Charter School Expansion & within District Equity: Confluence or Conflict?

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Abstract

This article explores whether two popular policy initiatives are compatible or conflicting strategies for enhancing educational equality in demographically diverse large urban centers. These two initiatives are 1) charter school expansion and 2) improving resource equity across urban public school systems through policies often referred to as weighted student funding formulas. In this article, we focus on New York City and Houston, two cities where districts have adopted initiatives to improve equity of the distribution of school site funding and have concurrently experienced significant expansion of charter schooling. We find that charter schools have the tendency to both amplify the sorting of students across schools by disability, language and low income status and that charter schools' access to financial resources varies widely. However, we find that in very large urban districts like New York City, where charter market share remains small, the overall effects of charters on system-wide inequity remain small.

Introduction

This article explores whether two popular policy initiatives are compatible or conflicting strategies for enhancing educational equality in demographically diverse large urban centers. These two initiatives are 1) charter school expansion and 2) improving resource equity across urban public school systems through policies often referred to as weighted student funding formulas. Both policy initiatives are pillars of the modern k-12 education reform movement. But as we explain herein, it is likely that these two initiatives operate in direct conflict with one another, with charter expansion leading to greater dispersion of haves and have-nots, contingent on access to private philanthropic giving. In this article, we focus on New York City and Houston, two cities where districts have adopted initiatives to improve equity of the distribution of school site funding and have concurrently experienced significant expansion of charter schooling.

Within District Disparities and Weighted Student Funding

Interest in within-district disparities emerged in the 1990s, with several studies exploring the extent that within-district, cross-school disparities in resources undermine state's attempts to improve funding equity across districts. Many studies found significant disparities in school site spending within districts, and disparities in teacher attributes associated with school spending differences (Burke, 1999; Steifel, Rubenstein & Berne, 1998).

Interest in policy solutions to within-district disparities followed, with significant attention paid to the development and adoption of district-level, weighted student funding formulas (Roza & Hawley Miles, 2004). Weighted student funding formulas (or WSFs) are

designed to allocate funding to schools based on certain "need" characteristics of each school's student population, such as low-income students, students with disabilities, etc. Site-based budget differences are determined using funding formulas with specific weights or multipliers. For example, while the basic per pupil budget allocation for each school in a district might be $12,000, each low income child might be provided an additional 20% or 50% of basic funding (or weight of 1.2 to 1.5). While treated as new and innovative by advocates, state aid formulas have been using weighted funding formulas for decades (Baker & Elmer, 2009). In the United States, Seattle and Houston were among the early adopters of modern, district-level weighted student funding formulas, with other large districts including New York City, San Francisco, Oakland, Philadelphia, Baltimore and the state of Hawaii to follow. In more recent years, cities including Seattle have begun to shift away from using WSFs (Baker, 2009).

A weighted student funding formula refers specifically to the school site budgeting formula used to drive different levels of funding to schools or districts based on various cost and student need factors. In modern policy rhetoric, the term *Weighted Student Funding* has become conflated with a broader package of strategies involving a combination of decentralized school governance and increased school choice, whereby students carry with them their weighted allocation to the district or charter school of their (parents') choosing (see Baker & Elmer, 2009; Baker & Thomas, 2006). WSF is seen, in part, as a strategy for enabling fairer funding for charter schools, which are often portrayed by advocates as receiving the short end of the stick on school funding.[1]

[1] A common citation for this claim that charters are systematically underfunded is the Ball State/Public Impact report by Batdorff, Maloney, May, Doyle & Hassel (2010). Baker and Ferris (2011) explain (page 4), however that this report is fraught with methodological errors and simply bad/incorrect comparisons and analyses. For example, in New York State Batdorff and colleagues argue that charter schools serve a student population poorer than the state average, and that charter schools spend less than the average district level per pupil

Popularity of the WSF movement has been fueled in part by the assertion that WSFs provide revenue-neutral solutions to what advocates argue are the most substantial persistent inequities in American public schooling- those which exist within the districts themselves, between schools, rather than those which exist between districts (Hall & Ushomirsky, 2010; Miller, 2010).[2] Resolving between-district funding disparities often requires substantial increases in state aid to local districts, whereas resolving within-district disparities requires only that those districts be mandated to re-allocate what they already have. Thus, the latter is far more politically palatable. But, as Baker (2012) shows, the ability to resolve within-district funding disparities may be significantly constrained by the sufficiency and relative equity (to surrounding districts) of district level resources. Where high need districts lack sufficient overall funding and where those districts are surrounded by lower need districts with more resources, it becomes more difficult for the higher need district to reshuffle funding across schools because doing so leaves the lower need schools with large funding deficits relative to schools in neighboring districts.

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expenditure of New York City. They fail to compare charter demographics to schools in the same locations (opting for a completely illogical statewide comparison) and when comparing spending, they include in the New York City schools spending figure, city expenditures on charter schools. By contrast, in a legitimate comparison, the city's Independent Budget Office found that charter schools located in district facilities were subsidized at a marginally higher rate than district schools and those not housed in district facilities were subsidized at a lower rate than district schools (IBO, 2011).

[2] For example, policy papers from the Center for American Progress argue that states have largely resolved between district inequities: "State funding formulas tend to exert an equalizing effect on per pupil revenues between districts, on average, and not by accident. These formulas were sculpted by two generations of litigation and legislation seeking equitable or adequate funding for property-poor school districts." Further, that "Scandalous inequity in the distribution of resources within school districts has plagued U.S. education for more than a hundred years." Thus, the greater problem is in their view, clearly the latter, not the former. See Miller, 2010 http://www.americanprogress.org/wp-content/uploads/issues/2010/05/pdf/comparable_schmomparable.pdf. Education Trust has echoed similar concerns: "Many states have made progress in closing the funding gaps between affluent school districts and those serving the highest concentrations of low-income children. But a hidden funding gap between high-poverty and low-poverty schools persists between schools within the *same* district," and "These gaps occur partly because teachers in wealthier schools tend to earn more than their peers in high-poverty schools and because of pressure to "equalize" other resources across schools." See Hall & Ushomirsky, 2010: http://www.edtrust.org/sites/edtrust.org/files/publications/files/Hidden%20Funding%20Gaps_0.pdf

Resolving within-district resource disparities has also become central to conversations surrounding re-authorization of Title I of the Elementary and Secondary Education Act. Specifically, advocates for improving within-district equity wish to make availability of Title I funds contingent on stricter measures of within-district equity between higher and lower poverty schools within the same district. In 2011, the U.S. Department of Education released data from a national survey of school level expenditures, coupled with a policy report decrying disparities between higher and lower poverty *schools* within the same districts[3]. Notably, this report omits any discussion of disparities between higher and lower poverty *districts*. The apparent intent of this report was to highlight disparities between schools as a major federal policy concern while downplaying disparities between districts. Also absent in these data were comprehensive, systematic estimates of charter school expenditures. Just as the report failed to look simultaneously at between-district funding disparities and at with within-district disparities, the report largely ignores disparities among charter schools and between charter and district schools. Influential D.C. think tanks continue to press for federal emphasis on resolving within-district disparities (Spatig-Amerikaner, 2012; Hall & Ushomirsky, 2010; Miller, 2010). Though ultimately, between-district disparities continue to pose real problems and are hardly a thing of the past (Baker & Welner, 2011).[4]

There are several misconceptions about WSFs that should be addressed. First, it is important to understand that contrary to WSF advocacy reports, there exists little to no evidence that between-district disparities have largely been resolved across states; between-school disparities are the more significant policy issue of the day (Baker and Welner, 2011). In fact,

[3] U.S. Department of Education, 2011 http://www2.ed.gov/rschstat/eval/title-i/school-level-expenditures/school-level-expenditures.pdf

[4] See also Baker and Rebell (2006).

there exists substantial evidence that states have far from completed the job of resolving between-district disparities (Baker, Sciarra and Farrie, 2009, 2012; Spatig-Amerikaner, 2012), and some evidence that between-district disparities may constrain districts' ability to resolve within-district disparities (Baker, 2012). Second, studies on the effectiveness of weighted student funding on improving within-district equity across schools are mixed at best. In Oakland and San Francisco, improvements to within-district resource equity – specifically the targeting of resources according to student needs-- have been small to non-existent (Chambers et al., 2008). Across Ohio and Texas cities, those adopting weighted funding formulas display no greater predictability of resources with respect to student needs than those using "other" budgeting and resource allocation strategies (Baker, 2012; Baker, 2009).

