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Comparing Academic Achievement in Charter Schools and Public Schools: The Role of Money

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Abstract
Discriminant analysis was used to ascertain whether or not student achievement and expenditure per pupil allow one to distinguish between Ohio charter schools and their associate public schools. The sample consisted of 129 Ohio charter schools and 30 associate public schools. The difference in means between the two types of schools was significant for achievement at the elementary and middle levels but not for the expenditure per pupil. For high schools, the difference in means for both student achievement and expenditure per pupil was significant in distinguishing between the two types of schools. The discriminant function including student achievement and expenditure was significant for each model: elementary schools, middle schools, and high schools.

Introduction

"A public charter school is a publicly funded school that is typically governed by a group or organization under a contract or charter that exempts it from selected state or local rules and regulations" (U.S. Department of Education [USDOE], 2005, p. 72), but must meet state and Federal academic accountability requirements. Public school districts, state boards of education, and state chartering agencies grant charters to these schools. The first charter school law was passed in Minnesota in 1991 (USDOE, 2004). "By the 2003-04 school year, 39 states and the District of Columbia had charter school laws in place, and more than 2,700 charter schools were operating nationally" (p. ix).

In 2003, schools chartered by public school districts were less likely to serve students eligible for free and reduced lunch than those chartered by state boards of education. Schools chartered by public school districts and state boards of education often served students in central cities and/or their surrounding areas. Also in 2003, 17.4% of the children attending conventional public schools were black compared to 29.4% of those attending charter schools. Nearly 60% of the children attending conventional public schools were white compared to about 50% in charter schools. Approximately 45% of all children in both types of schools were eligible for free or reduced lunch (USDOE, 2005).

While evidence in much of the latest research remains inconclusive regarding the relationship between school funding and student achievement, several scholars studying the academic success of charter school students contend that achievement failures are due to the lack of funding (Finn, Hassel, & Speakman, 2005; Hassel, Terrell, & Finn, 2004; Porch, Phillips-Schwartz, & Ryan, 2005).

Purpose of Study

The purpose of this study is to further investigate the nature of the relationship between student achievement and expenditures per pupil of charter schools compared to the same relationship between the public school districts of the charter schools and their students. The question is: Is the relationship between student achievement and student expenditures different in charter schools than in traditional public schools? The current study provides some support for attempting to an answer this question for charter schools in Ohio by comparing them to their associate public school districts.

Importance of Study

Evidence provided by the researchers cited above shows much recent work has been completed addressing the issue of finances and student achievement in charter schools. The current work will contribute to this existing bank of knowledge. Furthermore, the researchers anticipate that combining several techniques used in other studies to investigate this relationship contributes to the development of a final model for providing evidence regarding financial needs of charter schools.

Research Background

Student Achievement and School Funding

Probably long before, but certainly since Hanushek's work in 1989, the importance of the role of money on student achievement has been investigated and debated (Hanushek, 1996, 1994,1989; Hedges, Laine, & Greenwald, 1994; Wenglinsky, 1997; Wood, 1998; Taylor, 2000; Wossman, 2003). Employing a meta-analysis, Hanushek (1989) found no "strong or systematic" relationship between student achievement and expenditures. Hedges, Lane, and Greenwald (1994), using the same studies as Hanushek (1989) made a case for a positive relationship between education expenditures and student achievement. In his response, Hanushek (1994) countered Hedges, Lane, and Greenwald's (1994) findings and maintained the stance that more important than how much money a school receives is how the money is allocated or used. In other research, using data from the National Center for Education Statistics and a software package that accounts for indirect effects on student achievement, Wenglinsky (1997) broke per student expenditures into four categories: instructional, central administration, school administration, and capital outlays. He found that both instruction spending per pupil and central office administration spending per pupil indirectly related to student achievement. More recently, Wossman (2003) found that "the relationship with resource factors appears to be dubious and weak at best. The effects of expenditure per student and class size point in the 'wrong' direction…" (p. 156), though he acknowledged these findings may be biased due to design issues.

Charter Schools and Student Achievement

Like research results regarding the importance of the role of money on student achievement, evidence regarding academic success of students attending charter schools is also inconclusive. As a matter of fact, Zimmer et al. (2003), in studying California charter schools, found mixed evidence with respect to student achievement; some students in some circumstances outperformed traditional public school students, while other students in other circumstances matched public school student performance and still others underperformed compared to their public school counterparts. Similarly, in a study completed by Finnigan et al. (USDOE, 2004), "More than half of the charter schools in Texas, Colorado, Illinois, Massachusetts, and North Carolina were meeting state performance standards. However, charter schools

were less likely to meet performance standards compared with traditional public schools" (Chapter 5, p. 1). In a study analyzing student achievement in the Chicago International Charter School system, Hoxby and Rockoff (2004) found that students who applied to and attended elementary grades showed greater academic achievement than students who applied to but were not accepted due to space constraints of the school. According to a report published by The Center for Education Reform (2003), after reviewing 98 research reports published from 1995 through 2002, "…88 major reports now show[ing] that charter schools are improving education for America's kids" (p. 3). Greene, Forster, and Winters (2003) compared student academic achievement for charter schools and their public counterparts serving general student populations. They found that math and reading scores improved more for charter school students than for their public school counterparts in the eleven states studied. Findings from an Ohio study by Porch, Phillips-Schwartz, and Ryan (2005) indicate that Dayton public school districts and the charter schools within these districts performed nearly the same (except in grade eight where students in charter schools outperformed those in public schools.) Performance in Cleveland was generally the same for charters and public schools while public schools in Cincinnati and Columbus generally outperformed charters.

