Do For-Profit Managers Spend Less on Schools and Instruction? A national analysis of charter school staffing expenditures

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Abstract

This article takes advantage of a recently released national data set on school site expenditures to evaluate spending variations between traditional district operated schools and charter schools operated by for-profit versus nonprofit management firms. Prior research has revealed the revenue-enhancement, private fundraising capacity of major nonprofit providers (Baker, Libby and Wiley, 2015). For-profit providers may face greater pressure to reduce operating expenses. As such, we hypothesize that regardless of average differences in staffing expenses between district and charter schools, school site staffing expenditures are likely to be lower in for-profit than in nonprofit managed charter schools. Further, school site instructional staffing expenditures may be lower yet. Applying national, then state and labor market level models to compare spending for schools of similar size, serving similar grade ranges and students with similar attributes (income status, special education and language proficiency status), we find these assumptions largely to be true. Specifically, on average across all settings (global model) we find that charters spend less per pupil on instructional salaries compared to districts; further, for-profit charters spend less than non-profits. Further, for-profit charters spend statistically significantly less ($p < 0.05$) on instructional salaries, compared to district schools, in Arizona, Colorado, Indiana, Michigan, Nevada, Ohio, and Pennsylvania. In all cases except Michigan, the difference in instructional spending compared to district schools is greater for for-profits than nonprofits.

1.0 Introduction

Since its origins in the early 1990s, the charter school sector has grown to involve over 6,500 schools serving over 2.25 million children by 2013.[1] In some states, the share of children now attending charter schools exceeds 10% (Arizona, Colorado) and in select major cities that share exceeds one-third (District of Columbia, Detroit, New Orleans). As the charter sector has grown both in magnitude and market share, governance structures and delivery systems have become increasingly complex (Green, Baker, Oluwole, 2014, 2015). The early charter movement coincided with the emergence of private management firms interested in public schooling. Two private for-profit companies tried their hand at providing school management services for public districts in the 1990s – Edison Schools, Inc. and Education Alternatives, Inc. (Richards, Shore & Sawicky, 1996). Education Alternatives, Inc. a publicly traded for-profit company, failed financially while holding an operating contract for 9 (then 11) schools within Baltimore City Public Schools, soon after signing a contract with Hartford Connecticut Public Schools. The company failed prior to taking full responsibility for schools in Hartford. Edison Schools expanded cautiously in the wake of EAI's failure, operating a school in Wichita, Kansas, in 1995 and 25 schools nationally by the end of 1996.[2] Edison also faced financial troubles as a publicly traded stock, eventually buying back their company stock in 2003 and reverting to privately held status.[3]

As charter schools expanded, including online and hybrid schooling options, Edison Schools and other new, upstart for-profit companies shifted their growth strategy to the charter sector, where they could control employment contracts, increasing financial flexibility and profit

[1] Tabulation by author using data from NCES Common Core of Data, Public School Universe Survey(s)
[2] http://www.nytimes.com/1997/12/17/us/edison-project-reports-measurable-progress-in-reading-and-math-at-its-schools.html
[3] http://m.lasvegassun.com/news/2003/jul/14/edison-founder-to-buy-back-stock/

potential. Coinciding with these developments, many now high-profile nonprofit charter management firms got their start as founders of single charter schools, including the Knowledge is Power Program (KIPP), with middle schools in Houston and New York City; Uncommon Schools, founded from North Star Academy in Newark, NJ; and Achievement First, founded from Amistad Academy in New Haven, CT. Presently the charter school landscape consists of a mix of schools operated by major nonprofit Charter Management Organizations, schools operated by for-profit managers, schools operated by other education management organizations described by Miron and colleagues as nonprofit in formal status but engaging in contractual arrangements more similar to for-profit organizations, and schools that remain independently operated ("mom-and-pop").

There are many reasons to assume that for-profit and nonprofit managers of schools would take different approaches to balancing their budgets, allocating their resources, or responding to government and public accountability. The school budgeting equation remains relatively simple. Publicly subsidized schools have finite resources to allocate to the delivery of a relatively common set of programs and services designed to achieve common outcome goals. Elementary and secondary schooling remains a human resource intensive endeavor, involving professional staff for direct instruction, instructional support, administration, clerical support and facilities maintenance and operations. Cutting expenses to any significant degree means reducing staffing salaries or benefits. Significant technological substitution for purposes of direct instruction has occurred only in limited cases, and with relatively poor results (Epple, Romano and Zimmer, 2015). Both Education Alternatives Inc. and Edison Schools in their early years of operating district schools under district management contracts found it difficult to achieve profit margins sufficient to impress investors (Richards, Shore and Sawicky, 1996).

Alternatively, budgets may be balanced by revenue enhancement. Baker, Libby and Wiley (2015) have shown that some major nonprofit charter management organizations (CMOs) substantially enhance their revenues, upwards to 30 to 50% over their public subsidy rate. For-profit providers lack similar ability to enhance revenues through tax exempt contributions. But for-profit providers must produce a profit margin for distribution of earnings to shareholders. Nonprofits are by contrast prohibited from such activities.

Assuming common public subsidy rates, one might expect to see nonprofit charter schools with significantly higher total resources than for-profit schools, with for-profit schools having greater reductions of expenditures directly allocated to instruction, in an attempt to generate profit. Further, for-profit providers, facing limited revenue enhancement alternatives coupled with profit pressures, may seek to enroll children who require less costly programs and services in order to hold down expenses. It is harder to anticipate whether nonprofit charter schools distribute their enhanced revenues to instruction.

These differences in incentives raise questions about the relative efficiency of these management alternatives and concerns over the equity consequences of diverse provider models for the public provision of education. For example, if the public expense on district operated, for-profit and nonprofit managed charter schools is constant, but for-profit charter schools allocate less to direct instruction, resulting in lower quality service provision, the public expenses on for-profit providers is less efficient. That is, lower quality output for the same public expense, due to the diversion of resources for profit. Of course, if profit can be generated without compromising outcomes, depth or breadth of programs and services, then efficiency is maintained.

Nonprofit providers might be able to operate less efficiently without compromising the overall level of outcomes, depth and breadth of programs and services if they can raise sufficient private contributions to support their inefficiencies. Nonprofit providers might be able to offer enhanced programs and services and achieve better outcomes through their revenue enhancement, while holding efficiency constant. But access to big philanthropy across nonprofit providers remains disparate.

The diverse provider, portfolio approach, without sufficient consideration of resource equity, substitutes preferences for individual liberty (or choice) in place of preferences for equity. That is, it assumes that inequity among providers is still equitable for choosers, in that they may choose schools that have more or fewer resources or are more or less efficient. This assumption is built on the false premise that all children have equal access to all schools – all children get their first choice and no schools are over enrolled, all are geographically accessible and provide relevant special services when necessary. This approach wrongly conflates liberty with equity, assuming the former necessarily leads to the latter, regardless of resource distribution. Political theory has long held that liberty and equity preferences operate in tension with one another. As such, emergence of inequitable choices in any given marketplace of schooling, and system features that increase inequity of choices should be of concern to policymakers.

The objective of this paper is to explore whether charter school management type leads to substantive differences in a) student populations served and b) staffing resources allocated at the school level and specifically to direct instruction. That is, does the heterogeneity of operator types in major labor markets across the country induce resource inequity and are these resource inequities potentially linked to variations in efficiency with which the charter allocated dollar is

expended? For this study we take advantage of a national collection of staffing and instructional staffing expenditures per pupil at the school site level for fiscal year 2011-12 and we apply to those data the Miron & Gulosino (2013) approach to classifying charter schools as being managed by either for-profit or nonprofit entities, separating out online charter schools. Our empirical questions are as follows:

1. Nationally, across settings, do charter schools operated by for-profit entities, compared with those operated by nonprofit entities (both district and charter) tend to spend less on school site staffing?
2. Nationally, across settings, do charter schools operated by for-profit entities, compared with those operated by nonprofit entities tend to spend less on instructional staffing?
    a. Is the differential for instructional staffing greater or less than the differential for total school site staffing?
3. Are there variations in the differences in total school site staffing expenditure and instructional staffing expenditure, between for-profit and nonprofit managers across settings?

In this study, we are only able to empirically reveal if there are indeed systematic differences in the total school site staffing expenditures, and instructional staffing expenditures of nonprofit and for-profit charter schools, by comparison to each other and to district schools operating within the same labor market. We save for another day evaluation of measured student outcomes.

If our assumptions regarding the different incentives and observed behaviors of nonprofit and for-profit providers hold, we would expect to see school site and instructional spending in nonprofit operated charter schools to be more similar to that of district schools and higher than

that of for-profit schools. These findings will vary by state policy and labor market context. The district to charter comparisons will to an extent be a function of state laws and local practices regarding charter subsidy rates, and local district allocations to district school sites. But, assuming that state subsidies for for-profit and nonprofit charter schools are comparable (given school type, grade level and student needs), and given the same baseline comparison group of district schools in the same labor market, we would expect to see reductions in school site staffing expenditures in for-profit managed schools, and potentially even greater reductions in school site instructional staffing expense.

2.0 Review of Literature

A handful of studies over time have addressed questions similar to those we address herein, asking more specifically about the differences in administrative overhead expenditures of charter schools. Two studies of Michigan charter schools, which operate fiscally independently of local public districts, have found them to have particularly high administrative expenses and low direct instructional expenses. Arsen and Yi (2012) found that "Controlling for factors that could affect resource allocation patterns between school types, we find that charter schools on average spend $774 more per pupil per year on administration and $1141 less on instruction than traditional public schools." (p. 1) Further, they found "charter schools managed by EMOs spend significantly more on administration than self-managed charters (about $312 per pupil). This higher spending occurs in administrative functions traditionally performed at both the district central office and school building levels." (p. 13)

Izraeli and Murphy (2012) found that district schools in Michigan tended to spend more on instruction per student than did charter schools, and the gap grew by about 5 percent to nearly 35% percent over the period studied (1995-96 to 2005-06) (p. 265). Further they found the

spending gap for instructional spending to be greater than that for general spending. The overall funding gap between district and charter schools was approximately $230. The spending gap for basic programs was $562 and for total instruction $910. The authors note “much like a profit-maximizing firm, charter schools generate a surplus of revenue over expenditure.” (Izraeli & Murphy, 2012, p. 265)

Bifulco and Reback (2014) explore the complex relationship between fiscally dependent charter schools and their host districts in upstate New York cities. Particularly relevant to our investigation is Bifulco and Reback’s finding that having fiscally dependent charter schools separately affiliated with outside management companies and governance structures can create excess, redundant costs (p. 86).

Others have explored teacher compensation in relation to instructional expense in charter schools. In a recent comprehensive review of charter school research, Epple, Romano and Zimmer (2015) summarize that “On the whole, teachers in charter schools are less experienced, are less credentialed, are less white, and have fewer advanced degrees. They are paid less, their jobs are less secure, and they turnover with higher frequency.” (Epple, 2015) Similarly, in a report on spending behavior of Texas charter schools Taylor and colleagues (2011) explain that much of the difference between instructional and non-instructional expense across differing types of charter and district schools is tied to differences in teacher compensation. The authors explain that “open-enrollment charter schools paid lower salaries, on average, than did traditional public school districts. Average teacher pay was 12% lower for teachers in open-enrollment charter schools than for teachers in traditional public school districts of comparable size, and adjusted for differences in local wage levels, average teacher pay was 24% lower. Average teacher salaries were lower not only because open-enrollment charter schools hired less

experienced teachers, on average, but also because open-enrollment charter schools paid a smaller premium for additional years of teacher experience." (p. ix)

Research by Gronberg, Taylor and Jansen (2012) also points to the revenue enhancement activities of some charter management companies, most notably KIPP schools. The authors find that some KIPP schools in Texas had nearly doubled their per pupil public subsidy through private philanthropy. Baker and Ferris (2011) and Baker, Libby and Wiley (2012, 2015) find similarly that some Charter Management Organizations have significant potential for revenue enhancement. Baker, Libby and Wiley (2012) explain "We find that in New York City, KIPP, Achievement First and Uncommon Schools charter schools spend substantially more ($2,000 to $4,300 per pupil) than similar district schools. Given that the average spending per pupil was around $12,000 to $14,000 citywide, a nearly $4,000 difference in spending amounts to an increase of some 30%." But, while some New York City based CMOs raised substantial private funding, others did not, and charter schools operating in other locations in Ohio and Texas had much less access to philanthropy.