Studies reporting substantial equity improvements resulting from WSF adoption have taken two problematic approaches: 1) relying on weights and cost adjustments within the weighted formulas themselves as the basis for determining equity; and 2) comparing whether low-income children in one school receive funding comparable to low-income children in another school, without ever addressing whether schools with more low-income children receive additional funding when compared to schools with fewer such children.[5] Further, while it is

[5] For example, research from Marguerite Roza and colleagues is frequently cited as providing the basis for the success of weighted student funding. But, rather than evaluate factors that predict spending variation, like Ajwad (2006), Baker (2012) or Baker (2009), Roza and colleagues adopt an approach which involves calculating a Weighted Student Index (WSI), to track equity levels and changes over time. A significant shortcoming of the *WSI* approach, however, is that it fails to measure differences in resources with respect to student population variation across schools, and measures instead whether the child in poverty in one school receives the same level of resources as the child in poverty in another (even if that level is $0, or 0% more than the non-poor child.). Roza and colleagues also test whether variations in their WSI are a function of (a) school grade level, (b) percent white in the school, (c) teacher experience, and (d) the academic rank of the school in the state. The authors suggest that this analysis is undertaken with the goal of determining whether observed resource variation (as measured by the WSI) is a function of "intentional" and "unintentional" factors. It is difficult to interpret, however, how this ad-hoc mix of outcome measures, organizational features and racial composition relates to more common sets of "cost" factors, or factors outside the control of local school officials that influence the costs of achieving any given level of outcomes (see Duncombe and Yinger, 2008). The dependent variable - WSI - measures resource variation in terms of differences across schools between

asserted that WSFs can improve equity between district and charter schools, none of the research on within-district equity has included thorough accounting of charter school expenditures and whether they contribute to, or erode, equity.

Charter Expansion and Spending Variation

Charter expansion in urban centers has occurred parallel to, but largely disconnected from, the WSF movement and funding comparability pressures. There is little, if any, evidence that pressures to improve within-district, cross-school funding equity has either stimulated or impeded charter school expansion. However, while it is difficult to tell how equity reforms have impacted charter expansion, there is evidence of the reverse, that is, how charter schools impact equity. Expansion of charter schools presents complications to within-district equity in at least two ways. First, in many urban contexts charter schools have further segregated students by needs (Baker, Libby & Wiley, 2012; Baker & Ferris, 2011; Buckley & Sattin-Bajaaj, 2010). That is, increased numbers of charter schools has meant increased numbers of schools with student populations that do not mirror surrounding neighborhoods, including fewer children with disabilities and fewer children with limited English language proficiency. As charter schools serve fewer of these students, district schools in turn serve more over time. If students by their various needs were distributed evenly across all schools, those schools could each receive similar per pupil budgets. But, to the extent that children are unevenly distributed by needs and associated costs, schools require differentiated financial resources.

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student subgroups, rather than aggregate resource differences across schools with respect to population differences across schools. Using per pupil expenditures as the dependent variable and identifying standard cost factors as independent variables in an expenditure function framework provides more straightforward interpretation, at least with respect to whether resource variation is a function of uncontrollable cost factors.

One problem is that charter schools may or may not be governed by the districts in which they operate, and may not be funded under the district-wide formula which may either advantage or disadvantaged charter schools. State policy may dictate that charter funding be allocated according to a calculation that is distinct from the district formula for allocating resources to its own schools. Alternatively, districts may have separate, distinct allocation formulas for charter schools versus district-operated schools. A second factor is that per pupil spending and revenue variation across charter schools within major urban centers appears largely a function of access to philanthropy. As Baker, Libby and Wiley (2012) explain:

> The substantial variation in resources introduced into urban education systems by the emergence of well-funded and less-well-funded charter schools creates significant equity concerns. Certainly cities like Houston and New York have long histories of offering competitive district-operated magnet schools of choice that have received more resources than other city schools. But these cities have also in the past decade begun to tackle this issue and design within-district resource allocation formulas intended to improve funding equity and predictability across schools. The press for improved within-district equity came in part from public pressure to deconstruct the system of elitism which revolved around academic competition for access to better resources. The emergence of well-endowed charter schools that are oversubscribed and have long waiting lists has replaced the old system with one in which access to more adequate educational resources is now contingent on winning a lottery. (Baker, Libby & Wiley, 2012, p. 32-33)

Thus, it is important that we consider how all of these pieces fit together to determine their equity consequences for children residing in settings where these new mixed models – portfolio

models – of publicly subsidizing and delivering elementary and secondary education are becoming more dominant.

Goals of this Study

In this article, we explore the question of whether the presence of charter schools in New York City and in Houston, Texas enhances or erodes resource equity across children and schools. We are especially interested in the predictability of per-pupil school site spending as a function of student population characteristics. In this article, we ask:

1. Are charter schools contributing to further demographic segregation of students in ways that might have implications for need-based funding?
2. Are school site expenditure variations a function of charter status and/or charter network affiliation, after controlling for cost and need factors? That is, does charter network affiliation alone explain variation in charter spending relative to district schools spending?
3. Overall, are school site spending variations rationally associated with differences in student needs and other costs, across district schools and across charter schools and are spending differences more or less predictable across schools when charter schools are included in or excluded from the analysis?
4. How does charter school variation from predicted spending differ from district school variation from predicted spending?

The first step in our analyses is to determine the predictability of spending variation across district schools and charter schools. Following the work of Baker, Libby and Wiley (2012) and using an extension of the same data, we estimate models of school level expenditures as a

function of student population characteristics. We estimate models across charter and district schools combined and across charter and district schools separately. In addition, we estimate models to determine spending variation by charter school governance type, e.g., whether the charter schools is governed by a professional management organization. This helps us understand the extent to which spending variation is a function of charter network affiliation rather than student needs or school characteristics. Our primary interest is whether and to what extent variations in charter school resources characterized by Baker and Ferris (2011) and Baker, Libby and Wiley (2012) disrupt district efforts to improve equity across schools and the children they serve.

New York City and Houston provide useful contexts for this investigation for a variety of reasons. First, they are among the largest school districts in the nation. Second, in the past 15 years, each district has adopted weighted student funding formulas in an effort to improve within-district equity across schools, though charters have largely been excluded from these formulas. Third, within-district equity has been studied extensively in both contexts, though those analyses have not considered the role of charter schools. Fourth, both cities have a significant number of charter schools, but the share of enrollment in charter schools is much larger in Houston (around 17%) than in New York (4%) according to a report from the National Alliance for Public Charter Schools (2011).

It is important to note that charter school expansion and governance in these two cities are somewhat different. New York City is under mayoral control and has engaged in a city-endorsed strategy of charter school expansion, including authorizing a significant share of charters, providing administrative support services for charter schools and providing facilities space (co-location) for a large share of charter schools operating in the city. About half of charter

schools operating in New York City are authorized by the city's own department of education. In Houston, by contrast, charters operate largely independent of district schools. Charter schools also draw on resources that are transferred from the sending district as tuition. This tuition is based on a state formula that varies by when the charter school commenced operation (see Appendix A). There are clusters of charter schools that operate under single management firms and independent, individual charter schools that operate as independent districts within the City of Houston. An additional complexity to the Houston context is that more than one public district operates schools within the city limits of Houston, though Houston Independent School District (HISD) operates by far the largest share (See Appendix B). Thus, our analyses of schools in the City of Houston include schools across multiple districts and charter schools.

Data

Data for this study are gathered primarily from publicly available sources. For New York City, we combine data from the National Center for Education Statistics, Common Core of Data, Public School Universe Surveys of 2007-08, 2008-09 and 2009-10 with data from the New York State Education Department School Report Cards, data from the City of New York Board of Education school site budgeting system and data from the City of New York Board of Education and The Charter Schools Institute of the State University of New York on charter school finances. We also rely on data provided by the Research Alliance for New York City Schools housed at New York University[6] (in part to bridge IDs between other data sources and also to reconcile/compare measures), and other available reports on school and student characteristics

[6] www.steinhardt.nyu.edu/research_alliance

(see appendix C).[7] For Houston schools we rely on data from the NCES Common Core Public School Universe Survey merged with data from the Texas Education Agency (see Appendix C).