Method

The Ohio Department of Education's Education Management Information System (EMIS) database provided the information used for the research. The EMIS is a database of information to which school districts are required to report information about district characteristics and student performance. After being compiled by the EMIS staff, the data are sent back to local school districts for review and validation.

Data were collected for all charter schools and their associate public schools districts in Ohio. The completed data set includes 2004-2005 student achievement data for each charter school and each corresponding grade level school in the associate school district. Likewise, expenditure per pupil data were collected for the same schools. Finally, data identifying type of student in both charter schools and associate school districts are included to compare pupils from one school to another as some studies suggest that students attending charter schools are "less expensive" to educate than those in traditional public schools.

Sample

One-hundred-twenty-nine individual Ohio charter schools were included in the study (Appendix A). Criterion for inclusion was that the school had to have been in existence long enough to have earned a Performance Index Score from the State of Ohio for the 2004-2005 school year. Electronic schools as well as schools using traditional methods of teaching are included.

Thirty associate Ohio school districts were used (Appendix B). The public school districts included in this study were identified as associate districts because the students from these school districts comprise the highest percent of students in at least one of the charter schools included in the study.

Charter School Funding

In Ohio, public school money follows the student to his/her chosen charter school. The number of dollars includes: the base foundation formula aid amount including the additional cost of doing business (CODB) dollars, any state dollars that would have been associated with the individual student because of at-risk status (poverty), dollars for special education status, dollars for vocational education status, and what Ohio refers to as parity aid. Parity aid is additional per pupil support for students in low wealth districts, measuring low wealth using two-thirds property value per pupil and one-third district income per pupil. The base foundation formula aid includes both the local and the state share. Figure 1 identifies the charter school transfer formula for the 2004-2005 school year.

Variables

The cases in the sample were sorted into either charter school (code 1) (n = 129) or associate public school (code 0) (N=30). Two attributes, performance index score and expenditure per pupil, were studied to determine if there was a significant difference in their values for charter versus associate public schools, and therefore if either student achievement or dollars spent to educate a student is significantly different from one type of school to another.

A performance index score is a measure of student achievement used by the State of Ohio (Ohio Department of Education, 2004). It is "a weighted average of (a) school or district's assessment results across all tested grades and all subjects based on the performance levels of untested, below basic, basic, proficient, and advanced. The percentage of students at each performance level is multiplied by 1.2 (advanced), 1.0 (proficient), .6 (basic), .3 (limited/

Figure 1

Charter School Funding Formula—2004-2005 Academic Year

Per Pupil Money Transferred to Charter School from Associate School District =

(FF x CODB) + At-Risk + SE +PA

Where:

Per Pupil	= Each student, grades 1-12, who transfers from associate school to charter school equals 1 student; each kindergarten student equals .05 student; each joint vocational school student equals .20 student
FF in 2004-2005	= Foundation Funding of $5,169
CODB	= ranged from 1.00-1.075 depending on associate district
At-Risk	= extra state dollars for students in poverty
SE	= extra state dollars for special education students
PA	= extra state dollars for students in low-wealth districts

below basic), or 0 (untested) and the products are summed (¶ Performance Index Score).” Because the untested students are not included in the overall calculation, the actual range is 30 to 120. If for example, all tested students scored at the limited/below basic level, then the performance index score would be 30 (100% of the students x 0.3 = 30). Conversely, if all tested students scored at the advanced level, the performance index score would be 120 (100% of the students x 1.2 = 120).

Expenditure per pupil refers to total expenditures per pupil meaning dollars spent for administration, building operations, staff support, pupil support, and instructional expenses. Administration expenditures include salaries for administrators, office staff, and office supplies; expenditures for building operations include utilities, maintenance, repairs, busses, and lunchroom expenses. Staff support includes money spent for teacher training and other professional development activities while pupil support expenditures cover salaries for librarians, counselors, and nurses. Instructional expenses include teacher and education professional salaries and classroom materials. Expenditures not included are those associated with the purchase, lease, or

construction of the facility used for either charter schools or their associate public schools.

Finally, percent of disabled students and percent of students designated as economically disadvantaged were compared between charter schools and their associate public school districts to verify the need for greater or lower expenditure per pupil for either school type.

Analyses

A Pearson Correlation was undertaken to determine if there is a relationship between student achievement and expenditure per pupil. Descriptive discriminant analysis was used to ascertain whether or not performance index score and expenditure per pupil allow one to discriminate between Ohio charter schools and their associate public schools. Student achievement, represented by the performance index score and expenditure per pupil are the two factors identified in the literature (as discussed above) as impacting charter schools more than public schools. The question answered by descriptive discriminant analysis was, "Will these two attributes discriminate between the two groups of schools?" We were not interested in the predictive power of discriminant analysis, only in its descriptive ability. In other words, we were not interested in assigning schools to one school type of the other; our only purpose was to determine if the literature contentions that the reason charter schools are performing less well than their associate public schools is because they have less money to spend per pupil.

Both analyses were undertaken three times, once for elementary schools, once for middle schools, and once for high schools. This was done to guarantee consistency across school types with respect to how Ohio measures student achievement. Grade level was determined by the Ohio Department of Education and is classified as elementary school, middle school, or high school.

Results

Descriptive Statistics

Table 1 identifies statistics that provide an overview of the charter school sample compared to the associate school district sample. The average percent of disabled students is higher for charter schools than for the associate school districts, as is the percent of economically disadvantaged students. The median

percent of disabled students is the only descriptive statistic that is greater for the associate school district sample than for the charter school sample.