Of particular interest herein are studies of the relative effectiveness or efficiency of charter schools operated by for-profit management companies, including operators of online schools. Rigorous, peer reviewed literature on these schools remains limited, and much of it dated, evaluating charter expansion from the late 1990s through mid-2000s. King (2007) evaluated the effectiveness of Arizona charter schools, where there exist significant numbers of for profit firms. King (2007) found, based on data from 2003-2004 that "there is some evidence that for-profit charter schools are achieving higher test scores, however, given the insignificant findings for many of the for-profit specifications, a definite conclusion cannot be reached based on this one study alone. (King, 2007, p. 744) However, in a broader, more recent and more

empirically rigorous analysis of Arizona charter schools as a whole Chingos and West (2014) found that "the performance of charter schools in Arizona in improving student achievement varies widely, and more so than that of traditional public schools. On average, charter schools at every grade level have been modestly less effective than traditional public schools in raising student achievement in some subjects." (p. 120S)

Studies on Michigan charter schools, another state we identify has having significant shares of children enrolled in for-profit schools, have also yielded mixed findings over time regarding effectiveness and relative efficiency. Bettinger (2005) found that during the early years of Michigan charter schools, "test scores of charter school students do not improve, and may actually decline, relative to those of public school students." (p. 133) Hill and Welsch (2009) found "no evidence of a change in efficiency when a charter school is run by a for-profit company (versus a not-for-profit company). (p. 147) They explain further: "The results of this paper find no evidence that schools managed by for-profit companies deliver education services less efficiently than schools run by not-for-profit companies; this matches recent results found by Sass (2006)." (p. 164) That is, the shift from nonprofit to for-profit management status caused no systematic harm to measured student outcomes. Sass (2004) in an early study of Florida charter schools by their management status had also found no significant performance differences between schools managed by nonprofit and for-profit providers, but had found that for-profit providers serve substantively fewer children with disabilities. (p. 91)

Perhaps the strongest evidence of charter school efficiency advantages comes from the work of Gronberg, Taylor and Jansen (2012) on Texas charter schools. The authors find that, generally, Texas "charter schools are able to produce educational outcomes at lower cost than traditional public schools—probably because they face fewer regulations—but are not

systematically more efficient relative to their frontier than are traditional public schools."(p. 302) In other words, while the overall cost of charter schools is lower for comparable output, the variations in relative efficiency among Texas charter schools are substantial. Efficiency is neither uniformly nor consistently achieved. As explained above, evidence from related work by these authors reveals that the lower overall expenses are largely a function of lower salaries and inexperienced staff (Taylor et al., 2011). Thus, maintaining efficiency may require ongoing reliance on inexperienced staff.

Frequently cited studies touting the relative effectiveness of charter schools operated by major Charter Management Organizations, including Lake et al. (2010) and Dobbie and Fryer (2011) have typically measured poorly or not at all the resources available in these schools – schools which Baker, Libby and Wiley (2015, 2012) and Gronberg, Taylor and Jansen (2012) identify as often spending substantially more than nearby district schools. Baker, Libby and Wiley (2015) and others (Preston et al., 2012) explain that most charter schools, and large CMO charter schools in particular, operate under a similar human resource intensive model as traditional district schools. Specifically, well-endowed CMOs allocate their additional resources to competitive wages (higher than expected for relatively inexperienced teachers), small classes, longer days and years (Baker, Libby and Wiley, 2012).

Other charter school operators have attempted to reduce substantially direct instructional per pupil costs through online and hybrid learning. This approach provides perhaps the greatest opportunity to maximize profit margin as it presents the greatest opportunity to cut staffing costs. But as Epple, Romano and Zimmer (2015) explain, regarding student outcomes "online 'cyber' schools appear to be a failed innovation, delivering markedly poorer achievement outcomes than TPSs." (p. 55)

To summarize, based on limited analyses of resource allocation behaviors of charter schools, we have evidence that charter schools generally tend to divert more from the classroom to administration. Classroom expenditures are reduced in part, if not mainly by reduction of total teacher salary expenses by having relatively inexperienced teachers and high turnover rates. EMO operated charter schools tend to have even greater administrative expense and charter schools operating within districts may create redundant administrative expenses. That said, there is limited evidence that charter schools generally, or those operated by EMOs and CMOs are less efficient as a result of increased administrative expense, and some evidence of efficiency improvement for charters over district schools (in Texas) due to reduced staffing expenditure. Generally, we have little evidence of systematic differences between nonprofit and for-profit operated charter schools, but we do have some evidence that high profile nonprofit providers engage in substantial revenue enhancement. Finally, we have increasingly clear evidence that online and cyber charter schools lag in performance outcomes, as well as evidence that charter schools in states including Ohio and Arizona perform particularly poorly.

3.0 Data

Our primary source for the classification of charter schools as "for-profit" comes from Miron & Gulosino's "Profiles of For-Profit and Nonprofit Education Management Organizations, Fourteenth Edition, 2011-12" (2013). The authors describe an education management organization (EMO) as "…a private organization or firm that manages public schools, including district and charter public schools," and distinguish a school run by an EMO from a school that contracts with vendors for specific services (p. 2). The authors first relied on state sources when collecting information, including "…key informants, advocacy groups, and charter school sponsors…" (p. 3) This information was then confirmed by web-based sources

and data from state education agencies. Finally, the authors contacted the EMOs themselves to verify their data. (p. 243)

Miron and Gulosino define "for-profit" and "nonprofit" EMOs as follows:

> "For-profit EMOs are businesses that seek to return a profit to the owners or the stockholders who invest in them. By contrast, many of the nonprofit EMOs tend to have missions related to social objectives or see their purpose as the expansion of charter schools. Historically, only a small portion of EMOs have been nonprofits." (p. 2)

For our analysis, we define a for-profit charter school as a school designated in the Miron and Gulosino study as managed by a for-profit EMO. A nonprofit charter school is any other charter school, as designated by the CRDC data, which is not managed by a for-profit CMO listed in Miron and Gulosino. A district school is so designated by the CRDC data; schools not designated as either charter or district are excluded.

We merge Miron and Gulosino's (2013) EMO listing with charter schools in the National Center for Education Statistics Common Core of Data, Public School Universe Survey for 2011-12 by assigning to each school in the Miron/Gulosino data set the relevant NCES school ID.[4] In some cases, multiple records in the CCD that share similar names in the same location with a

[4] We digitized the Miron and Gulosino data tables using a combination of optical character recognition and hand coding. The tables were combined and sorted by state and city. To link these tables to the other data sources, we then assigned a NCES (National Center for Education Statistics) school ID code to each record in the Miron and Gulosino data, based on matching each record with a record from the 2012 NCES Common Core of Data (CCD). Our principal criteria for matching records from both data sets was a match on the name of the school, the city, and the state. Small variations in names and cities were considered matches. For example, if a school in the Miron and Gulosino data gave a mailing address city name, but the CCD gave a physical city name, this was still considered a match.

record in the Miron and Gulosino dataset were added and matched to the same EMO.[5] Records from the Miron and Gulosino data that could not be matched to a CCD record were excluded. Some records that could not be matched to a 2012 CCD code were matched with a 2011 code.[6]

3.1 CRDC/Ed Facts & NCES Common Core

The NCES, CCD Public School Universe data provides a bridge to our other data sources. Our school resource measures are drawn from the December 2014 release of the Educator Equity Profiles Data (EEPD) from the United State Department of Education.[7] As the documentation explains: "The data used in the profiles come from three extant Department data sources: the Civil Rights Data Collection [CRDC], EDFacts, and the Common Core of Data." (p. 1). We use the spending measures from the CRDC in this analysis; student characteristics, school location, and enrollment data are from the CCD. While the EEPD includes Comparable Wage Index (CWI) data, we chose to match each record directly with the labor market delineations originally adopted by Taylor and Fowler (2006) and subsequently updated by Taylor.[8]

We calculate student economic disadvantage by eligibility for the federal free lunch program, noting that the "free" lunch (130% income threshold for poverty) rather than "free or reduced lunch" (185% threshold) captures greater differentiation across schools in high poverty settings where more charter schools tend to exist. The CRDC dataset, however, only lists enrollment figures for the aggregated total of students enrolled in both the free and reduced-price

[5] For example, if "Apple Charter School" in the Miron and Gulosino data was in the same city and state as "Apple Charter Middle School" and "Apple Charter High School" in the CCD dataset, we matched the EMO to both CCD schools.

[6] All records that could not be immediately matched one-to-one between the two datasets were noted and logged. In a small number of cases (n = 24), we found schools listed under two different EMOs in the Miron and Gulosino tables. The majority of these (n =21) were listed for both White Hat Management and National Heritage Academies. For this analysis, we eliminated the duplicates and assigned the schools the status of "for-profit" charters.

[7] http://www2.ed.gov/programs/titleiparta/resources.html

[8] http://bush.tamu.edu/research/faculty/Taylor_CWI/

lunch programs. We take the free lunch enrollment figures directly from the CCD; rates are calculated by dividing the total enrollment figure from the same data source.[9]

3.2 Spending Measures

The two spending measures we use as dependent variables in our models are "total salaries per pupil" and "instructional salaries per pupil." CRDC documentation[10] delineates four classifications of school-level personnel for finance reporting purposes: Instruction, Support services – pupils, Support services – instructional staff, and Support services – school administration (p. 33). Instruction includes teachers and instructional aides; all other personnel are listed under support services. We calculate total salaries per pupil by dividing "TOT_SALARIES" (from the CRDC) by "member," the CCD figure for total student enrollment. Instructional salaries per pupil, similarly, is "INST_SALARIES" (CRDC) divided by "member."

3.3 Outliers & Inconsistencies in the CRDC Data

The distributions of our spending measures have a significant positive skew, the result of outliers reported in the CRDC data of spending on salaries. These outliers may reflect extraordinary circumstances: for example, schools serving profoundly disabled students requiring larger numbers of staff per pupil. They may also be the result of data error, in either collection or reporting. Including these records in our models would likely render the results invalid. We exclude from our dataset any observations that report total spending on salaries per pupil as less than or equal to zero. We then mitigate against the effects of outliers by applying the following procedure:

[9] Using FL did cause us to lose some observations. Oregon, for example, has two for-profit charter schools (as designated by the Miron & Gulosino dataset), but the CCD data does not show a FL percentage for either; therefore, we had to eliminate the state from our subsequent analysis.
[10] http://www2.ed.gov/about/offices/list/ocr/data.html?src=rt/

In any sample herein, we calculate the mean of total salaries per pupil. We then eliminate any record whose total salary per pupil is more than ten times the mean. We recalculate the mean and the variance of this new sample, and eliminate any record whose total salary per pupil is 2.5 standard deviations above or below the mean. Models using instructional salaries per pupil use the same subsequent sub-sample as those reporting total salaries per pupil.

4.0 Methods & Models

As noted in the introduction, one strategy schools of choice might use to reduce expense is to try to shape their enrollments, serving less needy, less costly students. As such, our first step is to evaluate the demographics of schools by type. Following evaluation of the demographics of schools, we evaluate total and instructional spending per pupil.

