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Texas Charter Schools:
An Assessment In 2005

SEPTEMBER 2005

By Dr. Timothy J. Gronberg
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With Forward
by Chris Patterson, Research Director
Texas Public Policy Foundation

Forward

In 2001, Texas Public Policy Foundation published a report by Timothy Gronberg and Dennis Jansen that shattered myths about charter schools and pioneered a new, more informative way to evaluate the impact of schools on student achievement.

Navigating Newly Chartered Waters examined the first four years of charter school operation in Texas and revealed that achievement of educationally-disadvantaged students in charter schools surpassed their peers in traditional public schools. Looking at how student achievement changed over time permitted the authors to identify the value added, academic effectiveness, and economic efficiency of Texas charter schools.

Today, we offer an even more remarkable study of Texas charter schools by the same authors – who, in taking a look at the second four years of charter school operations – shed new light on the impact of charter schools on their own students, as well as the impact on students in traditional public schools, and correct persisting misperceptions about charter schools.

The findings of this new study are startling and will prove immensely useful for state policymakers considering ways to improve public education and parents seeking academically-sound alternatives to traditional public schools. For researchers and policy analysts, the findings stimulate critical questions about measures that truly capture academic performance, standards for school accountability that recognize the most important educational objectives, and reforms necessary to fundamentally change high school outcomes.

This report demonstrates:

- Academic gains for elementary and middle school students who have remained in the charter school for several years, are significantly higher than their matched counterparts in traditional public schools.

- Students enrolled in at-risk charter schools have larger achievement gains than their matched counterparts in traditional public schools.

- Charter schools are generally more successful with students at the lower end of the academic achievement than with students at the higher end of achievement.

- The achievement of high school students in charter schools, on the whole, is significantly lower than their matched counterparts in traditional public schools.

- Students in Texas charter schools do achieve, on average, lower than students in traditional public schools — *based on absolute, level test scores,* rather than achievement gains. This should be unsurprising, given:
  - The vast majority of students may never have passed state assessments while attending traditional public schools;
  - The strongest influence on student achievement is past achievement — Charter schools generally serve a higher population of disadvantaged students than traditional public schools;
  - Changing schools has a temporary, adverse impact on student achievement — Charter schools generally have a higher proportion of new students than traditional public schools;
  - Educational outcomes of high school students generally fall further below expectations than outcomes of students in elementary and middle schools — Charter schools generally serve a higher proportion of high school students than school districts; and
  - A large number of charter schools are expressly designed to provide alternative education programs for students at-risk — Alternative education schools have different, lower academic standards than traditional public schools.

- Students at traditional public schools facing charter competition generally achieved significantly higher gains in reading and math than schools that did not compete with charters — without any increase in traditional public school spending.

- There is an urgent need to improve high school achievement in charter schools that reflects the broader, equally urgent need to improve high school achievement in traditional public schools, particularly those serving at-risk students.

The findings of this study furnish two solid reasons for expanding charter schools. First, charter school students — especially non-high school students — are doing as well or better than if they remained at traditional public schools. Second, traditional public school students in districts facing charter competition are doing better than students in districts without charter schools.

Charter schools are making a vital contribution toward improving the education of all youth in public schools today, and challenge Texans to look more closely at school choice as the way to improve public education.

About The Authors

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Dr. Gronberg is a Professor of Economics at Texas A&M University, where he teaches and specializes in research in microeconomic theory and public finance. Dr. Gronberg earned his Ph.D. in Economics from Northwestern University in 1978. He has been a Research Fellow of the Private Enterprise Research Center since 1992. Dr. Gronberg has been affiliated with Texas A&M since 1977, and has previously served as Director of Graduate Programs and as Chairman of the Department of Economics.

Professor Gronberg has published papers in major academic journals, including *American Economic Review, Quarterly Journal of Economics, Review of Economics and Statistics*, and *Journal of Urban Economics*. Much of his research has focused on the provision of public goods and services. His recent research has centered upon issues in the economics of education, and includes studies of the cost of education services, the measurement of educational performance, and the impact of charter schools.

Dr. Dennis W. Jansen
Dr. Dennis W. Jansen is Professor of Economics at Texas A&M University and Editor of Economic Inquiry. He received his Ph.D. in Economics in 1983 from the University of North Carolina at Chapel Hill and his undergraduate degree in economics and mathematics from St. Louis University in 1978. He has served on the faculty of Texas A&M University since 1983 and has been both Director of Graduate Programs in Economics (1994-1996) and Department Head (1996 - December 2001). Dr. Jansen has held research and/or teaching positions at the Federal Reserve Bank of St. Louis, Indiana University-Bloomington, North Carolina State University, Erasmus University Rotterdam, Catholic University Leuven, and Maastricht University. He has been a Private Enterprise Research Center Research Fellow since 1992.

Professor Jansen has published over forty research papers in refereed professional journals, two textbooks, and numerous other writings. His research has largely focused on the areas of monetary economics, financial economics, and applied econometrics. Most recently Professor Jansen has done research on the economics of education, including studies of education cost functions, charter schools, and school competition.

He has received grants from both the State of Texas Advanced Research Program and the National Science Foundation. Professor Jansen has chaired the doctoral dissertations of over twenty students now graduated and holding jobs in academia, government, and business throughout the world. He is a regular participant at academic conferences, and he has made presentations at universities and conferences throughout the world.

Disclaimer: *The views expressed in this paper are solely those of the authors and not of Texas A&M University.*

Introduction

In our first report, *Navigating Newly Chartered Waters*, we provided a look at the first four years of charter school operations in Texas. We are now revisiting the Texas charter sector four years later in order to update and to extend our earlier analysis. During the intervening period, the number of charter schools has grown by twenty-five percent, and the number of students enrolled in charter schools has grown by over one-hundred percent. The survival and growth of charter school suppliers speaks positively and, at least to economists, loudly to the viability and success of the charter ventures. Attracting more customers is one relevant indicator of success, but there remain important policy concerns about the charter experiment.

We focus our analysis on two of the highest profile and highest priority concerns surrounding charter schools: Are students who exit to charters being hurt or helped with respect to their academic development? Are students who choose to stay behind in traditional public schools pushed behind in their academic development because of charters? We use the two-years of individual student test score data generated within the TAKS-testing environment to evaluate the impact of charter schools on their own students. This is the update portion of the report, although we use different empirical strategies here.

We utilize data from both the TAAS and TAKS test worlds to estimate the effect of charter schools on traditional public school student outcomes. This is a major extension from our previous report. The potential feedback effect of charter schools upon traditional public students is a critical and controversial issue in the debate over school choice experiments, such as charter schools. Opponents of charters expect costs to be visited upon the kids left behind whereas proponents expect benefits to be conferred upon the kids who choose the traditional option. Our objective is simply to try to provide the best available evidence as to the realized effect over the early years of the Texas experiment.

In the first section of the report, we highlight key features of the structure of the charter school market. The two major analytical sections of this report combine to provide a system-wide assessment of charter school impacts. The first of these sections considers charter school student outcomes, and the second considers the charter market impact on traditional public student performance.

The Texas Charter School Market

The charter school sector continues to expand both in number of schools and in number of students enrolled. Over the four-year period following our initial charter school report, enrollment in charter schools has more than doubled. Even with this significant enrollment growth, however, the enrolled student body of charter schools is only 1.41 percent of the public school student population. Although there is a wide distribution of charter schools across the State, the charter sector is heavily geographically concentrated in the four largest metropolitan areas. This concentration feature is important to account for in a careful analysis of the comparative performance of charter schools and traditional public schools. Tables 1 and 2 show the following:

- Charters have expanded from 142 schools in 2000 to 190 schools in the 2003-04 school year.
- The number of students enrolled in charters has increased from 25,687 in 2000 to 60,748 in 2004.
- 120 of the charter schools and 78 percent of the charter students are located in the four metropolitan areas of Houston, Dallas-Fort Worth, San Antonio, and Austin.

Table 1: Number and enrollment of charter schools in Texas

Year	Charters			
	Number in Operation	Enrollment	Growth in Enrollment	Percent of Public School Students
2003-2004	190	60,748	14%	1.41
2002-2003	185	53,156	13%	1.25
2001-2002	180	46,979	24%	1.13
2000-2001	159	37,978	48%	0.94
1999-2000	142	25,687	110%	0.64
1998-1999	61	12,226	217%	0.31
1997-1998	19	3,856	60%	0.10
1996-1997	16	2,412	--	0.06
1995-1996	0	0	--	--

Table 2: Charters in five major metropolitan counties, 2003-04

County	Number of Charter Schools	Number of Charter Students
Bexar (San Antonio)	23	7,214
Dallas	29	16,910
Harris (Houston)	44	17,203
Tarrant (Fort Worth)	11	2,867
Travis (Austin)	13	3,143

As shown in Table 1, the total number of charters in operation has increased from 16 in 1997, the birth year of the charter sector, to 190 in 2004. The increase of 174 charter school operators is the net effect of the entry of new charter schools and the exit of unsuccessful charter schools during the eight year period. Comings and goings are a common feature of developing sectors, but there are, appropriately, heightened concerns over closings of schools relative to closings of other businesses, e.g. restaurants. As shown in Table 3, we identify 17 charters as exiting during the period.[1] It is also clear that the explosive entry of charters during the 1999-2000 period has slowed considerably, with fewer new charter schools opening over the 2000-04 period than opened in the 1999-2000 school year alone. The slowdown is at least partially attributable to the cap on the number of authorized charters as part of House Bill 6, which was enacted in 2001.[2] The continued significant growth in charter student enrollment, up 136 percent from the 1999-2000 level, has mainly come from growth of continuing charters. Given that there are no guaranteed customers for charters, the survival and enrollment growth rates among charters provide relevant barometers of their viability and success.

[1]The TEA reports that 35 of the charters awarded during the period 1996-97 through 2003-04 have been removed (Revoked, Returned, Rescinded, Expired, or Merged). Of those, only five are revocations. Only 17 of those exiting charters were ever included in our data set.

[2]HB 6 set a cap at 215 for the number of authorized charters. In 2004, there were 201 active status charters in Texas.

Table 3: Charter school industry growth

Year	Number of New Charter Schools	Enrollment in New Charter Schools	% of Growth in Charter Population Due to New Charter Schools	Number of Exiting Charter Schools
2003-2004	9	1,165	15.3	4
2002-2003	10	1,121	18.1	5
2001-2002	23	2,926	32.5	2
2000-2001	21	2,686	21.9	4
1999-2000	83	11,770	87.4	2
1998-1999	42	6,705	80.1	0
1997-1998	3	364	25.2	0
1996-1997	16	2,412	100.0	--
1995-1996	0	0	--	--

In our previous report, we separated charter schools into two categories: at-risk charters and not at-risk charters. The separation was driven by the formal institutional distinction between those schools which were chartered to serve predominately (at least 75 percent) academically "at-risk" students and those schools which were chartered as open enrollment operations. That institutional feature of chartering in Texas was eliminated for the 2000-01 school year. There remains a large number of charter schools which serve significant numbers of at-risk students, although more of the growth in the charter sector has taken place in not at-risk charters.

Table 4 presents the growth of at-risk charters. For classification purposes we adopt the TEA convention of classifying charter schools as at-risk if at least 70 percent of their students are classified as at-risk. Note that the number of new at-risk charter schools was only three in 2002-03 and in 2003-04, or roughly one-third of the total number of new charters in these years. This stands in sharp contrast to prior years such as 1999-2000, when 36 of 83 new charters were classified as at-risk.