Table 1
*Descriptives-Disabled and Economically Disadvantaged Students**

	% Disabled Students		% Economically Disadvantaged Students	
	Charter Schools	Associate Schools	Charter Schools	Associate Schools
Mean	.17227	.16153	.62826	.53483
Median	.11200	.16550	.66400	.55700
Std. Deviation	.22388	.02753	.26181	.20293
Variance	.05000	.00100	.06900	.04100
Range	.99000	.14000	.00000	.92800
Minimum	.00000	.08100	.00000	.07200
Maximum	.99000	.22100	.00000	1.00000

*Charter Schools: n = 129; Associate School Districts: n = 30.

Tables 2, 3, and 4 provide descriptive statistics for each school level for expenditure per pupil and the performance index score. Each table includes data for both charter schools and their associate public schools. In the case of elementary schools (Table 2), the mean and the median for the associate schools are higher for expenditure per pupil and the performance index score.

Table 3 shows that the mean expenditure per pupil is higher for charter schools, but the median is considerably higher for the associate schools. The mean and median performance index scores are substantially higher at this level for the associate public schools.

At the high school level, as show in Table 4, the mean and median expenditure per pupil are both higher for the associate public schools. The mean performance index score for the associate schools is more than twice that of the charter schools. The median performance index score for the associate high schools is 35.40 points higher than that of the charter schools.

Table 2

Descriptives--Elementary Level--Expenditure per Pupil and Performance Index Score

	Expenditure per Pupil		Performance Index Score	
	Charter Schools (87)	Associate Schools (30)	Charter Schools (87)	Associate Schools (30)
Mean	8,289.51	8,551.23	65.044	81.407
Median	7,815.00	8,443.00	63.000	79.200
S.D.	2,768.27	1,396.26	17.7905	9.9533
Range	12,215	5,563	93.3	39.0
Minimum	3,197	5,803	11.9	70.5
Maximum	15,412	11,366	105.2	109.5

Table 3

Descriptives—Middle School Level--Expenditure per Pupil and Performance Index Score

	Expenditure per Pupil		Performance Index Score	
	Charter Schools (13)	Associate Schools (30)	Charter Schools (13)	Associate Schools (30)
Mean	9,169.38	9,076.37	57.077	77.170
Median	7,279.00	9,194.50	56.700	77.600
S.D.	3,992.77	1,976.04	18.2342	11.8596
Range	11,957	9,341	73.4	46.9
Minimum	5,096	5,697	13.3	55.2
Maximum	11,957	15,038	86.7	102.1

Table 4

Descriptives—High School Level--Expenditure per Pupil and Performance Index Score

	Expenditure per Pupil		Performance Index Score	
	Charter Schools (29)	Associate Schools (30)	Charter Schools (29)	Associate Schools (30)
Mean	7,053.86	8,868.00	48.197	108.580
Median	7,276.00	8,531.50	49.200	84.600
S.D.	1,726.38	1,812.25	25.8344	132.0100
Range	7,234	8,810	88.2	740.3
Minimum	3,197	6,167	6.2	64.7
Maximum	10,431	14,977	94.4	805.0

Pearson Correlation

Tables 5a and 5b show the correlation results for charter schools (Table 5a) and the associate public schools (Table 5b). Note that there are no significant relationships between expenditure per pupil and the performance index score for any type of charter school in Ohio. The only significant correlation between these two factors is at the middle school level for the associate public schools. Note also, that the coefficient for all schools and all levels except at the high-school level for the associate public schools is negative, indicating that as expenditure per pupil increases, performance index score decreases.

Table 5a

Pearson Correlation Results— Charter Schools: All Three Levels

		ES Performance Index Score	MS Performance Index Score	HS Performance Index Score
ES Expenditure per Pupil	Pearson Correlation	-.050		
	Sig. (2-tailed)	.963		
	N	87		
MS Expenditure per Pupil	Pearson Correlation		-.329	
	Sig. (2-tailed)		.272	
	N		13	
HS Expenditure per Pupil	Pearson Correlation			-.286
	Sig. (2-tailed)			.133
	N			29

Table 5b

Pearson Correlation Results— Associate Public Schools: All Three Levels

		ES Performance Index Score	MS Performance Index Score	HS Performance Index Score
ES Expenditure per Pupil	Pearson Correlation	-.310		
	Sig. (2-tailed)	.095		
	N	30		
MS Expenditure per Pupil	Pearson Correlation		-.388*	
	Sig. (2-tailed)		.034	
	N		30	
HS Expenditure per Pupil	Pearson Correlation			.142
	Sig. (2-tailed)			.455
	N			30

* Significant at the .05 level.

Discriminant Analysis

Elementary Schools. Eighty-seven charter schools and 30 associated public schools were analyzed in the elementary school sample. Table 6 (see next page) shows that the difference in means between the two types of schools is significant for the performance index score (p = .000) at the elementary level but not for the expenditure per pupil (p = .621). The table also indicates that the discriminant function is significant at the .05 level (p = .000), suggesting that, for the elementary school cases, the function including performance index score and expenditure per pupil together was significant in distinguishing between the charter schools and the associate public schools. Finally, the table shows that only about 17% (η = .410) of the variability of the values in the discriminant function is accounted for by the difference in school type. The standardized coefficient for performance index score was .995; for expenditure per pupil, it was .134.

Middle Schools. Table 6 shows the results of the discriminant analysis completed on the middle school portion of the cases, including 13 charter schools and 30 associate public schools. The table shows that the difference in means between the two types of schools is significant for the performance index score (p = .000) but not for the expenditure per pupil (p = .919). The table further indicates that the discriminant function including both performance index score and expenditure per pupil is significant at the .05 level (p = .000), again suggesting that, for the middle schools cases, both attributes together were significant in distinguishing between the charter schools and the associate public schools. Finally, Table 6 shows that by squaring the canonical correlation (η), .581, nearly 34% of the variability in the discriminant function including the performance index score and expenditure per pupil is accounted for by the difference in school type. The standardized coefficient for performance index score was 1.068; for expenditure per pupil, it was .353.