4.1 Comparing School Demographics

Our first goal in this analysis is to determine if student population characteristics vary depending on a school's type of management structure: for-profit charter, nonprofit charter, or district school. A global model or statewide comparison, however, is not particularly useful or informative. Charter schools draw unevenly from different geographic areas, serving different proportions of the total student population in different regions. Because charters are mostly concentrated in large urban areas[11], the total student population for the regions where they are situated likely have higher proportions of students who qualify for free lunches (Bitterman and Goldring, 2013) and higher proportions of Limited English Proficient (LEP) students (Kena et al., 2015) than across a state or the nation. Demographics may also be influenced by the different grade levels a school enrolls. Students may be more likely to be classified as having a special

[11] Digest of Education Statistics, Table 216.30. U.S. Department of Education. Washington, DC: National Center for Education Statistics. Retrieved 7/14/15 from http://nces.ed.gov/programs/digest/d14/tables/dt14_216.30.asp

education need or less likely to be listed as LEP if they are enrolled in a higher grade level (Bitterman and Goldring, 2013). Charter schools enroll a larger proportion of elementary students compared to district schools[12]; comparisons between charter and district school demographics, therefore, should account for these grade level differences.

To compare the student demographics of schools under different management structures, we first limit those comparisons to samples in particular geographic regions. In this analysis, we examine large counties (those with total publicly funded student populations of 150,000 or more) whose for-profit charter schools command a total market share of greater than 0.5 percent. We then calculate an unadjusted, weighted mean by provider type for the percentage of students eligible for free lunch (FL), the percentage of students with disabilities (SWD), and the percentage of LEP students.

Next, we apply the following conceptual model to each sample:

Student Population Demographics = *f*(Provider Type, Grade Range Distribution, City)

For each measure of student population characteristics, we use an ordinary least squares (OLS) model with provider type and city as dummy variables. The City fixed effect allows us to make comparisons of the demographics of each school to the average demographics of other similar schools in the same city. To account for differences in grade ranges, we use a continuous variable: the percentage of a school's population that is enrolled in grades K through five. A continuous variable allows us to include schools that serve any combination of grades from K to twelve, yet allows for distinctions between schools that may enroll both elementary and

[12] Digest of Education Statistics, Table 216.20. U.S. Department of Education. Washington, DC: National Center for Education Statistics. Retrieved 7/14/15 from http://nces.ed.gov/programs/digest/d14/tables/dt14_216.20.asp

secondary students but in different proportions. Regressions are not weighted by student enrollment of each school as the intent is to evaluate schools as the relevant unit of analysis. That is, compared to other schools, how does school "x" compare in terms of students served. Separately, we reported enrollment weighted average demographics for each major labor market and state by provider type.

4.2 Comparing School Site Spending

Our next analysis compares both total and instructional spending on salaries between different types of providers. Our conceptual model is:

Spending = *f* (Provider Type, Virtual, % Free Lunch, % Special Education, Grade Range Distribution, Scale, Labor Market)

Miron and Gulosno define a virtual charter schools as part of their study: "A virtual school (also known as cyber school) delivers its curriculum and provides instruction via the Internet and electronic communication."(p. 238) While the literature on the finances of virtual schools is sparse and inconsistent, there is adequate reason to believe that the structure of virtual schools is different enough from "brick-and-mortar" schools that they should not be directly compared (Baker & Bathon, 2012). Our model, therefore, uses a dummy variable for virtual schools. In some cases, this variable is excluded, either because no EMO in a sample has a virtual charter, or because all for-profit charters in a sample are virtual and including the variable would introduce colinearity into the model.

Student population characteristics also affect the cost of achieving equitable and adequate outcomes (Duncombe and Yinger, 2008). As such, we must compare spending of schools serving similar student populations. Specifically, we include measures of the share of children who

qualify for free lunch under the national school lunch program (from the CCD) and the share of children classified for special education services under IDEA (from the CRDC data).

Historically, whether validly tied to differences in costs or not, school expenditures have differed by grade levels of students served. As such, to compare schools to their most similar peer schools, we use the percentage of a school's population that is enrolled in grades K through five as our measure of grade level differences between schools. School level salary expenditures would typically also be adjusted for regional differences in competitive wages. We address this issue by comparing schools only to other schools in their same labor market.

We also choose to compare schools against others of similar scale, but we are of two mindsets on this, as previously addressed in Baker, Libby, and Wiley (2012). On the one hand, inefficiently small schools need not exist in high population density areas. As such, higher costs and spending resulting from inefficiently small size should be considered inefficiency, not a cost factor. In this case, our goal is to determine whether, compared to otherwise similar schools (district to nonprofit charter to for-profit charter) there exist differences in school site spending and in instructional spending. That is, if the district operated schools of similar size, would their spending be higher, lower or the same, and so on. That is, does organizational type affect spending across schools of varied sizes, among other factors? We adopt a simple, second order scale term, as is common in district cost models (Andrews, Duncombe, and Yinger 2002).

We apply this model at a global/national level, a state level, and for the counties specified above for our descriptions of student populations. When using the model at the county level, we include the City fixed effect. Including this effect would be impractical at the global/national of state level, as each city in either the nation or a state would require its own dummy variable in

our regression. Applying the City fixed effect at the county level is both practical and in keeping with our conceptual model for describing student population characteristics.

5.0 Findings

Table 1 shows the distribution of district, nonprofit, and for-profit charters by state, with virtual charters both separated from and combined with "brick-and-mortar" charters. We only include those schools that report all variables used in our subsequent models; these figures, therefore, do not represent full population descriptions, but rather the schools included in our subsequent analyses. States are limited to those where for-profit charters capture at least 0.5 percent of market share (enrollment). Only two states, Florida and Michigan, have more than one hundred for-profit charters; in addition, Michigan has more for-profit charters than nonprofits. Ohio and Arizona are the only other states with more than 20 for-profit charters. In three states (Hawaii, Idaho, and South Carolina) all for-profit charters are virtual schools.

Table 2 shows enrollments for each of the school management structures found in Table 1. When we restrict our observations only to those reporting the variables used in our models, Washington D.C., Florida, Illinois, and Michigan have the largest shares of their student populations in for-profits, all above three percent. Arizona, the state with the next largest share, enrolls more than two percent of its students in for-profit charters. Michigan is the only state where there are more students enrolled in for-profit charters than nonprofits.

Table 1

Distribution of Nonprofit and For-Profit Providers by State†

State	District School	For-Profit Charter	Nonprofit Charter*	For-Profit Virtual Charter	Nonprofit Virtual Charter*	Total	*All For-Profit Charters*	*All Nonprofit Charters**
AZ	1248	65	266	3	6	1588	68	272
CO	1544	8	155	1	-	1708	9	155
DC	114	6	72	-	-	192	6	72
FL	3168	182	281	-	-	3631	182	281
GA	2088	5	112	1	-	2206	6	112
HI	165	-	9	1	-	175	1	9
ID	608	-	30	3	-	641	3	30
IL	3801	8	109	1	-	3919	9	109
IN	1697	4	46	4	-	1751	8	46
MI	2854	105	96	2	-	3057	107	96
MO	2064	9	29	-	-	2102	9	29
NV	555	2	30	2	-	589	4	30
OH	2965	73	182	2	1	3223	75	183
PA	2745	17	129	4	-	2895	21	129
SC	1081	-	38	2	-	1121	2	38

† States with > 0.5% for-profit charter share. Only schools reporting all independent variables used in models, excluding outliers (see Methods).

** "Nonprofit" designates a charter school not listed as for-profit in the Miron, Gulosino (2013) dataset.*

Table 2

Distribution of Student Enrollments by Provider Type†

State	District School	For-Profit Charters	Nonprofit Charters*	For-Profit Virtual Charters	Nonprofit Virtual Charters*	Total	*All For-Profit Charters*	*All Nonprofit Charters**	*For-Profit Market Share*
AZ	852,427	23,301	66,736	1,712	5,325	949,501	25,013	72,061	2.63%
CO	752,645	4,256	68,063	5,013	-	829,977	9,269	68,063	1.12%
DC	43,019	2,264	22,924	-	-	68,207	2,264	22,924	3.32%
FL	2,462,843	79,796	90,564	-	-	2,633,203	79,796	90,564	3.03%
GA	1,572,916	3,238	71,111	10,289	-	1,657,554	13,527	71,111	0.82%
HI	119,301	-	3,847	1,071	-	124,219	1,071	3,847	0.86%
ID	253,559	-	10,240	4,261	-	268,060	4,261	10,240	1.59%
IL	1,926,061	71,168	284,029	590	-	2,281,848	71,758	284,029	3.14%
IN	972,464	2,557	18,227	3,990	-	997,238	6,547	18,227	0.66%
MI	1,336,508	41,327	29,473	1,206	-	1,408,514	42,533	29,473	3.02%
MO	860,855	4,871	10,057	-	-	875,783	4,871	10,057	0.56%
NV	415,479	573	11,176	5,292	-	432,520	5,865	11,176	1.36%
OH	1,507,268	23,390	51,581	4,156	1,490	1,587,885	27,546	53,071	1.73%
PA	1,560,258	11,262	72,636	17,429	-	1,661,585	28,691	72,636	1.73%
SC	693,519	-	9,996	6,289	-	709,804	6,289	9,996	0.89%

† States with > 0.5% for-profit charter share. Only schools reporting all independent variables used in models, excluding outliers (see Methods).

** "Nonprofit" designates a charter school not listed as for-profit in the Miron, Gulosino (2013) dataset.*

5.1 Student Demographics

Table 3 shows measures of student population characteristics (percent free lunch-eligible (FL), percent students with disabilities (SWD), and percent Limited English Proficient (LEP)) for district, for-profit, and nonprofit charters in several large counties with for-profit charter penetration greater than 0.5 percent. The first column under each characteristic is the weighted mean proportion; the second column shows the resulting coefficients using our model described above, which adjusts for grade range distribution and location by city. This model, then, describes how adjusted student population characteristics differ between for-profit and nonprofit charters compared to the baseline of district schools. Throughout our analyses, we compare against district schools as a baseline, because of their comparative large sample size.

There is substantial variation in the difference between for-profits and district schools across labor markets. For-profits enroll a statistically significantly ($p < 0.05$) lower proportion of FL students in Broward, Miami-Dade, and Palm Beach Counties in Florida, and in Philadelphia. The FL proportions of for-profits is higher, however, in Oakland and Wayne Counties in Michigan and Cuyahoga County, Ohio. SWD proportions are lower for for-profits in Ventura, California; Broward and Miami-Dade, Florida; Wayne, Michigan; and Cuyahoga, Ohio. SWD proportions are higher, however, in Palm Beach, Florida. Compared to district schools, LEP proportions are smaller in Miami-Dade and Palm Beach, Florida; Oakland, Michigan; and Clark, Nevada.

