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The Impact of Milwaukee Charter Schools on Student Achievement

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EXECUTIVE SUMMARY

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As part of a multi-state evaluation project on the impact of charter school attendance on student achievement, we put together and analyzed panel data on Milwaukee Public School (MPS) students spanning the 2000-01 through 2006-07 school years.¹ Specifically, we employed “fixed effects” models to estimate the impact of charter school attendance on student gain scores on mathematics and reading achievement tests. We found that:



© Reuters/Lee Celano - Teacher Quin Clemons directs students during her seventh grade class at Samuel J. Green Charter School.

1. charter school attendance is associated with higher scores on mathematics exams than attendance at traditional public schools, but there is no statistically significant relationship between charter school attendance and performance on reading exams;
2. positive results in mathematics are due to student performance in the initial years of the program – the performance of charter schools and traditional public schools is statistically indistinguishable for the most recent years of our study;
3. the positive impact of charter schools on achievement (relative to traditional public schools) declines as the number of years a student has attended a charter school increases;
4. charter schools that have operated for a number of years and those that had been traditional public schools drive the positive charter school results;

5. student mobility has a negative effect on performance and it is a more robust predictor of student performance than the organizational factors we consider;
6. there is no evidence that the presence of charter schools induces better student performance in traditional public schools.

We conclude that while charter schools overall may help the education of urban youth, our study of Milwaukee indicates that they should not be expected to be the silver bullet that some reformers seek. We also suggest that it is important to better understand and deal with instability in school attendance in urban school districts, as it proves to be the most significant determinant of student achievement in all of our statistical models.



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Introduction

Charter schools are public schools that have been “chartered” by an authorizing organization (such as a school board, non-profit organization, or university), usually to provide a specific form of education to a minimal number of students within a specific budget. If schools meet their accountability standards, their charters are renewable after a period of years. Although their charters often specify the organization of the school, personnel practices, and accountability measures, charter schools operate without some of the regulations that bind traditional public schools. In addition, charter schools provide parents with affordable alternatives to traditional public schooling. These features are popular and charter schools have proliferated as a result.

Reformers posit that the greater autonomy afforded to charter schools should enable them to educate students more effectively than traditional public schools. Some also contend that the mere presence of charter schools should induce traditional public schools to better educate their students, as traditional public schools must compete with nearby charter schools for students. On the other hand, critics question the notion that greater autonomy necessarily yields academic benefits, and they sometimes counter that charter schools could have a negative impact on the academic achievement of students in traditional public schools by robbing them of their funding and of strong students with motivated parents.

Our research seeks to address these disputes using student-level data obtained from the Milwaukee Public Schools. Below, we briefly review the data and methodology that we employed. Then, we present the results of analyses that compare the academic achievement of students in traditional public schools and charter schools, briefly explore the causal factors that may drive these results, and assess the impact of charter schools on the academic achievement of students in traditional public schools. We conclude with a general summary of our findings and their policy implications.



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Data and Methodology

The Milwaukee Public Schools (MPS) provided us with student test and demographic data from the 1997-98 through 2006-07 school years. However, the data from 1997 to 1999 are too sparse to estimate our statistical models, so we limited the analyses to the 2000-01 through 2006-07 school years. We also limited our analyses to mathematics and reading achievement, as the district tested students in grades 3-10 on these subjects for most years of the panel. Finally, during the course of the panel, state tests switched from the Terra Nova to the Wisconsin Knowledge and Concepts Examination (WKCE) assessment and the dates on which tests are administered changed. We chose our statistical methods in part to account for these inconsistencies.

We obtained data for those charter schools that MPS chartered, which comprise the majority of charter schools in Milwaukee. Table 1 summarizes the number of traditional public schools and charter schools that appear in our panel every year, as well as the number of students who took tests in those schools. (The counts fluctuate as schools come and go and as new testing is phased in and out.) We could not include a handful of schools in the analysis due to questionable or missing student data.

Table 1: Tradition Public and Charter School Observations in Panel

	Schools		Students	
	TPS	Charters	TPS	Charters
2000-01	177	4	10,394	79
2001-02	183	16	38,667	3,696
2002-03	182	17	35,005	4,404
2003-04	181	23	36,105	5,165
2004-05	177	33	34,195	5,837
2005-06	173	38	32,835	5,998
2006-07	166	35	26,572	4,741

That many charter schools now have been in operation for a number of years provides this study with advantages over earlier ones (Witte, *et al*, 2007). First, the short-term positive and negative academic effects associated with starting a new school, such as the negative effects associated with organizational instability and the positive Hawthorne-type effects that come with the initial excitement following a new program, are less likely to be influential. Second, there are now many more student-level and school-level observations to work with, which enables us to control for student and school characteristics.²

Our statistical models employed yearly student gains on normalized test scores as the dependent variable. We normalized the test scores across test-taking cohorts to account for differences in the tests from grade to grade and from year

There is controversy over whether or not charter schools provide a better education than traditional public schools.

to year. We estimated value-added (i.e., “gain score” or “growth”) models to account for selection bias, which occurs because charter schools do not enroll a random sample of traditional public school students. Gain scores control for student performance prior to attending a charter school.