In each case, our goal was to construct a data set that would include the following key school-level elements:

1. City of location
2. School Grade Level/Ranges Served
3. Total School Enrollment
4. Student population characteristics
    a. % Low income students
    b. % children with disabilities
    c. % children with limited English language proficiency
5. Current expenditures (per enrolled pupil)

In our Houston data we use the Texas Education Agency reported measure of campus level, current operating expenditures per pupil. For our New York City data, we use the total operating expenditure figure as reported on Annual Financial Reports for charter schools, and we use a modified school site operating expenditure figure for district schools, drawn from the school site budgeting and financial reporting system, comparable to that used by Baker, Libby and Wiley (2012). It is important to understand that NYC district-wide expenditures include building expenses, expenses which cover the building costs for charter schools. As a result, it would be inappropriate to count money actually spent by the city on charter schools as an

[7] We also consulted data gathered by Gotham Schools to reconcile special education population counts and enrollment shares for New York City Charter schools. Those data are explained here: http://gothamschools.org/2010/05/11/closing-the-gap-charter-school-special-education-stats/#more-38141, And the data themselves are provided here: http://www.box.net/shared/static/v4fz4xchjk.xlsx

expense to district schools. Further, the city provides directly for other expenses for both charter and district schools including food, transportation and textbooks (IBO, 2010, 2011a, 2011b). We remove a) non-public school subsidies, b) payments to charter schools, c) systemwide and regional costs, d) building maintenance related costs, e) energy costs, f) food, transportation and textbooks, and select other costs. [8]

Average "systemwide costs" (function 300) from year to year are on the order of $366 to $387 per pupil. Other systemwide obligations vary more from more from year to year, with a maximum of $1,571 in 2008, followed by $743 in 2009. Regression models (for 2008 and 2009) between our spending measure (across all BOE schools) and the total expenditure figure (including all above functions) yielded and r-squared of 0.93 and a slope of 1.146. That is, when all expense categories listed above are included in the BOE schools spending, at any given level of our spending measure, the total spending figure was 14.6% higher, and that relationship was highly consistent across the range of spending. Where average spending is approximately $13,000 to $15,000, this leads to a shift of around $2,000 for BOE schools if all expense categories are included (including those which support charter operations) for BOE schools.

Table 1 and Table 2 summarize the data on schools for which we have complete data on each element. Table 1 summarizes our data on New York City schools. In New York City, we have complete data on approximately 1,350 city public schools. We have complete data on 40 to 60 charter schools varying by year. By summer 2012, many still had not filed their 2009-10 financial reports. In New York City, charter schools overall serve about a 4% market share. That

[8] Specifically, NYC BOE Site Based Budgets in this analysis exclude: Building Services, Charter Schools, Non-Pub/Non-NYC, Oth Regional Csts, Regional Support, Building Maintenance, Charter Schools, Energy, Food Services, Transportation, Text Books, Summer & Evening Sch, Debt Service, Pass-Throughs, System-Wide Costs, Othr Syswd Obligs, Regional Costs. More extensive discussion is provided in Baker, Libby & Wiley, 2012.

is, their presence remains relatively limited. While many New York City charter schools are governed by major private management organizations, an even larger number are independent or belong to smaller, more local networks. On average, New York City charter schools tend to serve smaller shares of the lowest income children, those qualified for free lunch or falling below the 130% poverty-income threshold. This is especially true of Harlem Childrens' Zone schools, Achievement First and Uncommon Schools. Similarly, and consistent with the findings of Buckley and Sattin-Bajaaj (2010), New York City charter schools continue to serve very small shares of children with limited English language proficiency compared to district schools, and smaller shares of children with disabilities than district schools.

Table 1

NYC Schools

	Year			3 Year Average			
Group	2008	2009	2010	Spending	% Free Lunch	% LEP/ELL	% Special Education
Schools							
Independent	22	26	26				
Achievement First	3	5	5				
Ascend	0	1	0				
BOE	1,379	1,389	1,410				
Beginning with Children	2	2	2				
Believe	1	1	1				
Democracy Prep	2	2	2				
Explore Schools	1	1	1				
Green Dot	0	1	1				
Harlem Children's Zone	2	2	2				
Hyde Charter	1	1	1				
Icahn	2	3	4				
KIPP	4	4	4				
Lighthouse Academies	1	1	1				
National Heritage Academy	1	1	1				
Public Prep	1	1	1				
Success	0	3	3				
Uncommon Schools	4	5	7				
Victory Education Partners	3	5	3				
Village Academies	2	2	2				
Enrollment							
Independent	6,733	8,344	7,859	$14,759	59.26	5.88	11.85
Achievement First	846	1,933	2,238	$12,832	53.22	1.14	9.13
BOE	956,887	940,943	943,328	$12,999	66.64	14.96	14.48
Beginning with Children	729	741	745	$12,614	54.48	2.82	10.48
Believe	580	644	646	$15,168	32.60	2.69	11.79
Democracy Prep	448	577	644	$18,872	64.75	4.28	11.86
Explore Schools	427	438	466	$13,732	52.56	1.01	14.21
Green Dot	0	0	216	$13,910	74.00	7.00	11.43
Harlem Children's Zone	799	973	0	$15,548	46.64	1.53	10.85
Hyde Charter	329	449	589	$12,822	76.62	5.81	12.38
Icahn	424	560	762	$13,870	61.43	6.78	4.69
KIPP	925	1,049	597	$17,456	56.26	5.02	14.09
Lighthouse Academies	326	374	422	$13,661	68.00	9.00	8.95
National Heritage Academy	698	720	728	$13,425	87.66	0.00	5.56
Public Prep	177	218	261	$15,452	53.20	1.73	6.79
Success Charter Network	0	546	860	$14,134	59.06	3.10	9.62
Uncommon Schools	662	921	1,152	$15,046	48.29	2.12	8.33
Victory Education Partners	1,023	1,205	1,124	$13,813	52.33	5.28	5.17
Village Academies	396	494	623	$12,559	60.96	1.96	9.99

Table 2 summarizes our data on schools that are identified in the NCES Common Core of data as being located in the City of Houston (which includes district schools in Houston ISD, Cypress-Fairbanks, Aldine, Spring Branch, Alief, Spring, Galena Park, North Forest and Sheldon). Some districts in the mix serve comparable populations to Houston ISD (Aldine, Alief), on average, while others serve less poor populations and fewer English language learners (Cypress-Fairbanks, Spring Branch). In the aggregate, charter operators within the city limits serve a somewhat larger share of children who qualify for free or reduced priced lunch than do the various district schools. Shares of children with limited English language proficiency vary by charter operator, with some operators having higher shares than district schools and others lower. Nearly all charter schools serve much lower shares of children with disabilities than do district schools.

Table 2

City of Houston Schools

	Year			Characteristics (3yr Average)			
	2008	2009	2010	Spending	% Economic Disadvantage	% LEP/ELL	% Special Education
Schools							
City/Districts	561	564	572				
KIPP Lower	5	6	4				
KIPP Middle/ Secondary	1	2	7				
Other	42	45	48				
Cosmos/Harmony	4	5	5				
Ed. Leadership	3	2	3				
Milburn	1	1	1				
Yes Prep	4	5	5				
Students							
City/Districts	487,309	492,909	504,787	$6,333	69.8	27.3	8.3
KIPP Lower	1,772	1,855	2,222	$5,631	93.1	46.4	3.6
KIPP Upper	248	522	1,883	$9,964	88.3	8.9	4.7
Other	11,661	14,391	15,130	$5,861	82.3	24.0	7.9
Cosmos/Harmony	1,923	2,668	3,133	$7,148	53.3	9.0	2.3
Ed. Leadership	1,199	526	723	$6,504	92.1	49.0	2.9
Milburn	210	242	274	$6,091	71.2	0.0	2.6
Yes Prep	1,922	2,638	3,112	$7,970	76.9	7.8	4.8

Methods

Our methods in this study involve a series of regression models. In each case regression models are fit to the 3-year data panels of Houston City and New York City charter and district schools. We begin with regression models to characterize differences in demographics across schools by type and by affiliation. We then estimate regression models to determine differences in per pupil spending, among similar schools by type and affiliation. We then estimate models to all schools, to charter schools and to district schools in each setting to evaluate the extent that charters contribute either to equity improvement or equity erosion across schools. Finally, we explore the extent of variation in spending not explained by our models, for both district schools and charter schools.

