Charter School Performance in Texas

Kevin Booker

Scott M. Gilpatric

Timothy Gronberg

Dennis Jansen

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Abstract: We employ a panel of individual student data on math and reading test performance for five cohorts of students in Texas to study the impact of charter school attendance. Student fixed-effects control for selection bias. We also control for school mobility effects and distinguish movement to a charter school from movement within and between traditional public school districts. We find students suffer a significantly larger disruptive impact from the initial move to a charter school than from other school moves. Controlling for the mobility effect, we find that charter schools significantly improve the performance of students in both math and reading, with some evidence that school performance may improve as new charter schools progress beyond their first year in operation.

1 Introduction

During their short history charter schools have stirred plenty of debate over their academic effectiveness and success as an institution for creating public school choice. Opponents of charter schools argue that the benefits claimed by charter proponents have failed to materialize, and point to studies indicating that students in charter schools are underperforming those in traditional public schools (Texas Freedom Network, 2000, 2001). Evaluations of the academic achievement of charter students have certainly been mixed. Because of the availability of individual student data on annual test scores as well as a fairly large number of students in a charter sector that has now been operating for several years, Texas's charter experiment has become one of the most studied. Of course these annual reading and math test scores are an imperfect measure of student performance, but they provide the best signal available for assessing students' educational progress from year to year. Yet even investigators who have examined essentially similar data from Texas have come to very different conclusions about the academic success of charter students, ranging from poor (TCER, 2002) to ambiguous (Hanushek, Kain and Rivkin, 2002) to fairly positive (Gronberg and Jansen, 2001). At the heart of this dispute lie differences over how best to control for non-random selection of students into charter schools and other confounding factors that may impact students' performance contemporaneously with their decision to attend a charter school. In particular, the decision to attend a charter school entails a student's movement from one school environment to another which may be temporarily disruptive. Charter schools may also perform less well in early years than after becoming more established, a fact which may have exaggerated influence on student performance in charters while the industry is rapidly expanding from its inception.

In this paper we present new evidence that charter schools in Texas are indeed having a significantly positive impact on students' academic achievement. We find this result by examining annual student gains on the Texas TAAS tests in reading and math and employing individual student fixed-effects to effectively control for the selection problem. In that respect our methodology is similar to several other recent papers studying student achievement in a variety of settings (e.g. HK&R, 2002, 2003; Solmon, Paark and Garcia 2001). We find that it is also critical to account for the effect of disruption from changing schools, and to distinguish the effect of movement between traditional public schools from the effect of transitioning to a charter school, which may entail substantially greater change in learning environment.

2 The Texas Charter School Industry

Since the passage of the original charter school legislation in 1995, charter schools in Texas have been expanding rapidly in the number of charter school districts, charter school campuses, and students. The expansion is at least partly attributable to the supportive charter law environment. The charter law structure in Texas is ranked as the seventh most charter-friendly in the United States by the Center for Education Reform (1997). An idiosyncrasy of the Texas charter legislation is that, beginning with the 1998-99 school year, some charters were granted on the condition that they serve primarily (at least 75%) academically "at-risk" students. The number of charters issued to this type of school was not capped as it was for open enrollment charters. This charter law incentive structure had an effect, as well over half of the new charter schools which opened in academic years 1998-99 and 1999-00 were of the at-risk

type. This distinction between charter types and chartering rules was eliminated prior to the 2000-01 academic year.[1]

As one might expect when a new group of competitors enters an industry, most of the growth in students enrolled in charters is driven by the entrance of new firms, as opposed to the expansion of existing firms. As shown in Table 1a, there were 16 charter schools in academic year 1996-97, the first year of charter operation. This grew to 61 charters in 1998-99, 142 in 1999-00, and 179 in 2001-02. Enrollment in charters also grew rapidly, from 2,412 in 1996-97 to 12,226 in 1998-99, 25,687 in 1999-00, and 46,939 in 2001-02. To put this in perspective, by AY 2001-02 charter schools were enrolling over 1% of the total public school student body in Texas. Table 1b illustrates that throughout the time series the number of students attending charter schools continued to grow rapidly, with a substantial share of this growth arising from new entrants in the industry even in the later years of the series.

Charter schools in Texas are spatially concentrated. Although there are charter schools operating in 41 of the State's 254 counties, over 60% are located in counties within the four largest metropolitan areas: Houston, Dallas-Fort Worth, San Antonio, and Austin (see Table 2). These six counties (Bexar, Dallas, El Paso, Harris, Tarrant, and Travis) contain almost 48% of the population of Texas. At the same time, there are 35 additional counties in Texas containing 65 charters, and these counties account for 24% of the population of Texas. Finally, there are 213 counties in Texas without a single charter school.