High Schools. Twenty-nine charter schools and 30 associated public schools were analyzed in the high school sample. Table 6 includes the results of the analysis for this sample. Unlike the models for elementary and middle schools, the overall result for high schools shows that both performance index score and expenditure per pupil were significant in distinguishing between the two types of schools.

Table 6
Discriminant Analysis Results

Education Level	Independent Variable	β	Equality of Group Means Sig. Level	Function		Eigenvalue	η^2
				Wilk's Λ	Sig.		
Elementary	Performance Index Score	.995	.000*	.832	.000*	.202	.1681
	Expenditure per Pupil	.134	.621				
Middle	Performance Index Score	1.068	.000*	.663	.000*	.509	.3376
	Expenditure per Pupil	.353	.919				
High	Performance Index Score	.484	.019*	.739	.000*	.354	.2611
	Expenditure per Pupil	.845	.000*				

* Significant at $p \leq .05$.

Table 6 shows that the difference in means between the two types of schools is significant for the performance index score ($p = .019$) as well as for expenditure per pupil ($p = .000$). Table 6 also indicates that the discriminant function including both independent variables is significant at the .05 level ($p = .000$). This suggests that there is a difference between the groups based on the two attributes included. Finally, Table 6 shows that about 26% ($\eta = .511$) of the variability in performance index scores and expenditure per pupil is accounted for the difference in school type. The standardized coefficient for performance index score was .484; for expenditure per pupil, it was .845.

Scatterplots. Scatterplots for each of the three school levels provide visual evidence for the statistical results reported above. Figures 2, 3, and 4 show the plotted relationship by grade level between performance index score and expenditure per pupil for charter schools and associate public schools. Charter school districts and associate public school districts with more than one building at a particular grade level are represented by one data point. The performance index score is shown on the horizontal axis and the expenditure per pupil

is shown on the vertical axis. Each charter school is represented by a white box, and each associate public school is represented by a black triangle.

Figure 2 represents the elementary school level data. Quadrants on the chart were created using the midpoints on each axis (60.0 for performance index score and $9,000 for expenditure per pupil). At the elementary school level, all associate public school districts' elementary schools have performance index scores greater than 60.0 with expenditure per pupil amounts both above and below the $9,000 midpoint. At the elementary school level, charter schools have performance index scores and expenditure per pupil amounts in all four quadrants.

Figure 2
Elementary Schools

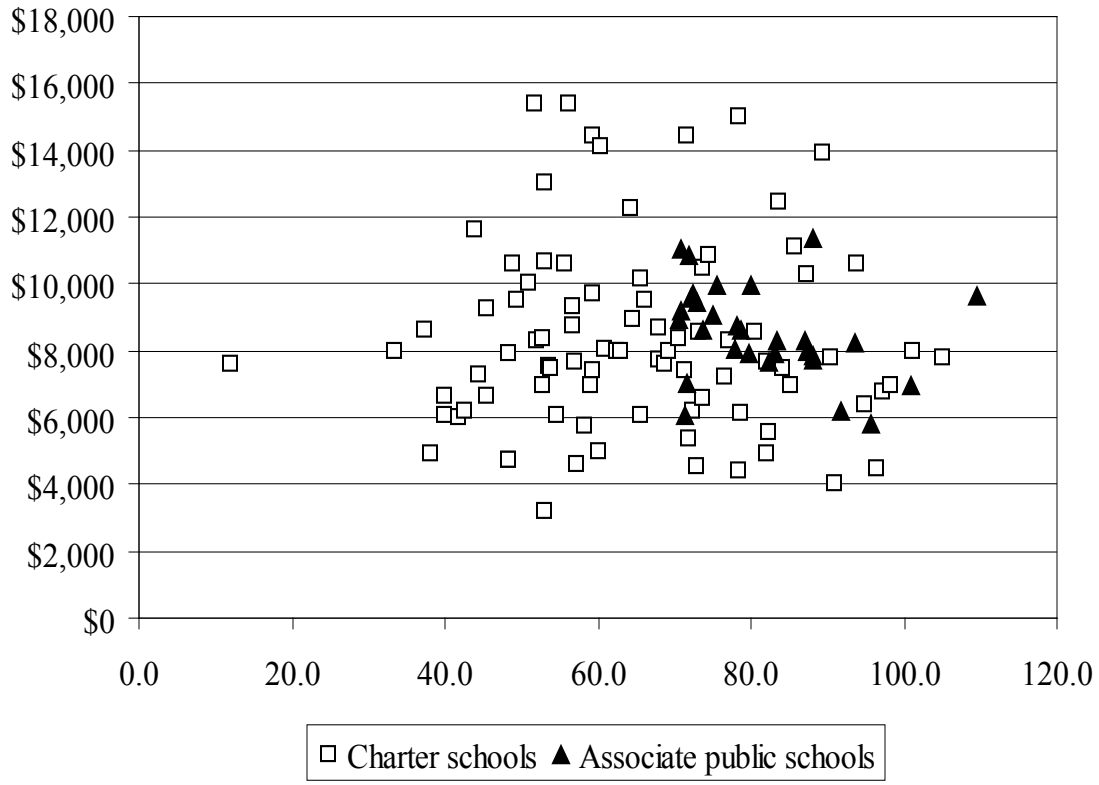
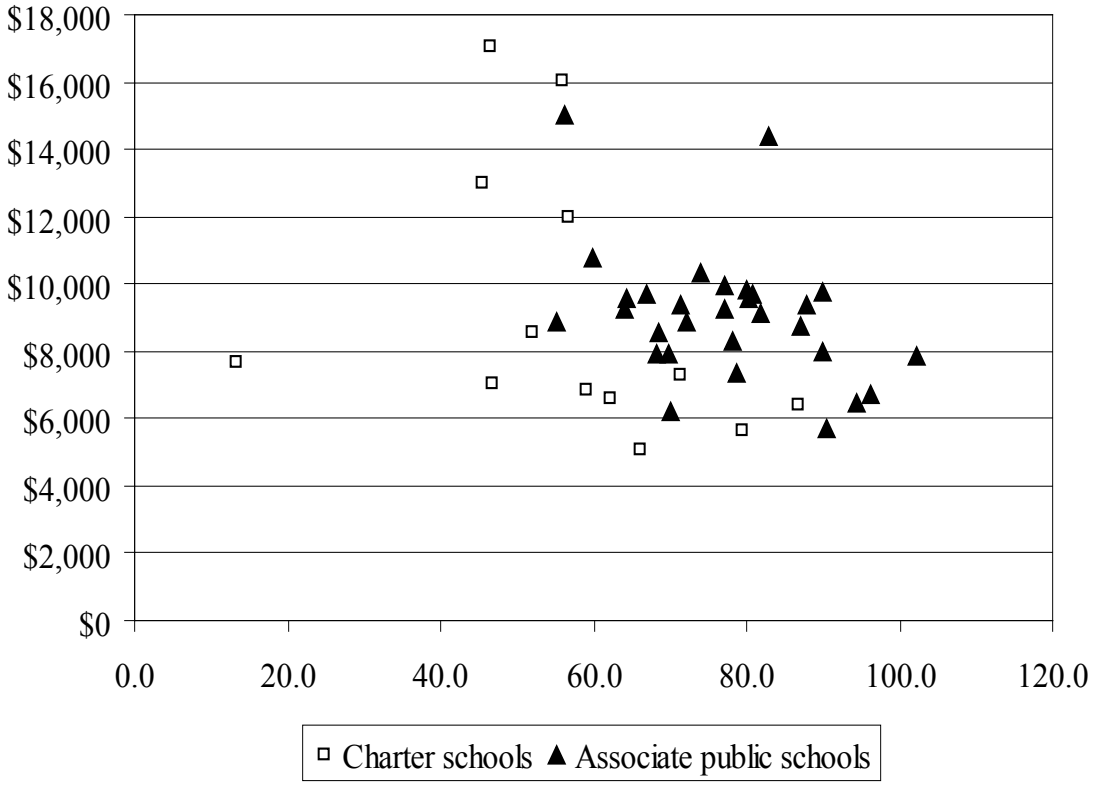