Are charter schools contributing to demographic segregation of students?

Relevant to understanding need-based distribution of funding across schools is how student populations themselves are distributed across schools. As noted earlier, if need-based groups of students are distributed evenly across schools then resources may also be distributed evenly. But to the extent that students are distributed unevenly, then resources must be targeted unevenly. Answering this background question addresses whether charter schools – organized by their network affiliation for convenience – are contributing to the uneven distribution, or segregation, of students by demographic characteristics across schools within Houston and New York.

To conduct a cursory, illustrative analysis on this point, we organize charters into groups by their management organizations or network affiliations[9] and cluster together all other independent, non-affiliated charters. This analysis is primarily for illustrative purposes, to identify whether charters as a whole or by specific groups tend to serve more or less similar populations as compared to district schools. In the Houston case, we also illustrate demographic variations across districts that operate schools within the city limits. While it would have been equally convenient to drop districts other than Houston ISD, we felt it important to acknowledge in our analyses that the way in which district boundaries may carve up spaces within city limits. Those geographic boundaries also contribute to inequity across schools that are in close proximity to one another. The portfolio system of schooling that serves children in any given city may include a mix of public districts as well as charters that are both dependent on and independent of those districts.

These analyses merely provide backdrop for the subsequent comparisons of spending across school groups and by student characteristics. For example, if we find that higher poverty schools on average spend more than lower poverty schools and charter schools spend more or less than schools serving similar students, it would be useful to also know whether charter schools tend to be higher or lower in student poverty. Thus, we present that preliminary step here using the following equation:

Eq1: Population Characteristics = f(CMO, Grade Level, Year, Location)

[9] As identified by the New York City Charter School Center: http://www.nyccharterschools.org/download-raw-data (data at: http://www.nyccharterschools.org/sites/default/files/resources/resource_operating_charters_042812.xls)

For each student population characteristic, we estimate whether specific groups of charters, by their management organization affiliation, serve higher or lower concentrations of these students that similar grade level schools in the same year, and in the case of New York, in the same borough.

Are school site spending variations a function of non-cost factors such as CMO Affiliation?

Next, we evaluate the extent to which charter network organization itself drives differences in spending across charter and district schools. That is, do some charter networks simply spend more than others in their schools, when compared with other schools serving similar students? In other words, are network affiliations, rather than school type and student needs driving charter spending variation, as previous research suggests? Our equation is as follows:

$$\textbf{Eq2: Spending} = f(\textbf{Level, \% Low Income, \% ELL, \% Disability, Network})$$

where per pupil spending is the dependent variable, and is estimated as a function of the grade level/range of the school, the share of low-income children, English language learners and children with disabilities. In this model, the Network dummy variables indicate to us the extent to which spending differs solely as a function of the management company/network to which a charter school belongs, and in the case of our Houston analysis, whether district schools are in districts other than Houston ISD. Sample sizes within management company network are in many cases very small. But, these regressions are intended to be descriptive. That is, merely mapping the average differences in funding between district schools and charter schools. As such, statistical significance is of little consequence.

As in Baker, Libby and Wiley (2012) we consider the choice by states through charter authorizing or by districts to operate small schools within city limits in population dense areas like New York or Houston to be a choice that contributes to resource inequity. The presence of small schools within and operated by a district, at higher per pupil costs, necessarily reduces available resources for other schools. Stiefel, Berne, Iatarola and Fruchter (2000) illustrate how small high schools in New York City contribute to inequity in school site budgets. [10] As such we do not include a scale factor in the regression models under this research question. In other words we do not treat school size as a factor contributing to costs, but rather as a potential source of inequity, inefficiency or both.

Do charter schools erode or enhance spending predictability?

To evaluate the overall effect of charter schools on the predictability of spending we apply the above general model to only district schools, then to charter schools and then to charter and district schools combined. Of interest is whether a) spending is more or less predictable as a function of need and cost factors for charter schools or for district schools, b) whether inclusion of charter schools with district schools affects the overall predictability of spending, and c) whether and how coefficients on specific need or cost factors differ for district schools and charter schools, and when charter schools are included with district schools. For example, if, on average, per pupil spending is higher in higher poverty district schools than in lower poverty ones, does inclusion of charter schools in the model affect that coefficient positively, negatively or not at all? Our equation for this analysis is as follows:

Eq3: Spending = *f*(Level, Scale, % Low Income, % ELL, % Disability)

[10] http://wagner.nyu.edu//publications/stiefel/highschoolsize-effectsonbudget...pdf (place holder)

Here, we consider the role of school size to determine the extent to which school size is a driving factor in spending variation. Again, within the context of large urban districts we consider spending differences due to small size to be inequity and inefficiency rather than a legitimate cost factor. Nonetheless, it is important to understand the role of small school size in determining spending variation. Baker, Libby and Wiley (2012) and Taylor (2011) each show that consideration of school size matters in comparisons of charter and district school spending, where many charter schools operate at small size (even after several years in operation) and while they spend comparably to other small schools, they spend more than other same grade level schools that are larger.

How does charter school variation from predicted spending differ from district school variation from predicted spending?

Finally, we evaluate the extent to which charter schools and district schools vary from their predicted spending levels. That is, on average, how far do charter schools and districts schools deviate from the spending levels predicted for schools with their given population characteristics? Notably, this particular analysis is stacked in favor of district schools, which, by virtue of being greater in number have stronger influence on the predicted values. Nonetheless, the residual variations may shed light on the extent to which charter spending varies from those predicted values.

Findings

Here, we summarize the findings of our various regression models. First we begin with a discussion of variations in student populations, variations believed to be induced by charter schools themselves. Next, we address variations in spending that are a predicted by charter affiliation alone. Finally, we conclude with analyses of the extent to which charter funding

variation contributes to, or erodes fiscal equity across schools within Houston and New York City.

Are charter schools contributing to demographic segregation of students?

Table 3 shows the findings of our demographic regressions for New York City charter schools, which specifically compare charter schools to other same grade level schools in the same borough (county) of the city. Note that statistical significance here is less at issue than in sample-based studies, because we are dealing with a universe of schools. That is, these differences reflect the actual average differences, not estimates. In most cases, statistical significance will not be achieved because there are so few schools from each charter network.

Each network of charter schools serves much lower shares of students who qualify for free lunch than do district schools. Uncommon schools in particular, have very low concentrations of the lowest income children. Notably, in most cases the total free and reduced lunch share for charters is more similar to district schools. But this occurs largely because the vast majority of children in the city school system live in families below this higher income threshold. Consistent with Buckley and Sattin-Bajaaj (2010) we find that charter schools in New York also serve very low concentrations of children with limited English language proficiency (referred to as LEP or ELL) and serve relatively low concentrations of children with disabilities. Overall, New York City charter schools appear to contribute quite substantially to the segregation of students by categories that would typically be considered in the need-based distribution of funding across schools.

By contrast, Houston charter schools appear far more similar to their district surroundings, where the baseline comparison group in Table 4 is Houston ISD. Other districts around Houston ISD range from demographically similar (Aldine & Alief) to substantially less

poor (Cypress-Fairbanks). Most of the charters operating in Houston have comparable to somewhat higher low-income (free and reduced lunch) populations than district schools. The major exception to this rule is the largest charter operator in the state – Cosmos/Harmony schools, which have much lower concentrations of low-income children. Cosmos/Harmony schools also have lower LEP/ELL and special education shares. Most other charter networks have lower LEP/ELL shares than Houston ISD, and most have significantly lower special education concentrations. While not operating entirely in a single direction (as in New York) Houston charter schools also appear to contribute to further segregation of students in patterns that have implications for resource equity.