The State Board of Education is the principal chartering agency in Texas. This granting structure facilitates greater competition between charters and traditional local public schools than

[1]Open enrollment charters were initially capped at 60 for academic year 1998-99, then 120 for 1999-00. In 2001 the legislature eliminated the at-risk exemption and capped the number of charters at 215, while also allowing for unlimited charters sponsored by colleges or universities.

in many other states in which the local public school district is also the charter-granting agent.[2] For charter schools in operation prior to the 2001-02 school year, the Texas school financing rules transfer one hundred percent of the maintenance and operation formula support, conditioned upon the enrollee's personal characteristics, from the child's home district to the charter school. The local district revenue implications of losing a student to a charter are thus larger in Texas than in either Michigan or Arizona, the two states which have been the focus of much of the charter school research to date. In both of those states, only the state portion of the pupil funding follows the student to the charter school.

Any discussion of student performance in charter schools must quickly turn to the characteristics of the students who attend them. However, charter schools are particularly heterogeneous in this regard, ranging for schools for gifted students to schools for individuals in the juvenile justice system. Because many charter schools are geared toward at-risk students, and because charter schools are predominantly located in major urban areas, it is not at all surprising that the demographic profile of charter schools differs in several ways from that of traditional public schools.

Table 4 indicates that charter schools serve a substantially larger share of African-American students, and a smaller share of Anglo students, than traditional public schools. Charters have a larger percentage of economically disadvantaged students (defined as those eligible for a free or reduced price school lunch) than traditional public schools. Note, however, that we treat as missing data the 31 charter schools that are reported to have zero disadvantaged students. We believe these are most likely schools that have chosen not to participate in the

[2] We study exclusively charter schools chartered by the state, so called "open enrollment" charter schools.

federal school lunch program. Charter schools on average have a somewhat lower percentage of their students in special education.

3 Modeling the Effect of Charter Schools on Student Achievement

Advocates of charter schools and school choice programs in general argue that there are several reasons why charter schools may improve students' academic performance. Because charter schools must compete for students they must convince students and parents that they provide an environment that is superior to the traditional public school alternative. If academic achievement is a principle criterion by which families evaluate schools, then this competitive effect should both drive charter schools to improve the academic performance of their students, as well as spur academic improvements in traditional public schools which face increased competition (a subject we address in a separate paper). In addition to this competitive effect, charter schools may improve student performance by structuring their programs to better suit particular groups of students, whether they be poorly performing at-risk students, gifted students, or students who are in some other way better served by a non-standard program. To the extent that students are heterogeneous in their education needs, the availability of charter schools may benefit students by simply allowing a degree of sorting into schools better suited to individual needs. Furthermore, charter schools may indirectly benefit students through peer effects on learning (Eberts and Hollenbeck, 2001). Peer effects may be more positive when a student enters a charter if students in the charter are more motivated or have greater parental involvement due to self selection, or if students benefit from the sorting generated by a charter which puts them in greater contact with classmates with similar educational needs. Although in principle it would be

very interesting to disaggregate these effects, the data available allow us to measure only the overall impact of charter school education on student performance.

As noted earlier, whether charter schools in Texas have in fact succeeded in improving their students' academic achievement has been the subject of dispute among researchers. With six years of data on students in charter schools we can now get a better picture of how charter schools have impacted student performance. In particular, the availability of yearly test score data from the Texas Assessment of Academic Skills (TAAS) for students in grades three through eight in reading and math allows us to track individual students over time as some students move from traditional public schools into charters.[3] By tracking individual students over time we can employ techniques that estimate the charter effect by comparing individual students' performance while attending a charter to their own performance while attending a traditional public school, thereby avoiding the selection problem that greatly complicates studies utilizing aggregate data.

Some prior efforts to evaluate the effect of charter schools on students' performance in Texas have focused on differences in average TAAS score levels or passing rates between charters and traditional public schools, or on differences in average TAAS score changes or growth.[4] Both of these methods have serious flaws. Particularly given that many charter schools were established to draw primarily students who are at-risk, a classification that is most often applied to students who fail one or more sections of the TAAS test, any suggestion that the average level of performance of students in charters compared to traditional public schools is an indicator of the quality of education provided by charters is very misleading. Even if average

[3] Unfortunately the fact that high school students are tested only once (in tenth grade) prevents us from applying the type of analysis employed herein to the performance of charter high schools.
[4] See the *Texas Open-Enrollment Charter Schools: Fifth Year Evaluation, 2002*.