Table 4: At-risk charter schools

Year	At-risk Charter Schools		Percent of Charter School Students in At-risk Charters
	Number in Operation	Enrollment	
2003-2004	72	19,926	32.8
2002-2003	69	17,532	33.0
2001-2002	66	14,871	31.7
2000-2001	60	11,410	30.0
1999-2000	55	8,207	32.0
1998-1999	19	4,550	37.2
1997-1998	7	1,875	48.6
1996-1997	7	1,171	48.5
1995-1996	0	0	--

Charter Campuses: Distribution By Age And Type

In academic year 2003-2004, there were 274 charter campuses in operation at the 190 charter schools. As displayed in Table 5 below, the campuses are differentiated both by their vintage and by the student population served. The oldest campuses, 13 in number, were in their eighth year of operation. These are campuses that have been in operation since the inaugural year of Texas charters, 1996-97. Fifth year campus operations were the most prevalent, and at 86, were almost twice as numerous as the next highest vintage (the 44 third year charters). Fifth year charter campuses are those that began operations in 1999-2000, the high water market for entry of new charter schools.

The continued growth in the sector is reflected in the 30 new charter campuses in 2003-04, representing more than 10 percent of the industry. It is also important to recognize the significant number of high school charter campuses. Nearly one-third of the charter campuses serve high school students only, and an additional 36 percent serve both high school and non-high school student populations. The high school share of the charter sector in Texas is high both relative to national charter industry norms and relative to the traditional public sector in Texas (see student population characteristics Table 6 below). The large high school charter share suggests some caution when comparing Texas charter school performance results to either national charter results or to traditional Texas public school results. At a minimum, one should separate the non-high school samples from the high school samples when carrying out comparative analyses.

Table 5: Charter campuses by age and type

Year of operation in 2004	All Charter Campuses (274)	High School Only Campuses (86)	Combination High/Non-High School Campuses (98)	Elementary and Middle School Campuses (90)
1st year	30	9	5	16
2nd year	29	11	9	9
3rd year	44	11	16	17
4th year	31	16	10	5
5th year	86	26	36	24
6th year	38	8	16	14
7th year	3	1	1	1
8th year	13	4	5	4

Four features of the charter market bear highlighting.

- 130 of the 142 charter schools which were operating in 1999-2000 were also operating in 2003-2004.
- 56 percent of the growth in charter school enrollment between 2000 and 2004 occurred in schools which were already operating in 1999-2000.
- While the number of and enrollment at charter schools which serve student populations which are at least 70 percent academically at risk has grown since 2000, the market share of at-risk charters has steadily decreased.
- Texas charters serve a large high school population relative to national charter norms.

Characteristics Of Charter School Students And Teachers

The average student body characteristics at charter schools differ in some ways from the average characteristics of the total Texas public school student body. Table 6 provides a description of the student populations at both charter and traditional public schools in Texas for academic year 2004. Differences which stand out include:

- Charter schools serve a markedly larger percentage of African-American students than do the total set of traditional public schools.
- Charter schools serve a much smaller percentage of Anglo students.
- Charter schools serve a larger percentage of economically disadvantaged students.
- Charter schools have a larger number of students identified as at-risk.

As noted earlier, a careful analysis of differences between charter and traditional public schools should take account of the geographic concentration of charter schools when drawing comparisons. In the third column of Table 6 we provide the student body demographic characteristics for those traditional public school districts which contain a charter school within their boundaries. The geographic matching identifies a more relevant set of comparator traditional public districts, namely those from which most of the charter school students will be drawn. As expected, for those 70 geographically matched public school districts, most of the differences in average student population characteristics are significantly reduced. Differences which remain include:

- Charter schools serve a larger percentage of African-American students, but a smaller percentage of Hispanic and Anglo students than do the geographically matched set of traditional public schools.
- Relative to the matched set of traditional publics, charter schools have a larger number of students identified as at-risk.
- Charter schools enroll a disproportionately high number of high school students.

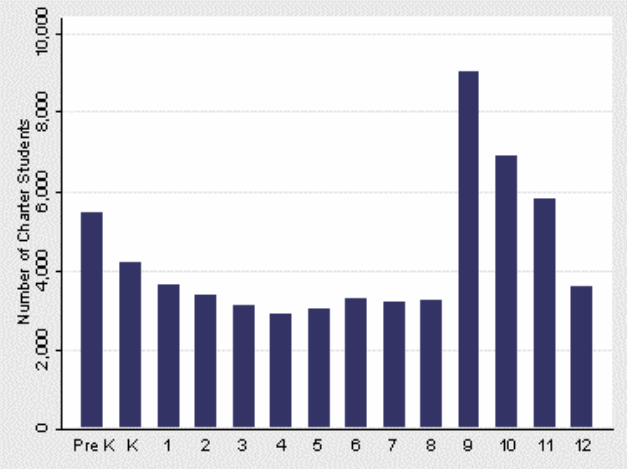
Table 6: Student demographics, 2003-04

Category	Charter Schools (190)	At-risk Charter Schools (72)	Not At-risk Charter Schools (118)	Traditional Public School Districts (1,037)	Traditional Public School Districts Containing Charter Schools (70)
% Anglo	18.4	19.2	18.0	39.0	26.4
% African-American	39.0	30.8	43.0	13.9	17.7
% Hispanic	40.9	49.2	36.9	43.8	52.9
% Asian	1.4	0.6	1.9	3.0	2.7
% Native American	0.3	0.3	0.3	0.3	0.3
% Economically Disadvantaged	63.1	70.4	59.5	52.7	61.5
% Limited English Proficient	9.1	11.8	7.7	15.4	20.1
% Special Education	11.3	16.0	9.1	11.6	11.2
% Career & Technology	15.8	25.9	10.9	20.2	19.6
% Gifted & Talented	1.0	0.2	1.4	7.9	8.5
% High School	41.7	66.8	29.4	27.5	26.5
% At-risk *	51.7	90.3	32.2	37.7	41.1

*NOTE: `*At-risk percentages are taken from the student-level TAKS data, and reflect % at-risk in grades 4-11.*

The prevalence of high school students in the charter sector can be seen clearly in Figure 1 below. This feature is driven by the concentration of high school students enrolled in at-risk charter schools. The large high school population is a distinctive feature of the Texas charter sector.

Figure 1: Distribution of charter students by grade



The comparison of the average student characteristics above does reveal information about the aggregate differences between the charter sector and the traditional public sector. An important dimension of the debate over school choice experiments such as charters is the potential for increased stratification of student populations across schools. The comparison of averages masks the considerable heterogeneity in student populations which exists across both charter schools and across traditional public schools. We provide some more detailed looks at the distribution of several student types within each of the two school sectors in Figures 2-4.

The most striking feature in these figures is the difference between the frequency distribution of African-American students among charter schools and geographically-matched traditional public schools. Figures 2a and 2b show the distribution of the percent of African-American enrollment at charter schools and at matched traditional public schools. A much higher percentage of charter students are attending schools whose student populations are 80 percent or more African-American.

Figures 3a and 3b show the analogous graph for the distribution of Hispanic enrollment at charters and matched public schools, and Figures 4a and 4b the distribution of enrollment of students labeled economically disadvantaged. These later graphs do not tell as clear a story of contrasting enrollment patterns, as charter enrollments more closely correspond to those at matched traditional public schools.

Figure 2a: Charter, percent African-American

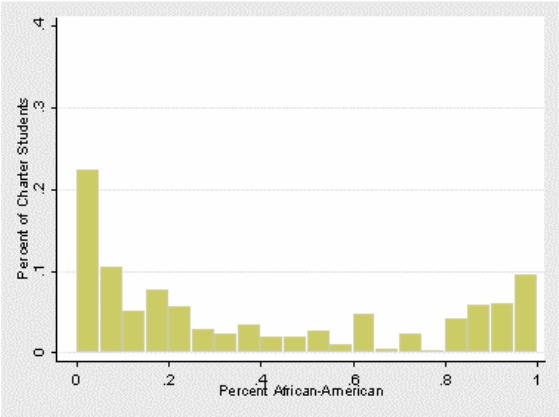


Figure 2b: Traditional matched public percent African-American

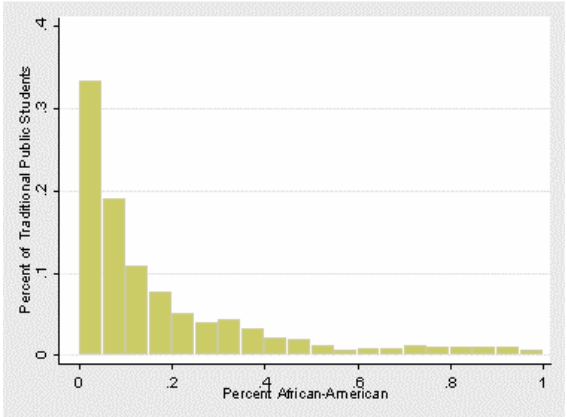


Figure 3a: Charter percent Hispanic

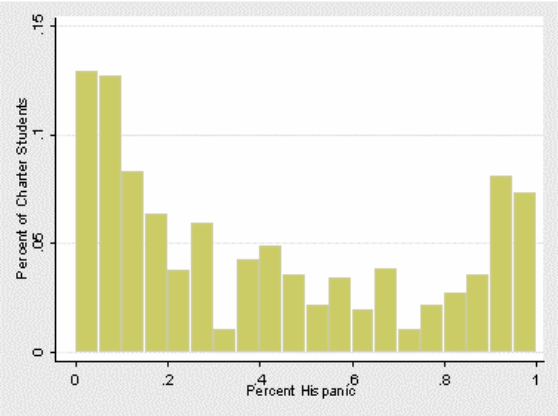


Figure 3b: Traditional matched public percent Hispanic

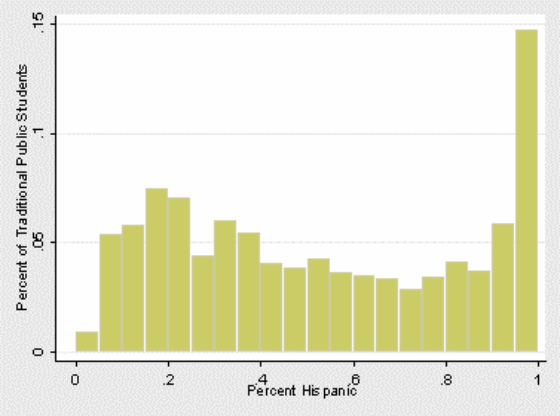


Figure 4a: Charter percent economically disadvantaged

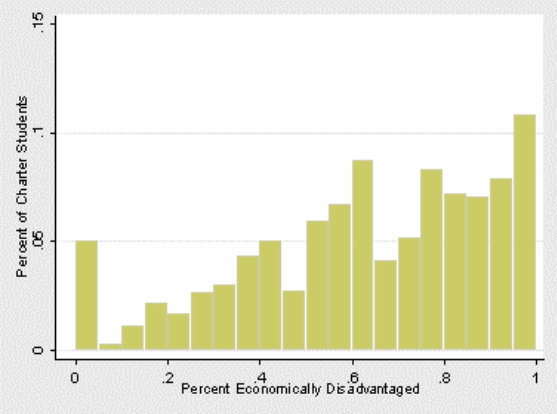


Figure 4b: Traditional matched public percent economically disadvantaged

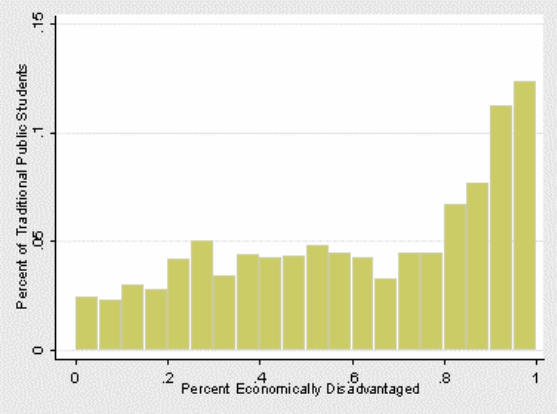


Table 7 summarizes data on teacher characteristics at charter schools and traditional public schools. Some items of special interest include:

- Charter school teachers include a much higher percent of minority teachers relative to the set of all traditional public schools, 62 percent versus 30 percent, but an almost identical percent relative to the geographically matched publics.
- Charter school teachers are less likely to have a B.A. degree, and less likely to have an M.A. or Ph.D., than are teachers in traditional public schools.
- The student-teacher ratio is higher in charter schools.