Figure 3 represents the middle school level data. Again, quadrants on the chart were created using the midpoints on each axis (60.0 for performance index score and $9,000 for expenditure per pupil). At the middle school level, all but two associate public school districts' middle schools have performance index scores greater than 60.0 with expenditure per pupil amounts both above and below the $9,000 midpoint. At the middle school

Figure 3

Middle Schools



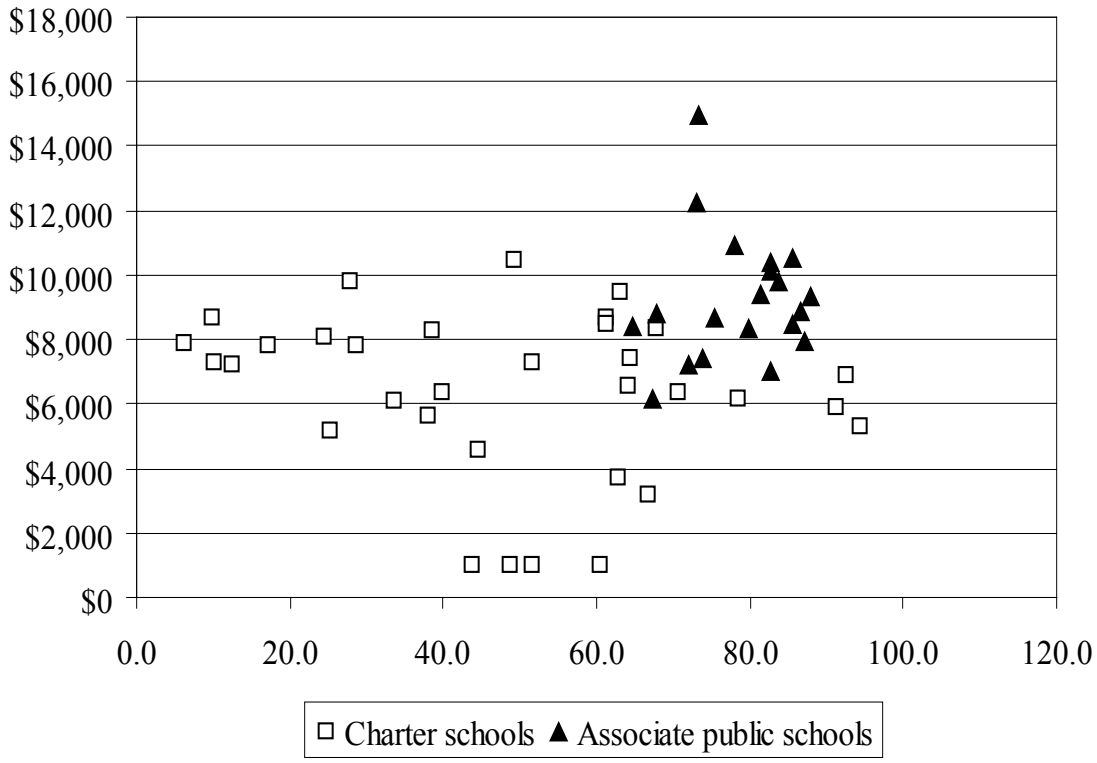
level, charter schools have performance index scores and expenditure per pupil amounts in all four quadrants.