In summary, it appears that New York City charters schools serve much less needy student populations, on average, compared to district schools and, as result, leave behind much needier students in district schools. However the picture is murkier for Houston, where some charters serve comparable to needier student populations than district schools, with the possible exception of special education populations.

Table 3
Student Population Differences between NYC Charters & BOE Schools

	% Free			% Free or Reduced			% ELL			% Sped		
	Coef.	Std. Err.	P>t	Coef.	Std. Err.	P>t	Coef.	Std. Err.	P>t	Coef.	Std. Err.	P>t
Affiliation												
Independent	-9.36	3.67	*	3.35	3.74		-10.13	2.24	*	-2.95	0.88	*
Achievement First	-14.84	9.20		-0.69	8.24		-11.20	5.21	*	-4.56	1.86	*
BOE												
Beginning with Children	-17.63	11.40		-0.96	10.70		-11.86	7.04	**	-3.32	2.79	
Believe	-26.48	12.41	*	-5.71	11.64		-6.96	7.67		1.13	3.04	
Democracy Prep	-2.34	13.14		9.12	12.34		-14.41	8.12	**	-4.69	3.22	
Explore Schools	-19.59	14.69		2.34	13.74		-13.69	9.08		0.39	3.60	
Green Dot	-0.09	36.48		12.07	34.19		-6.78	22.54		-5.13	8.93	
Harlem Children's Zone	-11.18	15.08		-1.80	14.04		-11.98	9.33		-3.83	3.13	
Hyde Charter	3.73	14.58		16.51	13.72		-7.66	9.01		-3.96	3.57	
Icahn	-21.33	13.26		-4.65	12.10		-13.22	7.93		-12.27	3.14	*
KIPP	-12.95	10.60		0.51	9.91		-10.68	6.55		-3.19	2.60	
Lighthouse Academies	-16.04	26.09		-9.39	24.65		-11.29	16.11		-8.06	3.92	*
National Heritage Academy	15.54	11.58		20.70	10.87		-14.69	7.15	*	-8.25	2.84	*
Public Prep	-15.51	20.93		-1.03	19.52		-18.52	12.93		-8.59	5.13	**
Success Charter Network	-10.71	15.31		1.85	14.58		-17.38	9.46	**	-6.05	3.51	**
Uncommon Schools	-22.65	10.54	*	-4.09	9.73		-11.31	6.34	**	-6.57	2.51	*
Victory Education Partners	-18.31	9.26	*	-5.37	8.74		-12.80	5.72	*	-9.64	2.27	*
Village Academies	-0.92	13.82		12.56	12.99		-13.41	8.54		-5.90	3.39	**
Borough												
Bronx												
Brooklyn	-10.38	0.90	*	-10.21	1.02	*	-5.21	0.63	*	-3.16	0.25	*
Manhattan	-14.02	1.07	*	-12.66	1.20	*	0.30	0.73		-1.66	0.29	*
Queens	-18.62	0.93	*	-20.46	1.05	*	-3.75	0.68	*	-4.00	0.27	*
Staten Island	-38.20	1.46	*	-38.91	1.66	*	-12.10	1.08	*	0.74	0.43	**
Year												
Year=2008												
Year=2009	3.07	0.77	*	-0.37	0.72		0.53	0.61		1.17	0.24	*
Year=2010	3.87	0.77	*	3.16	4.63		0.85	0.56		1.06	0.22	*
School Level												
Elementary												
Middle	-2.87	0.89	*	-2.97	1.00	*	-2.78	0.65	*	2.10	0.25	*
Secondary	-13.10	0.75	*	-17.15	0.84	*	-5.05	0.59	*	-3.17	0.23	*
Other	-9.95	1.60	*	-9.47	1.82	*	-6.51	1.06	*	-0.73	0.41	**
Constant	80.16	0.88	*	82.23	0.94	*	19.44	0.63	*	16.23	0.25	*
R-Squared	0.22			0.29			0.07			0.16		

*p<.05

Table 4

Student Population Differences between Houston Charters & City/District Schools

	% Economic Disadvantage			% LEP/ELL			% Disability		
	Coef.	Std. Err.	P>t	Coef.	Std. Err.	P>t	Coef.	Std. Err.	P>t
District									
Houston ISD									
Aldine	3.76	1.45	*	3.42	1.22	*	-1.46	0.26	*
Alief	-4.40	1.63	*	8.01	1.37	*	-0.11	0.29	
Cypress-Fairbanks	-39.57	1.22	*	-12.01	1.02	*	-1.22	0.22	*
Galena Park	-3.37	2.26		0.03	1.89		0.15	0.41	
North Forest	19.53	3.54	*	-17.65	2.97	*	0.05	0.64	
Sheldon	-1.72	4.18		-1.30	3.51		-2.84	0.75	*
Spring Branch	-24.15	1.87	*	3.58	1.57	*	0.72	0.34	*
Spring	-14.83	1.87	*	-12.54	1.57	*	0.86	0.34	*
CMO									
KIPP Lower	10.14	7.07		6.24	5.93		-4.04	1.27	*
KIPP Upper/Middle	9.27	10.47		-8.71	8.78		-5.61	1.89	*
Other	2.33	2.92		-10.84	2.45	*	-0.85	0.53	
Cosmos/Harmony	-16.49	7.15	*	-11.12	6.00	**	-10.21	1.29	*
Ed. Leadership	12.37	10.87		16.75	9.12	**	-5.30	1.96	*
Milburn	1.21	19.94		-11.03	16.73		-7.35	3.59	*
Yes Prep	6.36	6.95		-9.48	5.83		-7.95	1.25	*
Grade Type									
Both/Combined	-17.24	4.19	*	-26.20	3.51	*	6.45	0.75	*
Elementary									
Middle	-4.67	1.12	*	-24.35	0.94	*	3.80	0.20	*
Secondary	-14.84	1.06	*	-32.01	0.89	*	3.05	0.19	*
Year									
Year=2008									
Year=2009	2.20	1.06	*	0.73	0.89		-0.71	0.19	*
Year=2010	3.25	1.05	*	1.21	0.88		-1.03	0.19	*
Constant	82.86	1.01	*	42.34	0.84	*	7.56	0.18	*
R-squared	0.47			0.51			0.29		

*p<.05

Are school site spending variations a function of non-cost factors such as CMO Affiliation?

Table 5 shows the regression results intended to isolate the extent to which charter network status alone explains spending differences as compared to district schools in New York City. Whether comparing on the basis of free lunch populations alone, or free or reduced lunch populations, most charter networks and the aggregate category of "other" charter schools outspend demographically similar district schools – and some by a large amount. KIPP, Harlem Childrens' Zone and Uncommon Schools each outspend demographically similar district schools by over $3,000 per pupil. Recall that if we include all expenses in district schools expenditure reports, including expenses on charters and other expenses allocated to charter schools, BOE schools spending increases by around $2,000 per pupil, still falling behind many leading charter organizations. Further, adjusting district school site expenditures merely shifts the average difference between charter schools and district schools, but retains the disparities among each.

Combining these findings with the previous suggests that New York City charter schools may contribute substantially to inequities across schools. They invariably serve lower-need student populations – in some cases much lower-need student populations – leaving behind much higher need populations for district schools to serve. Further, charter schools spend either marginally more per pupil to far more per pupil than district schools serving similar populations.