Table 7: Teacher characteristics, 2003-2004

Teacher Characteristics	Charter Schools (190)	Traditional Public School Districts (1,037)	Traditional Public School Districts with Charter Schools (70)
Teacher Average Years of Experience	4.9	11.8	12.0
Teacher Average Years of Tenure	1.3	7.9	8.7
% of Teachers with no Experience	20.5	6.3	6.1
% of Teachers with 1-5 Years of Experience	51.4	28.9	29.8
Teacher Turnover Ratio	42.3	13.9	13.3
% Teachers with B.A. or Higher	88.7	99.0	99.0
% Teachers with M.A. or Ph.D.	13.0	22.8	25.6
Student-Teacher Ratio	18.5	15.0	15.5
% Minority Teachers	61.7	29.6	59.8
Average Salary for Teachers with no Experience	$30,184	$32,861	$33,964
Average Salary for Teachers with 1-5 Years of Experience	$31,141	$34,641	$35,728

There are three differences between the average characteristics of the charter and public teacher populations which are particularly striking, both due to the size of the differentials and due to the potential implications for differences in teacher quality.

- The average experience among charter teachers is less than half of the average experience of public teachers.
- The reported turnover rate among charter teachers is more than three times the public teacher rate.
- Charters pay teacher salaries which are, on average, more than ten percent below those at traditional public schools (within a comparable experience class).

We would expect the geographically-matched public districts to be good labor market matches for the charters, thus the ten percent salary differentials should represent within-labor market differentials. Whether this differential signals differences in average teacher observable indicators of skill or differences in the relative attractiveness of the two teaching environments to the teacher at the margin is not known.

Financial Characteristics

Charter schools operate in a funding environment which differs significantly from that of traditional public schools. Charter schools have no direct taxing authority, and their public funding comes from either state or federal sources. The state funding for a student depends upon both the public district from which the student is drawn (although this feature is in the process of being phased out[3]) and upon program characteristics of the student. Table 8 summarizes certain revenue and expenditure data for charters and traditional public schools for academic year 2003-04.

[3]As part of HB 6, charter funding will be based on the statewide average funding generated by a student with the same funding-formula characteristics as the charter student rather than the amount generated in the sending school district. For charters already in operation on September 1, 2001, the new funding regime will be phased in, with all charters brought under the new system by 2013.

Table 8: Revenue and expenditures, 2003-04

Revenue & Expenditures	Charter Schools (168)	Traditional Public School Districts (1,037)	Traditional Public School Districts with Charter Schools (70)
Local Tax Revenue per Pupil	$0	$3,637	$3,811
Other Local Revenue per Pupil	$222	$314	$262
State Revenue per Pupil	$6,307	$3,131	$2,880
Federal Revenue per Pupil	$1,086	$696	$808
Total Revenue per Pupil	$7,615	$7,778	$7,761
Total Operating Expenditures per Pupil	$5,976	$6,910	$6,988

NOTE: 22 charter districts are omitted because they are missing one or more of the financial categories.

- Operating Expenditures per pupil in charters are, on average, $1,012 lower than at geographically-matched traditional public districts.

- For charters, State plus Local Tax Revenue per pupil averages $461 less than the average at traditional public schools, and $387 less than the average at geographically-matched public schools. Thus charters receive 6.1 percent to 7.3 percent less in state and local tax funding per pupil than do traditional public schools.

Student Performance In Charters

Measuring student performance is a formidable task. Student performance has multiple dimensions, and any attempt at choosing a single test-based measure of academic performance is a tough assignment. Several different test score measures have been used within the academic literature which analyzes the determinants of student achievement. A variety of test score measures have also been adopted by the policy community, including the State of Texas itself, for use in the evaluation of the performance of students and of schools. The various competing measures can be classified into two generic categories: those which focus on levels of scores and those which focus upon changes in scores. Both approaches have merit. The score levels reveal something about where we are and the changes reveal something about where we are headed. In economic parlance, the score levels reflect information about the current stock of achievement and the changes in levels reflect information about the current flow of achievement.

The absolute performance on a criterion-referenced test such as the TAKS and TAAS tests is intended to be an indicator of whether or not a student has achieved a certain level of knowledge of a subject, a level of knowledge deemed appropriate to a certain grade level. So the absolute level of performance indicates whether or not students are achieving that performance standard.

When attempting to measure the performance of schools, however, changes in test scores are also important. The use of score changes rather than score levels may allow for better identification of school contributions to student outcomes. It is the cumulative effects of the time-path of school inputs which underlie current achievement. The influence of student, family, and com-

munity characteristics further "contaminate" level indicators of student achievement across schools. If the objective is to isolate the role of current school inputs, there are some advantages to looking at changes in achievement levels, thus differencing-out the historical input effects. Schools serve diverse student populations, and it is clearly the case that students who have scored well in the past tend to also score well on current tests. Thus looking at changes in test scores gives an indication of improvement, or lack thereof, and is arguably a preferred method of looking at the contribution of a particular school to student performance. The basic idea is to get an indicator of student improvement, with the presumption that the school has at least something to do with that improvement. This is especially important when looking at schools that serve student populations which traditionally achieve below average on standardized tests. Finally, schools face diverse circumstances, both in their student populations and in other exogenous characteristics. It is important when judging school performance to control for as many of these factors as possible, so that schools are judged on a more even footing. This inevitably results in a more complicated analysis than merely providing averages of test scores within a district or the average of changes in test scores. In the analysis to follow, we will use some relatively simple and straightforward statistical approaches to estimating the contribution of a school to the performance of students while controlling for other factors.

In our previous report, we used the Texas Learning Index, a statistic derived from the raw scores on the Texas Assessment of Academic Skills (TAAS) test. In 2003, Texas replaced the TAAS with the Texas Assessment of Knowledge and Skills (TAKS). The TAKS is widely recognized as a more challenging test than the TAAS. While there are only two years of data on the new test, it is the relevant test instrument for evaluating students and schools in Texas today, so we will focus our analysis on the TAKS environment for our comparison of student performance in charters and student performance in traditional public schools. We recognize that the 2003 TAKS was administered in a pilot program without consequences to students or districts for their performance on that test. Therefore, it may represent a less than ideal and potentially noisy baseline from which to measure performance gains. On the other hand, the TAKS data includes observations on ninth-grade and eleventh-grade performance, so it enables us to measure annual performance gains for all grades 5-11. Previously the lack of high school TAAS test scores for grades 9, 11, and 12 precluded a detailed analysis of high school performance in terms of changes in student scores.

A final issue to consider is that a significant number of charter school campuses are classified by the State of Texas as Alternative Education Campuses. Criteria for AEC designation include, among others, that the campus be dedicated to serving students at risk of dropping out of school and that the campus offers nontraditional methods of instructional delivery designed to meet the needs of the students served on the campus. Campuses designated as AEC do not fall under the standard Academic Accountability System, and for these campuses performance on the TAKS (or, formerly, the TAAS) may be deemphasized relative to traditional non-AEC campuses. This may be of special importance at the high school level, because AECs by definition serve students at risk of dropping out of school, so that the completion and/or dropout rate(s) may be the most important indicator in the Alternative Education Accountability procedures.

In 2004, 120 of 274 charter campuses were classified as AECs. At the high school level, 68.2 percent of students in our sample were classified as in alternative education, leaving only 31.8 percent under the traditional education program in the state accountability system. At the non-high school level, 27.4 percent of students were classified as in alternative education, leaving 72.6 percent in the traditional program.

While the impact of the large portion of AECs among charters is not completely clear, it seems important to look at cuts of the data in which we separate AECs and non-AECs when evaluating charters. Again, this may be of special importance among high school students, as it is high school students who are largely most in danger of dropping out of school, and those students are the target of AECs.

Test Score Levels

Tables 9a-9d provide summaries of the level of student performance on the TAKS test for years 2003 and 2004. Based upon level scores, it is clear that students in charter schools perform on average lower than do students in traditional public schools. This is true whether charters are compared to all traditional publics or to the geographically-matched set of publics, although the differentials are smaller with respect to the matched schools. The performance differential is particularly pronounced on math tests.

Given the heavier concentration of at risk students in charters, comparisons of average scores across all students is not particularly informative. When broken down into at-risk and not at-risk student categories, the charter student average performance in mathematics for not at-risk students in grades 5-8 still lags considerably behind that of traditional public school students, but the at-risk results are almost identical for charters and traditional publics. As noted earlier, the disaggregation into non-high school and high school sample results is both appropriate and insightful. The high school charter students are scoring well below the traditional public high school students in math and below the traditional public students in reading. Again, the results for at-risk kids are quite comparable for charters and traditional publics, and it is the not at-risk student differentials which are large.

Table 9a: 2002-03 TAKS score levels, grades 5-8

	Average Math Scale Score	Average Reading Scale Score	Percent Passing Math	Percent Passing Reading	Percent Passing Both	Number of Students Observed
All Students						
Charters	2064	2151	60.7	77.1	56.2	6,864
Traditional Publics	2148	2214	77.6	85.4	73.0	1,083,079
Traditional Publics containing Charters	2131	2195	74.0	83.0	69.1	454,985
At-Risk Students						
Charters	2022	2084	50.3	65.7	43.8	2,389
Traditional Publics	2025	2069	52.3	64.6	42.3	276,873
Traditional Publics containing Charters	2021	2067	51.0	64.1	41.5	135,636

Not At-Risk Students						
Charters	2089	2188	66.9	83.5	63.2	4,396
Traditional Publics	2191	2264	86.3	92.5	83.3	804,255
Traditional Publics containing Charters	2178	2249	83.9	90.9	80.6	318,242

Table 9b: 2003-04 TAKS score levels, grades 5-8

	Average Math Scale Score	Average Reading Scale Score	Percent Passing Math	Percent Passing Reading	Percent Passing Both	Number of Students Observed
All Students						
Charters	2107	2186	61.8	78.5	58.1	8,088
Traditional Publics	2179	2234	74.1	84.6	70.0	1,095,302
Traditional Publics containing Charters	2160	2214	70.3	81.7	65.7	462,419
At-Risk Students						
Charters	2055	2130	49.5	69.1	44.5	3,242
Traditional Publics	2048	2102	48.4	66.2	40.1	358,033
Traditional Publics containing Charters	2043	2093	46.5	63.8	38.2	165,876
Not At-Risk Students						
Charters	2143	2224	70.2	84.8	67.3	4,826
Traditional Publics	2242	2298	86.6	93.5	84.3	736,787
Traditional Publics containing Charters	2225	2281	83.6	91.6	80.9	296,278

Table 9c: 2002-03 TAKS score levels, grades 9-11

	Average Math Scale Score	Average Reading Scale Score	Percent Passing Math	Percent Passing Reading	Percent Passing Both	Number of Students Observed
All Students						
Charters	1973	2071	32.0	60.5	30.5	6,334
Traditional Publics	2108	2151	68.7	75.9	62.9	720,015
Traditional Publics containing Charters	2093	2138	65.0	73.0	58.7	293,860

At-Risk Students						
Charters	1940	2043	23.5	54.5	22.8	3,570
Traditional Publics	2002	2067	45.1	57.8	35.3	241,381
Traditional Publics containing Charters	2001	2065	44.7	57.2	35.0	115,301
Not At-Risk Students						
Charters	2021	2110	45.0	69.0	43.6	2,578
Traditional Publics	2162	2193	80.8	85.0	76.7	476,715
Traditional Publics containing Charters	2153	2186	78.4	83.3	74.1	177,389

Table 9d: 2003-04 TAKS score levels, grades 9-11

	Average Math Scale Score	Average Reading Scale Score	Percent Passing Math	Percent Passing Reading	Percent Passing Both	Number of Students Observed
All Students						
Charters	1980	2115	28.9	63.2	27.7	10,452
Traditional Publics	2144	2195	68.3	82.6	64.1	752,659
Traditional Publics containing Charters	2126	2182	64.3	79.7	59.9	311,153
At-Risk Students						
Charters	1956	2102	22.6	60.1	20.5	6,927
Traditional Publics	2029	2122	45.0	68.6	38.5	290,655
Traditional Publics containing Charters	2025	2118	43.8	67.0	37.4	133,118
Not At-Risk Students						
Charters	2030	2142	41.5	69.6	40.4	3,473
Traditional Publics	2216	2241	83.0	91.7	79.9	460,983
Traditional Publics containing Charters	2202	2231	79.7	89.4	76.3	177,392

Several features stand out in the above tables.