Figure 4 represents the high school level data. At the high school level, all associate public school districts' high schools have performance index scores greater than 60.0 with expenditure per pupil amounts both above and below the $9,000 midpoint. At the high school level, charter schools have performance index scores and expenditure per pupil amounts in all four quadrants.

Scatterplots provide a clear visual analysis. In a scatterplot, quadrant one would be noted in the upper left corner. It includes those schools that have performance index scores below the midpoint and expenditure per pupil greater than the midpoint. Schools in this quadrant perform worse than the midpoint but spend more than the midpoint. This is the least desirable quadrant from a student performance perspective and financial perspective.

Quadrant two is noted in the lower left corner. It includes those schools that have performance index scores below the midpoint and expenditure

Figure 4
High Schools



per pupil below the midpoint. Schools in this quadrant perform worse than the midpoint yet spend less than the midpoint. From a student performance perspective, this is not a desirable quadrant; but from a financial perspective, it is a desirable quadrant.

Quadrant three is noted in the upper right corner. It includes those schools that have performance index scores above the midpoint and expenditure per pupil above the midpoint. Schools in this quadrant perform better than the midpoint and spend more than the midpoint. From a student performance perspective, this is a desirable quadrant; but from a financial perspective, it is not a desirable quadrant.

Quadrant four is noted in the lower right corner. It includes those schools that have performance index scores above the midpoint yet spend less than the midpoint. This is the most desirable quadrant from a student performance perspective and financial perspective.

At the elementary school level (Figure 2), associate public school districts' elementary schools are found in quadrants three and four. The

associate public school districts' elementary schools' student performance is higher than the midpoint and many perform for less cost than the midpoint – in the desirable quadrant four. The charter schools are found in all four quadrants. The charter schools' student performance is mixed; some perform higher than the midpoint and some perform lower than the midpoint. At the same time, some charter schools spend more than the midpoint, but some charter schools perform less than the midpoint. From a student performance perspective, associate public schools as a group consistently outperform charter schools as a group.

At the middle school level (Figure 3), associate public school districts' middle schools are found in quadrants one, three, and four. The associate public school districts' middle schools' student performance is generally better than the midpoint and many perform at a cost close to the midpoint. The charter schools are found in quadrants one, two, and four. Again, the charter schools' student performance is mixed; some perform better than the midpoint and some perform worse than the midpoint. At the same time, some charter schools spend more than the midpoint, but some charter schools spend less than the midpoint. Again from a student performance perspective, associate public schools as a group consistently outperform charter schools as a group. From an expenditure perspective, it appears that a higher percent of associate schools are above the midpoint while a higher percent of the charter schools are below the midpoint.

Figure 4 shows that associate public school districts' high schools are found in quadrants three and four. The associate public school districts' high schools' student performance is better than the midpoint and some perform for less cost than the midpoint, that is, in the desirable quadrant four. Again, the charter schools are found in all four quadrants. The charter schools' student performance is mixed; some perform better than the midpoint and some perform worse than the midpoint. At the same time, some charter schools spend more than the midpoint, but some charter schools perform less than the midpoint. From a student performance perspective, associate public schools as a group consistently outperform charter schools as a group. From an expenditure perspective, it appears that a higher percent of associate schools are above the midpoint while a considerably higher percent of the charter schools are below the midpoint.

Discussion

With respect to which type of school enrolls the "more expensive students," the evidence provided from this study is mixed. Based on median numbers, the expense of disabled students disproportionately falls on the associate public schools while the additional expenses for educating poor children is assumed to a greater extent by charter schools. Interestingly enough, the Pearson correlation showed only one significant relationship between performance index score and expenditure per pupil. Furthermore, that relationship is negative suggesting that as expenditure per pupil increases, performance index score decreases. These findings are inconsistent with the literature that contends there is a positive significant relationship between student achievement and expenditure per pupil.

All three models resulting from three separate discriminant function analyses suggest that, at some level, student achievement, as measured by performance index score, and expenditure per pupil are important in distinguishing between charter schools and their associate public schools in Ohio. Expenditure per pupil was not a significant variable in either the elementary or the middle school models. However, at the high school level, expenditure per pupil appears to play a more important role in distinguishing between the two types of schools than does performance index score. Perusing the scatterplots verifies the findings from the analyses.

Conclusion

This study set out to investigate the relationship between student achievement and expenditure per pupil in charter schools and their associate public schools in Ohio. The only significant correlation coefficient suggests an inverse relationship between these two variables. Both variables were significant in only one discriminant model, that for the high schools.

The evidence provided in this study does not support the premise that the reason charter schools in Ohio are not succeeding academically is because of low level of funding. Recall, however, that this study did not include funding necessary for the physical plant. Other limitations of the study are that the cases included herein actually constitute the population and not the sample. This is important to recognize to the extent that the analyses used were designed for

sample study. Finally, no assumptions of normal distributions can be made. Although this violation is acceptable to a certain extent with discriminant analysis, it must be recognized.

