

LITERATURE REVIEW

RESEARCH COMPARING CHARTER SCHOOLS AND TRADITIONAL PUBLIC SCHOOLS

At a Glance

During the 2008-09 school year, over 5,000 charter schools operated in 40 states and Washington, D.C. and were attended by over 1.5 million students, or about three percent of the nation's public school students. Although the first U.S. charter schools opened in 1992, debate continues over whether they provide students with a better education than traditional public schools. This Literature Review summarizes studies that compared the achievement of students attending charter and traditional public schools and found mixed results. Most studies have found that charter schools produce achievement gains that are about the same or lower than those found in traditional public schools, although a few studies have concluded that charter schools have a positive effect on student achievement. These inconsistent findings have led some researchers to conclude that the rapid growth of the charter school movement has significantly outpaced the evidence supporting its impact on student achievement. Because there is such wide variation from state to state in charter schools' mission, funding, student populations, size, grade level coverage, and independence from regulations and teacher contracts, there may never be a single definitive study that determines if charter or traditional public schools provide students with better learning opportunities.

In addition to reviewing studies conducted on overall charter school performance, this report summarizes research that examined the following issues: student achievement at new versus more established charter schools; student achievement at conversion versus start-up charter schools; student mobility at charter schools; charter school teacher attrition rates and qualifications; demographic characteristics of students attending charter schools; extent of segregation in charter schools; and the impact of charter school competition on the achievement of students remaining in traditional public schools. Finally, information on charter schools operating within the state of Florida and in Miami-Dade County is provided.

Charter schools are public schools operating under a performance contract, or "charter," that frees them from many of the regulations created for traditional public schools while holding them accountable for academic and financial results. Charter schools have more autonomy than traditional public schools and determine their own budgets, class and school sizes, staffing levels, curriculum choices, and the length of the school day and year. In exchange for this added flexibility, charter schools are accountable for producing certain results and their charters are regularly reviewed, then renewed or revoked, by their authorizing agency. Examples of organizations that can grant charters include local school districts, state educational agencies, institutions of higher education, municipal governments, and special chartering boards (O'Brien & Devarics, 2010; Abdulkadiroglu et al., 2009; Zimmer et al., 2008; Crane & Edwards, 2007; Florida Department of Education, n.d.).

Since state laws don't require charter schools to follow a particular program or instructional approach, the missions and educational philosophies of charter schools vary, as do the types of students and communities they serve. Charter schools are similar to public schools in that they are publicly funded and their students must participate in statewide testing programs; however, they are schools of choice, which means that parents must choose to enroll their children. Charter schools are free to all students (O'Brien & Devarics, 2010; Zimmer et al., 2008; Crane & Edwards, 2007; Bifulco & Ladd, 2004; Finnegan et al., 2004; Hoxby & Rockoff, 2004).

Although the first U.S. charter schools opened in 1992, debate continues over whether they provide students with a better education than traditional public schools. Proponents of charter schools contend that they expand the number and variety of school choices available to parents and students, increase innovation, improve student achievement, and promote competition with traditional public schools. Opponents claim that charter schools result in increased segregation, reduce public schools' financial and human resources, and lead to no real improvements in student achievement (Booker et al., 2009; Imberman, 2009; Winters, 2009; Zimmer et al., 2009; Bulkley & Fislser, 2002).

Charter Schools, by the Numbers

Charter schools operate in 40 states and in Washington, DC. As of November 2009, there were more than 5,000 charter schools in the U.S. attended by over 1.5 million students. In 2008-09, charter schools represented 4.8 percent of all U.S. public schools and enrolled 2.9 percent of the nation's public school students. From 2004-05 to 2008-09, the number of charter schools increased by 41 percent and the number of students attending them increased by 56 percent (Center for Education Reform, 2010; Lake, 2010).

Charter school growth has been concentrated in a select number of states. For example, since 2005, more than half of new charter schools opened in just six states (California, Florida, Georgia, Ohio, Texas, and Wisconsin). Since 2004, two states (California and Florida) opened almost one-quarter of all charter schools in the country. In addition, charter schools have been confined largely to urban areas, with 47 percent of all charter schools located in cities. Approximately 89 percent of American school districts have no charter schools within their boundaries (Lake, 2010).