- For the non-high school population, the average scores for at-risk students in charters matched those of their traditional public counterparts. The not at-risk students in traditional publics outscored the not at-risk charter students.

- For the high school population, the average scores for charter students trailed those of traditional public high-schoolers, with the difference being particularly pronounced in math. Looking just at at-risk students, the differences between charter students and traditional public school students remain large for math but are much smaller for reading.

Test Score Changes

As argued above, we might better identify the relative impact of charter schools on student achievement by focusing upon changes in test scores rather than upon test score levels. A simple approach to measuring sector changes is to calculate the score change for each individual student and then to aggregate those individual changes up to charter and public average growth figures.

One problem with comparing test scores across years and grades is that the distribution of results can differ over grades and over time as the test changes. This is true even if the test is intended to provide the same distribution of results over time. Thus a student scoring 2100 on the TAKS math test in grade 5 in 2003 may be scoring above average, while that same student scoring a 2200 on the TAKS math in grade 6 might be scoring below average. We attempt to partly control for changes in test means over time and grade by calculating a standardized score for each student in each year-grade-subject. Our standardized score is the so-called z-score, and we calculate the z-score for a student in year t, grade g, subject m, by taking that student's test score in year t, grade g, subject m, subtracting the state-wide mean test score for year t, grade g, subject m, and dividing by the state-wide standard deviation for tests administered in year t, grade g, subject m. To calculate a standardized TAKS score growth, we take the student's z-score in year t, grade g, subject m and subtract from it the student's z-score in year t-1, grade g-1, subject m.

As an example, a student scoring at the state average in 2004 on math would have a math z-score of zero in 2004. If that same student scored at the state average in 2003, she would have a math z-score of zero in 2003, and her change in score would also be zero.

The evidence as to average growth in individual TAKS scale scores is provided in Tables 10a - 10b.

Table 10a: 2003-04 TAKS score growth, grades 5-8

	Average Math Scale Score Growth	Average Reading Scale Score Growth	Average Math Z-score Growth	Average Reading Z-score Growth	Number of Students Observed
All Students					
Charters	19.5	40.6	0.054	0.066	6,484
Traditional Publics	12.8	30.3	0.003	0.010	991,601
Traditional Publics containing Charters	11.8	29.5	0.001	0.009	412,611

At-Risk Students					
Charters	22.6	44.3	0.077	0.091	2,466
Traditional Publics	18.9	41.5	0.060	0.074	316,140
Traditional Publics containing Charters	17.4	38.4	0.053	0.062	143,911
Not At-Risk Students					
Charters	17.9	38.4	0.041	0.051	4,009
Traditional Publics	10.0	25.2	-0.024	-0.019	675,258
Traditional Publics containing Charters	8.7	24.9	-0.028	-0.019	268,596

Table 10b: 2003-04 TAKS score growth, grades 9-11

	Average Math Scale Score Growth	Average Reading Scale Score Growth	Average Math Z-score growth	Average Reading Z-score growth	Number of Students Observed
All Students					
Charters	-6.1	18.8	-0.158	-0.108	6,464
Traditional Publics	24.8	4.1	-0.039	-0.027	679,655
Traditional Publics containing Charters	23.8	6.6	-0.036	-0.035	277,509
At-Risk Students					
Charters	-6.12	32.7	-0.148	-0.071	4,000
Traditional Publics	26.7	37.7	-0.010	0.007	258,220
Traditional Publics containing Charters	24.8	36.0	-0.012	-0.002	117,550
Not At-Risk Students					
Charters	-5.93	-4.42	-0.174	-0.166	2,443
Traditional Publics	23.7	-16.7	-0.056	-0.048	420,796
Traditional Publics containing Charters	23.0	-15.3	-0.055	-0.060	159,724

The prominent features are:

- Math and reading scores improved more among non-high school charter school students than among non-high school traditional public students, with the difference being particularly pronounced among not at-risk students.

- Math scores improved considerably more among traditional public high school students than among charter school high school students, but reading scores increased more among the charter high-schoolers.

A Superior Matched Sample Approach

The results in Tables 10a-10d make some attempt to control for the differences in charter student populations and traditional public student populations by looking at score changes and by separating the at-risk from the not at-risk student results. We attempt to control for the clustered spatial distribution of charters by drawing comparisons with the set of traditional public schools which contain charters within their geographic boundaries. These are, however, fairly coarse controls. As argued persuasively by Carolyn Hoxby in a recent paper (Hoxby 2004) which evaluates charter performance across the United States, careful matching strategies can greatly improve the quality of the statistical analysis of the effect of charter schools on student achievement. We adopt her basic matching strategy, but expand upon it in several dimensions. Our extensions take advantage of the fact that we are only studying charters in one state and that we are able to work with individual test score files.

Matching Methodology

We first match each student who is enrolled in a charter in 2004 back to our best predictor of the traditional public campus that the student would have attended if he or she had stayed in the traditional public school system. For each 2004 charter school student, we track them back to the last traditional public campus they attended. If that traditional public campus is the same campus type (elementary, middle, high, or all grades) as the charter school the student attends in 2004, it is assigned as the student's matched traditional public campus. If that traditional public campus is an elementary school and the student is in a charter middle school in 2004, then the charter student is assigned the matched traditional public middle school where the majority of the students from the elementary school progressed to in 2004. The same procedure is used for students who are in a charter high school in 2004 and last observed in a traditional public middle school. This forms our best estimate of where the charter student would have attended traditional public school had they not left for a charter school.

Our second step is to generate matched student score differentials. For the set of students for whom we have TAKS scores for both 2003 and 2004, we identify their quintile rank in the 2003 score distribution of all students statewide in the same grade level taking the same subject test.[4] We also transformed the TAKS scale scores into standardized z-scores with a mean of zero and variance equal to one, as mentioned above. This allows for greater comparability of scores across years and grades. Finally, the change in standardized score between 2003 and 2004 is calculated for each student. For each traditional public campus, the average change score within each quintile rank (based upon 2003 performance) for the 2004 campus enrollees is then generated. For each student in a charter in 2004, we calculate the difference between her change score and the average score for her matched traditional pub-

[4]We start with a potential sample of 29,821 charter students in grades 5-11. We lose more than a third of those students due to missing 2004 scores. Of those 18,540 (for math, 18,862 for reading) scored students, we lose almost a third to missing 2003 test scores. We then lose a small number of the remaining students due to lack of a matching traditional public quintile score. The final sample for our analysis is 10,479 (for math, 10,636 for reading). We looked at the student characteristics of the final sample relative to the potential full grade 5-11 sample, as they are closely comparable, with no glaring selection problems.

lic quintile-campus score. We take the matched quintile-campus mean as our best predictor of the score gain the charter student would have realized if she were at the most relevant traditional public school in 2004 rather than at a charter school. Our difference score represents the increase or decrease in actual performance while in a charter relative to the traditional public predicted performance. It represents our best attempt to answer the truly relevant question here: How much better or worse did the student fare in the charter relative to their expected improvement in achievement in the relevant alternative traditional public school?

Matched Sample Performance: Non-High School Students

We first focus upon results from our non-high school (grades 5-8) sample of charter students. Since one of our purposes here is to update our previous report, and given that the earlier study used data from grades 3-8, the non-high school sample maintains close comparability. Almost all of the existing studies of charter school performance of which we are aware use non-high school samples, often of a single grade, so taking a look at non-high school results in Texas allows for better comparison with findings from other states.

The average performance results for our matched student score analysis are shown in Table 11.

Table 11: Means of non-high school charter student matched-public combined quintile performance measure

	Math	Reading
All Charter Students	-.003	.015
Students in Charters serving at least 70% At-risk Students (853 Math, 856 Reading)	.005	.001
Students in Charters with less than 70% At-risk Students (3,687 Math, 3,652 Reading)	-.005	.019
Students in their 1st year in a Charter (2,525 Math, 2,508 Reading)	-.056**	-.031*
Students in their 2nd year in a Charter (1,030 Math, 1,028 Reading)	.051*	.064**
Students in their 3rd or greater year in a Charter (985 Math, 972 Reading)	.077**	.083**
Number of Students	4,540	4,508

NOTE: (*) Indicates significance at 5% level, (**) at 1% level

Overall, the evidence indicates that the average improvement in scores among the charter students compares with those of their matched public counterparts. For math scores the difference is negative but very small and statistically insignificantly different from zero. The reading score difference is positive but also small and not statistically significantly different from zero.

The performance differentials are quite similar for students in at-risk charters as compared to students enrolled in not at-risk charters. The at-risk charter students did a little better compared to their traditional public counterparts than did not at-risk students, although neither estimate is significantly different from zero (nor are the two estimated significantly different from one another).

The breakdowns by student charter tenure yield critical insights into the average performance results. It is important to recognize that the charter sector continues to be heavily populated by newcomers. This is particularly true within the test-taking population in charters, as 55 percent of our observations come from students taking the TAKS in 2004 during their first year in a charter setting. The negative numbers for charter kids as a whole are coming from these charter rookies whose performance could well reflect a disruption effect of moving to a new, and potentially very different educational environment.[5] *The gains for the charter school veterans are actually statistically significantly higher than for their matched traditional public counterparts, suggesting that the disruption effect of moving to a charter is a temporary phenomenon*.

It is also interesting to see how test score performance varies across charters of varying maturity. In our earlier report, we conjectured the predominance of first and second year operations among charters during the early years of the industry could be responsible for some of the low average numbers for the sector as a whole. In an earlier study (Booker et. al., 2004), we used data from the TAAS-testing environment over the period 1996-2002 and employed panel data estimation techniques to evaluate charter student performance. In that study we found a positive relationship between charter student outcomes and the maturity of the charter school.[6]

We display average charter student performance within the new TAKS environment, as measured by our matched differential metric, by the eight age classes of charter school operators in Table 12.

Table 12: Mean matched campus math and reading performance by the number years charter school has been in operation, for non-high school students

Number of years the charter school has been in operation	Math	Reading
1 year	-.316** (68)	-.057 (68)
2 years	.036 (112)	.143** (109)
3 years	.025 (574)	.075** (584)
4 years	.164** (984)	.044 (970)
5 years	-.152** (1113)	-.108** (1118)
6 years	.024 (1213)	.052** (1190)
7 years	-.099** (226)	.066 (224)
8 years	-.036 (250)	.062 (245)

NOTE: Number of students in the category in parenthesis.
(*) Indicates significance at 10% level, (**) at 5% level.

[5]Hanushek, Kain, and Rivkin (2004) find evidence of disruption effects of campus moves, both structural (normal transition with cohort, eg. elementary to middle school) and nonstructural (transition away from previous cohort) among Texas public students. In a related paper (Booker et.al., 2004), we find evidence that moves to charters have a larger disruption effect than do moves within the traditional public school sector.

[6]Sass (2004) finds a similar pattern of improved charter student performance with respect to the number of years the charter has been in operation in his study of Florida charter schools. Hoxby (2004) also uncovers support for a positive age-performance relationship for her national sample of charters.

The data reveal a strong negative first-year charter operator performance in math, and a weak negative and statistically insignificant first-year charter performance in reading. The performance differentials are all positive for both math and reading for the two to four year operators, with half of those differentials being statistically significantly different from zero. The fifth charter results are negative, a result counter to the maturation improvement hypothesis, but the sixth year results are again positive. The oldest vintage charters, those in the seventh and eighth years of operation, display small negative differentials in math and small positive differentials in reading. The largest samples are for the fourth, fifth, and sixth year charter school operations, and the evidence is positive for two of those three years. Our summary take on these data is that there is strong evidence that the large negative start-up charter test results are a one-time phenomenon, but there is no evidence of a consistent trend of improvement with aging/experience of charters.