Table 3

Mean Student Characteristics and Conditional (Regression based) Differences in Student Populations by Labor Market

		Pct. Free Lunch Eligible				Pct. Students with Disabilities				Pct. Limited English Proficient			
		Mean	**Coeff.**	**se**	**sig.**	**Mean**	**Coeff.**	**se**	**sig.**	**Mean**	**Coeff.**	**se**	**sig.**
MARICOPA COUNTY, AZ													
	District	0.407				0.110				0.084			
	For-Profit	0.523	0.071	0.042	*	0.094	-0.020	0.011	*	0.092	-0.010	0.014	
	Nonprofit	0.352	0.007	0.027		0.077	-0.042	0.007	***	0.046	-0.034	0.009	***
	N	*818*											
	R-squared	*0.214*											
	df_m	*51*											
VENTURA COUNTY, CA													
	District	0.427				0.093				0.266			
	For-Profit	0.339	0.115	0.072		0.086	-0.034	0.016	**	0.019	-0.079	0.060	
	Nonprofit	0.223	-0.134	0.056	**	0.074	-0.024	0.013	*	0.079	-0.115	0.047	**
	N	*215*											
	R-squared	*0.613*											
	df_m	*21*											
BROWARD COUNTY, FL													
	District	0.498				0.119				0.099			
	For-Profit	0.439	-0.083	0.031	***	0.075	-0.057	0.008	***	0.090	-0.007	0.013	
	Nonprofit	0.334	-0.078	0.041	*	0.064	-0.075	0.011	***	0.070	-0.003	0.017	
	N	*294*											
	R-squared	*0.554*											
	df_m	*29*											
HILLSBOROUGH COUNTY, FL													
	District	0.513				0.136				0.121			
	For-Profit	0.328	-0.169	0.092	*	0.111	-0.066	0.060		0.046	-0.062	0.039	
	Nonprofit	0.317	-0.163	0.049	***	0.135	0.078	0.032	**	0.067	-0.046	0.021	**
	N	*275*											
	R-squared	*0.267*											
	df_m	*18*											
MIAMI-DADE COUNTY, FL													
	District	0.669				0.105				0.206			
	For-Profit	0.479	-0.225	0.029	***	0.043	-0.079	0.013	***	0.138	-0.060	0.020	***
	Nonprofit	0.571	-0.189	0.036	***	0.070	-0.001	0.017		0.205	-0.017	0.025	
	N	*457*											
	R-squared	*0.376*											
	df_m	*29*											
ORANGE COUNTY, FL													
	District	0.569				0.107				0.157			
	For-Profit	0.268	-0.244	0.150		0.179	0.032	0.047		0.136	0.059	0.069	

	Nonprofit	0	-0.169	0.069	**	0.109	0.072	0.022	***	0.076	-0.083	0.032	**
	N	*217*											
	R-squared	*0*											
	df_m	*13*											
PALM BEACH COUNTY, FL													
	District	0.490				0.133				0.109			
	For-Profit	0.426	-0.279	0.089	***	0.182	0.295	0.066	***	0.032	-0.130	0.051	**
	Nonprofit	0.559	-0.011	0.045		0.179	0.125	0.033	***	0.060	-0.037	0.026	
	N	*215*											
	R-squared	*0.468*											
	df_m	*23*											
COOK COUNTY, IL													
	District	0.594				0.126				0.147			
	For-Profit	0.872	0.037	0.062		0.127	-0.018	0.032		0.054	-0.084	0.047	*
	Nonprofit	0.908	0.102	0.021	***	0.116	-0.019	0.011	*	0.128	-0.020	0.016	
	N	*1290*											
	R-squared	*0.703*											
	df_m	*118*											
OAKLAND COUNTY, MI													
	District	0.255				0.108				0.054			
	For-Profit	0.734	0.201	0.062	***	0.094	-0.033	0.047		0.000	-0.065	0.029	**
	Nonprofit	0.510	0.006	0.048		0.047	-0.140	0.037	***	0.069	-0.003	0.022	
	N	*312*											
	R-squared	*0.746*											
	df_m	*48*											
WAYNE COUNTY, MI													
	District	0.502				0.128				0.087			
	For-Profit	0.811	0.121	0.020	***	0.085	-0.061	0.017	***	0.132	0.012	0.026	
	Nonprofit	0.768	-0.008	0.025		0.081	-0.083	0.022	***	0.005	-0.093	0.033	***
	N	*433*											
	R-squared	*0.830*											
	df_m	*43*											
CLARK COUNTY, NV													
	District	0.477				0.103				0.176			
	For-Profit	0.391	-0.154	0.130		0.087	-0.064	0.050		0.028	-0.218	0.090	**
	Nonprofit	0.245	-0.159	0.058	***	0.083	-0.018	0.022		0.046	-0.123	0.040	***
	N	*349*											
	R-squared	*0.236*											
	df_m	*21*											
CUYAHOGA COUNTY, OH													
	District	0.281				0.164				0.033			
	For-Profit	0.443	0.444	0.052	***	0.116	-0.077	0.022	***	0.022	-0.036	0.019	*
	Nonprofit	0.451	0.324	0.047	***	0.172	-0.042	0.019	**	0.016	-0.036	0.017	**
	N	*293*											
	R-squared	*0.590*											

	df_m	*54*											
FRANKLIN COUNTY, OH													
	District	0.429				0.133				0.077			
	For-Profit	0.622	0.010	0.060		0.149	-0.039	0.031		0.111	0.024	0.031	
	Nonprofit	0.290	-0.008	0.041		0.173	0.005	0.022		0.048	0.007	0.022	
	N	*334*											
	R-squared	*0.491*											
	df_m	*20*											
PHILADELPHIA COUNTY, PA													
	District	0.839				0.132				0.082			
	For-Profit	0.579	-0.232	0.063	***	0.121	-0.010	0.017		0.023	-0.043	0.024	*
	Nonprofit	0.638	-0.202	0.030	***	0.143	-0.003	0.008		0.040	-0.034	0.011	***
	N	*310*											
	R-squared	*0.185*											
	df_m	*6*											
SALT LAKE COUNTY, UT													
	District	0.536				0.117				0.138			
	For-Profit	0.999	0.290	0.226		0.125	-0.072	0.118		0.000	-0.015	0.135	
	Nonprofit	0.374	-0.076	0.046		0.093	-0.036	0.024		0.089	-0.033	0.028	
	N	*254*											
	R-squared	*0.437*											
	df_m	*20*											

There are several counties where both nonprofit and for-profit charters enroll a statistically significantly different proportion of FL, SWD, or LEP students compared to district schools. Yet these differences do not consistently cut in the same direction among charters or between charters and district schools: in Miami-Dade, Florida and Philadelphia, for example, both types of charters enroll fewer FL students than do district schools. The for-profits' difference with district schools is greater than the nonprofits', suggesting that, while both types of charters differ from district schools, the nonprofits' student populations are less different from district schools than the for-profits'. This finding is in line with our expectations based on the different incentives of for profit and nonprofit providers. In Cuyahoga, Ohio, for-profit charters are also less similar to district schools than nonprofits, except the difference is that they enroll a greater proportion of FL students, conflicting with expectations.

These differences suggest that, while a global model may have some use, state and regional differences are important in explaining how spending patterns in district, for-profit charter, and nonprofit charter schools may vary. Different laws, incentives, and overall student populations in different regions may explain the varying distributions of student characteristics across all three management types. Spending models, therefore, will be most useful when they incorporate these differences and describe them within local contexts.

5.2 Staffing Expenditures – Global and State Level

Table 4 shows per pupil spending on both total salaries and instructional salaries for our five major types of school management structures: district, for-profit charter, nonprofit charter, for-profit virtual charter, and nonprofit virtual charter. Again, we restrict our analysis to those states with over 0.5 percent market penetration of all for-profit charters (virtual and brick-and-mortar). Florida reports total and instruction salaries as the same figures; therefore, we omit Florida's instructional spending from this table, though it remains conceivable that figures reported as total spending are, in fact, instructional spending instead.

Virtual charters, both for-profit and nonprofit, spend substantially less per pupil than brick-and-mortar schools of all types, both in total salaries and instructional salaries. The spending differences between different types of brick-and-mortar schools, however, are more complex. For-profit charters spend at least $500 less on total salaries than district schools in Colorado, Florida, Illinois, Indiana, Ohio, and Pennsylvania; however, they spend at least $500 more in Georgia, Michigan, Missouri, and Nevada. For-profits spend at least $500 more on total salaries than nonprofits in Nevada; they spend at least $500 less than nonprofits in Washington, D.C., Illinois, and Indiana.

These differences extend to spending on instructional salaries. For-profit charters spend at least $500 less on these salaries compared to district schools in Colorado, Washington, D.C., Illinois, Indiana, Nevada, Ohio, and Pennsylvania (in Arizona, the difference $480). Only in Missouri and Georgia do for-profits spend more on instructional salaries than district schools.[13] For-profits spend at least $500 more than nonprofits on instructional salaries in Missouri; they spend at least $500 less in Washington, D.C., Indiana, and Nevada.[14]

Table 4

Mean Staffing Expenditures and Instructional Staffing Expenditures by State and Provider Type

		District	For-Profit Charters	Nonprofit Charters	For-Profit Virtuals	Nonprofit Virtuals
Total Salaries Per Pupil						
	Arizona	$2,892.72	$2,741.06	$3,078.50	$1,495.96	$1,616.96
	Colorado	$3,697.71	$3,033.78	$3,232.56	$647.29	
	District of Columbia	$7,849.08	$7,847.81	$9,007.96		
	Florida	$2,805.80	$1,899.74	$2,344.21		
	Georgia	$4,232.78	$4,910.51	$4,455.01	$1,018.58	
	Hawaii	$4,379.95		$6,004.92	$2,197.63	
	Idaho	$2,838.96		$2,585.59	$1,301.92	
	Illinois	$5,222.91	$3,604.00	$4,191.80	$2,398.73	
	Indiana	$3,669.91	$2,466.82	$3,613.50	$1,298.98	
	Michigan	$3,707.04	$4,230.38	$4,092.30	$1,843.27	
	Missouri	$4,043.05	$5,606.13	$5,495.72		
	Nevada	$3,147.02	$5,774.62	$3,826.14	$1,048.10	
	Ohio	$4,307.30	$3,354.49	$3,687.12	$1,728.74	$2,974.62
	Pennsylvania	$5,356.24	$4,795.19	$5,130.66	$2,324.20	
	South Carolina	$3,939.07		$4,296.80	$1,007.09	
Instructional Salaries Per Pupil						
	Arizona	$2,219.10	$1,739.20	$2,088.76	$1,095.34	$1,253.77
	Colorado	$2,965.98	$2,194.89	$2,326.03	$571.18	
	District of Columbia	$5,960.24	$5,132.64	$5,779.71		

[13] Notably, the $2,628 spending advantage on total salaries that Nevada's for-profit charters have over district schools changes to an $1,827 disadvantage when comparing instructional salaries. Closer examination of the CRDC spending figures for Nevada suggests there may be significant data errors that account for at least some of this discrepancy. Imagine 100 Academy of Excellence, for example, reports $2,879,281 in total salary spending, but only $39,395 in instructional salary spending. Because only four Nevada for-profit charters report spending figures, this one anomaly would be enough to distort the mean for the entire sector.

[14] See the previous footnote regarding Nevada.

	Florida	*	*	*	*	*
	Georgia	$3,365.82	$3,735.97	$3,558.38	$862.58	
	Hawaii	$2,872.25		$3,678.04		
	Idaho	$2,222.16		$1,741.33	$1,013.74	
	Illinois	$4,003.71	$2,350.41	$2,830.43	$2,260.56	
	Indiana	$2,853.33	$1,902.30	$2,512.04	$977.78	
	Michigan	$3,045.72	$2,685.39	$2,673.04	$1,364.27	
	Missouri	$3,171.83	$4,148.67	$3,580.96		
	Nevada	$2,400.45	$573.70	$2,766.05	$910.04	
	Ohio	$3,431.82	$2,427.10	$2,543.39	$1,079.63	$1,439.73
	Pennsylvania	$4,243.23	$3,121.63	$3,499.51	$1,429.82	
	South Carolina	$2,802.30		$3,025.86	$757.47	

† States with > 0.5% for-profit charter share. Only schools reporting all independent variables used in models, excluding outliers (see Methods).

** Florida reports the same spending for Total Salaries and Instructional Salaries.*

Again, these unadjusted means do not necessarily capture differences in spending due to differences in student population characteristics, school size or grade levels served. Table 5 uses our model to account for these differences with a nationwide dataset.[15] We report this model's results with three variations: first, with all observations in our dataset that report all variables, subject to our outlier filter as described above, and using total salaries per pupil as the dependent variable. Next, knowing that some observations either do not report instructional spending, or report similar figures for instructional and total salary spending, we omit any observations that report these figures as equal (again, this includes all Florida observations), and continue to use total salaries per pupil as the dependent variable. Finally, we regress instructional salary spending, using the same observations as the second model.