Normalized gain scores do not account for all selection bias, however, as students may not only differ in terms of their prior achievement but also in terms of their growth (i.e., learning) trajectories and other characteristics that may lead to spurious results. To help us account for such selection bias, we used student “fixed effects” (basically, we conducted the statistical equivalent of including a control variable for each student) in all of the regression models that we estimated. This method controls for all time invariant student characteristics such as race and gender. Controlling for student fixed effects also allowed us to estimate differences in gains on normalized test scores when a student switches from a traditional public school to a charter school, or vice versa. This is because student fixed effects make our estimates of charter school effects dependent on the leverage we get from observing particular students in both charter and traditional public schools. Moreover, we included grade-year control variables to account for inconsistent score growth across grades and years.

Finally, in all of the models we included an indicator variable that accounts for the year in which a student switched schools. This was done because we found that switching between schools of any type has a negative impact on student achievement. The student “switcher” variable also helped us account for the variability of test administration dates across the years of our panel. During a year in which a change in the administration date occurs, the amount of time a student is educated in his or her new school before taking an achievement test changes. This brings into question how much student achievement in the year a student switches schools is attributable to the new school. Controlling for the year in which a student moves to a new school should account for this inconsistency.

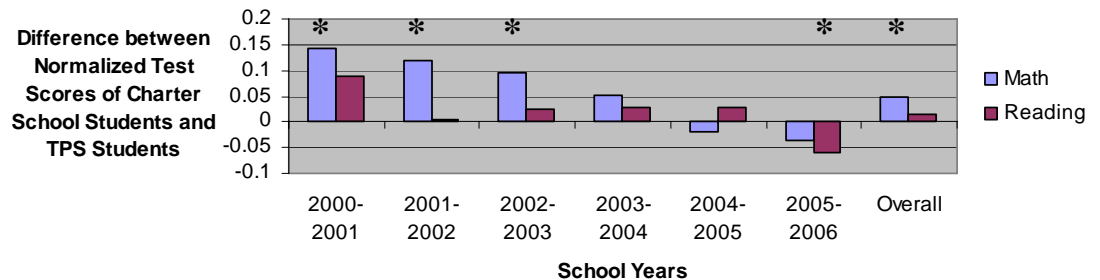
Results

There is controversy over whether or not charter schools provide a better education than traditional public schools, as well as whether or not the presence of charter schools improves education in traditional public schools by providing competitive pressures. These controversies continue in part because empirical research yields mixed results. The empirical results we present below contribute another set of findings to the accumulating empirical literature. They also reveal a trend which suggests that the initial positive results for charter schools that some prior studies detected were temporary.

Achievement in Charter versus Traditional Public Schools

Consistent with past research on Milwaukee Public Schools (Witte *et al*, 2007), we found that, between the 2000-01 and 2006-07 school years, charter schools outperform traditional public schools in mathematics and that they perform about as well as traditional public schools in reading (i.e., the reading gains are not statistically significant). The last pair of bars in Figure 1 illustrates the average advantage of attending a charter school across the years of the panel. But the figure also reveals that the positive results overall are due in large part to initial gains in the early years of the panel, which are the years to which existing studies are limited. The results clearly reveal a downward trend in terms of the “advantage” that charter school attendance provides with respect to student performance on achievement tests. In fact, in 2005-06 there is an advantage for students in *traditional public schools* in reading.³

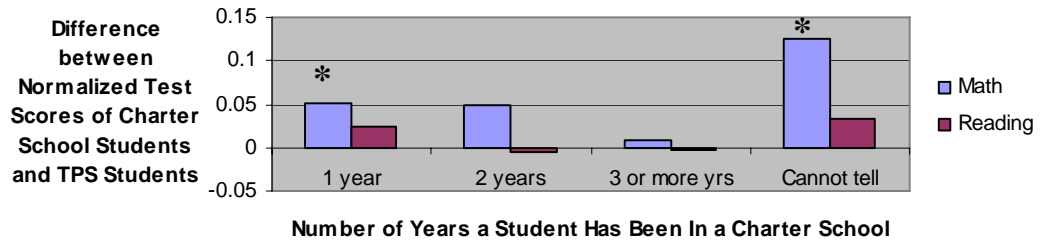
Figure 1. Student Performance Associated with Charter School Attendance Compared with Student Performance Associated with TPS Attendance



