00	0.00	0.00	5.53
Dean	0.53	1.11	0.48	1.10	1.45	0.76	-0.28
Disability	8.55	9.46	0.90	8.48	10.02	0.85	0.06
Drivers Ed	1.06	0.61	1.74	1.20	0.91	1.33	0.41
Elementary Classroom	0.00	0.00	0.00	0.00	0.00	0.00	0.00
English Other	0.00	0.00	0.00	0.74	0.48	1.56	-1.56
Family/Consumer	0.48	0.43	1.10	0.30	0.44	0.67	0.43
Foreign Language	5.32	2.88	1.85	5.04	3.08	1.64	0.21
General English/Langu	9.33	8.25	1.13	8.26	7.89	1.05	0.08
Geography	0.47	0.45	1.03	0.42	0.27	1.57	-0.54
Gifted	0.00	0.00	0.00	0.04	0.00	0.00	0.00
Graphics	0.19	0.15	1.21	0.16	0.29	0.56	0.65
Guidance/Counseling	6.24	4.93	1.27	5.74	4.81	1.19	0.07
Health Education	0.82	0.82	1.00	0.83	0.71	1.17	-0.16
History US & World	4.95	4.09	1.21	4.24	4.15	1.02	0.19
Library/Media	0.93	0.76	1.22	1.10	0.81	1.36	-0.14
Math Other	0.00	0.00	0.00	0.78	0.35	2.24	-2.24
Math Remedial	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Music Theatre Drama D	1.97	1.20	1.63	1.76	1.29	1.37	0.27
Other	0.07	0.13	0.53	1.27	1.39	0.91	-0.38
Phys Ed	5.11	4.81	1.06	5.40	5.40	1.00	0.06
Reading Remedial	0.00	0.00	0.00	0.10	0.06	1.60	-1.60
Science Other	0.00	0.00	0.00	0.35	0.48	0.73	-0.73
Reading Specialist	0.16	0.04	4.06	0.00	0.00	0.00	4.06
Social Science Genera	0.00	0.00	0.00	1.24	1.22	1.01	-1.01
Technology	0.08	0.15	0.52	0.00	0.00	0.00	0.52
Trades	3.76	4.79	0.79	3.84	5.66	0.68	0.11

Table B4: New York Unified District Staffing by Assignment

	Staffing 2010			Staffing 2001			
Assignment	Assignments per 1,000 High Spending High Outcomes	Assignments per 1,000 Low Spending Low Outcomes	Disparity Ratio	Assignments per 1,000 High Spending High Outcomes	Assignments per 1,000 Low Spending Low Outcomes	Disparity Ratio	Disparity Ratio Change
Agriculture	0.01	0.05	0.23	0.01	0.06	0.19	0.05
AP/College Art	0.06	0.02	4.02	0.03	0.01	3.91	0.10
AP/College Biology/Li	0.20	0.10	2.00	0.12	0.07	1.74	0.27
AP/College Calculus	0.16	0.08	1.95	0.12	0.07	1.67	0.28
AP/College Chemistry	0.09	0.03	2.74	0.06	0.01	3.95	-1.22
AP/College Computer	0.02	0.00	5.10	0.02	0.01	1.79	3.31
AP/College English	0.17	0.10	1.66	0.14	0.09	1.51	0.15
AP/College French	0.05	0.03	1.84	0.03	0.01	2.25	-0.41
AP/College Music	0.02	0.01	3.80	0.01	0.00	2.37	1.44
AP/College Other Lang	0.03	0.00	9.06	0.02	0.00	17.27	-8.21
AP/College Other Math	0.06	0.03	2.03	0.02	0.01	3.40	-1.38
AP/College Physics	0.09	0.02	5.23	0.07	0.02	3.80	1.43
AP/College Social Stu	0.50	0.23	2.17	0.22	0.09	2.44	-0.26
AP/College Spanish	0.13	0.07	1.97	0.07	0.03	2.17	-0.20
Art (Visual) Elective	0.96	0.79	1.21	0.73	0.62	1.17	0.04
Art Elem-Middle	1.36	1.43	0.95	1.02	1.00	1.01	-0.06
Art Other	0.08	0.07	1.11	0.05	0.05	1.03	0.08
At Risk	0.00	0.00	0.00	0.04	0.03	1.29	-1.29
Bilingual/ESL Ed	1.12	1.85	0.61	0.44	1.34	0.33	0.28
Biology Elective	0.24	0.28	0.86	0.14	0.12	1.16	-0.29
Biology General	0.89	0.96	0.93	0.66	0.57	1.15	-0.23
Building Admin & Support	6.04	7.41	0.81	4.21	4.17	1.01	-0.19
Business Ed	0.60	0.72	0.83	0.63	0.75	0.83	-0.01
Central Admin	1.33	1.40	0.95	0.05	0.12	0.47	0.49
Chair/Supervisor/Dire	0.55	0.25	2.18	0.20	0.08	2.37	-0.19
Chemistry General	0.64	0.43	1.50	0.56	0.39	1.44	0.06
Chemistry Other	0.05	0.06	0.92	0.02	0.02	1.09	-0.18
Computer	0.39	0.38	1.05	0.39	0.41	0.95	0.10
ELA Middle	1.32	1.40	0.94	1.22	1.24	0.99	-0.04
Elem Classroom	17.00	18.03	0.94	17.67	18.27	0.97	-0.02
English 11-12	0.81	0.86	0.93	0.77	0.74	1.04	-0.11
English 9-10	1.25	1.23	1.02	1.08	1.03	1.05	-0.03
English Elective	0.23	0.14	1.61	0.25	0.13	1.99	-0.37
English General/Other	0.41	0.26	1.56	0.40	0.24	1.67	-0.11
Film/Theater	0.05	0.02	2.59	0.04	0.02	2.21	0.39
French General/Other	0.01	0.00	2.17	0.01	0.00	2.57	-0.40
French Intro	0.13	0.17	0.80	0.13	0.18	0.77	0.04
French Lower	0.22	0.17	1.27	0.21	0.22	0.98	0.29
French Upper	0.17	0.12	1.41	0.17	0.13	1.28	0.13
Gifted Education	0.28	0.13	2.12	0.19	0.13	1.44	0.68
Health & PE	4.74	4.47	1.06	3.59	3.37	1.07	-0.01
Home Economics	0.29	0.28	1.01	0.24	0.28	0.86	0.15
Humanities Other	1.92	2.85	0.67	0.09	0.07	1.22	-0.55
Industrial Arts	0.45	0.54	0.82	0.39	0.41	0.95	-0.13
Interdisciplinary	0.08	0.04	1.80	0.06	0.06	1.09	0.72
Kindergarten	3.31	4.85	0.68	2.51	3.79	0.66	0.02
Languages Other	0.08	0.06	1.23	0.04	0.04	0.92	0.31
Library/Media	1.46	1.42	1.03	1.18	1.02	1.16	-0.13
Math 3yr Sequence	0.00	0.00	0.00	1.60	1.23	1.31	-1.31
Math Advanced Middle	0.00	0.00	0.00	0.27	0.16	1.68	-1.68
Math Elective	0.16	0.10	1.57	0.14	0.08	1.76	-0.19
Math Elem-Middle	1.58	1.64	0.96	1.25	1.22	1.03	-0.06
Math Other	0.27	0.19	1.43	0.13	0.12	1.07	0.35
Math Other Alg/Geometry	0.87	1.03	0.84	0.04	0.07	0.61	0.23
Math Other Upper Level	0.35	0.17	2.01	0.25	0.15	1.69	0.33
Math Regents A	0.01	0.03	0.32	0.01	0.01	0.89	-0.57
Math Regents B	0.41	0.22	1.86	0.00	0.00	0.00	1.86
Math Remedial	0.26	0.36	0.71	0.37	0.54	0.69	0.02
Music Choral Groups	0.47	0.38	1.24	0.34	0.28	1.21	0.03