scores in charters are compared to those for similarly composed groups in traditional public schools with regard to observable characteristics such as race, limited English proficiency and economically disadvantaged status, these comparisons are still likely to be biased because such labels almost certainly do not fully account for differences in the composition of the students who attend charter schools. Charter students are unlikely to be a random selection or representative of any classification of students because the very act of choosing to attend a charter distinguishes these students.[5]

Examination of differences between charters and traditional public schools in terms of average changes or growth in TAAS test scores are more appropriate since this method controls for the level of performance of students prior to entering a charter school. Nevertheless, analysis of TAAS score growth still suffers in two important respects. First, charter students may systematically differ from students in traditional public schools not just in their level of performance but in their growth trend or ability to improve. That is, they may be more or less likely to show improvement in scores from year to year than the non charter population. Thus the selection problem is not resolved by the use of score growth rather than levels because the students who choose to attend charters may be different from other students in their performance growth trends as well as their levels of performance. Second, because the charter sector has experienced substantial growth in each year since charters began operating, any average of

[5] Some studies have addressed this selection problem in school choice settings by carefully constructing control groups, such as students who sought to attend a choice school but, due to oversubscription, were unable to do so due to random selection (e.g. Hoxby, 200x, Rouse, 1998). Such methods are critical when studying aggregate data, but use of student fixed-effects in our microdata panel supersedes the need for the need for such techniques.

students' score changes may be heavily influenced by the effects of changing schools since a very large share of the observations will be students in their first year in the charter.[6]

The availability of longitudinal data that allows us to track changes in individual student test scores over time as they transition from traditional public schools to charters enables us to deal much more effectively with the problem of selection bias than when studying aggregate data. By including student fixed-effects in our empirical model we can generate estimates of the mean effect of charter attendance on test scores by comparing the growth trend of particular students while they attend a charter with their trend while attending traditional public schools.[7] This method obviates the need to model the process by which students are selected into charter schools (such as the techniques pioneered by Heckman, 1979) or to establish an appropriate comparison set of traditional public school students based on limited observable characteristics or random selection (e.g Peterson and Howell, 2003). As HK&R (2002) note, while the student fixed-effect method effectively controls for time-invariant student, family and peer effects, there remains some concern that students may experience a change in one of these factors contemporaneous with the move to a charter school. For example, the family's decision that the student attend a charter may be stimulated by a disciplinary problem or, more positively, by the emergence of a previously lacking parental awareness or concern for a students academic progress. Such changes in students' external circumstances represent one source of potential bias to our estimates, but only if there is a systematic pattern of such occurrences contemporaneously with the movement of students to charter schools.

[6] For example, in 2002 we observe xx students entering charter schools in our test score data while only xx students are continuing in a charter school.

[7] Note that because our data series begins prior to the establishment of charter schools in Texas, and because many students first enter a charter after fourth grade (the first point at which we observe their test score growth), we observe most charter students in a traditional public school prior to entering the charter.

In order to establish the effect of charter attendance on student achievement, we seek to isolate short-term student mobility effects and new school start-up effects from the long-term (and presumably more stable) impact of attending a school structured as a charter. These two similar but distinct factors may affect student test scores when they enter charter schools and confound estimates of the underlying contribution of charters to student achievement. Consider first the potential for disruption to a student's academic progress due to switching schools. HK&R (2001) have shown, using Texas data similar to that we study, that mobility can be significantly detrimental. After controlling for structural moves (such as progress from an elementary to middle school), which they define as moves in which a student remains with at least 30% of her previous classmates, they distinguish between *inter*district moves, which they find to not have a negative impact, perhaps because they often indicate family choices to move in search of superior schools, and *intra*district moves, which do have a negative impact and the authors argue are likely to be moves of necessity rather than choice. We employ this distinction between structural, interdistrict, and intradistrict moves, but we also believe it is important to distinguish the effect of movement to a charter school from the effect of mobility within the traditional public school system. If mobility is disruptive to academic progress because of difficulty in transitioning to a new environment, the effect may be quite different when switching to a charter school because of potentially larger differences in instructional style, curriculum, peer groups, and other factors which distinguish charter schools. To isolate the mobility effects on student achievement, we include indicators for students who have switched campuses or districts within the public school system, and separate indicators for a move from a traditional

public school to a charter, a move from one charter to another, and for a move from a charter to a traditional public school.[8]

A second confounding factor that we wish to isolate in our analysis is start-up difficulties that charter schools may experience in their initial years of operation. For this reason we disaggregate our estimates of charter school effects by the number of years a school has been in operation.