Most charter schools are relatively new. Nationwide, the average time a charter school has been open is 6.2 years, with more than one-third of charter schools open less than three years and just 2 percent open more than 15 years. The national charter school closure rate has been estimated at 13 percent, but closure rates vary significantly between states (Jefferson County Public Schools, 2010; Lake, 2010; Allen et al., 2009). Reasons for school closures vary, but a report from the Center for Education Reform, a charter school advocacy organization, found that 41 percent of U.S. charter schools closed as a result of financial deficiencies, 27 percent closed because of mismanagement, and 14 percent closed because of students' poor academic performance (Allen et al., 2009).

Amid the growing debate over whether charter schools are inadequately funded compared to traditional public schools, Miron and Urschel (2010) conducted a study that examined the amount and sources of revenues and expenditures between the two types of schools. They concluded that in most states, charter schools report spending less money per student than traditional public schools. They spend less on instruction, student support services, and teacher salaries and benefits. However, charter schools reported paying more for administration, both as a percentage of overall spending as well as for the salaries paid to administrative personnel. Although Miron and Urschel found that charter schools received less revenue per student than traditional public schools (\$9,883 versus \$12,863) during the 2006-07 school year (the most recent year for which national school finance data were available), they concluded that this direct comparison may be misleading. Traditional public schools provide and receive funds for services that most charter schools do not provide, such as special education, student support services, transportation, and food service. The researchers concluded that "as long as traditional public schools are delivering more programs, serving wider ranges of grades, and enrolling a higher proportion of students with special needs, they will require relatively higher levels of financial support. Under these circumstances, differences or inequalities in funding can be seen as reasonable and fair."

Caution is Advised

Although the demand for educational research has increased exponentially in the last decade, the quality or scientific rigor of that research has not kept pace with the demand. Much of what is being published as educational research is actually marketing a "politicized" party line with the sole purpose of selling some policy position or agenda of the author. Kevin Welner, Professor and Director of the National Education Policy Center at the University of Colorado at Boulder, explains the situation in more diplomatic terms: "Policy decisions are too often made without supporting research, or even in conflict with what the research tells us."

No area has been inundated with more politicized educational research than the area of school choice. Educational management companies and think tank reports abound espousing the virtues of their latest and greatest educational innovation as they market their wares in the swap meet that has unfortunately become educational reform. Every effort has been made in this Literature Review to include the most objective and rigorous research available concerning charter schools. Methodological concerns regarding school choice research are discussed later in this report.

Therefore, the reader is cautioned to be extremely prudent and to seek out objective third-party confirmation of the results pertaining to important policy decisions. In this regard, the interested reader is referred to the following organizations which exemplify such an approach.

University of Colorado
National Education Policy Center (NEPC)
<http://nepc.colorado.edu>

Arizona State University
Education Policy Research Unit (EPRU)
<http://epicpolicy.org>

Research Comparing Academic Performance in Charter Schools and Traditional Public Schools

A number of researchers have attempted to determine if charter school students perform better than students in traditional public schools. This question has proved difficult to answer for several reasons: charter schools differ considerably from state to state and from district to district; the student populations charter schools enroll often differ from those of traditional public schools; and much of the research conducted on charter schools is based on imperfect designs, context-specific findings, and unreliable measures. Furthermore, research studies on the effectiveness of charter schools can be difficult to interpret because data are often reported by advocates or opponents of charter schools and not independent evaluators (Jefferson County Public Schools, 2010; O'Brien & Dervarics, 2010; Zimmer et al., 2009; Betts & Tang, 2008; Henig, 2008; Greene et al., 2006). Hill, Angel, and Christensen (2006) noted: "Because state laws are so different and charter schools differ from state to state in mission, funding, size, grade-level coverage, and independence from regulations and teacher contracts, the absence of evidence from many states makes it impossible to make definitive statements about charter schools in general."

As can be seen from the following discussion of methodological issues, simple comparisons of student achievement at charter and traditional public schools cannot be taken at face value and often lead to invalid conclusions. A brief overview of the methodological challenges associated with charter school research follows to help the reader evaluate the studies summarized in this report.

Methodological Issues

The factor leading to the biggest methodological difficulty when assessing charter schools' impact on student achievement is selection bias. Selection bias arises because parents voluntarily choose to enroll their children in charter schools. Therefore, it is possible that the motivation for selecting charter schools makes these students different than students who remain in traditional public schools in ways that may impact student achievement. To attribute achievement differences to the time spent in charter schools, rather than to the motivation to attend charter schools, researchers must control for selection bias (Pennsylvania State Education Association, 2010; Booker et al., 2009; Nicotera, 2009; Akey et al., 2008; Booker, 2008).

