

**Examining the Nature and Magnitude of Intra-District Resource Disparities in  
Four Mid-Size New York State School Districts**

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## Executive Summary

While research on school finance equity has traditionally focused on disparities across school districts, recent years have witnessed increased attention to resource differences across individual schools, particularly within large school districts. With a majority of the existing evidence on intra-district equity coming from the nation's largest districts, little is known about intra-district resource allocation in the nation's mid-size districts, or about the formulas and mechanisms that districts use to allocate resources across individual schools. These intra-district resource allocations are particularly important in the wake of the Campaign for Fiscal Equity decision, which is resulting in substantial new resources for urban districts in New York State. This study begins to fill this gap in the literature by examining the nature and extent of intra-district resource disparities in mid-sized New York State school districts.

The existing studies on school-level resource disparities have often reached remarkably similar conclusions. First, the researchers often conclude that resource disparities found across schools may be as large as or larger than the more widely-recognized disparities across districts. Second, these disparities are generally not explained by student need differentials; on the contrary, schools with greater student needs often find themselves disadvantaged relative to other schools in the same district, particularly in terms of the quality of teacher resources. These patterns vary, though, by funding source and suggest a complex relationship between funding streams. Third, these patterns are not caused by the intentional targeting of resources to lower-need schools, but are frequently the result of position-based funding formulas, average cost budgeting practices, and teacher sorting patterns that allow higher paid teachers to systematically opt into lower-need schools without financial ramifications for the schools they transfer from or to.

Virtually all of the available research on intra-district resource disparities has focused on large school districts, often comprised of hundreds of schools (or, in the case of New York City, over one thousand). Almost nothing is known, though, about intra-district resource allocation in the nation's mid-sized school districts, which we define as those with 10-50 elementary and middle schools. This paper begins to fill this gap in the literature by examining the distribution of teacher resources within four of the larger New York State school districts outside New York City. In the next section we describe our data and process for choosing school districts.

We employ a purposive sampling methodology. The sample size was set at four districts in an effort to balance the competing interests of including enough districts to identify patterns across districts with the prohibitive cost of analyzing additional districts. To select the four districts we restricted the universe of schools in New York State to districts that both contain at least ten schools and exhibit variation in the distribution of student need across schools. These restrictions limited our list of potential districts in New York State to a handful. Moreover, we excluded New York City because it has already been studied more extensively than other districts and does not fit our criteria of being a "mid-size district. We employ a mixed method approach to examining intra-district resource allocation, relying primarily on quantitative analysis of district resource

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allocation patterns using New York State data and analysis of interviews with central office officials in each district.

Quantitative analysis of the relationships between student characteristics and the number and characteristics of teachers in schools suggests that smaller and mid-size districts may exhibit similar patterns to those found in larger districts. Specifically, we find clear relationships between student poverty and teacher characteristics, with more experienced and therefore higher paid teachers disproportionately represented in lower poverty schools in three of four districts. Given our small sample, it is difficult to infer a reason why district D exhibits little sorting by poverty.

Consistent with previous research, we also find strong relationships between student needs and pupil-teacher ratios, with all districts exhibiting lower ratios in schools with higher percentages of students with IEPs. The relationship with LEP-eligible students is less consistent, though, as the larger districts appear to allocate more teachers to schools with larger limited English proficient populations while the smaller districts allocate fewer resources to these schools, perhaps due to economies of scale in the larger districts.

It was clear from the interviews in each district that district budget and finance staff felt strong pressure to comply with existing legislation and to meet the demands of new grants and changes in legislation. Meeting these requirements and keeping up with new requirements may represent the top priority for budget officials. This may leave little time to think strategically about resource allocation, particularly about identifying potential disparities across schools or developing strategies to address these disparities. For example, no district in our sample attempts to ensure a uniform distribution of teacher quality across schools in the district. Administrators are, though, quite focused on class size policies and generally consider consistent class size across schools to be an important equity goal.

District size also appears to be a significant factor in intra-district resource allocation. For example, the larger districts sought more control over the distribution of teacher quality in contrast to the small districts that felt that such authority was not needed because teacher quality was distributed equitably already. In the larger districts, officials expressed little concern over allocating additional resources to schools with higher concentrations of student need, generally stating that the district contained too little variation in student need to warrant adjustment to allocation policy. On the other hand, the smaller districts informed us that they deliberately set smaller average class sizes in the highest need schools in their districts. The data did not support this claim; however, as it appears that pupil-teacher ratios are smallest for high need schools in the largest districts in our sample.

Both the quantitative analysis of resource allocation patterns and the interviews with district officials suggested that officials consider equity in allocating resources to schools, but to some extent, have only limited control over the process. Our quantitative analysis found a number of strong relationships between pupil-teacher ratios and student characteristics, particularly special education eligibility. Our interviews echoed this emphasis

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on class size in making resource allocation decisions. While district administrators may have direct control over the *number* of staff in a school, and do intentionally target more staff to higher-need schools, they may have little control over the *quality* of these staff. District officials rarely assign specific teachers to specific schools, therefore informal sorting patterns and historical precedents largely govern the distribution of teacher characteristics, leading in many cases to concentrations of more experienced and higher paid teachers in schools with relatively fewer student needs.

The interviews with district officials in the four sample districts suggested that many issues facing these districts and affecting the intra-district allocation of resources are district-specific. That is, unique historical circumstances, organizational features of the district office, revenue sources and other factors all play important roles in shaping the methods for distributing resources across schools and the outcome of these processes. Based on our analyses of intra-district resource allocation patterns and our interviews with district officials, though, we recommend several policy changes that could help to improve the intra-district allocation of resources in mid-sized school districts:

- 1) Promote greater district-level control over the distribution of teachers.
- 2) Continue to monitor student performance and increase accountability for school performance.
- 3) Reduce fragmentation in budgeting systems and move toward an “all funds” budgeting approach.
- 4) Improve accounting systems and reporting of financial information at the school level.

## **Examining the Nature and Magnitude of Intra-District Resource Disparities in Four Mid-Size New York State School Districts**

### **I. Introduction**

While research on school finance equity has traditionally focused on disparities across school districts, recent years have witnessed increased attention to resource differences across individual schools, particularly within large school districts. Rubenstein, Stiefel and Schwartz (2006), in an extensive review of the literature on intra-district resource allocation concluded that “the resource disparities found across schools within districts are often as large and, in some cases, may be larger than the more widely-recognized disparities across districts.” Similarly, the Recent Fordham Institute report “Fund the Child” (2006) concludes that “(d)espite clear evidence that some students require more resources than others, less money often flows to schools serving children who need these extra resources most.”

The extant research on intra-district resource allocations has been primarily confined to the nation’s largest districts, such as New York City, Chicago, and Seattle. Much less is known, though about intra-district resource allocation in the nation’s mid-size districts, or about the formulas and mechanisms that districts use to allocate resources across individual schools. These intra-district resource allocations are particularly important in the wake of the Campaign for Fiscal Equity decision, which is resulting in substantial new resources for urban districts in New York State.

This study begins to fill this gap in the literature by examining the nature and extent of intra-district resource disparities in mid-sized New York State school districts. The paper proceeds as follows. The next section reviews previous research on resource disparities within districts and draws conclusions from the literature. The third section reviews our decision rules in selecting districts for this study. An overview of the data and methods follows. The fifth section describes findings from quantitative analysis of resource allocation patterns in our four sample districts, followed by a summary of findings from a series of interviews conducted with school district and state officials. A concluding section draws policy recommendation and explores avenues for future work.

### **II. What do we know about Intra-district Resource Allocation?**

Rubenstein, Stiefel, and Schwartz (2006) and Roza, Miller and Swartz (2005) provide comprehensive overviews of the promises and pitfalls of research on school-level resource distribution. Rubenstein, Stiefel and Schwartz identify almost twenty studies dating back over twenty-five years examining the school-level distribution of various resources, including dollars, teacher-pupil ratios and teacher characteristics. A number of studies (for example, Summers and Wolfe, 1976; Rubenstein, 1998; Iatarola and Stiefel, 2003) examine resource allocations across schools within a single large school district, while other work (such as Clark, 1998; Stiefel,

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Rubenstein and Berne, 1998) examines the distribution within (but not across) several large districts. Still other studies, such as Betts, Rueben and Dannenberg, 2000, Burke, 1999 and Hertert, 1995, use school-level data to compare resources across schools in different districts.

The studies looking across districts typically find that district-level averages understate the level of disparities that exist across schools within the districts (see, for example, Hertert, 1995; Owens and Maiden, 1999). Resource inequalities across schools may be acceptable or even desirable, though, if they drive additional resources to the students who most need them. Conversely, we may be particularly concerned if intra-district studies find that schools with the highest concentrations of students with special needs systematically receive fewer or lower quality resources. The available research suggests that higher concentrations of student needs, such as poverty, are sometimes associated with higher levels of per-pupil spending. In their review of the research on intra-district resource allocation, Stiefel, Rubenstein and Schwartz (2006) find a significant positive relationship in five of eleven school-level studies examining the relationship between spending and poverty, with significant negative relationships found in only two studies. These findings come with the caveat that expenditure data alone may mask a trade-off between quality and quantity of resources.

The growing availability of school-level personnel data has facilitated more extensive analysis of the number and type of staff employed across schools allowing researchers to determine whether a quantity-quality tradeoff takes place. A common finding in research examining the distribution of teachers is that high-poverty schools often have more teachers relative to pupils, but that these teachers are generally more inexperienced and educated and, thus, lower paid. As early as the 1970s, Summers and Wolfe (1976) found significantly lower education levels and teacher exam scores in schools with higher poverty and higher proportions of black students in Philadelphia. Similar findings have been reported in numerous studies since, encompassing a wide range of large districts (Ginsburg, et al., 1981; Stiefel, Rubenstein and Berne, 1998; Rubenstein, 1998; Betts, Rueben and Dannenberg, 2000; Ingersoll, 2002; Roza and Hill, 2003).

Though the availability of school-level data is increasing, the ways in which data are reported, such as only reporting a fraction of district expenditures at the school level and using average costs can often mask real resource variations across schools. As an example of the former, Roza, Swartz and Miller (2005) report that in Denver only 45 percent of the district's operating budget is reported in school budgets, with the remainder consolidated at the district level. Centrally-reported expenditures allocated to the school level by the researchers accounted for an additional \$1,000 in spending per pupil, on average. Their findings suggest that transparency may play a direct role in improving equity between schools, as the study found that the more transparent school budgets were distributed more equitably than the much more opaque centrally-reported budgets. In addition, the common practice of reporting average rather than actual teacher salaries by school can hide substantial resource differences. Roza and Hill (2003) report that if all schools received funding for only an average teacher salary for

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each teacher position, schools above and below the salary average would lose or gain 4-6% of their budgets, with gains of over a half million dollars and losses close to \$1 million for schools at the extremes.

As the largest district in the nation, and one in which detailed school site resource data has been collected, New York City has increasingly become a focus of research on school-level resources. New York City is currently the only district in New York State that produces school-level budgets and this transparency has led to several studies that document the equity of resource distributions across elementary and middle schools in New York City. For example, Rubenstein *et al.* (2007) find that New York City schools with higher concentrations of low-income students tend to have higher per-pupil spending, with more teachers relative to pupils. At the same time, these schools have teachers with significantly lower levels of observable qualifications, namely experience and education. Lankford, Loeb and Wyckoff (2002) specifically examine teacher sorting in New York State and conclude that “(d)ifferences in the qualifications of teachers in New York State occurs primarily between schools within districts...”

Iatarola and Stiefel (2003) explore the intra-district equity of inputs and outputs, including expenditures, teacher resources, and performance across 840 elementary and middle schools in New York City in 1997–98. The results show that disparities in resources at the school level are generally greater than those reported for inter-district studies (particularly in middle schools). Similar to results in other cities, the authors also find that elementary schools with higher proportions of students with special needs (with the exception of immigrant status) tend to have more teachers per student, but lower salaries.