In keeping with the value-added framework for measuring student achievement discussed above, the dependent variable in our analysis is individual student Texas Learning Index (TLI) score gains in either reading or math.[9] We model test score gains for student (i) in grade (g) at time (t) as a function of vectors of time-varying student and school-programmatic characteristics (X), school demographic characteristics (SD), school movement indicators (M), indicators for attendance of a charter school by the number of years the charter has been operating (C), student fixed effects (μ), year-by-grade fixed effects (γ) and a random error (ε). This gives us the following estimation equation:

$$1)\ \Delta TLI_{igt} = X_{igt}\beta + SD_{it}\phi + M_{igt}\varphi + C_{it}\eta + \gamma_{gt} + \mu_i + \varepsilon_{igt}$$

The student and school-programmatic characteristics we include are economically disadvantaged status, and enrollment in special education.[10] Year by grade fixed effects are included because, despite the intention that TLI scores be comparable across grades and years, we find that average

[8] Following HK&R, 2001 we eliminate structural moves, such as from elementary to middle school, by treating any move from one campus to another as structural if the move is made by 30% or more of a student's cohort.
[9] See Hanushek, Kain & Rivkin (2000) for a discussion of the benefits of value-added methodology.

[10] Note that all time-invariant student characteristics such as gender and ethnicity are replaced by the individual student fixed effect.

score growth differs across grades and years and that these fixed-effects are significant throughout our estimation.

We do not include any measures of inputs, such as expenditures per pupil or student teacher ratios, in our model. The charter effect therefore captures all systematic differences between charters and traditional public schools, which may entail different quantities inputs and choices of how to allocate inputs, as well as institutional differences between charters and traditional public schools.

In the student fixed-effect methodology the estimated effect of attending a charter school is determined by the change in achievement gains for students who are observed in both traditional public school and charter school environments. One disadvantage of this method is that any student who is in a charter school throughout the period will have any impact of attending a charter captured by the individual fixed effect and will not provide information on the impact of charter schools. However, this problem is minimal in our sample since we observe nearly all charter students in a traditional public school prior to entering a charter. Table 7 shows the number student-year observations in out sample for charter schools of varying years in operation.

4 The Data

All of the data for this project were obtained from the Texas Education Agency and consist of district, campus and student level observations. The student level data consists of observations on all students in grades 3-8 and 10 (the grades in which the TAAS test is administered) from 1995 through 2002. We track six cohorts of students from fourth grade (the first point at which we are able to observe score growth) through the point at which they are no

longer observed in our dataset. This means that we follow a student who does not exit the Texas public school system from fourth through eighth grade for students that were in fourth grade between 1995 and 1997. Students in fourth grade in 1998 are last observed in seventh grade in 2000; those in fourth grade in 1999 are last observed in sixth grade in 2002. Each student has a unique identification number in the data which allows us to follow students as they switch schools. The data contain student, family, and program characteristics including gender, ethnicity, eligibility for a free or reduced price lunch (which is used an indicator of economically disadvantaged status), limited English proficiency, and participation in special education.[11] As discussed earlier, the student fixed-effect methodology we employ eliminates the need for time-invariant student characteristics, such as gender and ethnicity, in our model, but this data is useful for generating simple descriptive statistics.

The TAAS test in math and in reading is administered in the spring to all students in grades 3 through 8 and 10, although some special education students and limited English proficiency students are exempt if a school committee determines that the TAAS test is not educationally appropriate for the student. Approximately 15% of students in the relevant grades do not take the test either because they are exempt or they are absent on testing days. The TAAS math and reading tests each contain 40 questions. Of course the average percentage correct differs across grades and years, as does the number correct required to be considered "passing" on this criterion referenced test. In order to make comparisons across years and grades and evaluate students' progress, the TEA transforms the raw scores into the Texas Learning Index

[11] Due to confidentiality concerns at TEA, the data on student characteristics such as ethnicity are masked if there are fewer than five students in a cell in a single grade at a campus. Thus if there is only one Hispanic student in fifth grade at a school in particular year, that student's ethnicity is listed as missing. Additionally, though we have an indicator for whether a student participates in special education, we do not have information on what type of instruction the student receives or the student's specific disability. Thus the special education indicator encompasses a very wide range of students from those with speech difficulties or learning disabilities to the deaf or blind.