The more robust studies have controlled for selection bias in two ways: randomized experiments and longitudinal analyses. Randomized experiments compare students who were admitted to charter schools through a random lottery to students not selected to attend the school through the lottery. Students who apply and are not admitted to charter schools are believed to be similar to those who apply and are admitted. One drawback of the lottery-based approach is that results can't be generalized to charter schools without waiting lists. To the extent that over-subscription is a sign of quality, lottery-based analyses exclude lower quality charter schools.

When randomized experiments have not been possible, researchers have used a longitudinal, fixed-effects approach. Although not as robust as randomized studies, the fixed-effects method minimizes selection bias by controlling for all student variables that don't vary across time (such as gender and ethnicity) and factoring out students' baseline achievement levels. The fixed-effects approach also permits within-student comparisons of achievement gains, analyzing changes in the gains of students who move from traditional public schools to charter schools, and vice versa, over time. One disadvantage of this type of analysis is that it only includes students who move between charter and traditional public schools (Abdulkadiroglu et al., 2009; Center for Research on Education Outcomes, 2009; McEwan, 2009; Zimmer et al., 2008; Sass, 2006).

Another factor that confounds results from charter school studies is student attrition. Attrition is the rate at which students leave a school. Studies have confirmed that charter schools have higher attrition rates than traditional public schools. Research has also indicated that students leaving charter schools tend to be lower-achieving students. When substantial numbers of lower-achieving students leave a school, it raises that school's average test scores. This makes it impossible to determine if higher test scores are due to lower performing students leaving a school or the impact of the educational program (Bennett, 2010; Vaznis, 2009; Ball State University, 2008; Henig, 2008; Bracey, 2005; Miron, 2005).

A common design weakness in charter school research is the use of cross-sectional, as opposed to longitudinal, data. Betts and Tang (2008) noted that "snapshots" of student achievement at a single point in time can be misleading because schools' populations fluctuate from year to year. Another difficulty with charter school research is the extent to which some researchers aggregate data. When data are analyzed at the school level instead of at the individual student level, changes in the school's population over time are concealed. When results are combined across schools, findings are weighted by the number of test takers in each school, with large schools influencing the results more than small schools (Zimmer et al., 2008; Miron et al., 2007).

Several researchers argue that each charter school is unique and that aggregate data on charter schools is not an appropriate indicator of their potential. In fact, variation in academic quality among charter schools appears to be the norm, not the exception, with some charter school students performing at much higher levels than traditional public school students and others performing at significantly lower levels (Loveless, 2010; Center for Research on Education Outcomes, 2009; Miron et al., 2007; Solmon et al., 2001). Hanushek (2009) noted: "We still remain in a situation with an unresolved key question about what policies, laws, and incentives lead some charters to flourish and others not." Miron, Coryn,

and Mackety (2007) concluded: "We believe . . . there may never be a single authoritative and definitive study that settles the question regarding the performance of charter schools."

The following sections of this report summarize some of the major studies that compared student achievement at charter and traditional public schools. Studies are divided into two categories: studies finding that charter schools had a positive impact on student achievement and studies finding that charter school students did not consistently outperform traditional public school students.

Studies Reporting that Charter Schools have a Positive Impact on Student Achievement

The following four studies are considered methodologically sound and concluded that charter schools have a positive effect on students' academic performance.