The fifth year charter results appear to be a cohort-specific. This cohort of charters is known as the "third generation" of charters (7th and 8th year charters combine to form the first generation; 6th year charters are the second generation and so on). It is our understanding that those involved in the charter school system believe that the third generation of charters included some relatively poor performers. Part of the problem may have been with the chartering process itself — we understand that all completed applications were approved for this third generation. An important policy question is whether the existence of this third generation cohort by itself is grounds for additional reform of the charter system. Evidence from additional cohorts seems to suggest not, so it may be that any problems associated specifically with the third generation of charters have been corrected (at least for generations beyond the third) by the time of this analysis.

Since almost all of the students enrolled in first-year charter schools are also making their initial foray into the charter sector, it is difficult to separate the start-up effects of the school from the disruption effects for the students. We provide some light on this issue in Tables 13a-13b.

Table 13a: Mean matched campus math performance by the number of years the student has been in a charter and the number of years the charter has been in operation, for non-high school students

Number of years the charter school has been in operation	Number of years the student has been in charter schools		
	1 year	2 years	3 or more years
1 year	-.326** (64)	-.376 (1)	-.098 (3)
2 years	.016 (75)	.100 (35)	-.345 (2)
3 years	-.026 (315)	.114* (142)	.055 (117)
4 years	.190** (500)	.079 (275)	.210** (209)
5 years	-.206** (670)	-.123** (224)	-.014 (219)
6 years	-.049 (680)	.154** (242)	.084* (291)
7 years	-.244** (97)	.036 (55)	-.010 (74)
8 years	-.116 (124)	-.007 (56)	.083 (70)

NOTE: Number of students in the category in parenthesis.
(*) Indicates significance at 5% level, (**) at 1% level.

Table 13b: Mean matched campus reading performance by the number of years the student has been in a charter and the number of years the charter has been in operation, for non-high school students

Number of years the charter school has been in operation	Number of years the student has been in charter schools		
	1 year	2 years	3 or more years
1 year	-.091 (64)	.797 (1)	.399 (3)
2 years	.141 (72)	.175 (35)	-.353 (2)
3 years	.072 (320)	.020 (145)	.152* (119)
4 years	-.046 (493)	.157** (270)	.109* (207)
5 years	-.136** (675)	-.069 (229)	-.064 (214)
6 years	-.005 (666)	.082 (239)	.161** (285)
7 years	.023 (96)	.076 (54)	.115 (74)
8 years	.089 (122)	.102 (55)	-.019 (68)

NOTE: Number of students in the category in parenthesis.
(*) Indicates significance at 5% level, (**) at 1% level.

The negative math performance differential for students in their first year in a charter school is larger for those students who are also in a first year charter operator than for those in any other charter school vintage. This result is consistent with there being a negative first-year charter school effect in addition to a first-year charter student effect. The same basic result holds for reading, with the exception of the, perhaps exceptional, fifth year charter schools.[7]

Matched Sample Performance: Non-High School Student Quintiles

Our individual student matched sample approach allows us to look at the performance differentials for charter students across the measured distribution of student achievement. In our basic matching procedure, we assigned each charter student to an achievement quintile based upon their 2003 TAKS quintile score. We now calculate the average measured differential improvement for charter students within each quintile rank. Those quintile means are reported in Tables 14a-14b.

The story across the performance distribution is, in general, qualitatively similar to the averages story. The most interesting finding here is that charters may be having more success with students from the bottom end of the achievement distribution than with those at the upper end. For math, the results for all charter students indicate no significant difference in any quintile from the matched traditional publics. The same can be said if we divide the charter students by at-risk and not at-risk categories. If we look at results by student tenure

[7]It may be important to note that in our single cross section of data categorizing charters by the number of years a charter has been in operation is indistinguishable from a categorization by the year that a charter began operations. Thus our statistical results on the effect of years in operation is observationally equivalent to statistical results on the effect of the year in which a charter began operating. As more years with TAKS data become available it will be possible to construct a panel of data and to distinguish years in operation from year operations began.

in a charter, we find that in every quintile except the lowest charter students in their first year in charters do worse than the matched publics. For students continuing in charters, the point estimates are almost uniformly positive, and are significant in three cases, the middle three quintiles.

For reading the results fit this pattern. For all charter students, performance is estimated to be higher than traditional publics in the lowest four quintiles, and statistically significantly higher in the second quintile, but statistically significantly lower in the highest quintile. Looking separately at at-risk and not at-risk charters reinforces this pattern. If we look at results by student tenure, we again find that students in their first year in charters do worse than matched traditional publics in their first year in the three highest quintiles, and significantly so in the top two quintiles. Continuing charter students generally do better than their matched public counterparts, and in four cases the difference is not only positive but also statistically significant.

Table 14a: Means of non-high school charter student matched-public math performance measure, by quintile

	Lowest Quintile	2nd Quintile	3rd Quintile	4th Quintile	Highest Quintile
All charter students	-.000	.017	-.002	.001	-.052
Students in charters serving at least 70% at-risk students	.044	-.042	.014	-.010	-.038
Students in charters with less than 70% at-risk students	-.012	.027	-.005	.004	-.055
Students in their 1st year in a charter	-.005	-.055*	-.073*	-.089*	-.139**
Students in their 2nd year in a charter	.016	.099*	.049	.023	.093
Students in their 3rd or greater year in a charter	-.003	.139**	.129**	.158**	.002
Number of students	1,456	969	877	682	556

NOTE: (*) Indicates significance at 5% level, (**) at 1% level.

Table 14b: Means of non-high school charter student matched-public reading performance measure, by quintile

	Lowest Quintile	2nd Quintile	3rd Quintile	4th Quintile	Highest Quintile
All charter students	.016	.050*	.026	.015	-.078*
Students in charters serving at least 70% at-risk students	.009	.004	.021	.017	-.089
Students in charters with less than 70% at-risk students	.019	.060**	.027	.014	-.075
Students in their 1st year in a charter	.017	.030	-.036	-.111**	-.163**
Students in their 2nd year in a charter	.037	.103*	.084*	.048	.046
Students in their 3rd or greater year in a charter	-.015	.051	.122**	.237**	-.010
Number of students	1,239	1,016	942	820	491

NOTE: (*) Indicates significance at 5% level, (**) at 1% level.

Non-Alternative Education Campus Sample

Charter schools in Texas are subject the accountability system for public schools in the State. As part of the accountability structure, campuses which focus upon alternative education programs aimed at serving academically at-risk (i.e. those well on the road to dropping out) can seek classification as an Alternative Education Campus. These AEC campuses were not given a rating under the State 2004 accountability scorecard, and thus were operating under different incentives than were traditional public schools. In 2004, 120 of the 274 charter campuses were AECs. As a final matching strategy, we exclude the AEC campuses from our sample. The results for the Non-Alternative Education Campus sample are provided in Table 15.

Compared to results for all charter students in Table 11, Table 15 shows across-the-board positive and significant impact of charter attendance for students at non-AEC charters. The pattern of results is similar to the pattern in Table 11, but for students at non-AEC charters even their first year in a charter has a positive impact on performance.

To summarize:

- Non-high school students at Non-Alternative Education Charters have a positive and significant increase in performance relative to their matched traditional public school students.
- Students attending at-risk charters have a larger positive increase in performance relative to their matched public school counterparts than do students at non at-risk charters.

Students in their first year in a charter have a positive and significant increase in performance relative to their matched public school students. As students move to greater tenure in charters, this positive performance increase grows in magnitude.

Table 15: Means of charter student matched-public combined quintile performance measure, non-high school students at non-alternative education charters

	Math	Reading
All charter students	.064**	.060**
Students in charters serving at least 70% at-risk students (550 Math, 557 Reading)	.166**	.120**
Students in charters with less than 70% at-risk students (3,004 Math, 2,985 Reading)	.045**	.048**
Students in their 1st year in a charter (1,836 Math, 1,831 Reading)	.034**	.030*
Students in their 2nd year in a charter (864 Math, 860 Reading)	.082**	.086**
Students in their 3rd or greater year in a charter (854 Math, 851 Reading)	.108**	.097**
Number of students	3,554	3,542

NOTE: (*) Indicates significance at 10% level, (**) at 5% level.

We also look at the relationship between years a charter has been in operation and years a student has attended a charter for non-AECs. The results are reported in Tables 16a-16b. While the general pattern follows that shown for all charters students, this focus only on non-AECs in general leads to more positive and significant cell entries. This is especially visible in reading. Looking at all non-high school charters, there were seven negative and 17 positive entries, with one negative and significant and four positive and significant. Looking now at non-AEC charters, there are six negative and 18 positive entries, with one negative and significant and eight positive and significant.

Table 16a: Mean matched campus math performance by the number of years the student has been in a charter and the number of years the charter has been in operation, for non-high school students at non-alternative education charters

Number of years the charter school has been in operation	Number of years the student has been in charter schools		
	1 year	2 years	3 or more years
1 year	-.326** (64)	-.376 (1)	-.098 (3)
2 years	.016 (75)	.100 (35)	-.345 (2)
3 years	-.003 (298)	.124** (136)	.059 (113)
4 years	.276** (411)	.108** (248)	.238** (184)
5 years	-.093** (326)	-.133** (143)	.082 (151)
6 years	.038 (519)	.202** (208)	.101** (262)
7 years	-.259** (42)	.047 (37)	-.022 (69)
8 years	-.088 (101)	-.007 (56)	.083 (70)

NOTE: Number of students in the category in parenthesis. (*) Indicates significance at 10%, (**) at 5% level.

Table 16b: Mean matched campus reading performance by the number of years the student has been in a charter and the number of years the charter has been in operation, for non-high school students at non-alternative education charters

Number of years the charter school has been in operation	Number of years the student has been in charter schools		
	1 year	2 years	3 or more years
1 year	-.091 (64)	.797 (1)	.399 (3)
2 years	.141* (72)	.175 (35)	-.353 (2)
3 years	.078** (306)	.030 (138)	.144** (113)
4 years	-.003 (403)	.176** (243)	.122** (182)
5 years	-.017 (331)	-.122** (145)	-.030 (150)
6 years	.034 (514)	.136** (207)	.155** (264)
7 years	.096 (41)	.102 (36)	.121 (69)
8 years	.126* (100)	.102 (55)	-.019 (68)

NOTE: Number of students in the category in parenthesis. (*) Indicates significance at 10%, (**) at 5% level.

Matched Sample Performance: School Averages

We can aggregate the individual student test score measures to the school level, and thus generate a distribution of average performance across the charter sector operators. This look at the data provides information about the heterogeneity of outcomes across charter schools and identifies the presence of outliers in the outcomes data. We display that performance distribution for math and reading in Figures 5a-5b. The data are for the Non-Alternative Education Campus sample.