Further research using cases from a nationwide population would provide more insight into this topic. The problem with attempting to generalize from any one-state study is that state regulations regarding charter schools vary widely and it is difficult to compare "apples to apples" with such diverse laws. Although it appears that much more research is needed to either substantiate or refute the findings in this study, certainly this study provides contradictory evidence regarding the impact of money on student achievement in charter schools and their associate public schools.

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Appendix A

Charter School Sample

Charter School	Performance Index Score 2004-2005	Enrollment 2004-2005	Grade Level	Exp/Pupil 2004-2005 ($s)
A.B. Miree Fundamental Academy	53.8	327	E	8,072
A+ Arts Academy	62.2	104	M	5,190
Academy Of Business & Tech	53.7	320	E	7,209
Academy of Cleveland	40.0	115	E	6,033
Academy Of Dayton	45.4	134	E	10,471
Akron Digital Academy	38.0	545	H	5,601
Alliance Academy of Cincinnati	53.0	313	E	11,175
Alternative Education Academy	70.6	2,702	EMH	6,328
Apex Academy	51.9	273	E	8,276
Arts & College Preparatory Academy	91.3	147	H	5,873
Aurora Academy	55.8	112	E	11,025
Bridges Community Academy	97.2	85	EM	6,784
Buckeye On-Line School for Success	62.8	393	H	5,170
Canton City School Digital Academy	38.7	111	E	8,242
Cincinnati College Preparatory Academy	72.9	622	E	6,377
Citizens Academy	82.0	305	E	7,850
City Day Community School	48.3	124	E	5,167
Colin Powell Leadership Academy	50.9	248	E	10,042
Columbus Arts & Technology Academy	38.3	294	E	4,912
Columbus Humanities, Arts and Tech. Ac.	41.8	193	E	4,641
Columbus Preparatory Academy	60.2	123	E	6,149
Dayton Academy, The	71.5	1,117	E	7,435
Dayton View Academy	58.2	1,221	E	10,581
Eagle Academy	49.5	107	E	11,622
East End Community Heritage School	49.2	203	H	11,300
East End Community School	68.0	116	E	7,727
Edge Academy, The	63.0	241	E	7,960
Electronic Classroom Of Tomorrow	44.7	8,545	E	6,384
Elyria Community School	73.7	197	E	10,851
Emerson Academy of Dayton	64.3	132	E	12,273
Englewood Peace Academy	59.4	212	E	7,392
FCI Academy	63.1	61	H	8,728
George A. Phillips Academy	48.4	245	E	5,109
Graham School, The	94.4	245	H	6,199
Great Western Academy	95.0	142	E	6,353
Greater Achievement Community School	52.9	155	E	6,953
Greater Cincinnati Community	56.1	180	E	15,365
Greater Heights Academy	48.3	408	E	7,299
Hamilton County Math & Science	71.8	164	E	4,999
Harmony Community School	13.3	560	M	8,347

Heir Force Community School	71.7	151	M	5,097
Hope Academy Broadway Campus	66.2	547	H	8,237
Hope Academy Brown St Campus	67.8	253	E	8,076
Hope Academy Canton Campus	67.9	380	E	9,732
Hope Academy Cathedral Campus	59.4	537	H	8,646
Hope Academy Chapelside Campus	61.3	487	H	8,442
Hope Academy Cuyahoga Campus	61.4	345	E	14,424
Hope Academy East Campus	59.4	403	E	10,964
Hope Academy Lincoln Park	62.6	154	E	8,911
Hope Academy Northwest Campus	64.6	268	H	6,887
Hope Academy University	92.6	182	E	7,982
Hope Northcoast Academy	69.4	270	E	11,082
Horizon Science Academy Cleveland	85.8	490	M	5,227
Horizon Science Academy Columbus	79.4	448	M	6,882
Horizon Science Academy Toledo	71.5	285	M	6,479
Ida B Wells Community Academy	46.9	165	E	5,804
Intergenerational School, The	91.1	77	E	8,720
International Academy Of Columbus	56.8	227	E	7,383
International College Preparatory Academy	57.1	547	E	6,078
Lake Erie Academy	54.7	267	E	6,639
Legacy Academy For Leaders & Arts	45.6	200	E	7,578
Life Skills Center Of Akron	11.9	625	H	7,841
Life Skills Center of Elyria	28.8	462	H	8,053
Life Skills Center of Metro Cleveland	24.5	164	H	5,144
Life Skills Center-Middletown	25.3	346	H	7,840
Life Skills Center-Springfield	17.3	256	H	7,878
Life Skills Center Of Cleveland	6.2	697	H	7,303
Life Skills Center Of Lake Erie	10.2	669	H	7,213
Life Skills Center Of Youngstown	12.4	367	H	8,689
Life Skills Of Trumbull County	10.0	376	H	7,436
Lighthouse Community & Prof Dev	64.4	173	E	8,933
Lorain Academy For Gifted Students	105.2	46	E	16,174
Lorain Community School	78.4	149	E	8,985
Mansfield Community	77.2	111	E	10,731
Marcus Garvey Academy	52.7	129	E	8,011
Maud Booth Academy	59.1	81	E	9,330
Middletown Fitness & Prep Academy	83.6	137	E	18,300
Millennium Community	33.5	491	E	7,354
Minster Community School	101.3	107	E	7,275
Mollie Kessler	44.5	55	E	10,154
Moraine Community School	65.7	141	E	8,036
No. Dayton School of Science & Discovery	61.0	489	E	8,641
Oak Tree Montessori	37.4	77	E	9,961
Ohio Connections Academy, Inc	73.3	408	E	4,903
Ohio Virtual Academy	82.0	2,247	E	6,101