Table 5

Differences in Current Spending per Pupil for NYC Charters & BOE Schools

	% Free or Reduced			% Free		
	Coef.	Std. Err.	P>t	Coef.	Std. Err.	P>t
Affiliation						
Independent	1,866.51	311.90	*	2,265.47	318.93	*
Achievement First	759.96	689.33		1,270.97	695.19	**
BOE						
Beginning with Children	22.52	988.68		630.03	997.52	
Believe	3,403.52	1,075.46	*	4,116.12	1,085.69	*
Democracy Prep	6,100.84	1,138.47	*	6,604.65	1,148.59	*
Explore Schools	55.26	1,274.39		813.66	1,285.95	
Green Dot	384.06	3,163.43		757.44	3,192.57	
Harlem Children's Zone	3,261.37	1,306.99	*	3,958.01	1,318.92	*
Hyde Charter	-705.35	1,264.26		-178.19	1,275.22	
Icahn	2,534.56	1,114.32	*	3,359.71	1,161.23	*
KIPP	4,829.40	918.85	*	5,358.91	927.16	*
Lighthouse Academies	1,265.85	1,387.81		1,589.42	1,400.48	
National Heritage Academy	1,461.65	1,007.49		1,801.83	1,016.13	**
Public Prep	3,929.80	1,814.82	*	4,524.99	1,831.42	*
Success Charter Network	1,534.49	1,240.46		2,072.06	1,251.64	**
Uncommon Schools	3,539.05	890.63	*	4,091.24	923.19	*
Victory Education Par	2,889.57	805.29	*	3,348.29	812.54	*
Village Academies	384.04	1,197.75		965.96	1,208.31	
Students[1]						
% Low Income	32.67	1.50	*	30.21	1.51	*
% Disability	266.55	5.36	*	270.96	5.37	*
% LEP/ELL	8.37	2.31	*	10.42	2.32	*
School Level						
Elementary						
Middle	-858.81	77.87	*	-877.13	78.59	*
Secondary	-518.81	69.56	*	-654.91	68.98	*
Other	-282.04	139.20	*	-277.08	140.03	*
Year						
Year=2008						
Year=2009	1,128.16	67.09	*	1,130.01	67.71	*
Year=2010	997.01	67.13	*	1,000.70	67.69	*
Constant	6,707.49	121.39	*	6,752.80	124.11	*
R-Squared	0.56			0.55		

[1] student population characteristics averaged over 3 years for all schools to account for missing data

*p<.05

Table 6 shows the variations across Houston districts and charter operators. Disparities in school-site spending across district schools are, in some cases, quite substantial. Schools in Alief and Cypress-Fairbanks each spend much less than schools in Houston ISD. The aggregate group of "other" charter schools, along with Cosmos/Harmony schools and lower grades schools

operated by KIPP also spend less than Houston ISD schools serving similar populations. But, KIPP middle and upper grade schools spend far more than Houston ISD schools, more than other charter schools, and more, therefore, than schools in other districts. Unlike New York spending variations, spending variations in Houston associated with charter network alone cut sharply in both directions. In Houston, some charters are far more advantaged than others.

Recall, however that Cosmos/Harmony schools are also the only Houston area charter chain to systematically serve much lower-need student populations across each need category. Table 6 indicates that even when compared to other low-need schools, Cosmos/Harmony schools spend less. Therefore, it is conceivable that the presence of this large group of low spending, low need charter schools could actually contribute to statistically improved fiscal equity across schools citywide. That is, where fiscal equity is enhanced where schools serving lower need populations spend less than those serving higher need populations in the same geographic context.

In both Houston and New York City, charter network affiliation appears to be a major driver of access to financial resources. In most cases, New York City charter schools affiliated with management organizations appear to have access to substantial outside resources, allowing them to outspend district schools which serve higher-need students. But even among New York City schools, disparities between charter schools are substantial. In Houston, the landscape is again more mixed; some charter schools have financial advantages over district schools while others operate at a sizeable deficit.

Table 6

Differences in Current Spending per Pupil for Houston Charters & District Schools

	Coef.	Std. Err.	P>t	
District Schools				
Houston ISD				
Aldine	-295.1	89.2	*	
Alief	-1,947.9	101.2	*	
Cypress-Fairbanks	-1,405.6	93.8	*	
Galena Park	-194.3	137.1		
North Forest	-668.9	224.2	*	
Sheldon	539.6	254.9	*	
Spring Branch	-69.1	123.9		
Spring	-1,618.5	116.1	*	
Charter Groups				
KIPP Lower	-1,239.7	431.1	*	
KIPP Upper/Middle	3,186.7	638.6	*	
Other Charter	-1,770.7	179.4	*	
Cosmos/Harmony	-1,267.2	441.8	*	
Ed. Leadership	90.7	661.8		
Milburn	-276.3	1,212.6		
Yes Prep	-607.1	428.8		
Students				
% Econ Disadvantage	7.5	1.8	*	
% Disability	116.6	8.1	*	
% LEP/ELL	-0.1	2.1		
School Type				
Both/Combined	2,539.9	262.7	*	
Elementary				
Middle	-111.3	84.9		
Secondary	36.4	86.5		
Year				
Year = 2008				
Year = 2009	419.9	64.9	*	
Year = 2010	647.2	64.9	*	
Constant	7,644.6	289.6	*	
Adj. R-squared	0.45			

*p<.05

Do charter schools erode or enhance spending predictability?

Table 7 explores the question of whether and to what extent charter school population and spending variations contribute to inequity across schools in New York City. Recall that the charter school market share in New York City remains relatively small, at around 4%. As such, any adverse effect on system-wide equity would likely be small. Table 7 shows that across district schools, for each 1% increase in % free or reduced priced lunch, school site budgets

increase by $21.53. The effect is slightly smaller for each 1% increase in percent LEP/ELL. The student need effect is largest for children with disabilities, where each additional 1% children with disabilities is associated with an additional $244 per pupil in school site budget. Overall, grade level, economies of scale, year and student needs explain about 65% of the variations in school site budgets, but student need factors remain trumped by economies of scale and grade level differences.

For NYC charter schools, there is no systematic relationship between low-income concentration and school site spending and no relationship between ELL concentration and school site spending. However, charter schools that serve larger special education populations do have higher per pupil school site spending. Differences in scale, grade level, and network affiliation dominate charter spending differences. Structural factors alone, along with special education populations, explain about 40% of variation in spending across charter schools. Because of the relatively small market share of charter schools in New York City, when charter schools are included with district schools, their effect on the predictability of citywide funding equity with respect to costs and needs is negligible. That said, the citywide system as it stands appears to have done little to target additional resources to high-poverty schools.

Table 7

Influence of Charter Enrollments & Spending on Within District Equity in NYC

	District			Charter			Combined		
DV = Spending per Pupil	Coef.	Std. Err.	P>t	Coef.	Std. Err.	P>t	Coef.	Std. Err.	P>t
% Free or Reduced (3yr)	21.53	1.42	*	3.71	14.52		22.31	1.41	*
% Disability	243.87	4.89	*	222.71	28.44	*	240.35	4.76	*
% LEP/ELL	19.98	2.10	*	-4.25	32.35		18.41	2.08	*
Economies of Scale									
Enrollment (ln)	-8,551.71	571.12	*	-7,106.87	7,477.88		-8,428.58	549.54	*
Enrollment Squared (ln)	532.75	41.92	*	540.13	645.73		523.44	40.47	*
School Level									
Middle	-756.71	69.83	*	541.36	619.97		-749.49	69.80	*
Secondary	-249.44	73.42	*	14.04	766.97		-249.97	72.86	*
Other	-794.86	128.03	*	310.50	551.96		-615.74	122.77	*
Year									
Year = 2009	1,102.43	60.08	*	1,368.90	454.50	*	1,112.77	59.93	*
Year = 2010	957.63	60.10	*	1,723.15	457.97	*	978.74	59.95	*
Constant	40,729.35	1,941.23	*	33,714.42	21,440.08		40,348.74	1,859.59	*
Adj R-squared	0.6535			0.4207			0.6449		

[1] student population characteristics averaged over 3 years for all schools to account for missing data

*p<.05

Table 8

Influence of Charter Enrollments & Spending on Within District Equity in Houston

	Houston ISD			Districts			Charters			Combined		
	Coef.	Std. Err.	P>t	Coef.	Std. Err.	P>t	Coef.	Std. Err.	P>t	Coef.	Std. Err.	P>t
Students												
% Econ Disadvantage	-1.23	2.53		7.76	1.40	*	-8.31	8.17		5.40	1.48	*
% Disability	97.76	11.01	*	87.77	7.90	*	19.82	28.10		96.26	7.95	*
% LEP/ELL	3.45	2.82		6.07	1.92	*	2.96	7.19		8.16	1.99	*
Economies of Scale												
Enrollment(ln)	2693.27	1073.04	*	-311.19	682.07		2365.48	2772.08		1505.74	637.10	*
Enrollment Squared (ln)	-282.94	81.13	*	-93.95	49.86	**	-295.35	230.34		-220.37	47.40	*
School Type												
Both	11066.42	583.41	*	6818.26	398.32	*	1863.94	398.20	*	2120.81	209.88	*
Elementary												
Middle	510.99	149.33	*	576.98	85.34	*	2417.32	622.71	*	621.64	90.95	*
Secondary	1329.10	184.40	*	2007.68	119.99	*	2956.07	713.35	*	2089.29	126.93	*
Year												
Year = 2008												
Year = 2009	637.54	101.22	*	385.42	62.73	*	728.44	386.94	**	393.71	67.63	*
Year = 2010	1066.23	101.03	*	597.66	62.76	*	1259.87	377.98	*	615.90	67.53	*
Constant	11050.50	3497.59	*	17475.60	2334.55	*	3727.72	8314.33		6271.61	2137.49	*
R-squared	0.53			0.50			0.31			0.40		