Figure 5a: Distribution of average matched math difference, where each student is now matched back to the average of students in the same performance quintile in 2003, unweighted, non-high school students only

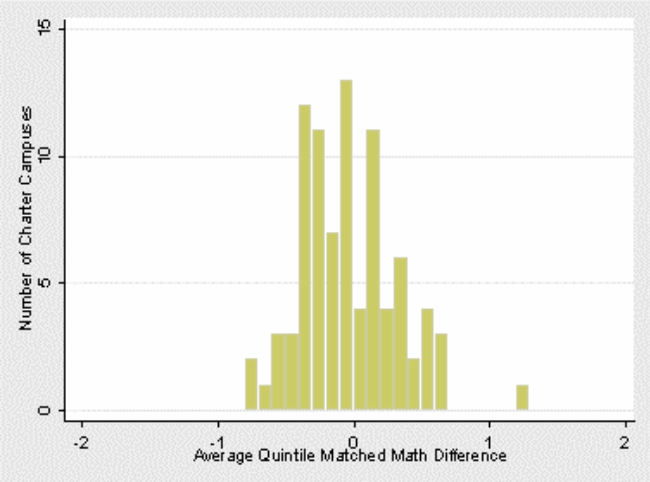
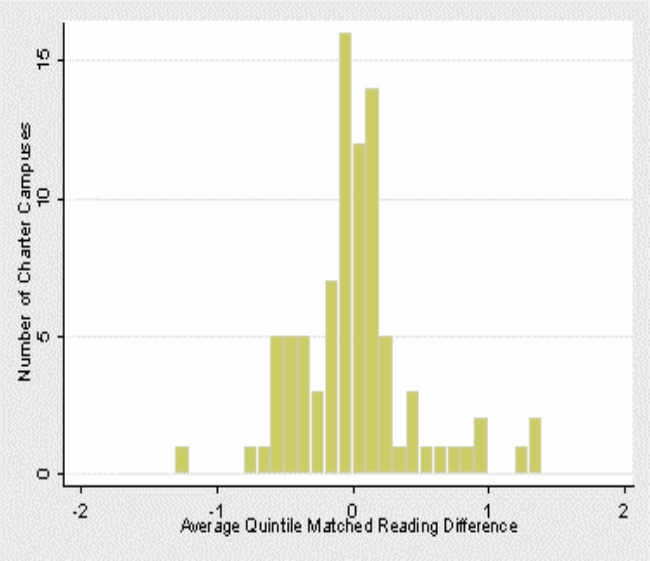


Figure 5b: Distribution of average matched reading difference, where each student is now matched back to the average of students in the same performance quintile in 2003, unweighted, non-high school students only



The math distribution is concentrated in the negative range, with just under 60 percent of the values being less than zero. The reading distribution is centered at zero. Less than half of the school averages are statistically significantly different from zero. If we narrow the consideration to those averages which are statistically significant, the message is more positive for charters. Of the 42 significant math measures, almost half (20) are positive and of the 30 significant reading measures, 18 (60 percent) are positive.

Matched Sample Performance: High School Students

Although our primary objective is to provide an updated look at the non-high school charter student data, we also provide a look at the high school sector. Since we can only look at high school students (using our methods) in the TAKS regime, we cannot draw comparisons with TAAS-world results. In particular, we cannot use insights gained from more sophisticated econometric analyses of panel data from the TAAS tests to help interpret the results our analysis of the first two years of data from TAKS tests.

The matched sample differential performance results for high school charter students are displayed in Table 17. Basically, charter high school students under-perform the matched traditional public school students across the board. Overall results indicate that high school students in charters under-perform their matched public school counterparts, by statistically significant margins, and that this under-performance shows up in both math and reading, whether we distinguish at-risk and not at-risk charters, and regardless of the number of years a student has been in a charter. We do find that charter school students in their second and third years perform relatively better than charter school students in their first year, but regardless of number of years in a charter we see charter performance to always fall below the matched publics.

Table 17: Means of charter student matched-public combined quintile performance measure, high school students

	Math	Reading
All charter students	-.215**	-.163**
Students in charters serving at least 70% at-risk students (3,066 Math, 3,174 Reading)	-.237**	-.139**
Students in charters with less than 70% at-risk students (2,873 Math, 2,954 Reading)	-.191**	-.188**
Students in their 1st year in a charter (4,421 Math, 4,580 Reading)	-.247**	-.175**
Students in their 2nd year in a charter (409 Math, 401 Reading)	-.144**	-.142**
Students in their 3rd or greater year in a charter (1,109 Math, 1,147 Reading)	-.112**	-.119**
Number of students	5,939	6,128

NOTE: (*) Indicates significance at 5% level, (**) at 1% level.

As argued above, it may be especially important to look separately at non-AEC charters for high school students. Table 18 does just that, and the results indicate that the negative high school charter effect is somewhat attenuated if we consider only non-AEC charters. We still find a negative and significant overall impact of non-AEC charter high schools, but this effect for math is only half the size of the effect estimated over all charter high schools and for reading is only two-thirds the size of the effect estimated over all charter high schools. A similar diminution of the negative impact of charters occurs when considering the at-risk versus non-at-risk distinction. That is, we still find a negative and statistically significant impact, but the size of the effect is diminished. Finally, when considering the impact of student tenure, we find the usual negative and statistically significant impact of a student's first year in a charter, again with the size of the impact much reduced relative to considering all charter high schools, but we find that for math the impact of two or more years in a charter is now statistically insignificant, as is the impact of the second year in a charter for reading. For reading only, we still find a statistically significant negative impact of three or more years in charters.

The conclusions from looking at non-AEC high school charters are:

- Charter students in high school non-AECs do worse than their matched public high school counterparts, and the effect is statistically significant.
- The estimated negative impact of charters on high school students at non-AECs is much smaller in magnitude than the estimated negative impact of charters as a whole (non-AEC and AEC).
- For math scores, the negative impact of charters on high school students at non-AECs is concentrated among first year charter attendees. The estimated impact for students in their second year and beyond is negative but small and statistically insignificant.
- For reading scores, the negative impact of charters on high school students at non-AECs is negative and statistically significant for students in their first year. In subsequent years the impact is negative but roughly half the size of the impact on first year attendees.

Table 18: Means of charter student matched-public combined quintile performance measure, high school students at non-alternative education charters

	Math	Reading
All charter students	-.099**	-.105**
Students in charters serving at least 70% at-risk students (559 Math, 554 Reading)	-.122**	-.094**
Students in charters with less than 70% at-risk students (1,413 Math, 1,481 Reading)	-.090**	-.109**
Students in their 1st year in a charter (1,147 Math, 1,218 Reading)	-.146**	-.131**
Students in their 2nd year in a charter (175 Math, 170 Reading)	-.027	-.065
Students in their 3rd or greater year in a charter (650 Math, 647 Reading)	-.037	-.068**
Number of students	1,972	2,035

NOTE: (*) Indicates significance at 10% level, (**) at 5% level.

The Effect Of Charters On Students At Traditional Public Schools

Much if not most of the interest of those focusing on charter schools has been directed at those students who attend charters and their academic achievements when attending charters. This interest focuses on the direct impact of charter schools on students attending charters. As we have seen, even after a period of rapid expansion, charters still enroll somewhat less than 1.5 percent of Texas public school students. Thus the direct effect of charter schools on students enrolled in charters is limited to a small percentage of Texas public school students. However, there is a secondary impact of charters on Texas public school students. The existence of charters in or near a district or campus can lead to important changes in the performance of students who remain in traditional public schools. These students are the vast majority of Texas public school students, and hence this secondary effect has the potential to influence far more students than the primary effect of charters on students enrolling in charters. Further, this secondary impact occurs without increasing the allocation of resources to the educational sector.

There are a number of channels by which the very existence of a charter option for a district's students might influence student outcomes in the traditional public schools. First and foremost is the direct effect of competition for students and the accompanying dollars of state and local funding. Every student that attends a charter is a student that does not attend a traditional public school, and the absence of that student results in fewer funds for the traditional public school district. Thus traditional public schools find themselves competing with charters for students, and to the extent that student performance drives parental choice between traditional public schools and charters, the very existence of charters leads traditional public schools to come under more intense pressure favoring student performance.

One explanation offered for a positive charter impact on traditional public school students is the possibility that existing public school suppliers of educational services are not cost-efficient. Weak incentives to reign in costs or to spend resources on educational purposes could result in public schools incurring costs above those necessary to achieve their current level of student

performance. A significant literature has developed which suggests that a lack of competition in the education market is an important root cause of this cost inefficiency. If the option of attending a charter school increases the level of competition facing traditional public schools, this could move the traditional public schools toward greater efficiency and lead to across-the-board improvements in student outcomes.[8]

The existence of charter schools may lead to greater homogeneity of student bodies due to sorting. New entrants competing within the expanded choice environment may alter the composition of the student body at a traditional public school along some relevant dimensions. For example, the ability distribution of students may be altered by the exit of some of the highest and/or lowest ability kids. The impact of compositional effects may operate through at least two channels. First, the composition of the student body may affect the instructional technique decisions of teachers. The best technique for delivering effective instruction to a classroom of students homogenous in ability may differ from that technique which works best with a heterogeneous-in-ability class. Second, the composition of the student body may directly affect achievement via peer effects. For example, adding a disruptive student to a classroom might well reduce the ability of other students to learn. Others have suggested that individual learning is affected by the mean ability of the individual's peers.[9]

The direction of impact of peer effects on student achievement depends on the specific peer effect at issue, and may well be student-specific. The net effect of any compositional changes accompanying expansion of school choices on student performance is, obviously, ambiguous exante, as the precise dimension of the compositional changes and the directional impact of those changes is not clear. However, to the extent that compositional effects have a positive impact on student performance, the equilibrium sort under the new institutional structure may lead to improved performance among students remaining behind at existing public schools. A more homogenous student body at the traditional public school may lead to more effective teaching, either due to the increased ease and effectiveness of teaching to a more homogenous student body or from the increased absorption of teaching from students with a more homogenous peer group. Of course, these effects, both the peer group effect and the teaching ease and effectiveness effect, might go in the opposite direction and cause worsened student performance at traditional public schools.

Regardless of the exact source of the effect, a positive effect of charters on student performance in nearby traditional public schools is a strong argument for the continued existence of charters, as this positive effect is generated without additional educational resources. In fact, charters spend somewhat less per pupil in state funds and local tax funds than do traditional public schools.

- Charters schools may exert an impact on student performance directly, via the impact of charters on students attending charters, and indirectly, via the impact of charters on students remaining in traditional public schools.
- Because only a small percent of public school students attend charters, the effect of charters on students remaining in traditional public schools will impact many more students than the impact on students actually attending charters, and is potentially a much more important effect.

[8]Examples of papers which develop this theme include Hoxby (2000, 2003a, 2003b), Dee (1998), and Grosskopf et. al. (2004).

[9]See Henderson et. al. (1977), and Caroline Hoxby (2001) for a recent study of these effects.

- The impact of charters on traditional public schools may come about due to the behavior-altering effects of competition for students, or from classroom sorting as students move to charters.

Measuring Charter School Competition

A central issue in any analysis of the impact of charter competition is to select an appropriate measure of competition. There are several conceptual approaches to measuring the competitiveness of charters. First, there is a sense in which the potential for charter school entry was created by the passage of the enabling charter school legislation. Some school districts might respond to the very threat of competition implied by this legislation, even without a single charter ever forming. Second, the establishment of a charter in or near a traditional public school district would provide further tangible evidence of the threat of charter competition for students. Finally, the most tangible evidence of charter competition occurs when a charter starts drawing students and funds away from the traditional public school district

For this study we look at this third and most tangible evidence of competition, and count the percentage of students from a campus who have exited to charters. This approach measures competition by the actual number of students — and accompanying dollars of funding — lost to charter schools. An advantage of this approach is that it counts not the number of charter schools regardless of size but instead counts the number of students that charters have successfully attracted away from traditional public schools.[10]

The definition we use to quantify the amount of charter penetration is a campus measure derived by calculating the cumulative net flows of students to charters for each campus.[11] An advantage of using a campus-level competition measure is that we calculate the level of charter penetration at an administrative level with immediate contact with the students we are observing. This measure indicates the realized impact of charter schools on campus enrollment, as measured by net students leaving a campus to enroll in a charter.[12]

Figure 6 presents our measure of charter penetration for academic year 2003-04. We include only values for the charter penetration measure that are non-zero. The top graph indicates that there are nearly 1000 campuses with a campus charter penetration value between 0.00 and 0.01,

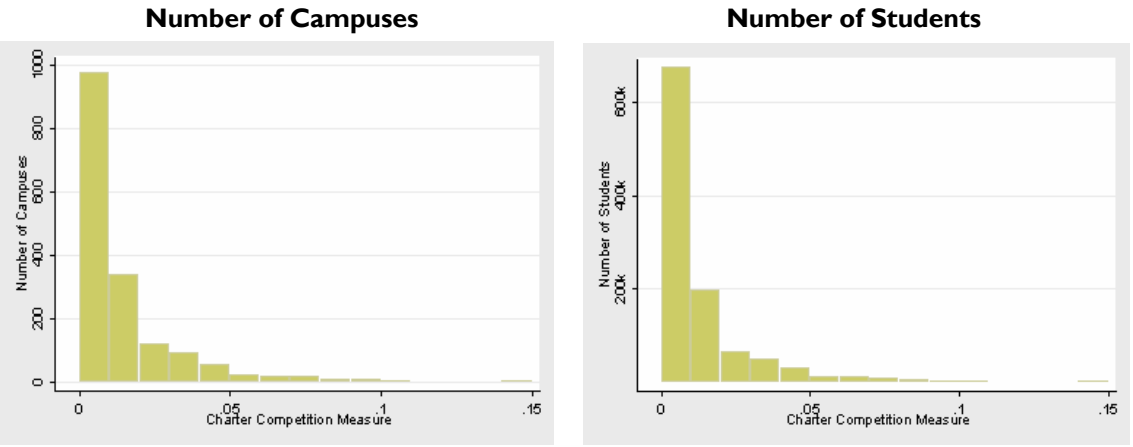
[10]Of course, traditional public schools face other competition in the market for students. They fact competition from other traditional public schools, the so-called Tiebout competition, and they face competition from private schools. These competitive factors were present before the entry of charter schools. But Tiebout competition works by parents moving housing locations, and private schools charge considerable tuition. Charter competition is unique in that parents may take advantage of the availability of a charter school at zero direct tuition cost and without moving.