Our first model shows that while both nonprofit and for-profit charter schools spend significantly less on total salaries per pupil than district schools, for-profits have a greater

[15] When creating this model, and in subsequent state- and county-level models, the percentage of Limited English Proficient (LEP) students was not often not found to be a statistically significant variable. This was not necessarily true in all geographical sub-populations; however, in the interest of keeping our model consistent, we have chosen to omit it for this analysis.

reduction in salary expenditures. Virtual schools also spend much less on total salaries per pupil. When we exclude the observations that replicate total and instructional salary spending in the second model the disparity in spending on total salaries between for-profit and nonprofit charters nearly disappears; however, we must remember that this model excludes all Florida observations. Florida has more for-profit charter schools than any other state (see Table 1); excluding its schools will significantly alter this model. The final model, using only instructional spending, shows a wider gap between district schools and charters, and between for-profit and nonprofit charters. Charters spend less per pupil on instructional salaries compared to districts; further, for-profit charters spend less than nonprofits.

Table 5

Differences in Spending by Provider Type – National (with labor market fixed effect)

	Total Salaries Per Pupil Spending				**Total Salaries Per Pupil Spending (excludes replication for Instructional Salary)**				**Instructional Salaries Per Pupil Spending (excludes replication for Instructional Salary)**		
	Coef.	**SE**	**Sig.**		**Coef.**	**SE**	**Sig.**		**Coef.**	**SE**	**Sig.**
For-Profit Charter	-719.686	71.240	***		-351.513	85.174	***		-652.056	74.042	***
Nonprofit Charter	-365.841	27.326	***		-333.431	27.724	***		-451.057	24.100	***
Virtual	-1470.550	189.512	***		-1718.620	207.437	***		-1314.239	180.326	***
Pct. FL	-58.041	22.910	**		-101.796	22.922	***		-312.965	19.926	***
Pct. SWD	1617.086	60.419	***		2153.700	67.626	***		1327.707	58.788	***
ln (Enrollment)	-632.995	38.240	***		-1410.198	43.998	***		-911.744	38.248	***
ln (Enrollment)^2	3.066	3.569			60.534	4.001	***		42.894	3.478	***
Pct. K-5	-549.307	13.405	***		-611.987	13.454	***		-273.127	11.695	***
N	*83995*				*78548*				*78548*		
R-sq	*0.379*				*0.406*				*0.320*		
dfM	*364*				*344*				*344*		

Table 6 applies two of the models used in Table 5 to individual states with significant for-profit charter market penetration. The first model shows adjusted spending on total salaries; the second shows adjusted spending on instructional salaries, but only for those schools whose spending on total and instructional salaries differs. The virtual variable is omitted in Washington, D.C., Florida, and Missouri because those states have no virtual schools that report all variables used in our models. The variable is also omitted in Hawaii, Idaho, and South Carolina, because all for-profit charters in these states are virtual charters.

In Arizona, Colorado, Florida, Hawaii, Indiana, Ohio, and South Carolina, spending on total salaries by for-profits is statistically significantly lower ($p < 0.01$) than the same spending by district schools.[16] Total salary spending is significantly higher in Michigan and Missouri. Nonprofit charters spend statistically significantly less ($p < 0.05$) on total salaries than district schools in Colorado, Florida, Idaho, Indiana, Nevada, Ohio, and Pennsylvania; however, in all of these cases except Nevada[17], for-profit spending on total salaries is lower than nonprofit spending. Nonprofit charters spend significantly more than district schools in Washington, D.C. and Missouri.

For-profit charters spend statistically significantly less ($p < 0.05$) on instructional salaries, compared to district schools, in Arizona, Colorado, Indiana, Michigan, Nevada, Ohio, and Pennsylvania.[18] In all cases except Michigan, the deficit in instructional spending compared to district schools is greater for for-profits than nonprofits.

[16] For-profit charter total salary spending is lower than district spending in Pennsylvania at the $p< 0.10$ level of significance.
[17] See footnote above regarding Nevada.
[18] Hawaii's one for-profit charter (which is also virtual) does not report instructional salary spending. For-profit charter total salary spending is lower than district spending in Illinois at the $p< 0.10$ level of significance.

Table 6

Differences in Spending by Provider Type by State

		Total Salaries Per Pupil Spending				Instructional Salaries Per Pupil Spending		
		Coef.	**SE**	**Sig.**		**Coef.**	**SE**	**Sig.**
Arizona								
	For-Profit Charter	-489.224	149.368	***		-599.249	106.335	***
	Nonprofit Charter	-87.782	89.755			-218.525	63.922	***
	Virtual	-1221.462	387.721	***		-1816.684	271.064	***
	Pct. FL	-110.337	102.608			-118.256	73.358	
	Pct. SWD	1001.983	340.219	***		1098.318	264.266	***
	ln (Enrollment)	-865.844	201.429	***		-826.783	157.495	***
	ln (Enrollment)^2	38.365	18.584	**		53.266	14.208	***
	Pct. K-5	-306.063	76.700	***		-17.629	54.646	
	N	*1588*				*1528*		
	R-sq	*0.236*				*0.202*		
Colorado								
	For-Profit Charter	-1116.020	400.040	***		-1152.187	315.523	***
	Nonprofit Charter	-460.389	101.758	***		-624.347	81.453	***
	Virtual	-1763.351	695.973	**		-1693.703	549.087	***
	Pct. FL	1184.032	120.268	***		690.087	96.254	***
	Pct. SWD	-273.029	479.557			-1209.505	416.883	***
	ln (Enrollment)	-1399.667	251.037	***		-891.577	224.763	***
	ln (Enrollment)^2	74.150	23.020	***		53.178	20.225	***
	Pct. K-5	-314.504	70.092	***		20.188	56.220	
	N	*1710*				*1669*		
	R-sq	*0.243*				*0.187*		
District of Columbia								
	For-Profit Charter	445.322	1192.609			-244.331	806.785	
	Nonprofit Charter	1548.532	466.139	***		374.553	315.337	
	Virtual							
	Pct. FL	-372.412	936.131			-1202.818	633.281	*
	Pct. SWD	16793.648	1646.263	***		11913.603	1113.677	***
	ln (Enrollment)	-3732.284	3889.788			-4058.016	2631.394	
	ln (Enrollment)^2	248.693	350.006			292.760	236.775	
	Pct. K-5	579.345	687.677			1212.668	465.205	***
	N	*192*				*192*		
	R-sq	*0.427*				*0.423*		
Florida								
	For-Profit Charter	-1035.267	71.751	***				
	Nonprofit Charter	-751.718	58.960	***				
	Virtual							
	Pct. FL	233.920	65.533	***				
	Pct. SWD	2598.070	120.045	***				
	ln (Enrollment)	461.594	97.048	***				
	ln (Enrollment)^2	-50.967	9.131	***				

	Pct. K-5	332.476	35.537	***				
	N	*3631*						
	R-sq	*0.293*						
Georgia								
	For-Profit Charter	176.585	386.062			-210.977	333.793	
	Nonprofit Charter	88.625	89.059			39.616	77.126	
	Virtual	-1698.660	976.834	*		-1250.869	847.045	
	Pct. FL	-86.772	82.630			-30.685	71.532	
	Pct. SWD	-462.484	349.834			-313.809	304.387	
	ln (Enrollment)	-459.059	319.335			158.857	300.842	
	ln (Enrollment)^2	-15.929	25.936			-37.751	24.230	
	Pct. K-5	-100.496	44.619	**		158.994	38.712	***
	N	*2206*				*2197*		
	R-sq	*0.243*				*0.246*		
Hawaii								
	For-Profit Charter	-1705.320	486.741	***				
	Nonprofit Charter	1055.556	177.554	***		866.340	114.424	***
	Virtual							
	Pct. FL	838.177	184.780	***		372.120	119.080	***
	Pct. SWD	3425.572	1000.798	***		1662.033	644.957	**
	ln (Enrollment)	-5423.040	840.715	***		-2618.787	541.793	***
	ln (Enrollment)^2	368.635	66.733	***		199.239	43.005	***
	Pct. K-5	-354.473	124.914	***		-48.510	80.500	
	N	*175*				*174*		
	R-sq	*0.664*				*0.435*		
Idaho								
	For-Profit Charter	-861.295	694.499			-677.672	564.048	
	Nonprofit Charter	-654.374	232.062	***		-795.713	189.127	***
	Virtual							
	Pct. FL	35.099	283.844			-228.122	236.714	
	Pct. SWD	594.899	760.089			-731.651	634.994	
	ln (Enrollment)	-575.467	289.829	**		-71.146	269.506	
	ln (Enrollment)^2	-6.529	29.263			-38.326	26.642	
	Pct. K-5	-793.511	108.567	***		-599.138	90.671	***
	N	*641*				*621*		
	R-sq	0.340				0.277		
Illinois								
	For-Profit Charter	-910.369	662.504			-978.470	542.698	*
	Nonprofit Charter	-215.407	187.315			-792.412	154.278	***
	Virtual	-2177.905	1880.633			-1052.437	1538.360	
	Pct. FL	-203.242	102.949	**		-100.665	84.841	
	Pct. SWD	3700.940	298.921	***		3051.096	264.470	***
	ln (Enrollment)	-873.568	193.682	***		-196.502	163.567	
	ln (Enrollment)^2	32.697	16.994	*		-11.399	14.271	
	Pct. K-5	-1056.503	73.200	***		-692.868	60.541	***
	N	*3919*				*3848*		
	R-sq	*0.226*				*0.201*		
Indiana								

	For-Profit Charter	-1203.160	409.945	***		-1056.630	414.895	**
	Nonprofit Charter	-253.074	125.507	**		-438.967	128.449	***
	Virtual	210.205	579.326			113.939	586.496	
	Pct. FL	850.533	96.314	***		590.176	97.693	***
	Pct. SWD	907.658	341.053	***		942.419	350.955	***
	ln (Enrollment)	64.207	290.690			92.911	346.180	
	ln (Enrollment)^2	-23.713	23.973			-11.632	28.154	
	Pct. K-5	-427.662	49.798	***		-153.735	50.640	***
	N	*1751*				*1739*		
	R-sq	*0.170*				*0.136*		
Michigan								
	For-Profit Charter	776.909	123.320	***		-249.624	93.749	***
	Nonprofit Charter	165.292	126.862			-335.976	97.218	***
	Virtual	-2361.558	852.437	***		-1150.688	641.997	*
	Pct. FL	-439.851	105.488	***		-466.777	80.805	***
	Pct. SWD	2802.000	210.513	***		1933.860	176.577	***
	ln (Enrollment)	-347.525	191.607	*		-83.318	164.261	
	ln (Enrollment)^2	17.206	18.102			0.238	15.163	
	Pct. K-5	-20.911	50.514			159.732	39.008	***
	N	*3057*				*2964*		
	R-sq	*0.116*				*0.143*		
Missouri								
	For-Profit Charter	1955.276	537.933	***		653.063	427.067	
	Nonprofit Charter	1717.374	306.865	***		393.871	248.241	
	Virtual							
	Pct. FL	-648.347	179.288	***		-332.428	150.653	**
	Pct. SWD	2168.509	294.965	***		875.064	247.058	***
	ln (Enrollment)	-51.264	288.900			242.580	243.669	
	ln (Enrollment)^2	-41.843	27.223			-46.636	22.837	**
	Pct. K-5	-315.756	84.185	***		-148.516	68.822	**
	N	*2102*				*1985*		
	R-sq	*0.173*				*0.103*		
Nevada								
	For-Profit Charter	1870.202	593.203	***		-2096.992	458.291	***
	Nonprofit Charter	-425.404	166.097	**		-391.260	128.607	***
	Virtual	-3109.263	847.016	***		719.174	654.970	
	Pct. FL	-141.446	140.253			-134.645	109.524	
	Pct. SWD	-2719.393	425.685	***		-2108.870	332.088	***
	ln (Enrollment)	-432.406	264.887			-859.805	261.931	***
	ln (Enrollment)^2	-56.365	23.989	**		19.335	22.978	
	Pct. K-5	-710.292	86.812	***		-225.454	70.071	***
	N	*589*				*574*		
	R-sq	*0.611*				*0.554*		
Ohio								
	For-Profit Charter	-1228.334	151.477	***		-1149.518	122.363	***
	Nonprofit Charter	-551.691	106.945	***		-921.264	87.819	***
	Virtual	-1138.247	736.949			-1401.768	591.487	**
	Pct. FL	-24.568	85.591			-53.290	69.040	