- Abdulkadiroglu and colleagues (2009) conducted two separate analyses comparing Boston middle and senior high charter and traditional public school students' performance on the Massachusetts Comprehensive Assessment System (MCAS). First, a lottery-based analysis compared students who applied and were selected to attend charter schools to students who were not selected to attend charter schools. Because the lottery-based analysis included only oversubscribed schools, a second analysis utilizing statistical controls was performed that included all Boston area charter and traditional public school students. This analysis used student-level data and controlled for baseline demographic characteristics, including gender, ethnicity, eligibility for free or reduced price lunch, special education, and prior MCAS scores. In both analyses, the researchers found large positive effects for charter schools, indicating that charter schools resulted in substantial English/language arts and math MCAS score gains. The researchers stated that the consistency of findings from the two analyses strengthened the study's overall conclusions.
- Dobbie and Fryer (2009) conducted a lottery-based analysis using data from the Promise Academy Charter School, sponsored by the Harlem Children's Zone. The researchers compared students who applied to and were admitted to the school through lottery and those who applied to the school but were not admitted through lottery. Features of the Promise Academy include an extended school day and year; after-school tutoring and Saturday classes; student incentives for high achievement; a school health clinic; and a variety of supportive community services. Dobbie and Fryer analyzed data on approximately 470 New York City students who applied for enrollment in the charter school as entering sixth graders. Student outcomes were measured in sixth, seventh, and eighth grades using statewide English/language arts (ELA) and math tests. The study found that students who attended the academy received higher math test scores in all three grade levels than students who were not offered enrollment. By the time students were tested in eighth grade, the effect size for the math test was equivalent to moving a student from the 50th to the 71st percentile. In ELA, no significant differences were found in students' test scores in sixth or seventh grade, but a positive effect was found on the eighth grade test. The effect size was equivalent to moving a student from the 50th to the 58th percentile. The What Works Clearinghouse (2010a) reviewed Dobbie and Fryer's study and concluded that it was methodologically sound and was "equivalent to a randomized controlled trial because the groups of students contrasted in the study were formed by random lottery."
- Tuttle and associates (2010) conducted a matched, student-level longitudinal analysis designed to estimate the effect of Knowledge is Power Program (KIPP) charter schools on students' achievement. The study was commissioned by KIPP and conducted by Mathematica Policy Research. Twenty-two KIPP middle schools from across the country were included in the study. The researchers examined the achievement trajectories of KIPP students before and after they entered KIPP schools and compared them to the trajectories of students who remained in their local district's traditional middle schools. Analyses controlled for differences in the characteristics of the two groups of students, including ethnicity, gender, poverty status, special education status, limited English proficiency, and test scores for two years prior to KIPP entry. Findings indicated that students experienced significant,

positive impacts in 18 of 22 KIPP schools in math and 15 of 22 KIPP schools in reading. By year three, half of the KIPP schools produced math effects equivalent to moving a student from the 30th percentile to the 48th percentile on a typical test distribution, representing 1.2 years of extra growth in math over the three-year period. In reading, three-year impacts were also large, but not as large as the effects in math. Half of the KIPP schools showed three-year reading effects that represented an estimated 0.9 years of additional instruction. Only three KIPP schools did not show progress in any year for students in reading and math. Additional analyses found no evidence that KIPP impacts differed for specific subgroups of students, including higher- versus lower-performing students, limited English proficient students, and Black or Hispanic students.

Professional reaction to the KIPP middle school study has been mostly positive. Robin J. Lake, associate director for the Center on Reinventing Public Education, a nonpartisan research organization, stated that the study was methodologically strong. However, Ms. Lake questioned if the 22 schools included in the study were representative of all of KIPP's 82 schools, because the researchers studied only older and more stable schools with multiple years of test score data. Bruce Fuller, professor of education and public policy at the University of California at Berkeley, agreed that the methodology of the study was sound and the math gains were "impressive." He cautioned, however, that the reading gains at KIPP schools may not have been as large as indicated by the researchers because students who attended KIPP schools may have differed from comparison students in ways not controlled for in the analysis. Finally, Gary Miron, an education professor at Western Michigan University in Kalamazoo, noted that the study did not consider whether KIPP schools accepted new students to replace departing students, which would lead to more selective enrollments. In contrast, he said, traditional public schools accept new students at all grade levels. KIPP's director of public affairs confirmed that KIPP schools try to enroll new students to fill spaces that open in fifth and sixth grades, but typically not in seventh or eighth grades (Zehr, 2010).

- RAND Education researchers (Booker et al., 2008) analyzed data from the state of Florida and the city of Chicago to determine the effects of charter high school attendance on educational attainment. Both the treatment and comparison groups attended charter schools in the eighth grade; however, treatment group students went on to enroll in charter schools in the ninth grade, while comparison group students enrolled in traditional public schools in the ninth grade. To further account for selection bias, the researchers controlled for students' ethnicity, gender, disability status, family income, and baseline test scores. Analyses indicated that charter schools in both Florida and Chicago had substantial positive effects on high school completion and college attendance rates. Students who attended a charter high school were 7 to 15 percentage points more likely to earn a standard diploma than students who transitioned to a traditional public high school. Similarly, students who attended a charter high school were 8 to 10 percentage points more likely to attend a two- or four-year college.

Several studies received a substantial amount of media coverage when they reported that charter schools had positive effects on student achievement; however, these studies were subsequently criticized for methodological flaws and their conclusions should therefore be viewed with extreme caution.