[11]In each year the percentage outflow of students to charters at a given campus is the number of students at that campus in the previous year that we observe moving to a charter school in the current year, divided by the total number of students at that campus in the previous year and that we can observe in any public school (traditional or charter) in the current year. The percentage inflow of students from charters to a given campus is the number of students at the campus in the current year that we observe in charter schools in the previous year, divided by the total number of students at the campus in the current year that we can observe in any public school (traditional or charter) in the previous year. The net flow of students to charters at the campus in that year is the outflow minus the inflow. The campus level charter penetration measure is then the sum of this net flow in the current year and all previous years.

[12]In other work we found that use of a district-wide measure of charter competition yields qualitatively similar results.

and over 300 campuses with a campus charter penetration value between 0.01 and 0.02. The bottom graph indicates that there are well over 600,000 students in those campuses that have a campus charter penetration measure between 0.00 and 0.01 and just 200,000 students in those campuses that have a campus charter penetration measure between 0.01 and 0.02. Again to provide some perspective on these numbers, of those 4,472 campuses for which we have non-missing campus charter penetration measures in 2003-04, about 37 percent have campus charter penetration values greater than zero. For those campuses with a measured charter presence, the average value of the campus charter penetration measure is 0.016, with a maximum of 0.287. Nearly half (46 percent) of the students are enrolled at these "competing" campuses.[13]

Figure 6: Graphs of campus competition measure for 2003-2004



The distribution of charter competition, whether by number of traditional public school campuses or by number of traditional public school students, is skewed. Most traditional public school campuses have lost no students to charters. But over 1,000 campuses representing almost 700,000 students have lost at least one student and up to 1 percent of their student body to charters. Another 300 campuses representing just 200,000 students have lost between 1 percent and 2 percent of their student body to charters. At the upper end, a campus has lost just under 15 percent of students to charters, and others have lost at or near 10 percent of their students to charters.

The Effects Of Charter Competition

In Figure 7 we graph the average math TLI score growth for students in traditional public school campuses facing charter competition versus the average math TLI score growth for students in traditional public schools not facing charter competition. Clearly students at traditional public schools facing charter competition had higher average math TLI score growth in every year from 1997 through 2002, and this is occurring alongside the tremendous growth in the number of traditional public school campuses facing charter competition, from 16 in 1997 to 697 in 2002.

[13]The district enrollment values include all students in the district, whereas the campus enrollment numbers include only students at campuses for which we calculate a campus charter penetration measure. We do not calculate campus charter penetration measures for high school students; thus high school campuses are not included in the campus enrollment numbers.

Figure 7: Average math TLI score growth for students in campuses facing charter competition vs. students in campuses not facing charter competition

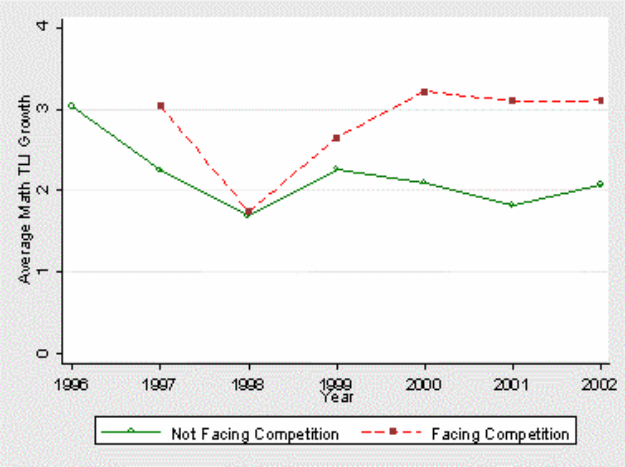


Table 19 provides that average math TLI score growth values that are graphed in Figure 7. Statistical tests indicate that the higher average math TLI score growth at traditional public school campuses facing charter competition is statistically significant for all years from 1998-1999 through 2003-2004.

For 1996-1997 and 1997-1998 the differences are positive but statistically insignificant, largely because of the small number of campuses facing charter competition, especially in 1996-1997. Over six years of TAAS testing, academic years 1996-1997 through 2001-2002, the traditional public school campuses facing charter competition averaged just over .75 added TLI points per year relative to campuses not facing charter competition.

Further, this effect seems to be continuing during our one observation on TAKS score growth. Academic year 2003-2004 saw traditional public school campuses facing charter competition average a growth in TAKS scores of 7.44 more points than campuses not facing charter competition.[14]

[14]Texas discontinued the TAAS test and switched to the TAKS test for academic year 2002-2003. Since we are looking at the growth in scores, we only no past TAKS scores to compute a growth in scores for 2003-2004. Thus our one and only observation on TAKS score growth is for 2003-2004.

Table 19: Average student math score growth for public school students at campuses facing charter competition compared with students at campuses not facing charter competition

Academic Year	Public Schools Facing Charter Competition		Public Schools Not Facing Charter Competition		Difference in Means	Statistically Significant?
	Mean Test Score Increase	Campuses	Mean Test Score Increase	Campuses		
1996-97	3.036	16	2.250	4550	0.786	No
1997-98	1.745	42	1.688	4443	0.057	No
1998-99	2.648	183	2.267	4301	0.381	Yes
1999-00	3.221	391	2.097	4101	1.123	Yes
2000-01	3.103	563	1.822	3880	1.280	Yes
2001-02	3.114	690	2.069	3715	1.045	Yes
2002-03	na	na	na	na	na	na
2003-04	18.013	616	10.574	3300	7.439	Yes

- For each year from 1996-97 through 2001-02, the average of student TAAS math score growth in traditional public schools that face charter competition is above the average of student math score growth in traditional public schools that do not face charter competition.

- In four of these six years, the growth in math scores at traditional public schools facing charter competition was statistically significantly greater than the growth in math scores at traditional public schools not facing charter competition.

- For 2003-3004, the TAKS math test score growth at traditional public schools facing charter competition was statistically significantly higher than the growth in those test scores at traditional public schools not facing charter competition.

In Figure 8 we repeat graph average reading TLI score growth for campuses facing charter competition and campuses not facing charter competition. We again see that campuses facing charter competition have higher average reading TLI score growth than campuses not facing charter competition, except that in the single academic year 1998-1999 the campuses not facing charter competition had slightly higher average reading TLI score growth.

Figure 8: Average reading TLI score growth for students in campuses facing charter competition vs. students in campuses not facing charter competition

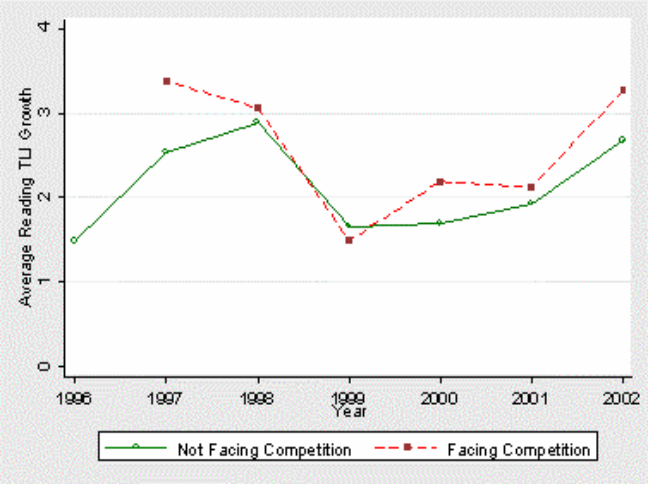


Table 20 provides the values underlying Figure 8. We see that the range of average reading TLI score growth differences has a high value of 0.84 in 1996-1997 and a low of -0.16 in 1999-2000. This Table also reports the analogous results for TAKS test score growth in academic year 2003-2004. Overall for six of the seven academic years the traditional public schools facing charter competition had higher standardized test score growth rates than the traditional public schools not facing charter competition, and three of those six values are statistically significant. Only in one academic year did the traditional public campuses facing charter competition have a lower growth rate in reading test scores than the campuses not facing charter competition, and that value is not statistically significant. Finally, over the six TAAS years, the traditional public school students facing charter competition had on average a bit more than one-third point increase in their TLI score compared to students in traditional public schools not facing charter competition.

Table 20: Average student reading score growth for public school students at campuses facing charter competition compared with students at campuses not facing charter competition

Academic Year	Public Schools Facing Charter Competition		Public Schools Not Facing Charter Competition		Difference in Means	Statistically Significant?
	Mean Test Score Increase	Campuses	Mean Test Score Increase	Campuses		
1996-97	3.3844	16	2.5438	4550	0.8406	No
1997-98	3.0605	42	2.8867	4443	0.1738	No
1998-99	1.4941	183	1.6580	4301	-0.1639	No
1999-00	2.1939	391	1.6871	4101	0.5068	Yes
2000-01	2.1218	563	1.9317	3880	0.1901	Yes
2001-02	3.2666	690	2.6739	3715	0.5926	Yes
2002-03	na	na	na	na	na	na
2003-04	30.1650	616	28.6692	3300	1.4958	No

- For five of the six years from 1996-97 through 2001-02, the average of student TAAS reading score growth in traditional public schools that face charter competition is above the average of student reading score growth in traditional public schools that do not face charter competition.

- In three of these six years, the growth in reading scores at traditional public schools facing charter competition was statistically significantly greater than the growth in reading scores at traditional public schools not facing charter competition.

- In the single year in which the growth of reading scores at traditional public schools facing competition was less than the growth in reading scores at traditional public schools not facing charter competition, the difference is not statistically significant.

- For 2003-2004, the TAKS reading test score growth at traditional public schools facing charter competition was higher, but not statistically significantly higher, than the growth in those test scores at traditional public schools not facing charter competition.

In addition to looking at test score growth, we also look at changes in passing rates. The State of Texas has established passing rate thresholds on both the TAAS and TAKS tests, and we can also study the performance of traditional public schools in achieving growth in the percentage of the student bodies that achieve the passing threshold, and compare the performance of those traditional public schools when facing/not facing charter competition.

Figure 9 graphs the average change in math passing rates for traditional public school campuses that face charter competition and for traditional public school campuses not facing charter competition. The qualitative results are much like those for the math test score growth reported above. In particular, traditional public school campuses facing charter competition had an increase in the percentage of students passing the Math TAAS test in five of the six academic years between 1996-1997 and 2001-2002. The exception was academic year 1998-1999.