*p<.05

Table 8 provides Houston city school models. Interestingly, across schools within Houston, there is no differentiation among school site budgets by rates of economically disadvantaged children. There is slight differentiation across districts by poverty, with a 1% increase in economically disadvantaged children translating to a $7 increase in per-pupil spending. Across charter schools, there exists a negative, non-significant relationship between school level poverty concentration and spending variation. Additionally, other student need factors, including special education populations and LEP/ELL children, are not associated with spending variation across Houston charter schools. Overall, effects of including charters with district schools are relatively negligible. Combining all schools yields a small, marginally positive effect for low-income students, an effect for special education students that is similar to the effect for district schools and a slight increase in the overall effect for LEP/ELL students. These equity-enhancing shifts may in part be a function of the relatively low spending of Cosmos/Harmony schools coupled with the low-need populations they tend to serve.

How does charter school variation from predicted spending differ from district school variation from predicted spending?

Finally, table 9 summarizes residual variations from predicted spending for district and charter schools in Houston and New York. That is, on average, to what extent does actual spending by charter or district schools vary from predicted spending? On average, in Houston, district schools (across all districts) spend slightly above their predicted values and have a standard deviation of around $1,300 per pupil by 2010. In Houston, the average charter school spends about $424 less than predicted by 2010 (converging on average over time) and has a very large standard deviation of $2,397, which is in part a function of their smaller sample size. Overall, when Houston charters are included with district schools, their presence increases the standard deviation by nearly $100. In other words, Houston charter schools do seem to

contribute to differences in spending from predicted spending. Further, when combined with previous findings, we know that these deviations from norms are not in relation to student needs. To reiterate, charter spending variations are not a function of student needs.

In New York City, district schools on average spent slightly below predicted levels. On average, over time, district schools spending dropped further below predicted values while charter spending increased further above predicted spending. By 2010, the average difference between charter school predicted and actual spending (mean residual) exceeded $2,000. That is, on average, given their population characteristics, NYC Charter schools were spending more than $2,000 more than predicted. By 2010, standard deviations for district schools crept toward $2,000 and for charter schools continued to exceed $2,000. Despite their smaller numbers, charter-spending variation was comparable to the spending variation among district schools. In other words, as inequitable as charter spending seems to be, despite district efforts to improve equity, district schools' spending remains almost comparably inequitable (unpredictable).

Table 9

Residual Equity

	Houston			New York		
	2008	2009	2010	2008	2009	2010
District						
Mean Residual	$39	$25	$22	-$25	-$38	-$48
Standard Deviation	$1,188	$1,239	$1,342	$1,669	$1,750	$1,864
Students	487,309	492,909	504,787	946,661	936,590	936,040
Schools	561	564	572	1,336	1,336	1,336
Charter						
Mean Residual	-$1,000	-$550	-$424	$1,572	$1,828	$2,277
Standard Deviation	$2,418	$2,612	$2,397	$2,512	$2,598	$2,049
Students	18,935	22,842	26,477	15,157	19,727	19,932
Schools	60	66	73	49	60	59
Combined						
Mean Residual	$0	$0	$0	$0	$0	$0
Standard Deviation	$1,270	$1,334	$1,416	$1,697	$1,791	$1,897
Students	506,244	515,751	531,264	961,818	956,317	955,972
Schools	621	630	645	1,385	1,396	1,395

Conclusions & Policy Implications

New York

In the case of New York City, charter schools, particularly charter schools serving fewer high-need students, receive resources that are provided by foundations and philanthropies. This negatively impacts resource equity and concentrates high-need students in other schools. The equity promise of WSFs - which is to direct more resources to high-need students - cannot be fulfilled if outside funds are not adequately accounted for.

Perhaps the most troubling pattern in New York City is that charter schools serve fewer high-need students compared to district schools. This, in effect, concentrates high need students within traditional public schools. While charter schools in New York City only serve 4% of students, there has been a steady push to expand the charter sector. If charter schools continue to serve fewer high-need students this expansion could lead to a more inequitable distribution of

both children and resources in the city. At some point, charters will need to educate more high-need students with existing budgets, or raise additional funds to serve more high-need students.

A notable factor in the inequitable situation in New York City is the additional support provided to many charters through the use of school district facilities. For charter schools that are already advantaged in terms of both access to philanthropy and serving less-needy students, access to facilities space in the high-rent marketplace of New York City provides further financial advantage, both over competing district schools and over less well-off charter schools. While the New York City Independent Budget Office has highlighted these concerns in recent reports, their findings seem to have fallen on deaf ears in terms of influencing policy moving forward.

Houston

In Houston, charters and public schools generally serve a similar percentage of low-income students, however charters appear to serve slightly lower populations of LEP students and lower percentages of special education students. Like New York, the concentration of lower-need students in charter schools serves to de facto segregate students by need, putting a strain on traditional public schools. Spending variations were less clear in Houston, with some charters spending more than traditional public schools and others spending less. In terms of predicted spending, on average Houston traditional public schools spend slightly above their predicted values, while the average charter spends slightly less than predicted, however a large standard deviation suggests high variability in terms of charter school over/under spending.

Equity Implications of Findings

The use of WSFs to enhance equity, coupled with charter school expansion, presents a number of significant challenges to achieving more equitable resource distribution within school districts. This is particularly the case if charter schools are funded outside of district WSF models, and further exacerbated if charters do not serve a comparable number of low-income students, English Language Learners, and special education students. Additional outside support from private donors and foundations further contribute to within-district inequities.

It bears repeating that district-level WSFs, while possibly a promising policy, do not address the more significant between-district inequities. At the moment, using WSFs to tackle within-district disparities is a policy favored by many influential D.C. think tanks and school choice advocates, yet the research supporting WSFs is mixed at best. While addressing between-district inequities may be less politically feasible in the short term, considerable evidence exists that between-district disparities must be addressed if policymakers are interested in larger inequities.

Rather than tackle resource equity, the combination of charter school expansion and WSFs encourages a conception of equal opportunity largely based on expanded school choice. This conception of equal opportunity focuses primarily on offering to children and families a portfolio of school options, including charter schools, and attempts to correct for differences in individual student needs by attaching more dollars to higher-need students. In this context, WSFs are used in part to provide an economic incentive for schools to serve high-need students as well as an acknowledgement that some students require additional resources to meet the same level of achievement. Equity, in this scenario, is based primarily on equalizing the freedom to choose

from various schools. If schools of choice are equitably resourced to accommodate student needs, equity can be achieved through such a model. But that does not appear to be the case in either Houston or New York City.

In large part, the portfolio approach, without sufficient consideration of resource equity, substitutes preferences for individual liberty (or choice) in place of preferences for equity. This approach is problematic in that it conflates liberty with equity, assuming that the former necessarily leads to the latter, regardless of resource distribution. This is simply untrue. This conception fails to acknowledge these two core values often operate in tension with one another, with individual choices collectively leading to substantial inequities. Access to high-resource charter schools serving low-need populations is unevenly distributed across children and families citywide, with most if not all high resource charter schools significantly oversubscribed.

Lower-Need Students and Additional Funding Resources

Herein lies the most marked challenge to equity: charter schools that serve lower-need students while also accessing funding support above and beyond what is available to traditional district schools. While segregating high-need students in traditional district schools, this process ensures that opportunities for a well-funded education are contingent upon access to philanthropic giving. It is important to point out that additional funding from outside sources is not, in itself, problematic. Rather it is the way in which this arrangement exacerbates within-district inequalities.