- Hoxby, Murarka, and Kang (2009) conducted a multi-year, lottery-based study in which nearly all of New York City's charter schools participated. (Since New York City's charter schools are routinely oversubscribed, 94 percent of students are admitted after having participated in a random lottery.) Hoxby and colleagues found that, compared to students who applied but were not admitted to charter schools, students attending charter schools earned Regents English/language arts and math exam scores that were approximately three points higher for each year spent in a charter school before taking the test. Students attending charter schools were also about seven percent more likely to earn a Regents diploma by age 20 for each year spent in a charter school. The researchers concluded that the average gains made by charter school students from kindergarten through eighth grade would be enough to close large percentages of the achievement gap between the average student in inner-city Harlem and the average student in Scarsdale, a wealthy suburb noted for the quality of its

public schools. Specifically, they calculated that charter school attendance would close about 86 percent of the achievement gap in math and 66 percent of the gap in English.

Reardon (2009) reviewed Hoxby and colleagues' study for the Education and the Public Interest Center and the Education Policy Research Unit. He concluded that the study's findings were based on a flawed statistical analysis. Since students' prior years' test scores in all but the first observation were measured after lotteries took place, Reardon stated that this approach destroyed the randomization that was the strength of the study's design, most likely overstating the effects of charter schools on students' achievement. Reardon also noted that the study used a weaker criterion for statistical significance than is conventionally used in social science research (0.05), referring to p-values of approximately 0.15 as "marginally statistically significant." Professor Kevin Welner, director of the University of Colorado at Boulder's Education and the Public Interest Center, stated that Hoxby and colleagues' study had significant flaws and limitations and "used inappropriate methods that overstate the performance of the charter schools it studied" (cited in Reardon, 2009).

- Earlier research conducted by Hoxby (2004) also reported positive effects for charter schools, but received harsh professional criticism. Hoxby's study was released directly to the media, not published in a peer-reviewed document. She found that charter students in states across the U.S. were four to five percent more proficient on their state's reading tests and two to three percent more proficient on their state's math tests compared to students attending the nearest traditional public school (i.e., schools they would presumably have attended without the charter option). Critics of the study claimed errors were made during the school-matching process and that the analysis did not adequately control for students' demographic and socioeconomic characteristics. Furthermore, the assumption was made that charter schools drew only from nearby public schools, but in fact it is likely that they drew from a range of public schools and districts, private schools, and even other charter schools (Hill et al., 2006; Lubienski & Lubienski, 2006; Bracey, 2005; Roy & Mishel, 2005). Roy and Mishel (2005) re-analyzed Hoxby's (2004) data, incorporating schools' ethnic composition and socioeconomic status. They found that when ethnic composition and income level were held constant (in effect, comparing charter schools and traditional public schools with identical ethnic composition and income levels), the charter school advantage disappeared.
- Toney and Murdock (2008) analyzed data on 79 charter schools and 593 traditional public schools in the Los Angeles Unified School District. School-level academic achievement was measured by comparing the change in charter schools' Academic Performance Index (API) to the change at matched comparison traditional public schools. The study found that charter schools' API increased more than the API in comparison schools. The What Works Clearinghouse (2008), however, stated that Toney and Murdock's research was not consistent with their evidence standards because there was no indication that the schools were initially equivalent on academic achievement. In addition, schools with very low API levels may have made greater gains simply because they had more room for improvement.
- Greene, Forster, and Winters (2006) compared charter and traditional public schools in 11 states (Arizona, California, Colorado, Florida, Michigan, Minnesota, New Jersey, North Carolina, Ohio, Pennsylvania, and Texas). Charter school test score gains were compared to the test score gains from their closest traditional public schools. The researchers found that charter schools outperformed traditional public schools on reading and math tests. Bracey (2005) criticized Greene and colleagues' conclusions, however, stating that the effect sizes they found were small (moving a student from the 50th to the 52nd percentile in reading and from the 50th to the 53 percentile in math) and only statistically significant because of the study's very large sample sizes. In addition, the researchers used school-level instead of student-level data. Bracey also pointed out that when Greene and colleagues analyzed data by individual state, a positive effect for charter schools was found only in Texas. [In Florida, the charter school effect was significant for the FCAT SSS Reading, but not for the FCAT NRT Reading; in math, the pattern was reversed, with a significant charter effect for the FCAT

NRT, but not for the FCAT SSS.] Greene and colleagues did, however, attempt to equate the student populations served in the two sectors by including only charter and traditional public schools serving general student populations.

Studies Reporting that Charter Schools Do Not Consistently Outperform Traditional Public Schools

The following seven studies found that charter school students did not consistently outperform students attending traditional public schools. These studies are considered to be methodologically sound.