Music Choral Lessons	0.10	0.05	1.84	0.05	0.02	2.01	-0.18
Music Electives	0.11	0.14	0.80	0.08	0.10	0.82	-0.03
Music Elem-Middle	1.12	1.29	0.87	0.84	0.95	0.89	-0.02
Music Instrumental Gr	1.07	0.71	1.52	0.56	0.41	1.38	0.14
Music Instrumental Le	0.69	0.43	1.60	0.34	0.18	1.93	-0.33
Music Other	0.05	0.06	0.79	0.01	0.04	0.42	0.37
Oth Lang General/Other	0.01	0.00	3.93	0.01	0.00	1.96	1.97
Oth Lang Intro	0.17	0.05	3.55	0.11	0.05	2.17	1.39
Oth Lang Lower	0.24	0.04	5.44	0.14	0.07	1.89	3.55
Oth Lang Upper	0.18	0.03	5.32	0.11	0.03	3.42	1.90
Other Subject Areas	1.02	1.26	0.81	1.08	1.56	0.69	0.12
Physics General	0.33	0.18	1.82	0.28	0.19	1.46	0.36
Reading/ELA Support	2.36	2.31	1.02	2.12	2.05	1.03	-0.01
Safety Education	0.01	0.03	0.29	0.02	0.03	0.65	-0.37
Science Elem-Middle	1.08	0.95	1.13	1.31	1.27	1.03	0.10
Science HS Other	0.16	0.05	2.95	0.15	0.09	1.63	1.32
Science Other	1.11	0.88	1.25	0.73	0.57	1.28	-0.02
Social Studies Elective	0.81	0.68	1.18	0.67	0.55	1.22	-0.03
Social Studies Elem-M	1.62	1.50	1.09	1.37	1.25	1.10	-0.01
Social Studies Genera	1.64	1.71	0.96	1.53	1.46	1.05	-0.09
Social studies Remedial	0.03	0.04	0.81	0.08	0.08	1.00	-0.19
Spanish General/Other	0.05	0.03	1.53	0.04	0.02	2.40	-0.87
Spanish Intro	0.54	0.60	0.90	0.44	0.39	1.12	-0.22
Spanish Lower	0.88	0.66	1.32	0.59	0.50	1.18	0.14
Spanish Upper	0.61	0.35	1.77	0.44	0.27	1.64	0.12
Speaking/Communication	0.56	0.53	1.05	0.36	0.28	1.29	-0.24
Special Education	11.25	12.65	0.89	6.94	7.88	0.88	0.01
Theater/Dance	0.06	0.08	0.73	0.05	0.08	0.64	0.09
Trades	1.14	1.26	0.91	1.11	1.47	0.75	0.15
Work Study	0.03	0.05	0.53	0.03	0.03	0.89	-0.36