(TLI) scaled score which we use in our analysis. TLI scores range roughly from 0 to 100 with the passing standard fixed at 70. A raw score is converted to a TLI by determining where the score would place the student in the reference year (1994) distribution in which the passing standard was established. Thus if the passing standard was set at the 40th percentile of the 1994 distribution then a student taking the test in later years whose raw score would place him exactly at the 40th percentile of the reference distribution would receive a TLI score of 70. If a student's score placed him one standard deviation above the passing level in the reference distribution then his TLI score would be 85 because the TLI is constructed such that one standard deviation in the reference population corresponds to 15 TLI points. TLI scores therefore have a norm-referenced character although, because each student's performance is evaluated by reference to an earlier year's population, it is possible for the entire population to show positive TLI score growth on average.[12]

In addition to student level data we utilize data on the composition of the student body at each campus. We include in our model the percentage of students by ethnicity, limited English proficiency, disadvantaged status, and enrollment in special education in order to control for peer effects. Note that this campus-level data is based on the entire student body rather than only those grades in which the TAAS is administered.

As we've noted, careful treatment of school mobility is important when studying the effect of charter schools on student performance. We follow HK&R (2001, 2002) in distinguishing between interdistrict moves and intradistrict moves, as well as between structural and non-structural moves. A student is labeled as having made an interdistrict move if she took

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[12] See the *TEA Technical Digest* for a complete description of the method of computing the TLI.

the TAAS test in a different district in year *t-1* than year *t*. She is labeled as having made an intradistrict move is she is observed in different campuses from one year to the next, but remains in the same district and the move is not considered structural. A move is considered structural if the student remains with 30% or more of her previous classmates. Structural moves are common in our dataset as students progress from elementary to middle school. Unlike HK&R (2002), we generally treat movement to and from charter schools as distinct from movement between traditional public schools. We include indicators for movement from a traditional public school to a charter, from a charter to a traditional public school, and from one charter to another. For comparison we include results from some specifications in which movement to or from a charter is grouped with other interdistrict moves.[13]

5 The Effect of Charter Schools on Student Performance Gains

Broadly, we can summarize our results as follows: 1) there is a significant negative effect of the transition from a traditional public school to a charter which is of much greater magnitude than the disruption effect of movement between traditional public schools. The results also indicate a large positive effect of transition from a charter to a traditional public school, which suggests that the performance drop when moving to a charter may be at least in part a consequence of a different testing environment or emphasis, rather than a true decline in achievement. 2) Controlling for the negative transition effect in the first year of charter attendance, charter schools do have a significantly positive effect on student achievement. 3)

[13] Because our study is focused on open-enrollment charter schools (i.e. those chartered by the State Board of Education) and does not consider district-chartered schools, all moves to and from a charter school are interdistrict moves.

There is evidence from the math results that charter schools are less effective in their initial year of operation than in subsequent years.

Tables 8 & 9 show the regression results for math and reading respectively. The estimated year-by-grade fixed effects are not shown, but are generally very significant. The campus population percentages which control for peer effects are also generally significant. The coefficients on the percentage African-American, Hispanic, and Special Ed. are negative throughout and the coefficients on economically disadvantaged status and limited English proficiency are consistently positive.

One of the most striking aspects of our results is that there is a great difference in the estimated effect of charter attendance between specifications in which movement to a charter is grouped with other interdistrict moves and those in which we include separate indicators for movement to, from, and between charter schools. We find that movement to a charter school is associated with an estimated -2.42 point effect on math score growth, and -2.616 point effect on reading score growth. Our estimates of the effect of movement between traditional public schools are fairly consistent with HK&R (2001). We find that intradistrict movement is associated with a -.295 effect on math, -.349 on reading. The estimated effect of interdistrict movement is slightly positive for math, .029, in line with the HK&R suggestion that this reflects Tiebout improvement, but we find a negative effect, -.059, for reading. (All estimates are significant at the 95% level.)

Given these estimated mobility effects, and the fact that a substantial share of all observations of students in charter schools are for students in the first year of charter attendance, it is not at all surprising that the estimated impact of charter attendance is much lower when

movement to a charter is conflated with other interdistrict moves, as in HK&R (2002). In the absence of specific indicators for movement to a charter the estimated effect of charter attendance is negative for nearly all ages of charter schools in both math and reading. Not surprisingly, 6th year charters are the lone exception, and we see the largest negative coefficient on charters in their first year of operation, which of course have almost exclusively students in their first year of charter attendance.

It is very interesting to observe the large positive coefficient on movement from a charter to a traditional public school, 3.45 in math and 3.01 in reading. In both cases these effects are slightly larger than estimated effect of movement from a traditional public school to a charter. This suggests that charter schools may prep students less effectively for the TAAS tests, communicate less emphasis on these tests to students, or in some other way effect student testing performance in a manner that is not indicative of underlying achievement. In other words, it may be that attending a charter has a negative level effect on testing performance which is consistent over time, while having a positive effect on achievement growth over time. If this hypothesis were correct, and if transition costs due to movement both into and out of a charter were not a confounding factor, we would expect that the estimate of the effect of moving from a charter to a traditional public school will be of opposite sign and similar magnitude as the effect of moving from a traditional public school to a charter, which is precisely what we observe. If, on the other hand, switching schools were always disruptive, the estimate on both indicators should be negative, which we do not observe.