- Betts and Tang (2008) conducted a meta-analysis of studies that compared charter and traditional public school students' achievement. They identified 14 studies that used high-quality research designs (i.e., those that included randomization based on lotteries and/or considered students' past achievement through value-added modeling). The majority of studies found that charter school students performed better than traditional public school students in elementary school reading and middle school math. Overall trends in elementary school math and middle school reading were inconclusive. At the high school level, charter school students performed at lower levels than traditional public school students in both reading and math.
- Gleason and colleagues (2010) conducted a large-scale randomized trial of the effectiveness of 36 charter middle schools across 15 states. The study was funded by the U.S. Department of Education's Institute of Education Sciences and conducted by Mathematica Policy Research. The researchers compared outcomes of students who applied and were admitted to charter schools through random admissions lotteries with the outcomes of students who also applied to these schools but were not admitted through lotteries. To be eligible for the study, charter middle schools had to have been in operation for at least two years. Results indicated that overall, charter schools were no more successful than nearby traditional public schools in raising student achievement. However, the impact of charter schools on student achievement was found to vary significantly across schools. Charter schools located in large urban areas and serving more low-income or low-achieving students had significant positive effects on math test scores, while charter schools serving more advantaged students (those with higher income and prior achievement) had significant negative effects on math scores. In reading, charter schools serving more advantaged students had a significant negative effect on achievement, while those serving fewer advantaged students had no impact on achievement.

Additional exploratory analyses were conducted to determine if achievement impacts were associated with certain school policies and practices. Smaller charter schools had significantly less negative impacts than larger charter schools and charter schools more likely to use ability grouping for math had significantly less negative impacts than those less likely to use ability grouping (the same was not the case for reading). The researchers found no evidence of a significant relationship between other aspects of charter school operations (including the length of the school day and year, the student-teacher ratio, and the experience level of teachers) and the school's impact on student achievement. Furthermore, policy-related characteristics of charter schools, including measures of their number of years operating, autonomy, accountability, type of authorizer, and management structure, did not appear to be related to charter schools' impact on student achievement. A significant relationship was found between revenues per student and impacts on math achievement, but the relationship was no longer significant once the analyses controlled for other charter school characteristics, such as percent low-income and minority students. Gleason and colleagues concluded that their study was not able to determine why some charter schools were more effective than others.

- The Center for Research on Education Outcomes (CREDO) (2009) at Stanford University studied students in grades 1-12 who were attending 2,403 charter schools in 16 states. For each charter school student, a "virtual twin" comparison group student was created, matched on students' demographics characteristics, English language proficiency, and participation in subsidized lunch

and special education programs. The study found that, in the aggregate, charter schools were not advancing the learning gains of their students as much as traditional public schools: 17 percent of charter schools provided learning gains that were significantly higher than students would have realized had they remained in traditional public schools, but 46 percent of charter schools nationwide had results that were no different from traditional public schools and 37 percent delivered learning gains that were significantly lower than students would have realized had they remained in traditional public schools. Some subgroups of students demonstrated greater academic growth than their "virtual twins" in traditional public schools. Specifically, low-income students and English language learners experienced larger learning gains in charter schools. Other subgroups, however, including Black and Hispanic students, had learning gains that were significantly smaller than those of their "virtual twins" in traditional public schools. Results disaggregated by grade level found small positive effects for elementary and middle charter schools, but negative effects for charter high schools and multi-grade level schools.

The CREDO researchers found that learning gains varied depending on the length of time a student had attended a charter school. First year charter students experienced significantly smaller learning gains compared to their peers in traditional public schools. However, second and third year charter students not only reversed this trend, but had larger learning gains than their counterparts in traditional public schools. The researchers also found that the effectiveness of charter schools varied by state. Of the 15 states in which the charter school effect was analyzed, charter students in five states had significantly higher average growth than their peers in traditional public schools; charter students in six states (including Florida) had lower average growth than their peers in traditional public schools; and four states had mixed results or charter gains that were no different than the gains in traditional public schools.

The What Works Clearinghouse (2010b) reviewed the CREDO study and concluded that it was "consistent with What Works Clearinghouse evidence standards with reservations." The Clearinghouse cautioned that "although the study matched charter school students to traditional public school students based on demographic characteristics and test scores, it is possible that there were other differences between the two groups that were not accounted for in the analysis, and these differences could have influenced achievement growth." Miron and Applegate (2009) reviewed the CREDO report for the Education and the Public Interest Center and the Education Policy Research Unit. They confirmed CREDO's claims of a superior and extensive data base and found that the analyses were largely sound. However, Miron and Applegate cautioned that the large sample size (over 1.7 million students) ensured that results would be significant and may have overstated the study's findings.