Supporters of WSFs seek to reduce within-district funding disparities by including both charter schools and traditional public schools under a district-wide WSF funding model. While

this move offers one way of ameliorating current within-district disparities, including charters under a WSF model does not account for the financial support to some charter schools provided by outside funding sources, such as philanthropic organizations and affluent parents. Through additional funding sources, these charters are able to accumulate resources above and beyond those of the public system. This is particularly problematic when excess funds are concentrated in schools with low-need kids, while high-need public populations are concentrated and lack appropriate funding just a few blocks down the street. This imbalance in funding will lead to greater dispersion of haves and have-nots.

The presence of charter schools that are able to secure additional funding for lower-need students directly challenges common claims made by charter school advocates that charters "do more with less." It is important to challenge this narrative not because there is something inherently wrong with "doing more with less," but that charter schools are not actually doing *more with less*. Recognizing the benefits to a student's education brought about by extra funding resources may actually strengthen arguments for improving school funding more broadly. While it may be a disappointment to those eager to prove that schools can be pushed to "do more with less," recognizing that they in fact are not doing more with less, or at the very least serve lower-need student populations than district schools, could bring clarity to this highly politicized issue.

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Appendix A. State Funding Models for Charter Schools

New York

Our primary source for understanding the allocation of public subsidies to New York City charter schools is the Independent Budget Office (IBO) report of 2010. As explained by IBO, under New York State charter school laws, "Charters receive a per pupil allocation from their home school district (in the case of charters in New York City this is DOE) which is intended to provide most of their basic operating costs."(p.3). The per pupil allocation is determined according to the Adjusted Operating Expense (AOE) of the host districts. The AOE is based on "local expenses from two years earlier, multiplied by the percentage change in the statewide measure of those expenses from three years prior to one year prior." (p. 3)

In addition, charter schools are eligible to request from the district, goods including textbooks and software, special education services including evaluations, health services and student transportation. The IBO explains that as a matter of local policy:

"In New York City there is a long-established process for nonpublic schools to access these services, and charter schools have access to similar support from DOE. For these items, charter schools receive the goods or services rather than dollars to pay for them. Most of these noncash allocations are managed centrally through DOE." (p. 3)

Further, as a matter of local policy:

"DOE has also chosen to effectively cover some other expenses faced by charter schools, particularly those located in DOE buildings. Charters also qualify for reimbursement for services provided to certain students based on their educational needs." (p. 3)

Under the state's charter law, there is no provision for direct public funding of the cost of school facilities. But, again as a matter of local policy in New York City, the city's education department provides space in DOE buildings to several charter schools (all in our sample). [11] Charters located in DOE facilities pay only a nominal rental fee and if charters share a DOE building (co-located with traditional public school), their utilities and janitorial costs are also absorbed within the DOE's budget.(p. 5)

Texas

Texas charter school laws provide for several types of charter schools, but two dominate the current landscape, open enrollment and district charter schools. District charters are operated by districts (potentially contracting with private management firms) and financed through district budgets. *Open enrollment* charters operate as independent entities drawing students from across district boundaries. For financing purposes, students enrolling in Texas charter schools are treated as inter-district transfer students. Transfer student tuition rates are set according to the state school finance formula (Foundation School Program, FSP). For charter schools opened since 2001, funding is provided according to a "State Average Formula," based on the state average funding per weighted student.[12]

[11] For a concise listing of co-locations, see: Democrats for Education Reform (2011) Teacher Voice/Teacher Choice: Teacher Satisfaction in NYC Charter Schools. http://www.dfer.org/2011/09/teacher_voicete.php. See appendix A.

[12] *See* TEC § 12.106. The State Average formula is based solely on the state-wide average funding per weighted student, calculated using the state average adjusted allotment, state average enrichment tax rates, and a state

That is, funding to open-enrollment charter schools operates as a pass through payment from local districts, where the tuition level is set according to a calculation of statewide funding per weighted student. This means that for districts below the statewide average funding per weighted pupil, their payments for charter students will exceed their resources available to their own students, and for districts above the statewide average funding per weighted pupil, the opposite will be true.

Open enrollment charters are eligible for direct federal funding through IDEA and Title I. These funds may be accessed by application to the state. In addition, state grants for startup funding are available for the first three years of operation.

Taylor and colleagues (2011)[13] summarize that on average charter schools end up with marginally less combined state, local and federal revenue (excluding private contributions) than traditional public school districts statewide. Actually, charters received federal funding comparable to the average, more state funding and less local funding -- these latter differences likely being a function of charters being located primarily in districts more reliant on state funding.

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average additional state aid for tax reduction (ASATR) per WADA. The name of this funding formula is the State Average formula.

For schools in operation prior to September 1, 2001, the State Average funding system will be phased in over 10 years beginning in 2003-2004, and during the phase-in period the schools will receive a portion of their funding under the Resident District formula.

http://ritter.tea.state.tx.us/charter/handbook/handbook.pdf

[13] Gronberg, T., Taylor, L.L., Jansen, D. (2011) The Relative Efficiency of Charter Schools: A Cost Frontier Approach. *Economics of Education Review.* (in press): http://www.sciencedirect.com/science/article/pii/S027277571100104X

Appendix B. Independent School Districts Operating within the City of Houston

Table B1

DISTNAME	2008	2009	2010
Schools			
HOUSTON ISD	275	273	274
CYPRESS-FAIRBANKS ISD	68	71	75
ALDINE ISD	64	66	69
SPRING BRANCH ISD	44	44	44
ALIEF ISD	39	40	40
SPRING ISD	30	31	31
GALENA PARK ISD	21	22	22
NORTH FOREST ISD	12	10	9
SHELDON ISD	8	7	8
Enrollments			
HOUSTON ISD	193,699	192,907	196,324
CYPRESS-FAIRBANKS ISD	92,903	96,200	102,052
ALDINE ISD	58,745	59,193	61,916
ALIEF ISD	44,045	45,098	45,235
SPRING BRANCH ISD	31,911	32,288	32,374
SPRING ISD	31,680	32,493	32,331
GALENA PARK ISD	20,205	21,174	21,372
NORTH FOREST ISD	8,364	7,890	7,657
SHELDON ISD	5,757	5,666	5,526

Data Source: NCES Common Core of Data, Public School Universe Survey 2008-09

Appendix C. Data Sources

Table C1

	New York City [1]		**Houston**	
	BOE	Charter	TPS	Charter
Demographic Data 1	NY State School Report Cards (SRC)	NY State School Report Cards (SRC)	TEA [2]	TEA
Demographic Data 2	NCES CCD	NCES CCD	NCES CCD	NCES CCD
Financial Data 1	BOE Data [3]	Authorizer Annual Financial Reports[4]	TEA [5]	TEA

[1] Our New York City data are reconciled, and in some cases rounded out with data from two additional sources. First, we obtained a comprehensive school site data set on New York City public schools from the Research Alliance for New York City Schools housed at New York University (www.steinhardt.nyu.edu/research_alliance). The research alliance data are gathered from the same sources we use directly, including the NYC Department of Education, the NY State Department of Education and National Center for Education Statistics. The Research Alliance data also included additional identifiers for consistent merging of data elements across data sources. We also consulted data gathered by Gotham Schools to reconcile special education population counts and enrollment shares for New York City Charter schools. Those data are explained here: http://gothamschools.org/2010/05/11/closing-the-gap-charter-school-special-education-stats/#more-38141, And the data themselves are provided here: http://www.box.net/shared/static/v4fz4xchjk.xlsx

[2] Texas Education Agency. http://ritter.tea.state.tx.us/perfreport/aeis/2010/DownloadData.html

[3] New York City Department of Education. https://www.nycenet.edu/offices/d_chanc_oper/budget/exp01/y2008_2009/guide.asp

[4] Charter Schools Institute, State University of New York. http://www.newyorkcharters.org/pubsReportsAudits.html & New York City Department of Education http://schools.nyc.gov/community/planning/charters/Schools/default.htm

[5] Texas Education Agency. http://ritter.tea.state.tx.us/perfreport/aeis/2010/DownloadData.html