	Pct. SWD	2757.653	253.384	***		2592.728	212.321	***
	ln (Enrollment)	186.712	336.326			53.155	283.278	
	ln (Enrollment)^2	-35.763	28.481			-16.380	23.833	
	Pct. K-5	-363.189	52.649	***		-182.767	42.514	***
	N	*3223*				*3192*		
	R-sq	*0.155*				*0.176*		
Pennsylvania								
	For-Profit Charter	-528.884	309.813	*		-984.262	283.680	***
	Nonprofit Charter	-424.928	119.402	***		-784.531	110.397	***
	Virtual	-935.595	725.244			-769.522	664.216	
	Pct. FL	-289.362	96.479	***		-663.574	88.581	***
	Pct. SWD	3234.900	389.900	***		2326.675	359.073	***
	ln (Enrollment)	84.822	447.372			-141.339	412.585	
	ln (Enrollment)^2	-52.755	36.630			-16.343	33.756	
	Pct. K-5	-912.339	60.412	***		-483.080	55.716	***
	N	*2895*				*2867*		
	R-sq	*0.293*				*0.221*		
South Carolina								
	For-Profit Charter	-1844.180	664.033	***		-869.533	663.011	
	Nonprofit Charter	-239.172	169.643			-285.781	169.561	*
	Virtual							
	Pct. FL	-121.564	156.106			-178.848	155.932	
	Pct. SWD	2772.801	441.754	***		1672.475	441.079	***
	ln (Enrollment)	2382.472	364.599	***		1716.433	365.012	***
	ln (Enrollment)^2	-238.012	31.297	***		-171.211	31.309	***
	Pct. K-5	-385.480	66.027	***		-184.631	66.018	***
	N	*1121*				*1119*		
	R-sq	*0.267*				*0.192*		

5.3 Staffing Expenditures – Labor Market Level

Table 7 applies the spending model to the counties in Table 3 (the distributions of providers, distributions of enrollments, and means for spending are included in the Appendix). The model here includes a fixed effect for the city where the school is located, as in the descriptive model. In 11 of the 15 counties, for-profit charter spending on total salaries is statistically significantly lower ($p < .05$) than spending in district schools.[19] In two counties – Wayne, Michigan and Clark, NV – total salaries per pupil are significantly higher.[20] Total salary spending is also lower for nonprofit charters in Ventura, CA; Broward, Hillsborough, Miami-Dade, Orange and Palm Beach, Florida; Cook, Illinois; Wayne, Michigan; Clark, Nevada; Cuyahoga, Ohio; and Philadelphia.

For those counties reporting different figures in total and instructional salary spending, instructional spending by for-profit charters is lower than district schools in Maricopa, Arizona; Cook, Illinois; Oakland, Michigan; Clark, Nevada; Cuyahoga and Franklin, Ohio; and Philadelphia. Only in Cuyahoga and Philadelphia is nonprofit adjusted spending on instructional salaries less than adjusted spending by for-profit charters.

Table 7

Differences in Spending by Provider Type by Large County (with City fixed effect)

		Total Salaries Per Pupil Spending				**Instructional Salaries Per Pupil Spending**		
		Coef.	**SE**	**Sig.**		**Coef.**	**SE**	**Sig.**
MARICOPA COUNTY, AZ								
	For-Profit Charter	-451.376	137.528	***		-679.974	100.307	***
	Nonprofit Charter	94.199	103.052			-202.033	75.337	***
	Virtual	-730.295	288.291	**		-1401.616	210.658	***
	Pct. FL	157.630	109.124			11.628	79.662	

[19] In addition, Salt Lake County is statistically significant at the $p < 0.10$ level.
[20] As stated above, data error may explain the differences in Nevada.

	Pct. SWD	712.610	426.619	*		511.895	363.787	
	ln (Enrollment)	469.582	279.399	*		419.503	239.154	*
	ln (Enrollment)^2	-51.794	23.903	**		-40.375	20.016	**
	Pct. K-5	-144.947	88.793			76.637	65.128	
	N	818.000				809.000		
	R-sq	0.158				0.235		
VENTURA COUNTY, CA†								
	For-Profit Charter	-1151.903	378.051	***				
	Nonprofit Charter	-1269.159	284.721	***		-833.256	237.718	***
	Virtual							
	Pct. FL	1802.964	366.165	***		61.980	311.181	
	Pct. SWD	1805.138	1620.507			2575.365	1357.307	*
	ln (Enrollment)	-1971.318	708.542	***		565.180	754.106	
	ln (Enrollment)^2	110.349	59.929	*		-78.780	63.141	
	Pct. K-5	-529.873	171.936	***		-290.315	153.172	*
	N	215.000				205.000		
	R-sq	0.613				0.433		
BROWARD COUNTY, FL								
	For-Profit Charter	-872.506	132.665	***				
	Nonprofit Charter	-340.115	157.381	**				
	Virtual	-392.613	209.930	*				
	Pct. FL	4179.454	751.771	***				
	Pct. SWD	526.471	379.684					
	ln (Enrollment)	-55.457	32.910	*				
	ln (Enrollment)^2	98.283	89.058					
	Pct. K-5							
	N	294.000						
	R-sq	0.488						
HILLSBOROUGH COUNTY, FL								
	For-Profit Charter	-1558.750	287.954	***				
	Nonprofit Charter	-1146.167	162.593	***				
	Virtual	430.244	191.934	**				
	Pct. FL	2879.412	299.687	***				
	Pct. SWD	319.167	458.873					
	ln (Enrollment)	-28.809	40.763					
	ln (Enrollment)^2	29.437	109.308					
	Pct. K-5							
	N	275.000						
	R-sq	0.471						
MIAMI-DADE COUNTY, FL								
	For-Profit Charter	-994.919	111.597	***				
	Nonprofit Charter	-1102.651	129.848	***				
	Virtual	399.839	169.429	**				
	Pct. FL	503.774	350.254					
	Pct. SWD	556.184	208.154	***				
	ln (Enrollment)	-51.603	18.706	***				

	ln (Enrollment)^2	595.369	76.365	***				
	Pct. K-5							
	N	457.000						
	R-sq	0.492						
ORANGE COUNTY, FL								
	For-Profit Charter	-1874.605	500.196	***				
	Nonprofit Charter	-807.035	245.193	***				
	Virtual	-197.215	234.729					
	Pct. FL	4098.514	748.728	***				
	Pct. SWD	-1169.680	415.056	***				
	ln (Enrollment)	76.354	37.469	**				
	ln (Enrollment)^2	786.890	151.014	***				
	Pct. K-5							
	N	217.000						
	R-sq	0.418						
PALM BEACH COUNTY, FL								
	For-Profit Charter	-1649.926	396.413	***				
	Nonprofit Charter	-1509.327	210.362	***				
	Virtual	689.232	299.683	**				
	Pct. FL	2201.521	414.380	***				
	Pct. SWD	-321.576	563.124					
	ln (Enrollment)	9.896	50.075					
	ln (Enrollment)^2	332.986	153.168	**				
	Pct. K-5							
	N	215.000						
	R-sq	0.396						
COOK COUNTY, IL								
	For-Profit Charter	-1531.071	638.310	**		-2007.578	489.024	***
	Nonprofit Charter	-980.660	200.698	***		-1496.692	153.278	***
	Virtual	-1970.101	1682.406			-365.875	1279.026	
	Pct. FL	193.620	248.863			-265.201	190.560	
	Pct. SWD	8410.465	510.846	***		6116.895	401.406	***
	ln (Enrollment)	-2027.435	504.874	***		-1895.375	433.634	***
	ln (Enrollment)^2	106.641	38.729	***		113.341	32.919	***
	Pct. K-5	-1720.437	134.347	***		-1058.316	103.030	***
	N	1290.000				1276.000		
	R-sq	0.558				0.586		
OAKLAND COUNTY, MI								
	For-Profit Charter	-1282.571	462.285	***		-2161.137	391.576	***
	Nonprofit Charter	-699.604	360.902	*		-601.638	313.613	*
	Virtual	-151.644	480.126					
	Pct. FL	-617.537	648.184			-260.463	409.382	
	Pct. SWD	3408.030	881.650	***		3740.840	755.241	***
	ln (Enrollment)	-277.454	76.435	***		3598.072	765.709	***
	ln (Enrollment)^2	90.362	161.465			-295.321	66.377	***
	Pct. K-5					156.169	138.922	
	N	312.000				308.000		

	R-sq	0.620				0.653		
WAYNE COUNTY, MI								
	For-Profit Charter	1283.500	219.448	***		96.416	150.714	
	Nonprofit Charter	558.598	266.105	**		-258.601	183.325	
	Virtual	-539.176	532.896					
	Pct. FL	6393.045	626.687	***		-1100.094	362.995	***
	Pct. SWD	-3016.596	846.600	***		4061.864	430.103	***
	ln (Enrollment)	226.920	73.929	***		-2156.974	681.627	***
	ln (Enrollment)^2	-165.222	163.736			160.810	58.365	***
	Pct. K-5					80.825	112.564	
	N	433.000				425.000		
	R-sq	0.427				0.432		
CLARK COUNTY, NV								
	For-Profit Charter	1826.542	365.333	***		-1901.540	276.220	***
	Nonprofit Charter	-658.952	143.301	***		-318.145	108.347	***
	Virtual	-3070.826	626.267	***		1100.583	473.506	**
	Pct. FL	-595.213	126.048	***		-566.403	95.302	***
	Pct. SWD	-2915.123	380.846	***		-1630.731	287.949	***
	ln (Enrollment)	-2041.432	724.196	***		-16.001	547.548	
	ln (Enrollment)^2	88.316	56.295			-28.301	42.563	
	Pct. K-5	-257.236	88.057	***		29.287	66.578	
	N	348.000				348.000		
	R-sq	0.721				0.579		
CUYAHOGA COUNTY, OH								
	For-Profit Charter	-2472.404	271.580	***		-1751.508	240.522	***
	Nonprofit Charter	-2440.797	256.368	***		-1916.866	227.050	***
	Virtual	1032.269	1430.972			278.377	1267.324	
	Pct. FL	494.072	303.046			152.262	268.389	
	Pct. SWD	4644.579	677.661	***		2624.526	600.163	***
	ln (Enrollment)	-698.376	992.905			1267.239	879.355	
	ln (Enrollment)^2	37.086	84.167			-99.256	74.542	
	Pct. K-5	-431.035	175.140	**		-197.920	155.111	
	N	292.000				292.000		
	R-sq	0.744				0.652		
FRANKLIN COUNTY, OH								
	For-Profit Charter	-1679.877	338.410	***		-2009.708	226.907	***
	Nonprofit Charter	-252.202	272.108			-1751.728	203.178	***
	Virtual	-1339.437	1295.678			-1975.111	868.506	**
	Pct. FL	-52.486	333.877			-97.288	225.733	
	Pct. SWD	1195.208	766.314			2920.788	571.693	***
	ln (Enrollment)	3239.131	1139.696	***		384.141	897.201	
	ln (Enrollment)^2	-271.835	91.362	***		-49.994	70.596	
	Pct. K-5	-569.717	162.811	***		-252.602	110.143	**
	N	334.000				330.000		
	R-sq	0.376				0.604		
PHILADELPHIA COUNTY, PA								

	For-Profit Charter	-192.036	321.752			-723.653	253.315	***
	Nonprofit Charter	-591.447	159.174	***		-812.716	126.483	***
	Virtual	546.912	301.333	*				
	Pct. FL	12314.685	1149.555	***		415.077	237.341	*
	Pct. SWD	453.212	1771.301			8143.633	919.508	***
	ln (Enrollment)	-92.531	141.743			506.536	1395.470	
	ln (Enrollment)^2	-485.391	178.439	***		-61.286	111.685	
	Pct. K-5					69.721	141.871	
	N	310.000				308.000		
	R-sq	0.469				0.410		
SALT LAKE COUNTY, UT								
	For-Profit Charter	-1184.198	696.578	*		-1137.030	578.309	*
	Nonprofit Charter	392.014	164.364	**		259.380	136.457	*
	Virtual							
	Pct. FL	488.887	197.700	**		323.375	164.133	*
	Pct. SWD	-947.110	578.145			281.864	479.984	
	ln (Enrollment)	-2025.656	1081.224	*		-904.364	897.647	
	ln (Enrollment)^2	121.868	85.044			61.254	70.605	
	Pct. K-5	-569.101	140.228	***		-54.189	116.419	
	N	254.000				253.000		
	R-sq	0.422				0.262		
† All for-profit charters in Ventura County, CA, report the same spending for total and instructional salaries.								