Models that account for the number of years that a student has been in a charter school yielded results that are consistent with the notion that the positive effects of charter schools ebb once the initial enthusiasm of participants subsides. As Figure 2 reveals, the positive charter school gains reported in Figure 1 come from students who have just started attending charter schools (controlling for the negative impact that switching schools has on a student). However, as the figure also shows, the positive effects come largely from students for whom we could not determine the years of attendance.

Between the 2000-01 and 2006-07 school years, charter schools outperform traditional public schools in mathematics.

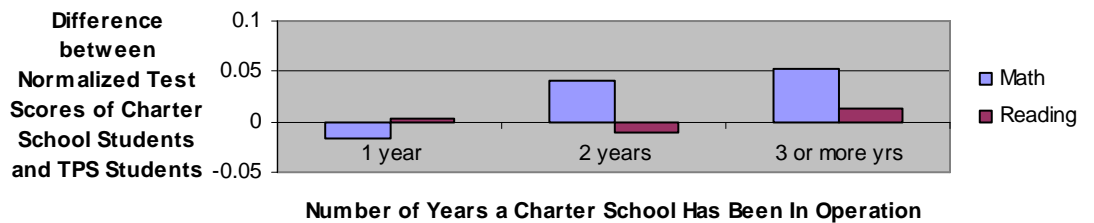
Figure 2. Student Performance Associated with Charter School Attendance Compared with Student Performance Associated with TPS Attendance, Broken Down by the Number of Years a Student Has Been in a Charter School



Positive charter school effects are driven by charter schools that have been in operation for a number of years.

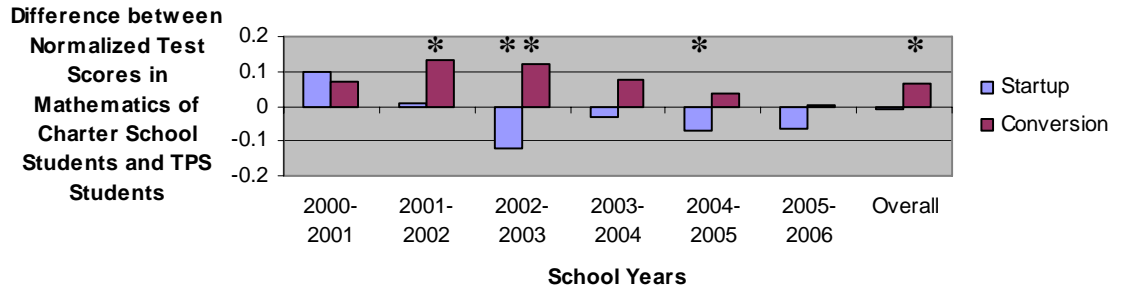
One also must be careful about how much one reads into this trend. Just as the initial positive effects of charter schools were temporary, so may be the non-positive (perhaps negative) effects found for recent years. One reason is that many charter schools are new; and, as Figure 3 illustrates, the positive charter school effects we report in Figure 1 are driven by charter schools that have been in operation for a number of years.

Figure 3. Student Performance Associated with Charter School Attendance Compared with Student Performance Associated with TPS Attendance, Broken Down by the Number of Years a Charter School Has Been In Operation



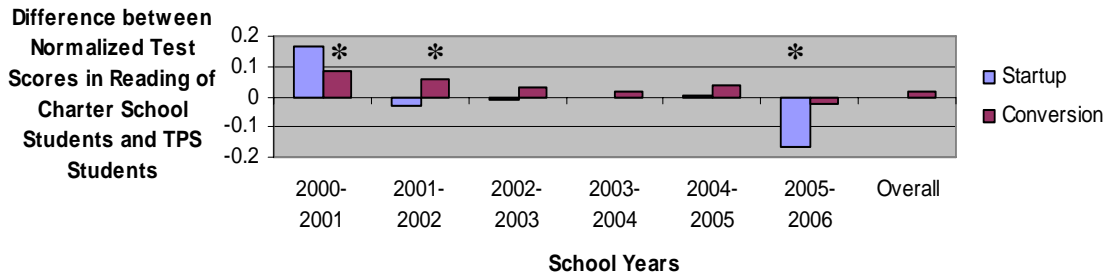
Additional models we estimated that distinguish between “conversion” charter schools—those created out of existing traditional public schools—and “startup” charter schools also yielded results that point to the importance of organizational maturity. As Figure 4 and Figure 5 indicate, “conversion” charter schools drive the positive charter school results, while traditional public schools sometimes outperform “startup” charter schools.