The math results suggest that charters may perform less well in their initial year than in later years of operation. In a regression run with only two categories of charter schools—those in their first year of operation and those beyond the first year—we find the estimated coefficient on

the continuing charter schools is 1.20 compared with -.02 (not significantly different from zero) for new charter schools. This result is not evident in reading, however, where the estimate for new charters is 1.41 and for continuing charters 1.29, which are not significantly different. There is an odd anomaly: for both math and reading the effect of 5th year charter schools in the disaggregated regressions is slightly negative (although not significantly different from zero). However, there are relatively few student observations in this category, only 587 students are observed in a charter in its 5th year of operation.

Conclusion

We conclude by comparing our results with other studies of charter school performance. As we've discussed, our study is closest to the work of HK&R (2002) who also examined the performance of charter schools in Texas but did not distinguish the impact of movement to a charter school from interdistrict moves among traditional public schools. They concluded that, after the initial start-up period, the performance of charters is not significantly different from that of traditional public schools, but we have argued that the poor performance of new charter schools in their study (and the mediocre performance of established charters) results from the absence of controls for the charter-specific mobility effect. HK&R also provide evidence that parents' decisions to exit charter schools seem to be much more sensitive to education quality than in the traditional public sector schools.

Eberts and Hollenbeck (2001) found evidence that students in charter schools in Michigan performed less well than students in traditional public schools in the same districts. However, their study suffered from data limitations. The Michigan students were tested in reading and math in fourth grade, and writing and science in fifth grad. This prevented true

value-added methodology from being employed (although the authors utilized the fourth grade scores as controls for ability level when analyzing fifth grade performance), and the lack of longitudinal data prevented the use of student fixed-effects. The authors therefore attempted to control for student ability at different schools principally by means of campus aggregate demographic data. As we've argued in this paper, these methods are unlikely to adequately control for selection into charter schools.

Perhaps the most interesting comparison is with Solmon, Paark and Garcia's (2001) study of Arizona charter schools. They utilized three years of data from the Stanford Achievement Tests administered yearly to students in Arizona which provided a longitudinal dataset although with a fairly short time-series. Utilizing individual student fixed-effects and value-added methodology similar to that we have employed they found strikingly similar results: charter schools were found to positively affect student performance in both reading and math in the second and third consecutive years of attendance, but the effect in the first year of charter attendance was negative for reading and not significantly different from zero in math. Although the authors of the Arizona study did not distinguish the effect of the number of years a charter school has been in operation from the effect of a student's being new to a charter school, their result is consistent with our finding that the transition to a charter school has a significant negative impact, but charter school students perform well thereafter.

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Texas Open-Enrollment Charter Schools: Fifth Year Evaluation.

Table 1a Number and Enrollment of Charter Schools in Texas

	Charter Schools		Percent of Total Public School Enrollment
Academic Year	Number in Operation	Enrollment	
2001-2002	179	46,939	1.13%
2000-2001	158	37,956	0.93%
1999-2000	142	25,687	0.64%
1998-1999	61	12,226	0.31%
1997-1998	19	3856	0.10%
1996-1997	16	2412	0.06%
1995-1996	0	0	--

Table 1b Breakdown of new charter students in each year

Academic Year	Increase in Number of Charter Students from Previous Year	Number of Students in New Charter Schools	Percent of Growth in Charter Population due to New Schools
2001-2002	9,983	2,926	29%
2000-2001	12,269	2,662	22%
1999-2000	13,461	11,770	87%
1998-1999	8,370	6,427	77%
1997-1998	1,444	364	25%
1996-1997	2,412	2,412	100%
1995-1996	0	0	0