To illustrate these differences more clearly, Figures 1 and 2 show the adjusted differences in total salary spending and instructional salary spending for both for-profit and nonprofit charters, compared to district schools. In most large counties in Figure 1, nonprofit and for-profit charter school total salary expense is lower than that of district schools. And in most cases, total salary expense per pupil is lower in for-profit charters than in nonprofit managed charters. In Wayne County, Michigan and Clark County, Nevada, these differences are flipped. In some cases, the for-profit reduction in school site expense is on the order of $500 per pupil to over $1,000 per pupil.

Figure 1

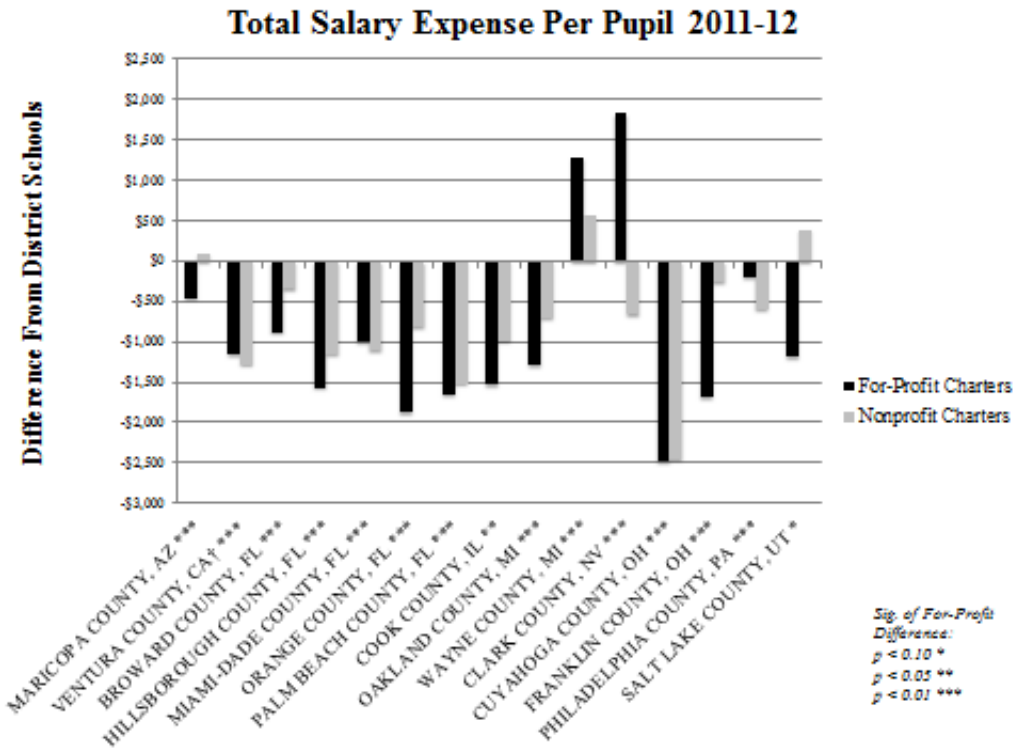
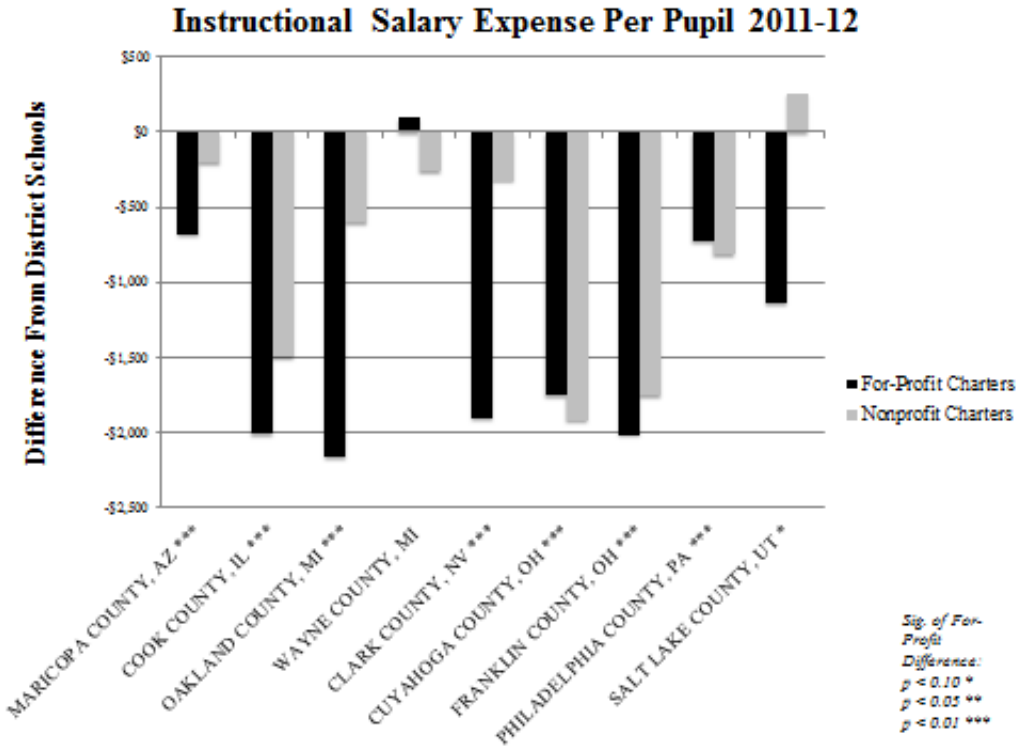


Figure 2 displays the differences for instructional staff spending per pupil. Here, the differences from district spending are greater and nearly all substantively lower than district schools' spending. In six cases of nine, for-profits spend less on instruction than do nonprofits, with particularly large differences in Oakland County, Michigan; Clark County, Nevada; and Salt Lake County, Utah. Notably, however, because of previously discussed data reporting issues, Florida charter schools are not included in this analysis.

Figure 2



6.0 Conclusions and Policy Implications

While not consistent across all settings, our models herein do reveal relatively common patterns which reconcile with our expectations laid out in the introduction to this article. Specifically, on average across all settings (global model) we find that charters spend less per pupil on instructional salaries compared to districts; further, for-profit charters spend less than nonprofits. Further, for-profit charters spend statistically significantly less ($p < 0.05$) on instructional salaries, compared to district schools, in Arizona, Colorado, Indiana, Michigan,

Nevada, Ohio, and Pennsylvania.[21] In all cases except Michigan, the difference in instructional spending compared to district schools is greater for for-profits than nonprofits.

With the available data we cannot be sure of the extent to which revenue enhancement activities of nonprofit charters, versus expense cutting behaviors of for-profit charters explain differences in staffing expenditures between the two types of schools. Again, nonprofit charters may be able to better maintain higher staffing expense and higher instructional staffing expense in part because they can raise additional funding through tax-exempt contributions. In many contexts explored herein, total staffing expenditure for all charters is lower than for district schools, and generally lower for for-profits. That is, we aren't seeing, as a general pattern, the pass-through of substantial private fundraising addressed previously by Baker, Libby and Wiley (2015, 2012).

Lower total staffing expense by charter schools relative to district schools might either be due to differences in initial subsidy rates – if charter schools receive reduced allotments – or differences in workforce characteristics. Even where well-endowed charters pay relatively high wages and operate with relatively low class sizes, the youth of their workforce often results in lower total staffing expense (Baker, Libby & Wiley, 2012). But, we should expect the subsidy rates to be constant between for-profit and nonprofit managed charters in any state and local policy context. As such, differences in total and instructional spending between these school types likely reflect management preferences and practices, the prevalent finding being that for-profit managers are spending less on school staffing, and even less on instructional staffing.

[21] Hawaii's one for-profit charter (which is also virtual) does not report instructional salary spending. For-profit charter total salary spending is lower than district spending in Illinois at the $p < 0.10$ level of significance.

Thus, children attending for-profit managed schools are likely to be in less well-resourced classrooms and schools than their peers attending nonprofit schools, or even district schools. Where choices are not equally accessible, and where well-resourced providers are over-subscribed, these differences raise equity concerns. For-profit charter schools in many settings are, on average, diverting hundreds of dollars per pupil from instructional staffing expense, relative to nonprofit providers. For a classroom of 25 children, a $500 per pupil reduction in expense equals $12,500. Applying that funding to teacher compensation for that classroom could yield substantially more experienced and otherwise qualified teachers, or alternatively, pooled across grades and classrooms could be used for class size reduction. Should students who reside in areas where available seats exist only in schools of for-profit managers be subjected to fewer resources? Are there available mechanisms for regulating the spending practices of charter providers to improve equity of programs and services, without compromising flexibility and creativity promised by charter expansion and school choice more generally?

A secondary concern we raised at the outset of this article is that the desire to maximize profit margin by reducing instructional spending might compromise the efficiency of public subsidies provided for charter schooling. Again, in some of these cases, for-profit managers are extracting substantial portions of classroom spending. To the extent that these practices compromise student outcomes, policymakers may wish to consider regulatory action. Unfortunately, in recent years, most attention on measuring charter school "effectiveness" via best empirical methods has focused on well-endowed nonprofit providers, revealing some promising results. Notably, however, broader though methodologically weaker studies like those from the Center for Research on Education Outcomes (CREDO at Stanford) have exposed mixed

to poor results in many settings we discuss herein as having high rates of charter market penetration by for-profit managers.

Regulatory solutions to these equity and efficiency concerns are complicated and potentially self-defeating. One concern is that increased regulation such as imposing resource allocation benchmarks to improve equity and efficiency may squelch development of innovative practices. A central presumption of the charter movement is that accountability emphasis should be placed on outcomes, and operators provided flexibility on how they pursue those outcomes. But recent headlines[22] and policy research on states including Ohio, Michigan and Arizona cast doubt on the ability of authorizers to follow through on their accountability promises, despite huge variation in outcomes (Ed Trust-Midwest, 2015, Chingos & West, 2015). Further, with respect to the efficiency concern, there are no simple, empirically justifiable benchmarks as to the shares of expenditures that should be allocated directly to classrooms (see Baker and Elmer, 2009).

Further research is necessary to explore potential causes of heterogeneity of outcomes both across state policy settings, and among provider types within policy settings. For example, do the spending practices parsed herein translate to substantively different teacher qualifications, class sizes and/or breadth and depth of course offerings? Finally, states, districts and authorizers must begin to monitor more carefully, and report more thoroughly data on data on spending practices, resource allocation and use across provider types, if for no other reason than to get a better handle on the extent to which diverse provider models lead to inequitable choice sets and inefficient spending practices.