- RAND Education researchers (Zimmer et al., 2009) analyzed longitudinal, student-level data from three states and five large urban school districts (Florida, Ohio, and Texas and the Chicago, Denver, Milwaukee, Philadelphia, and San Diego school districts). In total, eight states were represented in the data set. Across locations, the researchers found that charter middle and senior high schools produced achievement gains that were about the same as those found in traditional public schools, with moderately negative effects in math and reading in Texas middle schools and in reading in Chicago's middle schools. Achievement gains for charter elementary schools were unclear because most elementary students had no baseline test scores when they entered kindergarten to use as a basis for comparison.
- RAND Education researchers also studied charter schools in Philadelphia (Zimmer et al., 2008) and in the Los Angeles and San Diego Unified School Districts (Zimmer & Buddin, 2005). In Philadelphia, charter school students' average gains were statistically indistinguishable from the gains they experienced while at traditional public schools. In the California study, elementary school results showed that Los Angeles charter students kept pace with traditional public school students in reading and math, but charter students lagged behind their traditional public school peers in San Diego. At the secondary level, Los Angeles charter students scored slightly higher than traditional public school students in reading and slightly lower in math; the test score pattern was reversed in San Diego.

- Bifulco and Ladd (2004) used an individual level panel data set to evaluate the impact of North Carolina charter schools on the End-of-Grade reading and math test performance of students in grades four through eight. The researchers analyzed six years of test score data gathered on 6,000 North Carolina students who had been enrolled in both charter and traditional public schools. Since students went from one type of school to the other, they served as their own controls. Thus, the study's design ensured that findings could not be explained by differences in student backgrounds. The researchers concluded that the academic gains students made in charter schools were considerably smaller than the gains they made in traditional public schools.

Bifulco and Ladd (2006a) replicated their findings in a later study of over 8,700 North Carolina charter school students, confirming that students had lower test scores and lower annual test score gains when they were enrolled in charter schools. The negative effects of attending a charter school were large: the difference in achievement growth between being enrolled in a charter school was larger than the differences between Black and White students and between children of high school dropouts and children of parents with graduate degrees. The negative impact of enrolling in a charter school was also larger than the negative impact of changing schools or making the transition from elementary to middle school.

- Solmon and Goldschmidt (2004) analyzed the Stanford Achievement Test scores of over 60,000 Arizona students attending 873 charter and traditional public schools statewide over a three-year period. The researchers accounted for each student's initial achievement and made adjusted achievement comparisons based on various background factors, such as demographic and personal characteristics, language proficiency, migrant status, and absenteeism. A correlation was found between attendance at a charter school and greater achievement growth in the early grades, even though elementary charter students had lower initial achievement levels. However, this growth slowed at the middle school level, where achievement gains in the middle grades were similar for students at both types of schools. At the high school level, achievement growth was higher for traditional public school students. The authors' explanation for these findings was that elementary charter schools were more likely to focus on academics, while charter schools in the higher grade levels were more likely to serve students with learning or behavioral problems and students seeking vocational training.

Several studies that received a lot of media attention reported that charter schools had a negative impact on students' academic performance. However, in many cases, methodological shortcomings weakened the validity of their conclusions. For example, the American Federation of Teachers (AFT) compared the National Assessment of Educational Progress (NAEP) scores of traditional public school students and students from a nationally representative sample of 167 charter schools (Nelson et al., 2004). The researchers reported that charter school students' NAEP scores were significantly lower than those of traditional public school students, with charter school students performing about one-half year behind traditional public school students. Analyses conducted by subgroup indicated that, compared to their peers in traditional public schools, Black and Hispanic charter school students scored lower in reading and math, but the differences were not significant. The AFT analysis was released directly to the media as soon as it was written, not published in a peer-reviewed document. Its findings were widely criticized by charter school advocates who claimed that the analysis was based on an inadequate sample size (consisting of charter schools enrolling only about one percent of charter school students nationwide), did not account for differences in the student populations served by the two kinds of schools, and did not distinguish between long-standing and newly established charter schools. Most importantly, the study analyzed only a single year of test scores, so it is possible that charter school scores were lower than traditional public school scores because of pre-existing performance differences (Carnoy et al., 2006; Hill et al., 2006; Lubienski & Lubienski, 2006; Hoxby, 2004; Viadero, 2004).