Schwartz, Rubenstein and Stiefel (2007) examine resource allocation in New York City by fund source rather than the more traditional object-of-expenditure approach and find some unexpected patterns. For example, higher total funding is generally found in schools with higher percentages of students with special needs such as learning or physical disabilities, language needs and lower-performance receive higher per-pupil funding, in total and from specific funding sources. They find a more complex relationship with poverty, however; as schools with higher poverty receive higher funding from Title I and other sources, this higher funding is partially offset by significantly lower funding from tax levy and state operating aid. They also find that while the student characteristics explain about sixty percent of the variation in total spending across schools, they explain only about one-third of the differences in tax levy funds, suggesting that the distribution of general aid to schools is strongly related to unobserved factors.

In sum, the existing studies on school-level resource disparities have often reached remarkably similar conclusions. First, the researchers often conclude that resource disparities found across schools may be as large as or larger than the more widely-recognized disparities across districts. Second, these disparities are generally not explained by student need differentials; on the contrary, schools with greater student needs often find themselves disadvantaged relative to other schools in the same district, particularly in terms of the quality of teacher resources. These patterns vary, though, by funding source and suggest a complex relationship between

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funding streams. Third, these patterns are not caused by the intentional targeting of resources to lower-need schools, but are frequently the result of position-based funding formulas, average cost budgeting practices, and teacher sorting patterns that allow higher paid teachers to systematically opt into lower-need schools without financial ramifications for the schools they transfer from or to.

Virtually all of the available research on intra-district resource disparities has focused on large school districts, often comprised of hundreds of schools (or, in the case of New York City, over one thousand). Almost nothing is known, though, about intra-district resource allocation in the nation's mid-sized school districts, which we define as those with 10-50 elementary and middle schools. This paper begins to fill this gap in the literature by examining the distribution of teacher resources within four of the larger New York State school districts outside New York City. In the next section we describe our data and process for choosing school districts.

### III. Selecting Sample Districts

To fully understand allocation practices from districts to schools, we would ideally analyze resource allocation patterns in all of the districts in New York State or the country. Considerable data limitations prevent such analyses. Therefore, we focus on intra-district resource allocation in a small number of New York State districts. Our possible sample is limited, though, to districts with enough schools to provide a large enough sample to make inferences about the association between allocation patterns and student characteristics. In addition, these districts must have heterogeneous student populations. Without variation of student type across schools there would be no observable factors to covary with our dependent variables and allocation decisions would (appear) random. The final constraint we face is gaining access to school-level databases. We have access to school-level data in New York State and limit the study to a single state's universe of districts and schools, which improves the comparability of findings across districts but may limit the generalizability of findings to other states.

Given these constraints and the objectives of this study, we employ a purposive sampling methodology. The sample size was set at four districts in an effort to balance the competing interests of including enough districts to identify patterns across districts with the prohibitive cost of analyzing additional districts. To select the four districts we restricted the universe of schools in New York State to districts that both contain at least ten schools and exhibit variation in the distribution of student need across schools. These restrictions limited our list of potential districts in New York State to a handful. Moreover, we excluded New York City because it has already been studied more extensively than other districts and does not fit our criteria of being a "mid-size district."<sup>1</sup>

To help shed light on intra-district resource allocations in smaller districts, we selected four New York State districts. We have chosen not to identify the districts by name in order to maximize the likelihood of

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<sup>1</sup> On the contrary, it is by far the largest district in the United States.

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receiving candid responses from interviewees in the second portion of the study. We included two larger urban districts outside of New York City that we felt were comparable in many ways to and faced many of the same pressures as mid-sized urban districts around the country, particularly in the Northeast (see district profiles below). One of our districts also has a history of management reform and was seen as a resource allocation innovator in the 1990s. Thus, we were interested in the extent to which this district would exhibit different resource allocation patterns than the other districts. For the two remaining districts we sought to incorporate geographical diversity in our study and therefore restricted our search to other geographic regions of the state and districts with a sufficient number of schools to facilitate analysis and with heterogeneous student populations. Relatively few small city districts met all of our criteria listed above. We selected a district north of New York City with a relatively large number of schools and one suburban district on Long Island. Next we present a brief description of each of the four districts in our study.

### District Profiles

The four sample districts in this study, which we label districts A, B, C and D, share a number of similarities (Table 1). All are high need-districts, as defined by New York State.<sup>2</sup> As shown in Table 1, there is a discrepancy between student need as measured by the census and student need measured by free and reduced price eligibility (FRPL). Depending on the measure used to compare our sample districts, district C has either the highest proportion of poor students, as measured by FRPL, or the lowest proportion, as measured by the census index.<sup>3</sup> All districts enroll high proportions of minority students, while the concentration of students with limited English proficiency (over 20 percent) is much higher in district C than in the other districts.

The sample is split geographically with two upstate and two downstate districts and median teacher salaries reflect geographic differences in input costs, namely teacher salaries. Despite the large differences in median salaries, total per-pupil spending is comparable across the districts.<sup>4</sup> Higher pupil-teacher ratios in the two downstate districts appear to partially offset these large salary differentials. District C also exhibits substantially lower average teacher experience but a higher percentage of teachers with master's degrees as compared to the other districts.

The district profiles presented below are ordered from largest to smallest by enrollment. Each snapshot provides background on the region served by the district and the district itself.

**District A.** District A, the largest district in our sample, serves nearly 34,000 students in 63 schools. It is a fiscally dependent, central city district where minority students represent 87 percent of student enrollment, and

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<sup>2</sup> High-need districts are defined as those with high proportions of student with special needs (such as poverty, limited English proficiency) combined with low fiscal capacity.

<sup>3</sup> Note that FRPL is limited to pre-kindergarten to sixth grade enrollment whereas the census index looks at all children below eighteen years old.

<sup>4</sup> Expenditures are not adjusted for regional cost-of-education differences.

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85 percent of the students attending district A qualify for free or reduced price lunch. The district spends over \$14,000 per pupil and provides a teacher for every 11.8 students on average.

**District B.** District B is also a central city district serving nearly 22,000 students in 33 schools. The student population is 65 percent minority and 74 percent qualify for free or reduced price lunch. The district spends just over \$13,000 per pupil and provides a teacher for every 12.5 students on average.

**District C.** District C serves over 17,000 students in 17 schools. In contrast with district A and district B, district C is located downstate and serves a suburban community. Despite the suburban location, the district is large and the student population is 86 percent minority, with 86 percent of students eligible for free or reduced price lunch. Per pupil spending is nearly \$13,000 and there are 16.2 teachers for each pupil on average.

**District D.** District D serves over 10,000 students in 16 schools and is the smallest district in our sample, based on enrollment. In this downstate, small city district, 97 percent of the students are minority and 66 percent qualify for free or reduced price lunch, making district D unique in our sample as the least diverse district with the lowest rate of poverty. District D spends over \$14,000 per pupil and provides 14.7 teachers per pupil.

## V. Data and Methods

This study employs a mixed method approach to examining intra-district resource allocation, relying primarily on quantitative analysis of district resource allocation patterns using New York State data and analysis of interviews with district administrators in each district.

### Quantitative Analysis

The major constraint limiting our ability to quantitatively compare the distribution of resources across schools is the lack of a statewide, school-level resource database in New York State. Ideally we would use school-level expenditure data to analyze intra-district resource distributions. Such data are available only in New York City, however. Therefore, school-level resource analyses in this study will be confined to personnel characteristics and salaries. Because personnel costs make up a substantial majority of total school and district-level expenditures, we expect that our personnel analyses will capture the major sources of variation in school budgets within districts.

Data sources consist of the Personnel Master File (PMF) for teacher and staff data, the Institutional Master File (IMF) for school enrollment data, and school report cards for performance assessment data and selected school characteristics. The districts provided additional information unavailable in the state databases such as number of students in each school with Individual Education Plans (IEP). The analyses focus on schools

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-serving the elementary grades (kindergarten through sixth grade). We exclude middle schools and high schools from our analyses because few districts will have sufficient numbers of schools serving these grade levels to allow for quantitative analyses. For comparability, the analyses presented below also exclude charter schools (four in district A and three in district B).

Our quantitative analyses focus on both univariate measures of dispersion, such as the coefficient of variation, and multivariate regression analyses to capture relationships between teacher characteristics and student demographic variables. Specifically, we examine the distribution of teachers using data on five different dependent variables including average teacher salaries, permanent and temporary teacher certification, pupil-teacher ratio and experience. We selected four independent variables to represent student characteristics including poverty (free lunch eligibility), special education, English language status and academic achievement<sup>5</sup>. We then regress each of the five dependent variables listed above on these student characteristics. Note that the unit of analysis in this study is schools not teachers, and all variables represent school averages. For example, average teacher salary is the sum of all actual teacher salaries in a particular school divided by the number of full time equivalents teaching in the school.

We present two sets of regressions, with preference given to Weighted Least Squares (WLS) results in our presentation because these coefficients and standard errors have been weighted to address heteroskedasticity concerns. Specifically, the residual errors from the Ordinary Least Squares (OLS) regression were plotted and the variation increased as observations grew further away from the origin. Due to small sample sizes, though, formal tests of heteroskedasticity and more common methods of treatments (i.e., the Huber-White correction) that rely on asymptotic assumptions cannot be used in our analysis. OLS results are included in the appendix and do not differ significantly from the WLS estimates. As a check for the robustness of our results, we also estimate a third set of models weighting by school enrollment. These results, presented in the appendix as well, are consistent with those from the other two methods.

In addition to analyzing the relationship between teacher and student characteristics, we also sought to understand how different elements of the budget may play a role in either enhancing or diminishing the level of equity between schools in our sample district. The effect of central office resources, which was discussed in the background section earlier, has received very little attention in the literature because it is very difficult to find school-level measures of these resources. Our initial strategy was to use itinerant teachers as a proxy for central office resources because central departments often employ personnel that service multiple schools such as psychologists and mentor teachers. However, findings from the interview process redefined our approach. The distinction between school and central resources in New York State can be tested by comparing general fund and

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<sup>5</sup> While the data supported the inclusion of more control (e.g., enrollment and enrollment squared) and predictor variables (e.g., additional measures of academic achievement), the sample size constraints forced us to be parsimonious with our variable selection so as to minimize the loss of degrees of freedom.

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special revenue fund allocations separately. While we will discuss this distinction in more detail in our qualitative section below, the fund level detail was not available to test our central office hypothesis quantitatively.

Our goal in this portion of the analysis is to assess the magnitude of resource disparities within school districts and to identify student and school-level factors that are systematically related to the quantity and quality of personnel resources. Note that the measures of “quality” we use are imprecise; teacher quality may be largely unobserved in our dataset. We can, however, measure teacher qualifications that may be correlated with teacher quality. Because resource allocation decisions may be largely based on these observable qualifications rather than unobservable quality measures, it is important to assess the extent to which these qualifications vary across schools.

### Qualitative Analysis

Our descriptions of resource allocation mechanisms and analyses of factors leading to intra-district disparities rely primarily on interviews conducted with officials in our four sample districts and with one former local official now working for New York State. While our original plan included interviews in only two districts, we chose to supplement our analyses with additional interviews in each district.<sup>6</sup> In all, we interviewed 11 officials in the four districts over the course of four months. We also interviewed a former superintendent of one of our sample districts who now serves in a senior role at the state level. Approximately half of the interviews were conducted in person and the remainder conducted over the phone. Prior to the interviews we sent each interviewee an interview protocol containing a series of open-ended questions regarding resource allocation mechanisms and formulas, factors the district considers in allocating resources to schools, goals of the process, constraints faced during the process, and opinions regarding ways to improve intra-district resource allocation in their district (a copy of the two different interview instruments are attached as appendices A and B). The interview protocol formed the basis for our interviews, but we allowed the interviewees to raise other topics not explicitly included in our questions and we asked follow-up questions for clarification and to pursue fruitful topics.

All interviews were tape-recorded with the permission of interviewees. These tape recordings were then transcribed. Each principal investigator reviewed the transcriptions and edited for accuracy. Each investigator then analyzed the notes, looking for common themes and differences among the districts.

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<sup>6</sup> These additional interviews were intended, also, to partially compensate for severe data limitations encountered in the quantitative portion of the study.