Figure 4. Student Performance Associated with Charter School Attendance Compared with Student Performance Associated with TPS Attendance, Broken Down by Charter School Type (MATHEMATICS)



“Conversion” charter schools drive the positive charter school results, while traditional public schools sometimes outperform “startup” charter schools.

Figure 5. Student Performance Associated with Charter School Attendance Compared with Student Performance Associated with TPS attendance, Broken Down by Charter School Type (READING)



It also is worth mentioning that student stability is an important predictor of student achievement. One of our key statistical controls, which indicates whether or not a gain score is observed immediately after a student has switched schools, yielded the most substantively and statistically significant results. Switching schools has a strong, *negative*, and statistically significant impact on all students, whatever type of school from which and to which they switch. This factor is more robust a predictor of performance than charter school attendance, and its impact is consistent and strong across all years of the panel. One of the policy implications of this study is that it is important to better understand and deal with instability in school attendance in urban school districts.

Charter School Competitive Effects

Finally, we estimated a number of statistical models in an effort to uncover the effect that the presence of charter schools may have on the performance of students who attend traditional public schools. Specifically, we estimated models that seek to identify a relationship between the number and distance of charter schools from the traditional public school that a student attends—again employing the controls we identify above. Using a number of model specifications, we found no relationship between the proximity and concentration of charter schools and the performance of students in traditional public schools.

These findings are not too surprising, however, as Milwaukee is relatively saturated with school choice options. Milwaukee options include charter and magnet schools, a voucher program that sends 20,000 students to private schools, and extensive open enrollment that allows students to go to other school districts. Distances between schools are also relatively small compared to those in geographically larger urban districts.

Conclusion

Our research indicates that there is a positive relationship between attending a charter school and performance on achievement tests in mathematics, but that there is no statistically significant relationship between charter school attendance and performance in reading. The positive impact of charter school attendance on mathematics achievement is due mostly to student performance in the charter school program's initial years. In the most recent years of our study, the performance of charter schools is statistically indistinguishable from the performance of traditional public schools. Moreover, the analysis yields no statistically significant relationship between the concentration and proximity of charter schools and the performance of students who attend traditional public schools.

In addition, we found that the achievement advantage associated with charter school attendance disappears after students have been in charter schools for a number of years, which may help explain the decline in charter school performance overall. One should be cautious about extrapolating from the negative charter school trend that we identify, however. Doing so requires that one understand better the causal factors that drive it. Moreover, our analysis suggests that there are forces at work that could counteract it. For example, we found that performance improves as charter schools mature. Consistent with this notion, we found that the positive charter school effects associated with student performance on mathematics exams are driven by schools that had been

Switching schools has a strong, negative, and statistically significant impact on all students, whatever type of school from which and to which they switch.

Our results are consistent with the notion that stability in a student's life is a better predictor of academic performance than organizational factors.

traditional public schools, not “startup” charter schools.

Our analysis also indicates that whether or not a student switches schools has a strong, negative, and statistically significant correlation with student performance on reading and mathematics achievements tests, and that the magnitude of this factor's impact exceeds that of the organizational factors on which our study focuses. Put differently, our results are consistent with the notion that stability in a student's life is a better predictor of academic performance than organizational factors. One of the policy implications of this study is that it is important to better understand and deal with instability in school attendance in urban school districts.

The impact of charter schools on student performance on reading and mathematics achievement tests is not the only factor one should consider when assessing the value of charter schools. One might be more concerned about the relationship between charter school attendance and college enrollment rates, for example. And choice options often are associated with higher levels of parental engagement and satisfaction, regardless of student performance on achievement tests. However, for the many policymakers who consider achievement test results to be of primary importance, our study indicates that charter school attendance in Milwaukee at best has a modest positive affect on such achievement. In other words, charter schools may contribute positively to improving the education of urban youth, but they should not be expected to be the silver bullet that some reformers seek.

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² The statistical methods we employ generally follow studies such as Bifulco and Ladd (2006), Booker, Gilpatric, Gronberg, Jansen (2008), and Sass (2006). We refer the reader to those studies for more in-depth discussions of our methods. In addition, we performed a number of robustness checks which we do not report due to space constraints.

³ The presence of a star above a bar in Figures 1-5 indicates a coefficient’s statistical significance at $p=0.05$ or better using a two-tailed test.