Table 2 Charter Schools by County and County Population, 2001 - 2002

County or Set of Counties	Number of Charter Schools	Population in County (or Counties)*	Percent of Texas Population
Charters in Major Metropolitan Counties:			
Bexar (San Antonio)	21	1,392,931	6.68%
Dallas (Dallas)	28	2,218,899	10.64%
El Paso (El Paso)	4	679,622	3.26%
Harris (Houston)	43	3,400,578	16.31%
Tarrant (Ft. Worth)	8	1,446,219	6.94%
Travis (Austin)	10	812,280	3.90%
Charters in Other Counties:			
Hidalgo	7		
Jefferson, Nueces	5 each		
Lubbock	4	242,628	1.16%
Bell, McLennan, Midland, Smith	3 each		
Brazos, Cameron, Galveston, Hays, Webb	2 each		
Angelina, Bee, Bowie, Brooks, Comal, Denton, Ellis, Erath, Gregg, Hunt, Lampasas, Montgomery, Panola, Potter, Real, Somervell, Taylor, Uvalde, Val Verde, Van Zandt, Walker, Wichita	1 each		
Total Population of Texas		20,851,820	
TX Counties with Charters - 41 counties	179 charters		
TX Counties without Charters - 213 counties	0 charters		

* Source: Bureau of the Census, GCT-PH1: Population, Housing Units, Area, and Density: 2000 Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data, Geographic Area: Texas

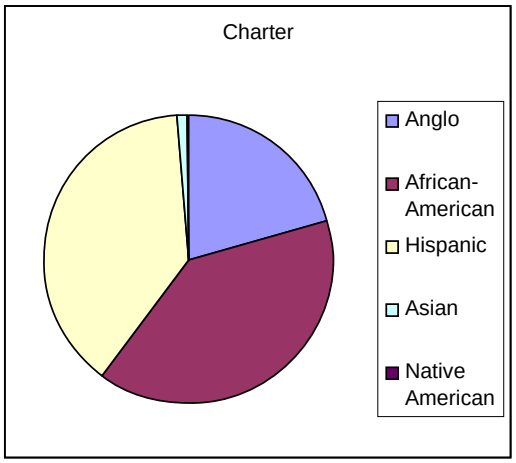
Table 3 Charter Penetration of School Districts

Academic Year	Districts with Charters	Enrollment in Public School Districts with Charters	Percent of Overall Public School Enrollment
2001-2002	67	1,738,360	41.9%
2000-2001	59	1,587,469	39.1%
1999-2000	40	963,714	24.2%
1998-1999	21	940,460	23.9%
1997-1996	10	632,311	16.3%
1996-1997	5	158,765	4.2%
1995-1996	0	0	0

Table 4. Student Demographics: Charters vs. Traditional Public Schools, 2001 - 2002

Student Group	Charter Schools (179)	Traditional Public School Districts (1,041)
Anglo	20.4%.	41.1%
African-American	39.7%	14.1%
Hispanic	38.3%	41.7%
Asian	1.3%	2.8%
Native American	0.2%	0.3%
Economically Disadvantaged	57.6%	50.4%
Limited English Proficiency	6.7%	14.6%
Special Education	9.0%	11.7%
Career & Technology	11.7%	19.4%
Gifted & Talented	1.7%	8.3%
At-Risk	47.3%*	32.0%*

* At-Risk percentages taken from campus level TAAS data, and reflect % at-risk in grades 3-8 and 10



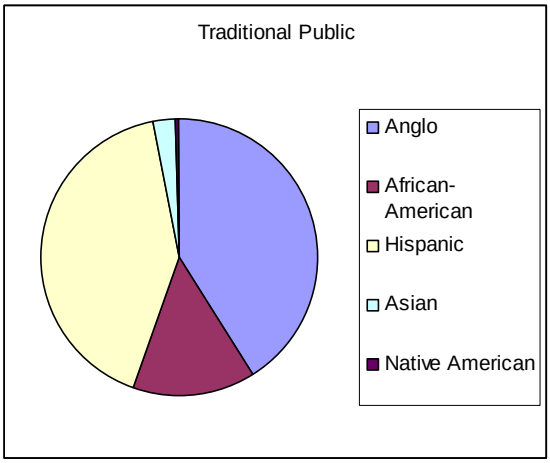


Table 5a Average TLI Math Growth

	Mean Growth
All students	1.36
All Charter Students	0.50
Students in 1st year at Charter	-1.12
Students in later years at Charter	2.04
Continuing students in Trad. Public	1.35
Studs. who changed TP district	1.41
Studs. who changed TP campus	1.10

Table 5b Average TLI Reading Growth

	Mean Growth
All students	1.66
All Charter Students	0.94
Students in 1st year at Charter	-0.77
Students in later years at Charter	2.57
Continuing students in Trad. Public	1.67
Studs. who changed TP district	1.48
Studs. who changed TP campus	1.15

Table 6 Distribution of Charter Schools by Years of Operation in Each Year

Years in Operation	1997	1998	1999	2000	2001	2002
New	16	3	42	82	20	23
2nd Year		16	3	40	80	18
3rd Year			16	3	40	80
4th Year				16	3	40
5th Year					15	3
6th year						15

Table 7 Number of Observations of Students in Charter by Years of Operation

Years in Operation	Number of Observations
New	2013
2nd Year	2886
3rd Year	2674
4th Year	1742
5th Year	587
6th year	256

Table 8 Estimated effects on change in TLI Math score
Absolute t-statistics in parentheses.