### VI. Results

Table 2 presents descriptive statistics and measures of dispersion for teacher characteristics in the four districts and in the combined sample.<sup>7</sup> The last column of the table displays the coefficient of variation (standard deviation divided by the mean) for each variable, with higher values reflecting more inequality in the distribution. The data indicate that teacher experience and certification status are distributed more unequally across schools than is salary. While overall levels of certification are high (99 percent in districts C and D), we see considerably more variation in temporary certification.<sup>8</sup> While all districts exhibit similar temporary certification averages, districts A, B and D also have considerable variation in the level of temporary certification while district C is substantially lower. This pattern suggests that newer teachers may be disproportionately represented in certain schools.

As explored further in our interview results below, each district described resource allocation mechanisms that focused on equalizing class sizes across schools. No class size data are available for our study, but we instead calculate pupil-teacher ratios as a proxy for class size. Our analyses focus on elementary schools, therefore pupil-teacher ratios are likely a reasonable proxy for class size, as compared to analyses focusing on high schools. Pupil-teacher ratios still may not reflect the number of students sitting in any particular classroom, however. Average pupil-teacher ratios are lowest in the largest districts (A and B) but we see somewhat different patterns of variation across the districts. District C, for example, has an extremely low CV, indicating little variation across schools, while the CV in district B is almost five times as large. The large variation in district B may be explained, in part, by the much higher proportion of students with individualized education plans (IEPs), a topic we turn to below. The percentage of students with IEPs is lowest in district D.

Table 3 presents a series of correlation matrices showing bivariate relationships between our independent variables of interest - school-level average student characteristics – and our dependent variables of interest – teacher characteristics. The relationships between the dependent variables show the expected patterns: teacher salary is strongly and positively related to teacher experience and certification but strongly negatively related to temporary certification. Temporary certification is strongly negatively related to average teacher experience because temporarily certified teachers tend to be new teachers working toward full certification. Pupil-teacher ratio does not have an obvious relationship in theory to teacher characteristics, but the correlations suggest that they are significantly related in all districts to either teacher certification or average teacher salary. In district D, for example, pupil-teacher ratios are negatively correlated with teacher salary, indicating that schools with more pupils per teacher also have lower salaries than other schools in the district, perhaps compounding inequities. In districts A and C, the percentage of teachers certified goes down as the pupil to teacher ratio increases, indicating that schools with larger class sizes may also have fewer certified teachers.

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<sup>7</sup> Descriptive statistics in Table 1 are calculated by the state and include all schools in the district. Statistics in Table 2 are calculated by the authors from PMF and IMF data and are limited to elementary schools.

<sup>8</sup> Note that we include temporary certification in the calculation of total certification.

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Examining the relationships between our dependent and independent variables, we find that teacher salary is negatively related to student poverty in three out of four districts, with a particularly strong relationship in districts A and C. These teacher salary differences appear to reflect differences in experience, with lower average experience and higher percentages of temporarily certified teachers in higher poverty schools, particularly in districts B and C. Limited English proficiency is also generally related to less experience and lower salaries, with all four districts exhibiting negative coefficients, although the relationship is typically not as strong as the relationship with poverty.

Our other major indicator of student need, the percentage of students in special education, shows a very different relationship with teacher characteristics. Schools with higher proportions of students with IEPs have lower pupil-teacher ratios in all districts, reflecting the smaller classes and more intensive services these students receive. In districts A and C, students with IEPs are (weakly) associated with higher salaries and more experience while in districts B and D they are associated with lower salaries and experience, suggesting teacher sorting in relation to special education may be idiosyncratic across districts.

A surprising and inconsistent pattern emerges in the relationship between limited English proficiency and pupil-teacher ratios. While the larger districts (A and B) have lower ratios in schools with more LEP-eligible students, the smaller districts, particularly district C, have higher ratios in these schools. While the causes for these patterns are not clear from these correlations, opportunities for economies of scale may, in part explain these relationships. Larger districts may have sufficient numbers of students with limited English proficiency (LEP) and sufficient numbers of schools to intentionally locate programs for these students, and the more intensive resources associated with these programs, in a small number of schools. Smaller districts may not have similar opportunities to achieve such economies, though. What is consistent across all four districts is that as the percentage of LEP students rises, teacher experience declines indicating that districts that maintain a positive relationship between LEP and class size (i.e., bigger classes) are not trading quantity for additional years of teaching experience.

While Table 3 examines simple bivariate relations between variables, it does not shed light on how school or student characteristics might be related to disparities across schools, holding other factors constant. With the very small number of schools in districts C and D, though, these multivariate regression models are not useful. Therefore, Table 4 displays the results of a series of models regressing average teacher characteristics and pupil-teacher ratio on average student characteristics for the larger districts (A and B) only.

Given the small sample sizes, it may be surprising to find statistically significant relationships, but some significant relationships do emerge in the regression analyses. It is also worth noting that, because the analyses use the population of schools in each district, statistical significance may be of less concern. In district A, teacher salary and experience are strongly negatively related to student poverty, even after controlling for other student characteristics. While it appears that less experienced (and therefore lower paid) teachers are systematically sorted

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into schools with higher poverty, we do not find any significant relationships with certification. We do find a positive relationship (both in the multivariate regression results in Table 4 and in the bivariate correlations in Table 3) between temporary certification and poverty, suggesting that higher poverty schools have a higher percentage of newer teachers. The relationships are weaker than those with average experience and not significant, however.

As might be expected, we continue to find a strong relationship between pupil-teacher ratios and student needs as measured by limited English proficiency and IEPs. Schools with higher percentages of students with these needs have more teachers relative to pupils, and the magnitude of the relationship is particularly large for special education. It is worth noting that we find no significant relationships between student performance, as measured by mean scores on the 4<sup>th</sup> grade English Language Arts test, and teacher characteristics, once we control for other factors.

We find similar distribution patterns in district B, though some differences emerge. While poverty is negatively related to teacher salary and experience as in district A, the relationships are not statistically significant. We do, though, find higher proportions of temporarily certified teachers in schools with higher free lunch eligibility, suggesting again that newer teachers tend to teach in higher poverty schools, although this relationship is not statistically significant. In contrast to district A we find significantly lower salaries and less experience in schools with more students with IEPs. These schools do, though, also have much lower pupil-teacher ratios than do schools with fewer special education students.

Unlike district A, we also find significant relationships between student performance and teacher characteristics, both in the multivariate regression results and in the simple correlations. Schools with higher 4<sup>th</sup> grade test scores have more experienced and educated teachers on average, lower percentages of teachers with temporary certification, but slightly higher pupil-teacher ratios. We do not suggest that these relationships are causal (in other words, that teacher experience caused higher test scores). The teacher sorting patterns leading to this distribution are more complicated, but the pattern does suggest that schools with higher test scores may be able to attract more senior teachers.

As described further in the qualitative portion of this study, resource allocation mechanisms may vary by fund source, for example general fund allocations versus those from special revenue funds. To date, though there has been little consideration of the implications of funding source on intra-district equity. While we believe this is an area worthy of further study, the datasets used to conduct the quantitative pieces of this study did not allow us to differentiate resources based on fund. Officials in sample district B, though, provided us with data directly from their accounting system. These data allowed us to differentiate teachers and paraprofessionals by school and by fund. However, the accounting data does not provide teacher characteristic data such as years of experience, used in the analyses described above.

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The descriptive statistics for these new district B data reveal some interesting variations across funds. For example, as shown in appendix table A.3, the special revenue fund is heavily weighted toward teachers. Although the SRF represents only 25 percent of the district budget, 47 percent of the district's elementary teachers are compensated by it. In addition, the general fund is heavily weighted towards paraprofessionals, consuming nearly one-third of total teaching salaries. In contrast, paraprofessional salaries represent less than 5 percent of total teaching salaries in the SRF. Average salaries of both teachers and paraprofessionals were compared across funds and found to be equivalent, suggesting that neither fund favors more experienced or highly educated teachers.

The general fund is more transparent at the school-level compared with the special revenue fund. When the location that a teacher works is coded to a program or central office location, they are not included in the quantitative portion of this analysis even though many of these teachers work in schools on a full-time basis. We classify these teachers as "district-wide" teachers or paraprofessionals. Twelve percent of the teachers employed by the district and 34 percent of its paraprofessionals are district-wide teachers. Of the 229 "district-wide" teachers and paraprofessionals, 77 percent of their salaries are drawn from the special revenue fund.

District-wide teachers are unintentionally omitted from school-level research. From an equity perspective, the omission is disconcerting because we do not know how these resources are distributed across schools. From an efficiency perspective, the omission could cause biased estimates if, for example, higher performing schools are receiving more resources, such as lower pupil-teacher ratios, than the resource level reported in currently available administrative data.

One of the more interesting patterns drawn from this single district case study is the absence of an association between paraprofessional salaries and student poverty. While teacher salaries, as predicted, are negatively associated with student poverty, as shown in table A.5, the absence of a negative relationship for paraprofessionals raises some interesting questions for future research. For example, are paraprofessional qualifications taken into consideration by the district during the allocation process? Do seniority transfer privileges extend to the ranks of paraprofessionals, and if so, is the language of those privileges different from teacher transfer privileges?

Finally, with respect to this fund-based case study in district B, we are particularly interested in comparing the association between students who qualify for free or reduced price lunch and the pupil-teacher ratio across the two fund types (table A.5). According to federal legislation, Title I resources come with three restrictions: (1) maintenance of effort, where fiscal effort meets or exceeds 90 percent of last year's spending; (2) comparability, where state and local funds must be "at least comparable" in Title I and non-Title I schools, and (3) resources are used to supplement, not supplant state and local funds in high poverty school (NCLB).

Our data do not allow us to disentangle Title I funds from other special revenue funds; nonetheless, the relationships between special revenue funds and poverty are worth examining. In addition, our data do not allow for an assessment of either the maintenance of effort or "supplement not supplant" clause, both of which would

## Intra-District Resource Allocation

require longitudinal data. Therefore, our analysis is limited to examining only one of the three fiscal accountability requirements in Title I, the comparability of state and local resources. Based on the comparability requirement, we might expect to find no significant relationship between general fund resources and student poverty; we would also expect to find a positive relationship between special revenue funds and poverty.

District B's general fund has a positive, but not statistically significant, relationship between FRPL and pupil-teacher ratio. The special revenue fund has a negative and statistically significant association between FRPL and the pupil-teacher ratio. That is, we do not find significantly different numbers of General Fund teachers in high poverty schools but do find smaller special revenue pupil-teacher ratios in high poverty schools. This pattern suggests that the district is meeting the comparability requirement in Title I. It is worth noting though that – while not significant - the correlation between General Fund pupil-teacher ratios and poverty is positive, suggesting that further study of these allocations may be warranted.

In sum, quantitative analysis of the relationships between student characteristics and the number and characteristics of teachers in schools suggests that smaller and mid-size districts may exhibit similar patterns to those found in larger districts. Specifically, we find clear relationships between student poverty and teacher characteristics, with more experienced and therefore higher paid teachers disproportionately represented in lower poverty schools in three of four districts. Given our small sample, it is difficult to infer a reason why district D exhibits little sorting by poverty. A possible explanation, though, may lie in the descriptive statistics in Table 2, which showed relatively little dispersion of poverty across schools.

Consistent with previous research, we also find strong relationships between student needs and pupil-teacher ratios, with all districts having lower ratios in schools with higher percentages of students with IEPs and with significant relationships in our two largest districts (perhaps because of their much larger sample sizes). The relationship with LEP-eligible students is less consistent, though, as the larger districts appear to allocate more teachers to schools with larger limited English proficient populations while the smaller districts allocate fewer resources to these schools, perhaps due to economies of scale in the larger districts.

While these quantitative analyses provide descriptive information on the distribution of resources across schools, they do not explain how resources reach individual schools. In the next section we address this question using data collected in a series of interviews with school district administrators.

### Interview Findings

This study began with four specific research questions and a mixed methodological approach designed to answer them. Of the four research questions posed, two required that we interview district administrators about resource allocation policies and procedures. The two research questions we address in this section are:

- 1) What mechanisms do school districts use to allocate resources across schools, how do these mechanisms differ across districts, and what other factors affect the distribution of resources?

## Intra-District Resource Allocation

2) What school and student characteristics, for example school size, student demographics and student performance, are related to the distribution of resources within districts?