Old Brooklyn Montessori School	78.8	232	E	7,624
Omega School Of Excellence	68.7	323	E	4,603
Orion Academy	57.2	171	E	14,405
Parma Community	89.3	247	E	6,199
Pathway School of Discovery	74.5	391	E	9,311
Paul Laurence Dunbar Academy	56.7	184	E	8,380
Performing Arts School Of Toledo	76.5	97	H	6,712
Phoenix Community Learning Center	64.2	337	E	8,105
Pinnacle Academy	70.5	303	E	10,283
Plain Local Academy Of Tech, Inc	87.3	25	M	6,400
Richard Allen Academy	86.7	217	E	6,935
Richard Allen Academy II	85.2	389	E	5,582
Richard Allen Academy III	82.4	128	E	6,077
Richard Allen Preparatory	65.5	222	E	6,221
Riverside Academy	72.3	429	E	7,780
Sciotoville	90.4	363	M	6,858
Springfield Academy Of Excellence	59.1	176	E	8,530
Springfield Preparatory and Fitness Ac.	80.5	78	E	6,222
Summit Academy Dayton	42.6	63	E	14,456
Summit Academy Of Alt Learners	71.7	70	E	13,006
Summit Academy of Creative Arts	53.1	61	M	16,038
Summit Academy-Canton	55.9	78	M	12,991
Summit Academy-Lorain	45.4	102	E	10,608
Summit Academy-Middletown	48.8	78	E	14,079
Summit Academy-Parma	60.4	79	E	11,611
Summit Academy-Youngstown	43.9	200	E	15,412
The Harte School - Columbus	51.7	31	M	32,614
The New Choices Community	46.6	134	M	11,996
Toledo Academy Of Learning	56.7	328	M	8,559
Toledo Accelerated Academy	52.1	128	E	10,589
Toledo School For The Arts	93.9	358	H	6,840
Treca Digital Academy	51.7	1,097	EMH	6,135
Trotwood Fitness and Prep Academy	78.4	147	EM	6,614
Virtual Community School of Ohio	39.9	1585	EMH	6,370
Virtual Schoolhouse, Inc.	27.9	267	H	9,767
Vision Into Action Academy	66.9	120	H	3,197
W C Cupe Community School	53.1	231	E	4,476
W.E.B. Dubois	96.5	702	E	5,039
Washington Park Community	84.3	186	E	6,974
Westpark Community-Cleveland	98.3	189	E	6,549
Wilson Military Academy	33.7	177	H	7,718
Winterfield Venture Academy	73.6	255	E	9,481
WOW Community School	66.2	326	E	6,661
Youngstown Community School	78.5	312	E	4,384

Note: E = elementary; M = middle school/junior high; H = high school.

Appendix B

Associate Public School District Sample

Associate Public School District	Number & Level of Building 2004-2005			Expenditure per Pupil per Level 2004-2005 ($s)			Performance Index Score Per Level 2004-2005		
	E	M	H	E	M	H	E	M	H
Akron City	40	10	9	9,948	9,946	10,376	79.9	77.0	82.6
Canton City	19	4	2	9,550	9,812	10,474	72.2	80.1	805
Cincinnati City	58	1	20	11,065	15,038	10,907	70.8	56.2	77.9
Cleveland Municipal City	89	12	20	8,587	9,252	8,412	73.7	64.1	64.7
Cleveland Hts.-University Hts.City	8	3	1	11,366	14,417	14,977	88.0	82.8	73.4
Columbus City	91	28	20	9,674	9,667	10,136	72.5	66.8	82.8
Dayton City	25	4	7	9,163	8,877	8,367	70.9	55.2	79.9
East Liverpool	4	1	1	8,299	8,285	8,465	83.4	78.2	85.5
Elyria City	11	3	2	7,948	9,761	7,401	87.2	90.0	73.8
Euclid City	7	2	1	9,049	8,529	9,820	75.1	68.5	83.7
Hamilton City	13	2	2	7,707	7,331	6,992	88.1	78.8	82.7
Lima City	5	3	1	6,034	6,222	7,244	71.3	70.0	71.9
Lorain City	12	2	2	8,046	9,253	8,880	78.0	77.0	86.7
Mansfield City	9	2	2	9,442	10,356	12,236	72.9	73.9	73.0
Middletown City	10	2	2	8,760	9,548	8,654	78.3	80.2	75.3
Minster Local	1	1	1	9,644	7,864	7,576	109.5	102.1	106.7
Mt. Healthy City	5	2	1	8,620	9,667	8,861	78.6	80.7	89.7
Parma City	15	3	3	8,206	9,386	8,103	93.7	87.8	100.1
Plain Local	6	3	1	6,218	6,692	8,117	91.7	96.1	104.3
Portsmouth City	4	1	1	7,924	9,350	10,500	79.8	71.3	85.5
South-Western City	23	5	4	7,900	8,756	8,598	83.1	87.0	95.5
Springfield City	10	5	4	7,034	7,915	8,796	71.6	69.8	67.7
Tiffin City	5	1	1	6,796	6,476	6,510	101.0	94.5	103.7
Toledo City	46	7	8	9,966	9,546	9,329	75.6	64.4	88.0
Trotwood-Madison City	5	1	1	8,924	7,912	7,956	70.5	68.3	87.1
Warren City	8	3	2	7,871	8,865	6,167	88.1	72.2	67.3
West Carrollton City	4	1	1	8,297	7,975	7,946	87.0	90.0	93.6
Youngstown City	11	4	5	10,877	10,759	9,371	71.8	59.8	81.4
Zanesville City	8	2	1	7,687	9,137	8,273	82.3	81.8	89.1

Note: E = elementary; M = middle school/junior high; H= high school.