

## **MAPP Discussion Paper #4**

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# Are Charter Schools Meeting Expectations?

A Meta-Analysis on Charter School Effectiveness

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## **Introduction**

The number of charter schools has increased substantially in the past decade. Charter schools are publicly funded schools of choice that form a contract, or a ‘charter’, with a public entity and are given greater autonomy than public schools in terms of curriculum, instruction, and operations.<sup>1</sup>

“In California today, one out of every 20 public schools is a charter school. And one out of every 50 students is being educated in one of these (charter) schools.”<sup>2</sup> One could claim that the increase in charter schools and charter school students can be attributed to the academic success of pre-existing charter schools or that charter schools have embarked on a major marketing and recruiting campaign. We will perform a meta-analysis to determine whether charter students have higher test scores than their traditional public school counterparts. We will utilize studies that used standardized test scores for reading and math to evaluate charter school students’ academic performance. The amount of funding and the extent of the charter school’s autonomy are not dealt with in our studies and therefore will not be part of our overall analysis.

## **The Political Environment for Charter Schools**

Various studies, commentators, and politicians disagree over whether charter schools are utilizing funding efficiently and are increasing the overall academic performance of students. Republicans and Democrats support charter schools for

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<sup>1</sup> Zimmer and Buddin, pg 1

<sup>2</sup> Brian Edwards, pp. 1

different reasons. Some Republicans and free market conservatives favor the ‘free market’ approach of charter schools with regards to efficient allocation and competition of school resources and minimum federal involvement in education. That is, requiring charter schools to be accountable for their financial records and the production of test scores will force charter schools to become efficient. The success of charter schools should force traditional public schools to compete for students, thus causing public schools to improve their academic standards in order to retain students. Democrats favor the ‘choice’ aspect of charter schools since they allow for greater parental and community involvement in the education of their children. However, there are policymakers that fear the extensive growth of charter schools because of funding constraints. “Local public school policymakers often fear that charters will cause declining enrollment and subsequent loss of state payments for average daily payments.”<sup>3</sup>

### **The Policy Environment for Charter Schools**

According to a 2004 CNN article, there are currently about 2,700 charter schools that have been introduced in 36 states since 1991.<sup>4</sup> In addition, there are 626,700 students enrolled in charter schools. Our data indicates there are more charter school students, but that is only because some authors tracked the progress of students through a number of years rather than one year.<sup>5</sup>

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<sup>3</sup> Kirst, *Politics of Charter Schools: Competing national Advocacy Coalitions Meet Local Politics*, 14

<sup>4</sup> Kingsbury, Kathleen. "Charter schools remain subject of debate." CNN.com. 13 Aug 2004. CNN. 10 May 2007 <<http://www.cnn.com/2004/EDUCATION/08/13/b2s.charters/index.html>>.

<sup>5</sup> Gregory A. Strizek, Jayme L. Pittsonberger, Kate E. Riordan, Deanna M. Lyter, and Greg F. Orlofsky. "Characteristics of Schools, Districts, Teachers, Principals, and School Libraries in the United States." National Center for Education Statistics Mar 2006 1-231. 10 May 2007 <<http://nces.ed.gov/pubs2006/2006313.pdf>>.

Charter school laws differ across states and are constantly amended. “State governments must authorize charter laws and establish the rules and framework for local politics.”<sup>6</sup> The issue for state legislators is the transparency of taxpayers’ money used ‘autonomously’ by charters. “When charter schools were first authorized in California, this ‘perform or shut down dynamic’ did not exist.”<sup>7</sup> There has been a tendency to increase limitations and make the charter laws more stringent to increase transparency of financial as well as academic records. The schools that mismanage their funds or fail to meet performance standards face serious consequences.<sup>8</sup>

### **The Theory Behind Charter Schools**

“The primary motivation for founding a charter school was to seek an alternative vision of schooling that could never be realized in the traditional public school system.”<sup>9</sup> Ted Kolderie, one of the pioneers of the charter school movement, intended for charter schools to improve 1) innovation; 2) choice and competition; and 3) accountability of schools within the educational system.<sup>10</sup> The teachers, principals, parents, and administrators of charter schools have greater autonomy to solve the inefficiency caused by the bureaucracy of state and local school districts. The greater autonomy allows the educators to effectively allocate resources and time, and, ultimately, increase the academic performance of charter students.

A charter school’s continual existence is contingent on government funding, which is determined by the number of students enrolled. “The choice feature inherent in

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<sup>6</sup> Kirst, *Politics of Charter Schools: Competing national Advocacy Coalitions Meet Local Politics*, 5

<sup>7</sup> Brian Edwards, pp. 5

<sup>8</sup> Brian Edwards, pp. 5

<sup>9</sup> The State of Charter Schools—add more 42

<sup>10</sup> Kirst, *Politics of Charter Schools: Competing national Advocacy Coalitions Meet Local Politics*, 16

charter schools means that these schools are reliant on their ability to attract students from their community.”<sup>11</sup>

### **Our Methodology**

We began our search by entering search terms in the economic database, EconLit. EconLit is an economic database that contains many quantitative studies; therefore, the database should contain studies that quantify the impact of charter schools on student achievement. Entering the search term “charter schools” in EconLit provided us with 31 hits.

We then expanded our search by entering search terms in the education database ERIC. We entered the search term “charter schools” in ERIC and received 1335 articles.