In this section we supplement the results of the quantitative analyses presented above with administrator interviews in each of our sample districts. While the quantitative analyses are intended to describe current allocation patterns, the interviews are intended to shed light on the causes and correlates of these patterns. The section is organized as follows. First, we describe resource allocation mechanisms – the rules or policies designed to allocate resources from districts to schools – for each district. Second, we examine teacher, student and school characteristics that affect resource allocation patterns. The third section discusses other factors affecting the distribution of resources, including the recent Contract for Excellence (CFE) funds provided by New York State. We conclude with a discussion of what we have learned about resource allocation from interviewing the administrators who are responsible for the process.

### Resource Allocation Mechanisms

By describing resource allocations as mechanisms we refer to a set of rules or policies allocating resources, financial and personnel, to schools. Our search for allocation mechanisms found several common mechanisms across the districts, including dividing the budget by source or fund, setting average class size targets, historical precedent, ad-hoc decisions, and the requirements of grant or aid providers. We also found many district-specific procedures and mechanisms. Each of these mechanisms is discussed below.

**Fund-Based Budgeting.** A consistent finding in our interviews was that districts tend to employ relatively fragmented budgeting processes in which separate departments have responsibility for allocating resources from different funding sources. Separating resources by fund is an important mechanism in school-to-district budgeting because the way in which total resources are divided determines how much money each central office department has to allocate. In this section we focus on the two largest operating funds, the general and special revenue funds, which together account for well over 80 percent of a district's budget. Aside from the material importance of these two funds, they also operate very differently, which allows us to compare and contrast the boundaries of district budgeting practices.

All four districts studied begin the budgeting process by fund source, with general fund and special revenue fund allocation decisions largely independent of one another. The independence of fund management is both physical - as the departments often reside in different locations - and informational, as there is no often dynamic information sharing system between funds for the budgeting process. The physical separation is driven, in part, by the fact that the general fund has two sources of revenue, local receipts and state aid. In contrast, the special revenue fund may need to respond to the demands of as many as one hundred or more different funding sources.

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The choice of resource allocation mechanism varies significantly between the general and special revenue fund. General fund managers tend to rely more heavily on formulas while special fund managers use formal formula-driven allocation processes less frequently. As a result, general fund mechanisms tend to be more transparent and the resources they distribute easier to assess on equity grounds. In contrast, in order to identify the allocation mechanism used by the special revenue fund requires a grant-by-grant assessment – making the special fund allocation mechanisms less clear.

The material importance of each fund has been changing over the past decade or more. The general fund has shrunk as a proportion of districts' budgets at the expense of the more fungible special revenue fund. For example, in one of our sample districts, the special revenue department has grown from 10 percent to 25 percent of the district budget. The relative growth in special revenue funds is a sign that the number of constraints placed on aid is probably increasing over time. However, the Contract for Excellence (CFE) is reclaiming some of the special revenue fund resources and re-allocating them as CFE dollars, which are a general fund revenue source. Of course, CFE funds come with allocation requirements much like the categorical grants that the special revenue department oversees.

Other departments in the organization influence the resource allocation choices of both fund sources. The instruction and curriculum staff tends to have more input and control over special revenue funds, while the finance personnel take more responsibility for the general fund.

Fund-based budgeting is a fragmented approach to budgeting. While a fragmented approach permits the use of different allocation mechanisms for different resources, it also limits the ability of administrators to consider the entire resource picture of each school relative to other schools in the district, conditional on student need, grade level, and other school and student cost factors. That is, while each allocation might be made according to the mechanism governing that particular fund or grant, the sum of all the resources allocated in this fashion may produce inequitable resource allocations or resource allocation patterns that may not fit broader allocation priorities.

**Average Class Size.** The single most important mechanism that school districts use to allocate resources to schools is an average class size formula. The average class size formula consumes a majority of the resources in the districts' largest fund. This finding is consistent across all four districts studied. Three out of the four sample district stated that they had full autonomy over class size targets and that the district leadership met annually to set limits.<sup>9</sup> Teachers allocated by the class size formula are generally compensated through general fund dollars. In contrast to general fund teachers, teachers paid with special revenue dollars are often not allocated by formula.

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<sup>9</sup> One district mentioned that they comply with state regulations for grades K-3 in exchange for additional state funds. However, this regulation was not cited by any of the other districts we interviewed.

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Class size varies intentionally across grade level. While there is some inter-district variation in the class size targets, all of our sample districts set smaller class sizes for younger students and increase class size with grade level. Officials in our two largest districts (A and B) attempt to keep class size equal across schools regardless of the distribution of student need across schools. In contrast, district officials in our two small districts (C and D) stated that class size is reduced in schools that had poor academic performance or a high concentration of English language learners (ELL). For example, the average class size in schools with high concentrations of ELL students was set at five students below the size at which other district schools operate.

**Historical Precedent.** Historical precedent and funding commitments appear to play an important role in shaping the distribution of resources across school, particularly with respect to special revenue funds. Many of our interview subjects, spanning all four districts, noted that once a school receives a resource it is very hard for central administrators to take that resource away, even if it was funded by a grant that ended. Schools hold on tightly and argue effectively for keeping their resources. The influence of historical precedent appeared to largely affect the special revenue funds rather than general fund allocations, perhaps because school leaders are aware of the fungible nature of special revenues and they know their arguments for more resources can be rewarded. These historical precedents, while generally not captured in formal allocation mechanisms or formulas, can have an important impact on the equity of intra-district resource allocations.

**Ad-hoc Mechanisms.** We define allocation mechanisms as ad-hoc when administrators described their decisions as to why a particular school received a special program or additional dollars as custom-designed to meet the unique needs of that school. Ad-hoc allocation mechanisms are singular in nature and therefore cannot be grouped with other types of mechanisms that affect multiple schools.

Ad-hoc decisions, not student or school characteristics per se, often determine which schools receive a program and which do not. Once a school is selected as the recipient of a program, they are allocated additional resources necessary to deliver the program. For example, in district C one of the two high schools has advanced placement (AP) courses, which require both the teachers qualified to teach AP and additional teachers to maintain an AP class size of 12:1. Supplemental program allocations, such as AP programs, after-school tutoring programs, and special arts and music programs can create resource disparities between schools within the district.

In our interviews, districts administrators argued that schools have unique needs requiring the specialized treatment that ad-hoc mechanisms permit. For example, administrative capacity is one factor that sample district B considers in their ad-hoc approach to resource allocation. Specifically, central administrators consider the number of grants a school receives out of concern for straining administrative capacity at the school. If a school has too many grants already, then the district will withhold future grants until some of the school's current grants expire. Similarly, if central office staff feel that the principal does not have the administrative capacity and

## Intra-District Resource Allocation

leadership to effectively implement the grant, then the school is less likely to receive the funds because the district wants to ensure success for the grantee and a continued revenue stream for the district.

### Resource Allocation and Teacher, Student and School Characteristics

**Teacher Characteristics.** Teachers are the most important resource in a school district and research has shown that teacher quality is distributed unevenly across schools in large urban school districts (Rubenstein et al 2006, Roza et al 2005, Koski and Horng 2007). The distribution of observed and unobserved teacher characteristic across schools is, therefore, of particular interest in this study. Examples of observed characteristics include years of teaching experience, teaching in subject area, teacher certification, salary, and years of education. Unobserved characteristics include the amount that students learn from their teacher, classroom management skills, and the degree to which a teacher is able to generate parental support. From a resource perspective, these unobserved characteristics are more important but are also much harder to measure. Therefore, researchers and policy makers tend to focus on more easily-observable teacher characteristics, such as teacher experience (Rivkin, Hanushek, and Kain 2005).

None of the administrators interviewed reported that they consider the distribution of teacher quality during the resource allocation process. When asked, some districts cited explanations for not explicitly including teacher quality in their resource allocation processes. For example, one district (A) noted that the distribution of teacher quality as measured by the highly qualified teacher standard is no longer an issue in the district. In the past two or three years the district re-assigned or eliminated 30 to 50 teachers who did not meet the No Child Left Behind (NCLB) teacher standards. Moreover, 86 percent of the district's students qualify for Free or Reduced Price Lunch (FRPL) so there is very little remaining variation in need across schools. Since most of the teachers in the district meet NCLB's definition of a highly qualified teacher and student need is more or less uniformly distributed across schools, there is no need to address the distribution of teacher quality.

Teacher transfer rights have been cited as a primary factor leading to concentrations of less experienced and less qualified teachers in the highest need schools (Moe 2006). A recent study of the relationship between the distribution of teacher quality and the strength of teacher transfer privileges, though, finds that there is no relationship between the strength of seniority transfer provisions and the distribution of teacher quality (Koski and Horng, 2007). This conflicting evidence on the influence of transfer privileges is also supported by our interviews. We find support from administrators for removing transfer privileges from the collective bargaining agreement in our two largest districts (A and B). At the same time, interviewees in the two smaller districts C and D) were comfortable retaining the privileges.

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**Student Characteristics.** A fundamental focus of this study is the extent to which school-level student characteristics are related to school resources. Specifically we are interested in four student characteristics that are associated with higher costs and, therefore, a need for higher levels of resources: low student achievement, free or reduced price lunch eligibility, students who are English language learners (ELL), and special education eligibility.

Title I is the largest source of funds specifically targeted at students from low-income families. All of our sample districts described per-pupil Title I allocation policies that appear to be uniform district wide and do not include adjustments for variation in the concentration of poverty across schools. For example, sample district C provides a Title I reading teacher to every elementary school. Administrators in two districts described a process whereby they allocate more general fund teachers to non-Title I schools to roughly equalize class sizes across schools. Other than during the discussion of Title I there was no mention of poor students as a consideration in the allocation of resources by any of the district officials we interviewed. Our findings are consistent with other Title I studies that conclude that high poverty school budgets are often not supplemented by Title I funds; instead, Title I may be used to offset lower funding from other sources (Roza and Hill 2006; Brown 2005, NY Times, 2007).

In sample district C, New York State's accountability policy drives Title I dollars to schools with the lowest academic performance. Based on academic performance on state exams, district C has chosen to redirect a majority of Title I funds away from primary schools where performance is above average, towards secondary schools where performance is lagging. However, substantial resources are still directed toward primary schools, as each elementary and middle school receives a Title I reading teacher. Historical precedent and parent political influence were mentioned as factors responsible for these allocations. Sample district D uses student achievement information to lower class size in poorly performing schools. Aside from these two examples where student achievement directed resources, there was no other evidence that student achievement is a resource allocation factor in any of the districts we studied.<sup>10</sup>

Each of the four sample districts relies heavily on paraprofessionals to meet the needs of English language learner students. However, none of the districts interviewed used a specific formula to allocate paraprofessionals based on the number, language and need-level of the students. Most of the sample districts mentioned the importance of economies of scale in ELL programs. To generate scale, districts locate ELL services at specific schools and transport students to the school offering the services they need. In only one district were supplemental resources beyond paraprofessionals offered to ELL students. In sample district C, officials lower class size by up to 25 percent in schools with high concentrations of ELL students.

Each special education student's Individual Education Plan determines the number of special education paraprofessionals that work within a given school. This pattern was consistent across our sample districts, perhaps

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<sup>10</sup> Note that districts C and D are the smallest district in our sample.

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in part because all the districts are in a single state. In all four districts non-staff resources from the general fund are allocated via a formula in which only special education students receive additional resources. It appears that special education legislation ensures equity in terms of dollars, but there are no stipulations about teacher quality for special education students.

**School Characteristics.** We asked interviewees about five school characteristics and how they might affect school resources: charter, magnet and alternative schools, school size (i.e., enrollment), and grade level. With the exception of charter schools, the interviews suggest that the sample districts attempt to treat all school types uniformly. For example, sample district A operates nine small high schools, in addition to magnet schools and alternative schools. These schools are staffed using the same formulas, such as the district class size formula, as other schools in the district serving the same grade levels. Charter school budgets are an exception to the rule as the state sets a funding formula that the district must follow. Alternative schools also present some unique difficulties in the budgeting process because enrollment is much more difficult to project than in the other school types; students often do not enroll in the alternative school until difficulties arise in their original placement.