[22] http://www.cleveland.com/metro/index.ssf/2015/03/ohios_charter_schools_ridicule.html

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Appendix

Reliability of CRDC/Ed Facts Spending Measures compared to State/Site Fiscal Data

		Error & Bias		Means		
		MAPE	Bias	Site	CRDC	Site-CRDC Correlation
Site 1	Total Salaries per Pupil	20%	20%	$4,687	$3,956	0.93
	Instructional Salaries per Pupil	11%	4%	$3,258	$3,187	0.87
Site 2	Total Salaries per Pupil	4%	3%	$4,570	$4,438	0.96
	Instructional Salaries per Pupil	9%	8%	$3,136	$2,899	0.72
Site 3	Total Salaries per Pupil	11%	6%	$3,619	$3,439	0.64
	Instructional Salaries per Pupil	23%	-22%	$2,650	$3,439	0.51
Site 4	Total Salaries per Pupil	6%	1%	$3,346	$3,304	0.80
	Instructional Salaries per Pupil	8%	-7%	$2,536	$2,725	0.65
Site 5	Total Salaries per Pupil	11%	4%	$3,523	$3,395	0.67
	Instructional Salaries per Pupil	10%	-8%	$2,609	$2,854	0.63
State 1	Total Salaries per Pupil	16%	-13%	$3,395	$4,045	0.55
	Instructional Salaries per Pupil	20%	-10%	$2,678	$3,165	0.68
State 2	Total Salaries per Pupil	15%	14%	$7,869	$7,061	0.69
	Instructional Salaries per Pupil	19%	15%	$5,950	$5,463	0.71

Completeness of CRDC/Ed Facts Spending Measures

Spending Category	Site 1	Site 2	Site 3	Site 4	Site 5	State 1	State 2
School admin pay	**8.3%**	**8.1%**	**4.8%**	**8.6%**	**5.7%**	**6.1%**	**3.9%**
Teacher pay	**55.8%**	**66.8%**	**49.8%**	**61.4%**	**50.7%**	**54.9%**	**46.3%**
Instructional support pay	**3.3%**	**5.3%**	**2.5%**	**3.3%**	**0.8%**	**5.3%**	**2.3%**
Pupil support pay	**11.1%**	**17.5%**	**8.8%**	**21.7%**	**7.0%**	**12.1%**	**14.9%**
Health insurance	31.8%	0.0%	18.4%	22.6%	22.9%	13.3%	26.0%
Retirement and pensions	5.9%	0.0%	8.9%	1.7%	15.6%	4.6%	25.2%
All or other benefits	28.7%	4.1%	17.0%	14.7%	28.7%	17.5%	17.3%
Professional development	9.8%	0.7%	7.7%	5.5%	13.4%	5.7%	6.6%
Textbooks and instructional materials	7.8%	1.5%	5.4%	2.9%	4.7%	2.1%	1.8%
Supplies	5.2%	16.5%	8.6%	14.9%	11.2%	17.1%	16.2%
Furniture and equipment	0.0%	3.8%	1.5%	0.0%	2.3%	0.0%	1.7%
Computer and electronics	2.9%	9.5%	2.5%	0.0%	0.3%	0.0%	4.0%
Telecommunications	0.3%	0.9%	0.7%	0.0%	0.0%	0.0%	0.9%
School maintenance and operations salary	0.0%	25.7%	39.6%	21.1%	26.2%	14.8%	17.9%
Utilities	0.0%	0.1%	26.7%	32.2%	19.6%	17.3%	1.7%
Security	4.4%	0.0%	0.0%	0.0%	0.0%	0.0%	3.2%
Transportation	0.0%	0.9%	1.9%	0.0%	21.8%	12.9%	33.7%
Food Service salaries	13.5%	31.1%	21.7%	0.0%	25.4%	25.6%	4.1%
Food service supplies	4.0%	54.5%	48.8%	2.0%	59.3%	43.9%	8.9%
Curriculum development	2.2%	0.0%	32.0%	0.0%	0.0%	0.0%	0.0%
District services	25.3%	42.0%	7.2%	6.7%	6.5%	17.9%	10.5%
Purchased/contracted services, rentals,	98.3%	90.9%	55.2%	95.3%	42.8%	71.5%	87.0%
Miscellaneous objects	85.4%	83.0%	97.0%	91.3%	96.9%	97.5%	97.7%
Total School Site Salary Share	**78.5%**	**97.6%**	**65.9%**	**95.0%**	**64.2%**	**78.4%**	**67.5%**

Distribution of Providers, Large Counties with > 0.5% For-Profit Charter Market Share

County	District School	For-Profit Charter	Nonprofit Charter*	For-Profit Virtual Charter	Nonprofit Virtual Charter*	Total	*All For-Profit Charters*	*All Nonprofit Charters**
MARICOPA COUNTY, AZ	634	45	130	3	6	818	48	136
VENTURA COUNTY, CA	193	-	12	9	1	215	9	13
BROWARD COUNTY, FL	225	45	24	-	-	294	45	24
HILLSBOROUGH COUNTY, FL	240	7	28	-	-	275	7	28
MIAMI-DADE COUNTY, FL	351	66	40	-	-	457	66	40
ORANGE COUNTY, FL	197	3	17	-	-	217	3	17
PALM BEACH COUNTY, FL	182	6	27	-	-	215	6	27
COOK COUNTY, IL	1186	8	95	1	-	1290	9	95
OAKLAND COUNTY, MI	298	5	9	-	-	312	5	9
WAYNE COUNTY, MI	348	56	29	-	-	433	56	29
CLARK COUNTY, NV	329	2	16	1	-	348	3	16
CUYAHOGA COUNTY, OH	239	22	30	1	-	292	23	30
FRANKLIN COUNTY, OH	279	14	40	1	-	334	15	40
PHILADELPHIA COUNTY, PA	232	11	67	-	-	310	11	67
SALT LAKE COUNTY, UT	224	-	29	1	-	254	1	29

† Large Counties (> 150K) with > 0.5% for-profit charter share. Only schools reporting all independent variables used in models, excluding outliers (see Methods).

** "Nonprofit" designates a charter school not listed as for-profit in the Miron, Gulosino (2013) dataset.*

Distribution of Student Enrollments, Large Counties with > 0.5% For-Profit Charter Market Share

County	District School	For-Profit Charters	Nonprofit Charters*	For-Profit Virtual Charters	Nonprofit Virtual Charters*	Total	All For-Profit Charters	All Nonprofit Charters*	For-Profit Market Share
MARICOPA COUNTY, AZ	536,880	16,495	40,751	1,712	5,325	601,163	18,207	46,076	3.03%
VENTURA COUNTY, CA	136,600	-	4,213	11,992	48	152,853	11,992	4,261	7.85%
BROWARD COUNTY, FL	226,019	18,218	10,225	-	-	254,462	18,218	10,225	7.16%
HILLSBOROUGH COUNTY, FL	187,120	1,645	7,576	-	-	196,341	1,645	7,576	0.84%
MIAMI-DADE COUNTY, FL	305,151	29,678	11,914	-	-	346,743	29,678	11,914	8.56%
ORANGE COUNTY, FL	171,614	1,315	4,011	-	-	176,940	1,315	4,011	0.74%
PALM BEACH COUNTY, FL	166,563	2,344	7,650	-	-	176,557	2,344	7,650	1.33%
COOK COUNTY, IL	725,034	71,168	278,332	590	-	1,075,124	71,758	278,332	6.67%
OAKLAND COUNTY, MI	177,121	1,660	4,558	-	-	183,339	1,660	4,558	0.91%
WAYNE COUNTY, MI	195,052	23,342	14,064	-	-	232,458	23,342	14,064	10.04%
CLARK COUNTY, NV	306,738	573	7,562	3,573	-	318,446	4,146	7,562	1.30%
CUYAHOGA COUNTY, OH	135,673	7,296	6,286	2,955	-	152,210	10,251	6,286	6.73%
FRANKLIN COUNTY, OH	151,778	5,900	18,825	1,201	-	177,704	7,101	18,825	4.00%
PHILADELPHIA COUNTY, PA	136,432	6,099	38,637	-	-	181,168	6,099	38,637	3.37%
SALT LAKE COUNTY, UT	180,618	-	14,449	1,949	-	197,016	1,949	14,449	0.99%
† Large Counties (> 150K) with > 0.5% for-profit charter share. Only schools reporting all independent variables used in models, excluding outliers (see Methods).									
** "Nonprofit" designates a charter school not listed as for-profit in the Miron, Gulosino (2013) dataset.*									

Per Pupil Spending on Salaries, Large Counties with > 0.55 For-Profit Charter Market Share

	District	For-Profit Charters	Nonprofit Charters	For-Profit Virtuals	Nonprofit Virtuals
Total Salaries Per Pupil					
MARICOPA COUNTY, AZ	$2,931.12	$2,774.74	$2,925.53	$1,495.96	$1,616.96
VENTURA COUNTY, CA	$3,501.21		$3,117.60	$1,744.63	$2,186.26
BROWARD COUNTY, FL	$2,607.07	$1,875.85	$2,439.94		
HILLSBOROUGH COUNTY, FL	$3,443.02	$1,990.31	$2,329.31		
MIAMI-DADE COUNTY, FL	$2,916.56	$1,953.27	$2,037.49		
ORANGE COUNTY, FL	$2,630.45	$872.77	$2,464.68		
PALM BEACH COUNTY, FL	$2,994.88	$1,762.85	$2,247.48		
COOK COUNTY, IL	$6,079.58	$3,604.00	$4,180.70	$2,398.73	
OAKLAND COUNTY, MI	$4,188.43	$3,711.01	$3,820.80		
WAYNE COUNTY, MI	$3,867.49	$4,527.60	$4,267.65		
CLARK COUNTY, NV	$2,946.46	$5,774.62	$3,061.56	$990.41	
CUYAHOGA COUNTY, OH	$5,557.10	$3,472.92	$3,865.90	$1,529.27	
FRANKLIN COUNTY, OH	$4,875.53	$2,848.89	$3,589.53	$2,219.50	
PHILADELPHIA COUNTY, PA	$5,902.52	$5,316.89	$5,606.74		
SALT LAKE COUNTY, UT	$2,422.09		$2,874.17	$972.55	
Instructional Salaries Per Pupil					
MARICOPA COUNTY, AZ	$2,278.79	$1,672.23	$1,971.00	$1,095.34	$1,253.77
VENTURA COUNTY, CA	$2,716.83		$2,316.19		$1,731.28
BROWARD COUNTY, FL	*	*	*	*	*
HILLSBOROUGH COUNTY, FL	*	*	*	*	*
MIAMI-DADE COUNTY, FL	*	*	*	*	*
ORANGE COUNTY, FL	*	*	*	*	*
PALM BEACH COUNTY, FL	*	*	*	*	*
COOK COUNTY, IL	$4,694.14	$2,350.41	$2,818.53	$2,260.56	
OAKLAND COUNTY, MI	$3,513.05	$2,097.49	$2,825.07		
WAYNE COUNTY, MI	$3,161.39	$2,841.81	$2,569.47		
CLARK COUNTY, NV	$2,176.83	$573.70	$2,180.48	$938.15	
CUYAHOGA COUNTY, OH	$4,409.74	$2,803.39	$2,820.23	$1,114.66	
FRANKLIN COUNTY, OH	$4,183.73	$1,887.65	$2,173.84	$993.43	
PHILADELPHIA COUNTY, PA	$4,429.53	$3,364.57	$3,729.76		
SALT LAKE COUNTY, UT	$1,869.63		$2,041.34	$817.26	

† Large Counties (> 150K) with > 0.5% for-profit charter share. Only schools reporting all independent variables used in models, excluding outliers (see Methods).

** Florida reports the same spending for Total Salaries and Instructional Salaries.*