To pare down the number of articles, we examined all the articles and discarded articles that did not contain a regression or numerical figures that could be used to calculate an effect size. A majority of the articles measured student achievement by using test scores in reading and math. To handle publication bias, we looked for any dissertations and contacted experts in the field to ask if they had any unpublished articles. Different studies had different results on the effects of charter schools on academic achievement, and not all included regressions or had sufficient quantitative data to be included in this meta-analysis. To that ensure our methods of coding were consistent, we all coded one article together and discussed any discrepancies between coders.

To allow comparisons between studies, we looked for a common way to measure the effects of charter schools. We found that the most common method for reporting the results was to normalize the scores by converting them to z-scores. This allowed us to

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<sup>11</sup> Zimmer and Buddin, *Making Sense of Charter Schools*, 1

express the results in terms of sample percentiles, which we used as our measure of effect size. So, for example, an effect size of -1 means that the average charter school student scored one percentile point below the average student in a traditional school. We limited our analysis to reading and math scores, since these were the most commonly reported subjects. Unfortunately, some studies did not provide sufficient data to calculate the effect size and could not be included in our meta-analysis. Our final analysis included six studies and twelve sets of estimates.

## **Results**

Given the current state of the American educational system, school performance ought to be examined in order to improve the academic performance of students. An overwhelming majority of the studies we read concluded that charter schools are not meeting expectations. Further, some studies also concluded that the achievement gap is widening between public schools and charter schools.

Table 1 displays our results. For reading, we found that nine of the twelve estimates are negative. The average effect size is -2.06, so the average charter school student scores two percentage points below the average student in a traditional school. Furthermore, the effect is statistically significant. We used the inverse chi-squared test to check the combined statistical significance of our studies (see Hedges and Olkin, 1985), pp. 37-39). Under this procedure, the positive results must be separated from the negative results, so that the p-values for one kind of result are not improperly used to support a claim about the opposite result. As shown at the bottom of table 1, the negative

results are statistically significant at the 10% level, while the positive results are not statistically significant at the 5% level.

A similar pattern emerges for math scores. Nine out of the eleven estimates were negative. The mean effect size is -3.64, so that attending a charter school pulls down the average student by almost 4 percentile points. Again, the negative results are statistically significant at the 1% level. The inverse chi-squared test is inappropriate for the positive results, since only one study with p-values found positive results.

We also analyzed the moderator variables to see if they affected the results. We created three dummy variables – one for elementary schools, one for secondary schools, and one for data aggregated to the school level – and correlated those figures with the effect sizes for reading and math. (It was necessary to have both an elementary and a secondary dummy variable because three studies used data from both levels of students.) The results are displayed in table 2. Using the standard 5% significance level, there were no significant correlations. However, one relationship, between math effect sizes and whether the data is aggregated by school, did have a p-value of approximately 8 percent. This suggests that studies using aggregate data may have more negative results in math.

Table 1: Results of Meta-Analysis

Authors	Date	Sample	Sample Size	Percentile Change in Reading	Percentile Change in Math
Loveless	2002	4th grade students	283 schools	-10.26	-15.54
Loveless	2002	8th grade students	254 schools	-0.80	-9.48
Loveless	2002	10th grade students	82 schools	-1.60	-1.70
Bifulco and Ladd	2004	North Carolina students at all levels	2997224 students	-6.36 (0.0004)	-10.26 (0.0004)
Hanushek et. al.	2005	4-7th graders in Texas	3293340 students	-9.48 (.0064)	
Ross	2005	Memphis students at all levels	436 students	7.53 (0.031)	6.36 (0.003)
Buddin and Zimmer	2005	California elementary students	9114624 students	0.13 (0.562)	-1.45 (0.0001)*
Buddin and Zimmer	2005	California secondary students	12647295 students	-1.46 (0.0001)*	-2.26 (0.0001)*
Zimmer and Buddin	2006	Los Angeles elementary students	518869 students	-0.61	-0.3
Zimmer and Buddin	2006	San Diego elementary students	55149 students	-2.1	-4.97
Zimmer and Buddin	2006	Los Angeles secondary students	312079 students	-1.15	1.28
Zimmer and Buddin	2006	San Diego secondary students	136208 students	1.49	-1.69
average				-2.06	-3.64
median				-3.98	-9.48
inverse chi-squared statistic for negative values				44.17	52.49
inverse chi-squared statistic for positive values				8.10	N.A.
combined statistical significance for negative values				significant at 1% level	significant at 1% level
combined statistical significance for positive values				not significant at 5% level	N.A.

Note: where available, p-values are in parentheses below associated figure.

\* = approximate. T-value exceeds maximum figure available on table.

*Table 2: Analysis of Moderator Variables*

	Dummy variable for elementary	Dummy variable for secondary	Dummy variable for data aggregated by school
Percentile change in reading	-.441 (.151)	-.271 (.394)	.248 (.438)
Percentile change in math	-.251 (.457)	-.556 (.076)	.136 (.689)

### **Conclusion**

We believe our results show that charter schools are failing to increase student achievement levels in standardized tests. Our results show that the current trend of increasing numbers of charter schools needs to be reexamined.

The current policy is to increase the number of charter schools but decrease their autonomy. Since charter school proponents believe that increased autonomy for charter schools will improve student achievement, there should be a meta-analysis performed on this topic. However, most of the research shows that increased autonomy does not improve student achievement. Even though the debate is intense on both sides and filled with many logical arguments, our empirical data show that charter schools are ineffective. Therefore, our recommendation is to eliminate charter schools and look for alternative ideas for underachieving public schools.

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