A number of allocations are building based, such as administrative positions, librarians and special programs that are allocated on a per building basis. Building based allocations are often responsible for unequal per-pupil spending patterns across schools because they fail to adjusted for enrollment, resource quality, and student need. These building level allocations were quite common across our sample. All the sample districts also employed varying allocation formulas based on the grade level of the students in each school. The most common use of grade level in an allocation formula occurs in the class size rules, where elementary students receive smaller class size targets.

### Other Factors Affecting the Distribution of Resources

In this section we assess the influence of three additional factors potentially affecting the distribution of resources within districts: 1) the district's organizational structure; 2) external and internal political influences; and 3) the level of financial transparency at the school-level. We combine these three factors because they do not fit neatly in the other categories presented above.

**Finance Department Organizational Structure.** Our sample districts operated with two general types of organizational structures. Three of our sample districts (B, C, and D) separated fiscal management of the general revenue and special revenue fund into two separate departments. For example, district B operates two different finance departments and both departments report the district Chief Financial Officer (CFO). Although

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expenditures from the two departments must be reconciled eventually, budgeting is done independently of one another.

In contrast to the rest of our sample, sample district A had a single director who was responsible for both the general fund and special revenue fund. District A integrated the general fund and special revenue fund management into a single position (budget director) four years ago. According to district A officials, this situation allows for more fiscal accountability because it eliminates the requirement to coordinate real time resource levels across departments and grants. Budget analysts and program managers know the full school-level resource picture. Contrary to the expectation that as departments grow larger they tend to become more compartmentalized, this district was the largest in our study. According to interviewees in this district, school administrators no longer need to follow a “find the money” approach to budgeting. Instead, when leaders bring proposals to the finance department they are typically asked to identify cuts in other areas to fund the new programs. While the single department structure used in district A appears to force administrators to make difficult choices earlier in the budgeting process and therefore reduce the likelihood of deficits, at least in the short term, it does not remove political influence from the allocation process. As described below, political influence appears to play the largest role in budgeting in the district with the least fragmented budget structure, though the relationship may be more coincidental than causal.

**Political Influence.** Political influence appears to play a different role in different departments, according to our interviewees. For example, special revenue department administrators reported feeling pressure laterally from other departments, from their bosses and from outside funders. General revenue department administrators reported the most political pressure from teachers and principals. We also found that organized political pressure, the type applied by labor groups and parent organizations, appeared to be an important influence only in our two largest districts. One official working in district A described the difference that the size of the district has on the kind of political pressure he faces. In a small district where he used to work, parents voiced their concerns to him at the grocery store. In his current role he is anonymous, so parents reach him through their interest group. Both approaches are political, but only in the larger district is the pressure organized. Additionally, dependent district status presents particular constraints and political considerations in the overall budget process (expenditure levels, debt management), though we found little evidence that dependent status affected allocations to individual schools.

Regarding general fund allocations, interviewees in our two largest districts reported that principals have both a direct and indirect influence on the distribution of teacher quality. In the case of the former, principals have considerable input into the hiring process. In the case of the latter, strong principals tend to attract better teaching applicants and reduce attrition. District administrators reported that teachers know who the “good” principals are in the district. In our two smallest districts, district officials described the distribution of principal

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quality as more uniform, and therefore this type of political influence was not present to the same degree as described in the larger districts we studied.

Regarding special revenue fund allocations, interviewees reported sources of political pressure that included the local representation of the Campaign for Fiscal Equity, parent-teacher organizations, collective bargaining agreements, the district board of education, New York State, and the city common council (in dependent districts). Some interviewees also indicated that special revenue funds are often distributed with political considerations in mind, an approach the interviewee dubbed “kissing the ring.” The description implies that resources were allocated in exchange for favors rather than student need or district strategy, though the interviewee suggested that this approach had been reduced in recent years.

**Transparency.** Transparency of school level resources is included in this section as a factor that influences resource allocation patterns because the presence of school budgets allows principals and parents to compare the resource levels of similar schools and use that evidence to effectively lobby for their fair share of district resources. In the absence of transparency, school leaders, parents and teachers are unable to hold central administrators accountable for the allocation decisions they make.

Although our four sample districts collectively serve over 83,000 students in 129 schools, none of the districts publish school budgets. One district had previously published school budgets as part of an overall decentralization and school-based management (SBM) initiative, but both practices had ended by the time of our research. Of the three remaining districts, none had ever generated nor published school budgets.

### Contract for Excellence Allocation

Contract for Excellence (CFE) grants represent a new funding stream from the state for some of New York’s neediest districts. CFE funds are allocated from NYS to districts as foundation aid and the districts we interviewed allocated them as general fund dollars. However, because the funds require districts to choose among five specific uses of the money, the general fund financial staff reported that they allocate and track the money in a similar fashion to the way special revenue funds are managed and spent.

The CFE funding affected each of our sample districts very differently. For example, although all four districts are high need, only three received CFE funds. Furthermore, our largest sample district, District A described CFE as more restrictive in the way it constrained resource allocation as compared with the description given by District B. Specifically, district A was required to provide evidence that the budgets of the neediest

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schools were supplemented with CFE funds.<sup>11</sup> Moreover, 75 percent of the CFE grant had to be spent on the schools that met the definition of need provided by the state.

A common complaint from our two largest sample districts was that CFE did not increase their budget. District officials justified this complaint with several supporting statements. First, according to interviewees, several state categorical grants that the district was receiving ended (e.g., magnet school grant) and those dollars were re-labeled as CFE funds and allocated to the general fund. Officials in district A argued that they were forced to cut \$10M in programs to find the \$18M needed to meet the requirements of CFE.

There was considerable variation between districts in the types of initiatives in which they chose to invest CFE funds. For example, district C added 15 – 20 teachers at the secondary level in order to move from an 8 to a 9 period day, while district B chose a customized approach to each of the schools in the district based on the needs of the school. These findings are in alignment with the results of a larger and more focused assessment of CFE conducted by Education Week (McNeil 2007).

### Discussion

It was clear from the interviews in each district that district budget and finance staff felt strong pressure to comply with existing legislation and to meet the demands of new grants and changes in legislation. Meeting these requirements and keeping up with new requirements may represent the top priority for budget officials. This may leave little time to think strategically about resource allocation, particularly about identifying potential disparities across schools or developing strategies to address these disparities. As noted, for example, no district in our sample attempts to ensure a uniform distribution of teacher quality across schools in the district. Administrators are, though, quite focused on class size policies and generally consider consistent class size across schools to be an important equity goal.

District size also appears to be a significant factor in intra-district resource allocation. For example, the larger districts sought more control over the distribution of teacher quality in contrast to the small districts that felt that such authority was not needed because teacher quality was distributed equitably already. In the larger districts, officials expressed little concern over allocating additional resources to schools with higher concentrations of student need, generally stating that the district contained too little variation in student need to warrant adjustment to allocation policy. On the other hand, the smaller districts informed us that they deliberately set smaller average class sizes in the highest need schools in their districts.

Both the quantitative analysis of resource allocation patterns and the interviews with district officials suggested that officials consider equity in allocating resources to schools, but to some extent, have only limited

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<sup>11</sup> Need is defined as a school above the median weighted value of several student characteristics such as poverty and academic achievement. According to officials from district A, state department of education personnel wrote the formula, but we were unable to obtain a copy of it from the district.

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control over the process. Our quantitative analysis found a number of strong relationships between pupil-teacher ratios and student characteristics, particularly special education eligibility. Our interviews echoed this emphasis on class size in making resource allocation decisions. While district administrators may have direct control over the *number* of staff in a school, and do intentionally target more staff to higher-need schools, they may have little control over the *quality* of these staff. District officials rarely assign specific teachers to specific schools, therefore informal sorting patterns and historical precedents largely govern the distribution of teacher characteristics, leading in many cases to concentrations of more experienced and higher paid teachers in schools with relatively fewer student needs.

### Policy Recommendations

The interviews with district officials in the four sample districts suggested that many issues facing these districts and affecting the intra-district allocation of resources are district-specific. That is, unique historical circumstances, organizational features of the district office, revenue sources and other factors all play important roles in shaping the methods for distributing resources across schools and the outcome of these processes. Based on our analyses of intra-district resource allocation patterns and our interviews with district officials, though, we recommend several policy changes that could help to improve the intra-district allocation of resources in mid-sized school districts.

- 1) Promote greater district-level control over the distribution of teachers.

As noted above, the distribution of teachers across school sites is one of the most critical issues in intra-district resource allocation. Using the federal NCLB definition, a highly qualified teacher “must have 1) a bachelor's degree, 2) full state certification or licensure, and 3) prove that they know each subject they teach” (NCLB). Moreover, NCLB requires that states report and monitor the percentage of teachers meeting this requirement. Districts could use these criteria to ensure that at a minimum, teacher quality is equally distributed across schools, according to the NCLB definition.

Recent research (Koski and Horng, 2007) and our interview data suggest that collectively-bargained seniority transfer rights may not be the sole or, perhaps, even primary cause of intra-district disparities. Nonetheless, it is essential that school district leaders have the ability to address potential inequities of teacher sorting by providing incentives for teachers to move to schools where they are most needed. Both the quantitative analyses and interview data suggest that district officials do attempt to explicitly allocate teacher positions in relation to student needs, but they have – or choose to exercise - little direct control over the characteristics of teachers filling those positions. In the absence of incentives to teach in high poverty or low performing schools, or in cases where they are insufficient to address inequities, school district administrators should reserve the right to

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transfer teachers to high-need schools. Because forced transfers have the potential to generate unintended negative consequences, such as attrition from the district or lower morale, they should be used only in extreme circumstances. Districts, though, should take steps to retain or gain such authority in negotiating union contracts.

There is a role for the state to play in the distribution of teacher quality. By recognizing that highly qualified teachers require more compensation to teach in higher poverty schools, the state could start a categorical fund for use by districts, on a voluntary basis, which would provide bonuses to incentivize qualified teachers to teach in high poverty schools. Districts with schools failing to meet annual yearly progress may be particularly interested in taking advantage of this opportunity to redistribute some of their more highly qualified teachers into their highest need schools.

- 2) Continue to monitor student performance and increase accountability for school performance.

Interestingly, a number of administrators in our sample districts pointed to accountability for performance as a factor that potentially gives them greater authority to address intra-district disparities. These administrators noted that the strong focus on accountability in New York State has enhanced their ability to target resources to individual schools and students. While some interviewees expressed concerns that accountability pressures can bring with them additional bureaucratic hurdles and “red tape,” they can also reduce political influence in the allocation system. Several administrators also noted that funding students (rather than schools) and allowing schools to buy back central services from the district might improve resource equity.

- 3) Reduce fragmentation in budgeting systems and move toward an “all funds” budgeting approach.

As discussed above, district budgeting systems appeared, in many cases, to be highly fragmented, with different revenue sources controlled by different departments and subject to different budgeting procedures. A more comprehensive budgeting approach that includes all funds could improve districts’ abilities to ensure greater equity in the distribution of all resources and to explicitly examine the relationships between funds. One step in this direction is to combine finance departments (general and special revenue) where separate departments exist. The State could encourage this by requesting a single vision and plan for district improvement rather than requesting new plans for separate funding streams and grants.

- 4) Improve accounting systems and reporting of financial information at the school level.

It is understandable that, in an era of constrained resources and one in which public policy is focused intently on student performance, the importance of administrative infrastructure such as accounting software

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receives low priority. As one interviewee explained, though, if school districts are not able to pay their bills on time, children's education ultimately suffers. We would add to this that if school districts cannot report accurately and in a timely manner what resources are expended at which school sites, it becomes difficult if not impossible for administrators, parents and the public to know whether resources are being distributed equitably and used efficiently. In both our own efforts to track and analyze spending patterns at the school-level, and in our interviews with district administrators, difficulty obtaining and using the necessary data was a recurring theme. Analyzing spending patterns at the school level would require working district by district to obtain and analyze the necessary data, making state-wide analysis a daunting and time consuming task.