Figure 9: Average change in math passing rates for campuses facing charter competition vs. campuses not facing charter competition

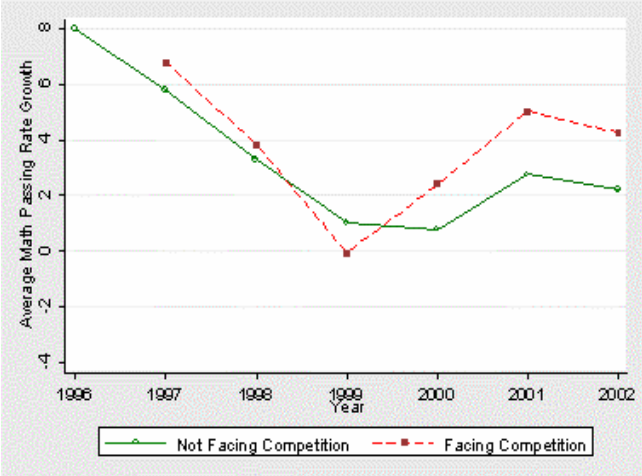


Table 21 provides the values underlying Figure 9, and adds the analogous figures for changes in the passing rate on the TAKS test for academic year 2003-2004. We see that the range of differences in the change of TAAS math passing rates has a low of -1.08 in 1998-1999 and a high of 2.28 in 2000-2001. Overall for five of the seven academic years the traditional public schools facing charter competition had a higher rate of increase in their passing rates than did the traditional public schools not facing charter competition, and three of those five positive values are statistically significant. Only in two academic years did the traditional public campuses facing charter competition have a lower rate of increase in their math passing rates, and neither value is statistically significant. Finally, over the six TAAS years, the traditional public school campuses facing charter competition had on average a bit over a one percent annual *increase* in the percent of students passing the math test compared to traditional public school campuses not facing charter competition. For the single TAKS year, the change in passing rates at both sets of public schools were nearly identical and far from statistically significant.

Table 21: Average student math passing rate growth for public school students at campuses facing charter competition compared with students at campuses not facing charter competition

Academic Year	Public Schools Facing Charter Competition		Public Schools Not Facing Charter Competition		Difference in Means	Statistically Significant?
	Mean Passing Rate Increase	Number of Campuses	Mean Passing Rate Increase	Number of Campuses		
1996-1997	6.7860	16	5.7922	4599	0.9939	No
1997-1998	3.8291	42	3.2624	4446	0.5666	No
1998-1999	-0.0587	183	1.0214	4301	-1.0801	No
1999-2000	2.4077	391	0.7840	4102	1.6237	Yes
2000-2001	5.0260	566	2.7482	3943	2.2778	Yes
2001-2002	4.2533	697	2.2130	3773	2.0403	Yes
2002-2003	na	na	na	na	na	na
2003-2004	-7.471	616	-7.354	3300	-0.117	No

- For 2003-2004, the average increase in the TAKS math passing rate at the traditional public schools facing charter competition was below, but not statistically significantly below, the average increase in the TAKS math passing rate at the traditional public schools not facing charter competition.

- For five of the six years from 1996-97 through 2001-02, the average increase in the TAAS math passing rate in traditional public schools that face charter competition is above the average increase in the TAAS math passing rate in traditional public schools that do not face charter competition.

- In three of these six years, the average increase in the TAAS math passing rate at traditional public schools facing charter competition was statistically significantly greater than the average increase in the TAAS math passing rate at traditional public schools not facing charter competition.

- In the single year in which the average increase in the TAAS math passing rate at traditional public schools facing competition was less than the average increase in the TAAS math passing rate at traditional public schools not facing charter competition, the difference is not statistically significant.

Figure 10 graphs the average change in reading passing rates for traditional public school campuses that face charter competition and for traditional public school campuses not facing charter competition. The qualitative results are much like those for the math passing rates. In particular, traditional public school campuses facing charter competition had an increase in the percentage of students passing the Reading TAAS test in five of the six academic years between 1996-1997 and 2001-2002. The exception was academic year 1998-1999.

Figure 10: Average change in reading passing rates for campuses facing charter competition vs. campuses not facing charter competition

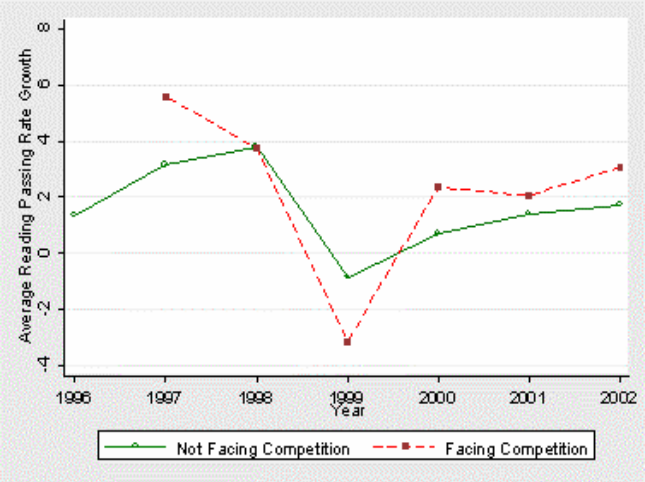


Table 22 provides the values underlying Figure 10, and adds the analogous figures for changes in the passing rate on the TAKS test for academic year 2003-2004. We see that the range of differences in the change of TAAS math passing rates has a low of 2.28 in 1998-1999 and a high of 2.47 in 1996-1997. Overall, for five of the seven academic years the traditional public schools facing charter competition had a higher rate of increase in their passing rates than did the traditional public schools not facing charter competition, and three of those five positive values are statistically significant. Only in two academic years did the traditional public campuses facing charter competition have a lower rate of increase in their math passing rates, and only one is statistically significant.

Finally, over the six TAAS years, the traditional public school campuses facing charter competition had on average a bit over a 0.6 percent annual *increase* in the percent of students passing the math test compared to traditional public school campuses not facing charter competition. For the single TAKS year, the change in passing rates at each set of public schools were nearly identical and far from statistically significant.

Table 22: Average student reading passing rate growth for public school students at campuses facing charter competition compared with students at campuses not facing charter competition

Academic Year	Public Schools Facing Charter Competition		Public Schools Not Facing Charter Competition		Difference in Means	Statistically Significant?
	Mean Passing Rate Increase	Number of Campuses	Mean Passing Rate Increase	Number of Campuses		
1996-1997	5.5976	16	3.1276	4599	2.4700	Yes
1997-1998	3.7502	42	3.7821	4446	-0.0322	No
1998-1999	-3.1309	183	-0.8516	4301	-2.2793	Yes
1999-2000	2.4077	391	0.7027	4102	1.7050	Yes
2000-2001	2.0590	566	1.4307	3943	0.6284	Yes
2001-2002	3.0721	697	1.7052	3773	1.3670	Yes
2002-2003	na	na	na	na	na	na
2003-2004	0.076	616	-0.058	3300	0.1344	No

- For four of the six years from 1996-97 through 2001-02, the average increase in the TAAS reading passing rate in traditional public schools that face charter competition is above the average increase in the TAAS reading passing rate in traditional public schools that do not face charter competition.

- For each of the four years for which the average increase in the TAAS reading passing rate at traditional public schools facing charter competition was above the average increase in the TAAS reading passing rate at traditional public schools not facing charter competition, the difference was statistically significant.

- For the two years in which the average increase in the TAAS reading passing rate at traditional public schools facing competition was less than the average increase in the TAAS reading passing rate at traditional public schools not facing charter competition, the difference was only statistically significant in one of the two years.

- For 2003-2004, the average increase in the TAKS reading passing rate at the traditional public schools facing charter competition was above, but not statistically significantly above, the average increase in the TAKS reading passing rate at the traditional public schools not facing charter competition.

The overall picture is one of a positive impact of charter school competition on the performance of students remaining in traditional public schools. Whether the channel for this positive effect is through efficiency-enhancing responses by traditional public schools or through sorting-driven peer effects (or some combination of the two) is unknown. Future research which attempts to identify the mechanism of change would be particularly valuable. The positive charter choice result is further supported in more formal econometric tests reported in Booker, Gilpatric, Gronberg, and Jansen (2004). In that work a series of panel regression specifications are run which include controls for student and campus identities, and the results indicate a mod-

erately sized and extremely statistically significant positive impact of charter school competition on the performance of students in traditional public schools. Booker et. al. also conduct a series of alternative specifications of the competition measure and demonstrate that their results are robust to alternative measures of charter competition and to various specifications of the econometric model.

Conclusion

Are kids who have exited to charters doing better, on average, than if they had remained in their traditional public school?

Applying a simple matched sample strategy and using the two years of test score observations within the TAKS regime, our answer is a qualified *yes*. If we adopt the conventional strategy of evaluating schools on the basis of test performance by non-high school student populations, and if we match upon those charter schools which are, programmatically, reasonably comparable to traditional public schools, we find that charter students fared better than did a set of relevant traditional public school peers. For this "best" sample, the charter student score gains exceeded those of the matched traditional public peer group. The differential gains were modest in magnitude, but were statistically significantly different from zero. When we broaden our sample to include those non-high school charters which focus upon alternative education programs, a fundamentally inferior matched sample, then there is no significant difference between the charter student results and the matched public student results. If we address the question with data from high school students, the answer turns negative. The performance of the charter school test-takers lags behind that of the matched traditional public high-schoolers. When we limit the sample to those students who are enrolled in non-alternative education charters, a limitation which seems particularly appropriate for analyzing the charter high school sector, the difference is statistically significant, but smaller quantitatively.

Are kids who enroll in traditional public schools helped or hurt by the presence of charters?

Charters serve as competitors for traditional public schools. The transfer of students to charters could provide incentives for traditional school managers to improve productivity and could change the peer composition of traditional public schools. Because of this, the presence of charter competition can lead to changes in the performance of students remaining in the traditional public schools. We observe that students in traditional public schools that face charter competition perform better than do students in traditional public schools that do not face charter competition. This charter competition effect may in the long run prove to be one of the most important contributions of charters to student achievement.

Our summary view has not changed from that of our earlier report. Charter schools continue to be an important, informative, and encouraging institutional design experiment. Our best evidence suggests that on average the kids who have chosen to try the new institution have benefited and that the kids who have remained in the existing traditional public school institution have benefited as well. These systemic benefits make a case for continuation of the charter experiment. The evidence also raises fascinating questions: What are the behind-the-scenes mechanisms of improvement associated with charters? Will charters continue to grow, and will the system-wide benefits grow as well? Could other choice institutions do as well or better than charters? Careful future analysis of data from Texas charter schools can help answer these key policy questions.

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Notes

Save the Date

4th Annual Policy Orientation for the Texas Legislature

The dates have been set for the 4th Annual Policy Orientation for the Texas Legislature. Each year, the Texas Public Policy Foundation brings together lawmakers and policy experts from across the political spectrum. This two-day symposium — sold-out since its inception — draws legislators and interested Texans to discuss and learn about a wide range of policy issues facing the state.

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About This Report

After seven years of operation and intense public scrutiny, the experience of Texas charter schools is still widely considered unchartered and controversial. Within just the past 12 months, seven independent research studies published different, often contradictory, information about Texas charter schools. The most provocative, a study commissioned by the Texas Education Agency, concludes, "Taken as a whole, instances of improving student academic performance for charter schools in 2003-04 were rare" and "Overall outcomes completely favor traditional public schools."

Dr. Timothy J. Gronberg and Dr. Dennis W. Jansen, economists at Texas A&M University, show why this conclusion is wrong. Using the same student performance data — but employing a more sophisticated statistical analysis that compares the academic changes in individual test scores of matched pairs — the authors demonstrate that students who leave traditional public schools for charters are doing better, on the average, than if they had remained in traditional public school. The data also shows that student achievement in traditional public schools significantly improved when faced with competition from charter schools.

This report is a must read for policymakers seeking to improve the effectiveness and efficiency of public schools and for Texans working to create a system of public education that meets the needs of all children.