	Disaggregated Charter Mobility Effects	**Common Mobility Effects**
New Charter	.109 (.34)	-3.18 14.86
2nd year Charter	1.44 (5.92)	-.794 4.26
3rd year Charter	1.25 (5.24)	-.629 3.18
4th year Charter	1.09 (4.07)	-.507 2.08
5th year Charter	-.099 (.23)	-1.28 3.03
6th year Charter	2.58 (3.86)	1.67 2.52
District Mover	.029 (1.63)	.041 2.25
Campus Mover	-.295 (16.44)	-.297 16.54
Moved to Charter from Trad. Public	-2.42 (10.96)	-
Moved to Trad. Public from Charter	3.48 (17.79)	-
Moved from one Charter to another	.481 (.66)	-
Student is Disadvantaged	.092 (5.17)	.093 5.20
Student is in Special Ed.	.396 (11.14)	.398 11.17
Campus % Black	-.016 (20.51)	-.016 20.69
Campus % Hispanic	-.037 (42.62)	-.037 42.67
Campus % Disadvantaged	.038 (57.38)	.038 57.49
Campus % Special Ed.	-.062 (40.13)	-.062 40.00
Campus % Lmtd. Eng. Prof.	.038 (54.91)	.039 54.85
Number of Obs.	4,690,027	4,690,027
Number of Students	1,411,912	1,411,912
F-statistic	3696.39	3976.61

Table 9 Estimated effects on change in TLI Reading score

Absolute t-statistics in parentheses.

	Disaggregated Charter Mobility Effects	**Common Mobility Effects**
New Charter	1.33 (3.26)	-2.01 (7.49)
2nd year Charter	.805 (2.65)	-1.43 (6.12)
3rd year Charter	2.02 (6.77)	.131 (.53)
4th year Charter	1.34 (4.01)	-.253 (.83)
5th year Charter	-.350 (.65)	-1.50 (2.84)
6th year Charter	2.94 (3.49)	2.02 (2.41)
District Mover	-.059 (2.61)	-.052 (2.31)
Campus Mover	-.349 (15.56)	-.351 (15.64)
Moved to Charter from Trad. Public	-2.61 (9.47)	-
Moved to Trad. Public from Charter	3.02 (12.32)	-
Moved from one Charter to another	.54 (.57)	-
Student is Disadvantaged	-.021 (.95)	-.021 (.93)
Student is in Special Ed.	.333 (7.33)	.333 (7.35)
Campus % Black	-.013 (13.19)	-.013 (13.33)
Campus % Hispanic	-.024 (22.75)	-.025 (22.79)
Campus % Disadvantaged	.027 (33.29)	.028 (33.38)
Campus % Special Ed.	-.031 (15.80)	-.030 (15.71)
Campus % Lmtd. Eng. Prof.	.024 (28.34)	.024 (28.29)
Number of Obs.	4,616,597	4,616,597
Number of Students	1,395,617	1,395,617
F-statistic	3621.25	3900.64

Table 10 Estimated Including Controls for Inputs

Absolute t-statistics in parentheses.

	Math	**Reading**
New Charter	.299 .87	1.63 3.77
2nd year Charter	1.55 6.14	1.00 3.18
3rd year Charter	1.53 6.26	2.23 7.27
4th year Charter	1.37 4.76	1.31 3.64
5th year Charter	.338 .75	.133 .24
6th year Charter	2.93 4.23	4.19 4.75
District Mover	.034 1.90	-.049 2.18
Campus Mover	-.281 15.65	-.334 14.86
Moved to Charter from Trad. Public	-2.474 10.66	-2.57 8.88
Moved to Trad. Public from Charter	3.51 17.72	3.12 12.57
Moved from one Charter to another	.194 .25	.883 .87
Student is Disadvantaged	.094 5.25	-.021 .93
Student is in Special Ed.	.398 11.18	.334 7.35
Operating Exp. per pupil	-.0000869 10.50	-.0000803 7.76
Avg. Teacher Experience	.0270 11.36	.036 12.39
Student-Teacher ratio	.000068 .02	-.0019 .47
Number of Obs.	4,680,207	4,607,019
Number of Students	1,411,245	1,394,947
F-statistic	3447.75	3374.59