Several administrators that we interviewed expressed frustration with the quality of the information technology used for financial procedures and reporting in their districts, comparing it unfavorably to the systems typically in place in the private sector or in larger local governmental organizations. As one administrator explained, the problem may be particularly acute in mid-sized districts. While smaller districts may be able to use "off-the shelf" accounting software and larger districts often have the resources to contract for specialized systems that meet their specific needs, mid-sized districts such as districts A and B in our sample often find themselves with out-dated "home-grown" systems that make reporting by school site extremely difficult.

New York State could take several steps to improve this situation. First, the state could target capital grants to assist schools with their financial information technology needs. Second, the state could provide technical assistance to help districts select contractors and integrate systems with state reporting requirements, perhaps by identifying a selection of preferred vendors and software systems from which districts could choose. Third, the state's accounting manual for school districts could be revised to focus more closely on schools rather than districts. For example, the chart of accounts should record not the names of central departments but the schools where resources are actually allocated. Fourth, the state could provide greater technical assistance in accounting and financial reporting directly to school districts, perhaps through regional BOCES.

We are hopeful that New York State will soon take meaningful steps in this direction. Legislation enacting the state Contracts for Excellence contained a provision requiring that:

**"THE COMMISSIONER, IN CONSULTATION WITH THE DIRECTOR OF THE BUDGET AND THE STATE COMPTROLLER, SHALL DEVELOP A METHODOLOGY FOR REPORTING OF SCHOOL-BASED EXPENDITURES BY ALL SCHOOL DISTRICTS. WHEN SUCH METHODOLOGY HAS BEEN APPROVED BY THE DIRECTOR OF THE BUDGET, THE COMMISSIONER SHALL ADOPT REGULATIONS IMPLEMENTING IT"**  
(New York State Assembly Bill A06063).

As of this writing, no such methodology has been developed and it is unknown how or when the school-based reporting requirement will be implemented. At least two recommendations for that methodology can be drawn from findings in this study. First, the methodology should permit users to

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segment resources by fund type. As we have shown, resource allocation mechanisms and the resulting resource patterns vary by fund type and fund level detail is necessary at the school-level to test for compliance with grant provisions, such as the NCLB act. Second, the methodology must accommodate the reporting of district-wide teachers by the school where they actually work. A system that fails to accommodate this requirement may misrepresent the level of resource disparities across school. Furthermore, the information gleaned from district interviews suggests that the state must work closely with districts not only to develop a methodology, but to ensure that that infrastructure is in place to make such reporting a reality. While working closely with district officials is important, the state (whether through the Division of the Budget, the Comptroller's Office or the NYSED) must take the lead in organizing and coordinating the effort to ensure that school-based reporting is consistent statewide.

### Conclusion

Relative to district-level concerns, such as the overall size of the district's budget and compliance with state and federal mandates, intra-district resource equity appeared to be a relatively low-priority item in our sample districts. Training programs for school district business officials could help to provide a greater emphasis on intra-district resource allocation by adding curricula on the topic to School District Business Official certification programs and in training programs for school board members. Raising this issue in training programs for district leaders and, perhaps, also for school leaders, may lead to local officials to recognize and more directly address intra-district inequities, should they arise.

While this report offers no easy solutions to problems of within-district resource disparities, it provides a first look at the patterns and mechanisms of resource allocation in mid-sized and smaller districts. The analyses suggest that intra-district disparities are not simply a large district problem. At the same time, they suggest that districts face unique circumstances and constraints that affect resource distribution, and that each district does not face the same problems. Simply drawing attention to these resource allocation patterns and potential problems may be a first step toward providing more equitable distributions of resources within all districts.

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Table 1: Key facts and figures for four sample New York State districts

District Name	District A	District B	District C	District D
Dependency Status	Dependent District	Dependent District	Independent District	Independent District
Regional Code <sup>b</sup>	Big Four City	Big Four City	Downstate Suburb	Downstate Small City
<i>District Need<sup>a</sup></i>				
Needs to Resources	High Need	High Need	High Need	High Need
Total Enrollment	33,858	21,715	17,158	10,249
Percent Minority	87%	65%	86%	93%
Census Poverty Index	40	37	16	19
Percent Free or Reduced Price Lunch	85%	74%	86%	66%
Percent Limited English Proficiency	8%	7%	21%	9%
<i>Teachers and Staff<sup>f</sup></i>				
Support Staff-Pupil Ratio	134.6	104.6	144.3	113.3
Pupil-Teacher Ratio	11.8	12.5	16.2	14.7
Percent Minority Teachers	20%	10%	17%	36%
Percent Teacher Turnover	13%	9%	7%	12%
Median Teacher Salary	\$45,000	\$49,062	\$66,241	\$81,929
Percent Permanent Teachers	63%	71%	69%	74%
Percent Provisional Teachers	27%	21%	29%	18%
Percent Other Teachers	10%	8%	2%	8%
Median Teacher Years of Experience	10	14	8	15
Percent of Teachers w/Masters	14%	18%	54%	29%
<i>Schools by Grade Level<sup>h&amp;c</sup></i>				
Elementary School	40	22	11	11
Middle School	0	3	4	2
Junior High School	3	3	0	2
Junior Senior High School	11	0	0	1
Senior High School	5	4	2	0
Other	4	1	0	0
Schools in District	63	33	17	16
Schools in Sample (elementary only)	37	22	11	9
<i>District Finances<sup>a</sup></i>				
Total Per Pupil Expenditures	\$14,180	\$13,033	\$12,863	\$14,334
NYS Aid as a Share of PPE	63%	65%	63%	52%
Combined Wealth Ratio	38%	41%	44%	87%
Central Administration	1.5%	1.3%	1.3%	1.2%

NOTES: The combined wealth ratio reports the district's standardized poverty level over their standardized property wealth. More variable definitions available at:

<http://ny.rand.org/stats/education/chapter655.more.html>.

SOURCES: a: Chapter 655 report for 2004-2005 school year; b: Institutional Master File for 2004-2005 school year; c: authors calculation

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Table 2. Summary statistics for dependent and independent variables, by district

Variable	Mean	Std. Dev.	Min	Max	C.V.
<i>District A n = 37</i>					
<i>Dependent Variables</i>					
Average salary	\$47,928	\$3,270	\$42,040	\$54,395	0.07
Percent of teachers certified	86%	13%	17%	100%	0.16
Percent of teachers temporarily certified	29%	9%	14%	49%	0.31
Pupil-teacher ratio	13.4	2.1	9.6	18.5	0.16
Average teacher experience	12.3	2.3	8.1	17.0	0.19
<i>Independent Variables</i>					
Percent free or reduced price lunch	75%	13%	39%	92%	0.18
Percent limited English proficiency	10%	11%	0%	41%	1.09
Percent individual education plan	12%	4%	3%	24%	0.35
Mean English language arts score (4th grade)	641	13	617	687	0.02
<i>District B n = 19</i>					
<i>Dependent Variables</i>					
Average salary	\$49,619	\$2,418	\$46,509	\$56,611	0.05
Percent of teachers certified	97%	5%	83%	100%	0.05
Percent of teachers temporarily certified	23%	8%	0%	40%	0.37
Pupil-teacher ratio	14.0	3.3	9.8	23.8	0.24
Average teacher experience	16.0	2.7	11.6	21.0	0.17
<i>Independent Variables</i>					
Percent free or reduced price lunch	64%	19%	23%	95%	0.30
Percent limited English proficiency	10%	15%	0%	45%	1.53
Percent individual education plan	22%	7%	15%	47%	0.30
Mean English language arts score (4th grade)	636	11	619	655	0.02
<i>District C n = 9</i>					
<i>Dependent Variables</i>					
Average salary	\$64,692	\$5,107	\$57,005	\$73,089	0.08
Percent of teachers certified	99%	1%	97%	100%	0.01
Percent of teachers temporarily certified	27%	5%	19%	36%	0.19
Pupil-teacher ratio	17.1	0.9	15.7	18.5	0.05
Average teacher experience	10.0	2.1	7.3	13.3	0.22
<i>Independent Variables</i>					
Percent free or reduced price lunch	61%	3%	58%	67%	0.05
Percent limited English proficiency	26%	4%	18%	30%	0.16
Percent individual education plan	14%	6%	7%	23%	0.41
Mean English language arts score (4th grade)	649	4	642	654	0.01
<i>District D n = 9</i>					
<i>Dependent Variables</i>					
Average salary	\$75,922	\$1,883	\$73,516	\$78,442	0.02
Percent of teachers certified	99%	1%	97%	100%	0.01
Percent of teachers temporarily certified	14%	6%	4%	21%	0.39
Pupil-teacher ratio	17.0	2.2	14.4	20.7	0.13
Average teacher experience	18.8	3.6	15.7	27.4	0.19
<i>Independent Variables</i>					
Percent free or reduced price lunch	52%	20%	15%	73%	0.38
Percent limited English proficiency	11%	11%	2%	33%	1.02
Percent individual education plan	8%	6%	1%	19%	0.74
Mean English language arts score (4th grade)	664	17	638	688	0.03

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Table 3. Bivariate correlation matrices of dependent and independent variables, by district

	Average salary	Percent of teachers certified	Percent of teachers temporarily certified	Pupil-teacher ratio	Average teacher experience	Percent free or reduced price lunch	Percent limited English proficiency	Percent individual education plan	Mean English language arts score (4th grade)
<b><i>District A</i></b>									
Average salary	1								
Percent of teachers certified	0.1746	1							
Percent of teachers temporarily certified	-0.6229**	0.2631	1						
Pupil-teacher ratio	-0.0643	-0.4106**	0.0137	1					
Average teacher experience	0.9428**	0.2085	-0.6889**	-0.1126	1				
Percent free or reduced price lunch	-0.3671**	0.0459	0.1402	-0.1348	*-0.2772	1			
Percent limited English proficiency	-0.1185	0.1393	0.0083	-0.2615	-0.0735	0.0849	1		
Percent individual education plan	0.0564	0.4034**	-0.0669	-0.3516**	0.089	0.221	-0.019	1	
Mean English language arts score (4th grade)	0.0934	0.0693	0.0394	0.0245	-0.0029	-0.5972**	0.2399	-0.2378	1

\* significant at 10%; \*\* significant at 5%

	Average salary	Percent of teachers certified	Percent of teachers temporarily certified	Pupil-teacher ratio	Average teacher experience	Percent free or reduced price lunch	Percent limited English proficiency	Percent individual education plan	Mean English language arts score (4th grade)
<b><i>District B</i></b>									
Average salary	1								
Percent of teachers certified	0.1517	1							
Percent of teachers temporarily certified	-0.7159**	0.1839	1						
Pupil-teacher ratio	0.6525**	0.3378	-0.3381	1					
Average teacher experience	0.8732**	0.1345	-0.6589**	0.4015*	1				
Percent free or reduced price lunch	-0.2554	-0.5014**	0.0662	0.0184	-0.3661	1			
Percent limited English proficiency	-0.051	-0.7034**	-0.165	-0.3103	-0.1659	0.4579**	1		
Percent individual education plan	-0.4308*	0.011	0.1861	-0.4372*	-0.3686	-0.1378	-0.0494	1	
Mean English language arts score (4th grade)	0.6287**	0.1051	-0.3482	0.4622**	0.6235**	-0.1739	0.0985	-0.1486	1

\* significant at 10%; \*\* significant at 5%

Intra-District Resource Allocation

Table 3 (continued). Bivariate correlation matrices of dependent and independent variables, by district

	Average salary	Percent of teachers certified	Percent of teachers temporarily certified	Pupil-teacher ratio	Average teacher experience	Percent free or reduced price lunch	Percent limited English proficiency	Percent individual education plan	Mean English language arts score (4th grade)
<b><i>District C</i></b>									
Average salary	1								
Percent of teachers certified	0.7149**	1							
Percent of teachers temporarily certified	-0.7946**	-0.5628	1						
Pupil-teacher ratio	-0.4806	-0.6444*	0.3698	1					
Average teacher experience	0.9747**	0.6247*	-0.7051**	-0.4202	1				
Percent free or reduced price lunch	-0.6194*	-0.861**	0.4156	0.5493	-0.5078	1			
Percent limited English proficiency	-0.3748	-0.3789	0.1905	0.7289**	-0.2966	0.3969	1		
Percent individual education plan	0.1104	0.1853	0.4255	-0.4967	0.1957	-0.2033	-0.5396	1	
Mean English language arts score (4th grade)	0.2941	-0.0496	-0.3044	0.373	0.2941	-0.0158	-0.1113	-0.2954	1

\* significant at 10%; \*\* significant at 5%

	Average salary	Percent of teachers certified	Percent of teachers temporarily certified	Pupil-teacher ratio	Average teacher experience	Percent free or reduced price lunch	Percent limited English proficiency	Percent individual education plan	Mean English language arts score (4th grade)
<b><i>District D</i></b>									
Average salary	1								
Percent of teachers certified	-0.0928	1							
Percent of teachers temporarily certified	-0.2026	0.3984	1						
Pupil-teacher ratio	-0.7117**	0.4289	0.693**	1					
Average teacher experience	0.6994**	0.2374	-0.083	-0.4663	1				
Percent free or reduced price lunch	0.0199	-0.336	0.0403	0.1535	*-0.5953	1			
Percent limited English proficiency	-0.3685	0.4635	0.3794	0.3515	-0.3413	-0.1392	1		
Percent individual education plan	-0.1937	-0.0278	-0.7258**	-0.0876	-0.1007	0.0515	-0.1963	1	
Mean English language arts score (4th grade)	-0.0799	0.1693	-0.0174	-0.0502	0.0447	-0.5229	0.5209	-0.1651	1

\* significant at 10%; \*\* significant at 5%

## Intra-District Resource Allocation

Table 4. Multivariate weighted least squares (WLS) regression results, by district

<b>District A</b>	(1)	(2)	(3)	(4)	(5)
	Average salary	Percent of teachers certified	Percent of teachers temporarily certified	Pupil-teacher ratio	Average teacher experience
Percent free or reduced price lunch	-12,181.67 (6,372.04)*	0.04 (0.21)	0.10 (0.18)	0.02 (3.52)	-7.94 (3.98)*
Percent limited English proficiency	6.47 (37.01)	0.00 (0.00)	-0.00 (0.00)	-0.08 (0.03)***	0.01 (0.03)
Percent individual education plan	11,409.13 (11,619.52)	1.23 (0.48)**	-0.07 (0.20)	-15.85 (6.67)**	11.76 (8.86)
Mean English language arts score (4th grade)	-31.52 (57.15)	0.00 (0.00)	0.00 (0.00)	-0.01 (0.03)	-0.04 (0.04)
Constant	75,752.47 (39,720.45)*	-0.62 (1.43)	-1.42 (1.30)	20.06 (20.07)	44.04 (27.31)
Observations	37	37	37	37	37
R-squared	0.15	0.19	0.07	0.42	0.14

Standard errors in parentheses

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

<b>District B</b>	(1)	(2)	(3)	(4)	(5)
	Average salary	Percent of teachers certified	Percent of teachers temporarily certified	Pupil-teacher ratio	Average teacher experience
Percent free or reduced price lunch	-1,109.99 (1,978.00)	-0.01 (0.06)	0.03 (0.08)	3.13 (2.95)	-2.86 (2.43)
Percent limited English proficiency	-17.23 (18.97)	-0.001 (0.00)*	-0.00 (0.00)	-0.10 (0.03)***	-0.02 (0.02)
Percent individual education plan	-13,051.62 (5,073.09)**	-0.07 (0.20)	0.28 (0.36)	-16.40 (6.85)**	-11.49 (6.35)*
Mean English language arts score (4th grade)	110.49 (36.80)***	0.00 (0.00)	-0.00 (0.00)	0.14 (0.05)**	0.13 (0.04)**
Constant	-16,977.05 (23,638.22)	0.62 (0.48)	1.86 (1.04)*	-75.48 (32.29)**	-63.22 (28.95)**
Observations	19	19	19	19	19
R-squared	0.56	0.35	0.37	0.61	0.60

Standard errors in parentheses

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

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### References

- Betts, Julian R., Kim S. Rueben, and Anne Danenberg. (2000). *Equal resources, equal outcomes? The distribution of school resources and student achievement in California*. San Francisco: Public Policy Institute of California. [http://www.ppic.org/content/pubs/R\\_200JBR.pdf](http://www.ppic.org/content/pubs/R_200JBR.pdf).
- Brown, Carolyn A. (2005). "Federal Title I Funding Distribution: Are the poorest children receiving their share of the funds?" Paper presented at the American Education Finance Association Conference, Louisville, KY, March.
- Burke, Sarah, M. (1999). "An analysis of resource inequality at the state, district, and school levels." *Journal of Education Finance*, 24(4), 435-458.
- Clark, Catherine. (1998). "Using school-level data to explore resources and outcomes in Texas." *Journal of Education Finance*, 23(3), 374-89.
- CFE Field Memo. (2007). Johanna Duncan-Pointier, Senior Deputy Commissioner of Education P-16. "Use of additional state aid for school districts - Contracts for excellence and allowable programs." accessed at: <http://www.emsc.nysed.gov/CfEfieldmemo.doc>.
- Ginsburg, Alan. (1981). "A school based analysis of inter- and intradistrict resource allocation." *Journal of Education Finance*, 6(4), 440 -455: spring.
- Hertert, Linda. (1995). "Does equal funding for districts mean equal funding for classroom students?" in Picus, Lawrence O. and James L. Wattenbarger, eds. *Where does the money go? Resource allocation in elementary and secondary schools*. Thousand Oaks, CA: Corwin Press: 71-84.
- Iatarola, Patrica, and Leanna Stiefel. (2003). "Intradistrict equity of public education resources and performance." *Economics of Education Review*, 22(1) (February), 69-78.
- Ingersoll, Richard M. (2002). "Teacher quality and educational inequality: The case of Title I schools." In Kenneth K. Wong and Margaret C. Wang, eds. *Efficiency, accountability, and equity issues in Title I schoolwide program implementation*. Greenwich, CT: Information Age Publishing, 149-182.
- Koski, William S., and Eileen L. Horng. (2007). "Facilitating the teacher quality gap? Collective bargaining agreements, teacher hiring and transfer rules, and teacher assignment among schools in California." *Education Finance and Policy*, Summer, 2(3), 262-300.
- Lankford, Hamilton, Susanna Loeb, and James Wyckoff. (2002). "Teacher sorting and the plight of urban schools: A descriptive analysis." *Educational Evaluation and Policy Analysis*, 24(1), 37-62.
- McNeil, Michele. (2007). "Tighter link sought between spending, achievement in New York." September 6<sup>th</sup>. <http://www.edweek.org/ew/articles/2007/09/05/02ny.h27.html>.
- Moe, Terry M. (2006). "Bottom-up structure: Collective bargaining, transfer rights, and the plight of disadvantaged schools." Education Working Paper Archive: September 14<sup>th</sup>. Accessed at: [http://www.uark.edu/ua/der/EWPA/Research/Teacher\\_Quality/1786.html](http://www.uark.edu/ua/der/EWPA/Research/Teacher_Quality/1786.html)
- Moser, Michelle. (1998). "School-based budgeting: Increasing influence and information at the school level in district A, New York." *Journal of Education Finance*, 23(4), 507-531.

## Intra-District Resource Allocation

- Miller, Larry J., Marguerite Roza and Claudine Swartz. (2005). "A cost allocation model for shared district resources: A means for comparing appending across schools." *Developments in School Finance: 2004*. Fowler, W.J. ed., U.S. Department of Education, National Center for Education Statistics. Washington, DC: Government Printing Office, 69-80.
- No Child Left Behind Act of 2001, Pub. L. No. 107-110.
- New York State Assembly Bill A6063 (2007).
- New York Times. (2007). "Really leaving no child behind" Editorial: September 7, 2007.
- Owens, Tom, and Jeffrey Maiden. (1999). "A comparison of interschool and interdistrict funding equity in Florida." *Journal of Education Finance*, 24(4), 503-518.
- Rivkin, Steven G., Eric A. Hanushek, John F. Kain. (2005). "Teachers, schools, and academic achievement." *Econometrica*, 73(2), 417-458.
- Roza, Marguerite and Paul Hill. (2006). "Comparability: What it does (and doesn't do!) for equity." Title I Monitor. March.
- Roza, Marguerite, and Paul T. Hill. (2004). "How within-district spending inequities help some schools fail." In Diane Ravitch, ed. *Brookings Papers on Education Policy*. Washington, DC: Brookings Institution Press, 201-228.
- Roza, M., Miller, L.J., Swartz, C., DeBurgomaster, S. (2005). "Peeling back the layers of funding: An examination of intra-district expenditures." Center on Reinventing Public Education, Daniel J. Evans School of Public Affairs, University of Washington.
- Roza, Marguerite, Claudine Swartz, and Larry Miller. (2005). "Lessons on assessing the costs of small high schools: Evidence from Seattle and Denver." Seattle: Center on Reinventing Public Education, Daniel J. Evans School of Public Affairs, University of Washington. March.  
[http://www.crpe.org/hot/PDF/CostofSmSchool\\_brief.pdf](http://www.crpe.org/hot/PDF/CostofSmSchool_brief.pdf).
- Rubenstein, Ross. (1998). "Resource equity in the Chicago public schools: A school-level approach." *Journal of Education Finance*, 23(4), 468-489.
- Rubenstein, Ross, Leanna Stiefel, and Amy Ellen Schwartz. (2006). *Rethinking the intradistrict distribution of school inputs to disadvantaged students*. Paper prepared for the conference "Rethinking Rodriguez," Boalt Hall School of Law, Berkeley, CA, April.
- Rubenstein, Ross, Leanna Stiefel, Amy Ellen Schwartz, and Hella Bel Hadj Amor. (2007). "From districts to schools: The distribution of resources across schools in big city school districts." *Economics of Education Review*.
- Schwartz, Amy Ellen. 1999. "School districts and spending in the schools." In *Selected Papers in School Finance 1997-1999* NCES 1999-334. Washington, DC: National Center for Education Statistics, U.S. Department of Education. <http://nces.ed.gov/pubs99/1999334/>.
- Schwartz, Amy Ellen, Ross Rubenstein and Leanna Stiefel. (2007). "Why do some schools get more and others less?: An examination of school-level funding in New York City." Paper prepared for the Research Partnership for New York City Schools Inaugural Conference, New York City, October.
- Stiefel, Leanna, Ross Rubenstein, and Robert Berne. (1998). "Intradistrict equity in four large cities: Data, methods, and results." *Journal of Education Finance*, 23(4) (Spring), 447-467.

## Intra-District Resource Allocation

Summers, Anita A., and Barbara L. Wolfe. (1976). "Intradistrict distribution of school inputs to the disadvantaged: Evidence for the courts." *Journal of Human Resources*, 11(3) (Summer), 328-342.

Thomas B. Fordham Institute. (2006). *Fund the child: Tackling inequity and antiquity in school finance*. Washington DC: Thomas B. Fordham Institute.

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Table A1. Multivariate ordinary least squares (OLS) regression results, by district

District A	(1)	(2)	(3)	(4)	(5)
	Average salary	Percent of teachers certified	Percent of teachers temporarily certified	Pupil-teacher ratio	Average teacher experience
Percent free or reduced price lunch	-12,146.24 (5,253.43)**	0.05 (0.21)	0.20 (0.16)	-0.86 (3.38)	-8.11 (3.79)**
Percent limited English proficiency	-10.96 (51.49)	0.00 (0.00)	-0.00 (0.00)	-0.05 (0.03)	0.01 (0.04)
Percent individual education plan	9,692.88 (12,830.46)	1.38 (0.52)**	-0.18 (0.39)	-17.73 (8.26)**	7.14 (9.26)
Mean English language arts score (4th grade)	-39.83 (54.54)	0.00 (0.00)	0.00 (0.00)	-0.00 (0.04)	-0.05 (0.04)
Constant	81,459.11 (37,533.11)**	-0.52 (1.51)	-0.78 (1.13)	19.73 (24.17)	46.31 (27.10)*
Observations	37	37	37	37	37
R-squared	0.18	0.20	0.05	0.20	0.14
Standard errors in parentheses					
* significant at 10%; ** significant at 5%; *** significant at 1%					
District B	(1)	(2)	(3)	(4)	(5)
	Average salary	Percent of teachers certified	Percent of teachers temporarily certified	Pupil-teacher ratio	Average teacher experience
Percent free or reduced price lunch	-2,489.58 (2,627.76)	-0.05 (0.05)	0.06 (0.13)	5.03 (3.60)	-3.75 (2.90)
Percent limited English proficiency	-5.13 (32.88)	-0.001 (0.00)***	-0.00 (0.00)	-0.11 (0.05)**	-0.02 (0.04)
Percent individual education plan	-13,816.80 (6,663.37)*	-0.02 (0.13)	0.20 (0.34)	-17.18 (9.12)*	-13.56 (7.35)*
Mean English language arts score (4th grade)	120.08 (41.72)**	0.00 (0.00)	-0.00 (0.00)	0.16 (0.06)**	0.13 (0.05)**
Constant	-22,156.25 (27,301.98)	0.67 (0.52)	1.64 (1.38)	-83.17 (37.38)**	-64.29 (30.10)*
Observations	19	19	19	19	19
R-squared	0.56	0.55	0.17	0.55	0.57
Standard errors in parentheses					
* significant at 10%; ** significant at 5%; *** significant at 1%					

Intra-District Resource Allocation

Table A2. Ordinary least squares regression results (observations weighted by enrollment), by district

<b>District A</b>	(1)	(2)	(3)	(4)	(5)
	Average salary	Percent of teachers certified	Percent of teachers temporarily certified	Pupil-teacher ratio	Average teacher experience
Percent free or reduced price lunch	-11021.66 (5,325.33)**	0.03 -0.14	0.19 -0.16	-0.56 -3.4	-7.42 (3.86)*
Percent limited English proficiency	10.12	0	0	-0.05	0.02
Percent individual education plan	-51.23 10,804.75 (12,910.39)	0 0.67 (0.35)*	0 -0.45 (0.38)	-0.03 -17.15 (8.25)**	-0.04 7.65 -9.37
Mean English language arts score (4th grade)	-14.77 -52.18	0 0	0 0	0 -0.03	-0.02 -0.04
Constant	63974.75 (35,827.45)*	-0.03 -0.97	0.14 -1.06	17.97 -22.89	28.81 -25.99
Observations	37	37	37	37	37
R-squared	0.16	0.12	0.1	0.17	0.13

Standard errors in parentheses

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

<b>District B</b>	(1)	(2)	(3)	(4)	(5)
	Average salary	Percent of teachers certified	Percent of teachers temporarily certified	Pupil-teacher ratio	Average teacher experience
Percent free or reduced price lunch	-4066.16 -2340.28	-0.04 -0.06	0.1 -0.12	4.89 -2.9	-5.97 (2.98)*
Percent limited English proficiency	15.21 -27.96	0 (0.00)**	0 0	-0.09 (0.03)**	-0.01 -0.04
Percent individual education plan	-15166.03 (7,731.53)*	-0.07 -0.18	0.27 -0.39	-18.29 (9.60)*	-16.79 -9.85
Mean English language arts score (4th grade)	72.46 (38.63)*	0 0	0 0	0.11 (0.05)**	0.1 (0.05)*
Constant	8977.82 -25347.84	0.7 -0.6	0.35 -1.27	-56.22 (31.46)*	-41.19 -32.28
Observations	19	19	19	19	19
R-squared	0.48	0.47	0.15	0.51	0.52

Standard errors in parentheses

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Intra-District Resource Allocation

Table A3. District B summary statistics for wages, by fund

Position	Teacher and paraprofessional counts	Total wages	As a percentage of combined funds
<i><u>By teacher, general fund</u></i>			
Paraprofessionals	370	\$7,480,808	89%
Teachers	496	\$24,421,492	53%
Subtotal	866	\$31,902,300	59%
<i><u>By teacher, special revenue fund</u></i>			
Paraprofessionals	43	\$886,106	11%
Teachers	435	\$21,647,062	47%
Subtotal	478	\$22,533,167	41%
<i><u>By teacher, combined funds</u></i>			
Paraprofessionals	413	\$8,366,914	
Teachers	931	\$46,068,554	
Total teacher and paraprofessional	1344	\$54,435,468	

Intra-District Resource Allocation

Table A4. District B summary statistics for dependent and independent variables, by fund

Variable	Observations	Mean	Std. Dev.	Min	Max	C.V.
<i>District B</i>						
<i>Dependent Variables, general fund</i>						
Average paraprofessional salary	16	\$20,218	\$661	\$19,461	\$22,010	0.03
Average teacher salary	19	\$49,237	\$2,913	\$43,456	\$56,059	0.06
Pupil-paraprofessional ratio	19	32	10	14	48	0.32
Pupil-teacher ratio	19	24	10	14	45	0.42
<i>Dependent Variables, special revenue fund</i>						
Average paraprofessional salary	16	\$20,607	\$1,145	\$18,998	\$22,502	0.06
Average teacher salary	19	\$49,763	\$2,564	\$46,729	\$58,312	0.05
Pupil-paraprofessional ratio	16	270	190	91	677	0.70
Pupil-teacher ratio	19	27	11	14	56	0.41
<i>Independent Variables</i>						
Percent free or reduced price lunch	19	64%	19%	23%	95%	0.30
Percent limited English proficiency	19	10%	15%	0%	45%	1.53
Percent individual education plan	19	22%	7%	15%	47%	0.30
Mean English language arts score (4th grade)	19	636	11	619	655	0.02

Intra-District Resource Allocation

Table A5. District B bivariate correlation matrices of dependent and independent variables, by fund

	Average para professional salary	Average teacher salary	Pupil-para professional ratio	Pupil-teacher ratio	Percent free or reduced price lunch	Percent limited English proficiency	Percent individual education plan	Mean English language arts score (4th grade)
<b><i>Special Revenue Fund</i></b>								
Average paraprofessional salary	1.00							
Average teacher salary	-0.08	1.00						
Pupil-paraprofessional ratio	0.56**	0.05	1.00					
Pupil-teacher ratio	0.00	0.31	0.44*	1.00				
Percent free or reduced price lunch	0.06	-0.17	-0.19	-0.47**	1.00			
Percent limited English proficiency	-0.26	-0.06	0.09	-0.14	0.53**	1.00		
Percent individual education plan	-0.22	-0.36	-0.15	-0.23	-0.12	-0.09	1.00	
Mean English language arts score (4th grade)	-0.23	0.48*	0.22	0.72**	-0.16	0.10	-0.16	1.00

\* significant at 10%; \*\* significant at 5%

	Average para professional salary	Average teacher salary	Pupil-para professional ratio	Pupil-teacher ratio	Percent free or reduced price lunch	Percent limited English proficiency	Percent individual education plan	Mean English language arts score (4th grade)
<b><i>General Revenue Fund</i></b>								
Average paraprofessional salary	1.00							
Average teacher salary	0.47**	1.00						
Pupil-paraprofessional ratio	0.25	0.34	1.00					
Pupil-teacher ratio	0.23	-0.38	0.30	1.00				
Percent free or reduced price lunch	0.08	-0.43*	-0.22	0.37	1.00			
Percent limited English proficiency	-0.20	-0.11	-0.28	-0.23	0.46**	1.00		
Percent individual education plan	-0.38	-0.29	-0.28	-0.31	-0.14	-0.05	1.00	
Mean English language arts score (4th grade)	0.18	0.73**	0.22	-0.39*	-0.17	0.10	-0.15	1.00

\* significant at 10%; \*\* significant at 5%

**Appendix B: Interview questionnaire for district administrators**

**Semi-structured Interview Questionnaire**

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**Examining Intra-District Resource Allocation Policies in Four New York State School Districts**

Principal Investigators:

Ross Rubenstein

Larry Miller

Center for Policy Research

The Maxwell School at Syracuse University

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The purpose of the interviews is to gather information about the methods and procedures that New York State school districts use to allocate resources across schools within the districts. The following questions will be used to structure the interview. Interview subjects will have substantial latitude to describe important aspects of the resource allocation process not specifically addressed by these questions. We expect each interview to last approximately thirty to forty-five minutes.

1. Describe the general process of allocating resources to schools in your district.
  - Follow-up: (if not covered in earlier answers)
    - Is a formula used?
    - How does the formula work? Do you allocate dollars or positions or a combination of both?
    - What portion of each school's allocation is consistent across schools? What portion varies with school characteristics?
    - What specific factors do you consider when determining the amount and type of resources a school will receive?
      - Enrollment
      - Student characteristics (poverty, achievement, ESL, special ed, mobility)
      - Grade level
      - School type (magnet, charter, traditional, others)
      - Other factors not mentioned
2. Who are the key stakeholders involved in the process and what role do they play?
  - Follow-up: can stakeholders (e.g., parents, community groups) influence the distribution of resources?
3. In several other districts we've studied, some resources are allocated by separate central office departments, for example Title I or special education. Do other central office departments allocate resources to schools in your district? If so, which ones? Do these allocations influence your decision making process for other resources and if so, how?
4. What federal, state, and/or local mandates or constraints influence the allocation process (e.g., minimum class size, special education student/teacher ratio, etc)?
  - (Follow-up for dependent districts) How does your dependent status affect the resource allocation process?
5. Do any of the district's labor agreements influence the way resources are distributed across schools (i.e., does the district offer seniority transfer privileges to teachers)?

## Intra-District Resource Allocation

6. How are students assigned to schools and does the assignment process vary by grade level?
7. Your district is receiving additional funding through the state's Contracts for Excellence. Which policy options did you choose to use the additional money for? How did you decide how much each school would receive?
8. If you could change the way your district allocates resources (including changing the constraints and mandates you face), what changes would you make?

**Appendix C: Interview questionnaire for state policy makers**

**Semi-structured Interview Questionnaire**

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**Examining Intra-District Resource Allocation Policies in Four New York State School Districts**

Principal Investigators:

Ross Rubenstein

Larry Miller

Center for Policy Research

The Maxwell School at Syracuse University

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The purpose of the interviews is to gather information about the methods and procedures that New York State school districts use to allocate resources across schools within the districts. We had hoped to interview you because of your unique experience as both a district leader and a state official. At this point we are finalizing a draft of our report and would like to get your perspective on some of our findings and recommendations,

- 1) In each of our sample districts we've found that, to one degree or another, the budgeting process tends to be fragmented, with different departments controlling the allocation of general fund vs. special revenue fund resources. To what extent have you found this in your own experience?
  - a. Follow ups: what problems does this cause? How would you address this, both as a district leader and a state policymaker?
- 2) In our own research attempting to analyze spending at the school-level we've found that it is extremely difficult, if not impossible, to track resources to the school level. We've heard from officials in many districts that their information technology infrastructure is simply not up to the task. Would you support state grants to help districts improve their financial reporting software and hardware? Would you support state efforts to collect and report school-level financial data?
- 3) A recurring theme in much of the research regarding school-level spending disparities is that much of it is driven by teacher sorting. What do you see as the primary factors leading to sorting of teachers (by experience, training, quality) across schools within districts? What do you think districts and the state can do to promote a more equitable distribution of teachers within districts?
- 4) The typical measures of teacher quality such as years of experience and certification are as reliable indicators of teacher quality as value-added measures of student achievement gains. Does the state have the ability to connect teachers with individual student performance and how can the state use that information to ensure a more equitable distribution of teacher quality?
- 5) States such as California and Colorado have mandated that school report cards publish the average teacher salary for each school in comparison to the district and state average. School report cards in these states also enable school comparisons across a range of indicators from violence to academic performance to school-level budgets. Will these measures aimed at increasing transparency generated more demand from parents for greater equality across schools?

## Intra-District Resource Allocation

- 6) Categorical grants often fail to supplement expenditures as intended. What role can the state play in correcting this failure?
- 7) While conducting research for this study, we found that administrators approached their jobs from a compliance-based perspective. With little to comply with in terms of district-to-school resource allocation, the distribution of resources appeared to be an afterthought for many of the officials we interviewed. In terms of professional development and possibly regulation and oversight, what role can the state play in addressing the limited attention that resource allocation policy receives?
- 8) What else do you think NYS can and should do to promote greater within-district equity? What do you think district administrators can do?