In summary, when considering only studies that used strong methodological designs, results of charter school research are decidedly mixed. The majority of studies have concluded that charter schools do not have a significant impact on student achievement. However, a few studies, such as those conducted on

a sample of KIPP charter schools and in Boston and New York City, have found that charter schools have positive effects on student achievement. One study reported that charter schools in Chicago and in the state of Florida had a positive impact on high school completion and college attendance rates. Several studies reported small positive charter effects at the elementary level, but negative effects at the senior high school level. Most researchers have concluded that there is wide variation in charter school performance, with some charter schools performing at much higher levels than traditional public schools and others performing at significantly lower levels. To date, studies have not been able to determine why some charter schools are more effective than others.

Miron and Applegate (2009) concluded: "On the whole charter school students are performing similar or slightly worse than comparable students in traditional public schools. This finding has not changed over time, nor has it changed as the body of evidence has expanded to include more states and more rigorous studies." Bracey (2005) noted that "given charter advocates' promise to raise achievement, however, one can view 'keeping pace' as reflecting charter school failure."

Do Charter Schools Improve With Time?

Researchers have consistently found that charter schools in their first year of operation have a negative effect on student achievement; however, studies have reached differing conclusions regarding the performance of charter school students in subsequent years (Bodilly & Li, 2009; Carruthers, 2009; Zimmer et al., 2009; Miron et al., 2007; Booker et al., 2004; Hoxby & Rockoff, 2004). The National Alliance for Public Charter Schools (2009a) reviewed the literature and found 11 studies that specifically examined charter schools' achievement gains over time using longitudinally linked, student-level data, while controlling for prior achievement as well as student and school characteristics. Findings were mixed: three studies indicated that older charter schools performed better than newer charter schools; three studies showed that older charter schools performed worse than newer charter schools; two studies found no difference in student performance at newer and older charter schools; and three studies had mixed findings.

The following studies found that charter schools have a positive impact on student achievement after they have been operating for two or more years.

- Researchers from RAND Education (Booker et al., 2009) studied grades 3-8 students from Chicago traditional public schools and charter schools. They found that charter schools in their first year of operation had significant negative effects on student achievement gains in both reading and math. However, in charter schools' second year of operation, the effects were no longer distinguishable from those of traditional public schools. In their third year of operation, charter schools demonstrated small positive math gains, while the estimated reading effect remained similar to that of traditional public schools.
- Hanushek, Kain, and Rivkin (2002) found that grades 4-7 students in first-year Texas charter schools had significantly smaller test score gains in both reading and math than students in traditional public schools, but that these negative effects diminished as charter schools gained more operating experience. For students in charter schools that had been operating for three or more years, there were no significant differences in reading or math achievement gains compared to students attending traditional public schools.
- Sass (2006) analyzed the FCAT NRT scores of a sample of grades 3-10 Florida students over a three-year period. He found that first year charter schools tended to have lower student achievement than the average traditional public school. By their fifth year of operation, however, Florida charter school math performance was equivalent to the performance at traditional public schools and reading scores exceeded those of the average traditional public school. Analysis by grade level indicated that the negative effect of first year charter schools on reading was greatest in the elementary

grades; in math, the pattern was reversed, with differences between charter and traditional public schools greatest at the high school level.

- Solmon, Paark, and Garcia (2001) compared gains on the Stanford Achievement Test (SAT) of Arizona charter and traditional public school students over a three-year period. They reported that in students' first year of attendance, charter schools had a negative effect on reading scores and no effect on math scores. In students' second and third consecutive years of attendance, charter schools had a positive effect on student performance in both reading and math. It should be noted that no measure of the age of the charter schools was included in the analysis. Therefore, there is no way to determine if the observed effects reflected differences in the age of the charter school or the duration of charter school attendance. Bracey (2005) cautioned that the gains made by charter school students in Solmon and colleagues' study were actually quite small. He equated them to a one percentile rank gain in three years, likely corresponding to answering one or two more SAT items correctly. In addition, charter school students still scored below traditional public school students at the end of three years.

The following studies found that the number of years a charter school had been operating had no effect on students' academic performance.

- Bifulco and Ladd (2004) followed five cohorts of North Carolina students from grades 3-8. They found that charter schools had a negative effect on student achievement and that this effect was larger for newly opened charter schools compared to more established charter schools. However, the negative effect remained significant and large even for charter schools that had been operating for five years.

Bifulco and Ladd (2006a) confirmed their findings in a later North Carolina study that separated the effects of the charter school's age and whether or not it was the first year a student attended the school. They found that the negative impact of charter schools was driven largely, but not entirely, by students during their first year in a charter school, regardless of the age of the school. Thus, a much larger negative charter school impact was found the year a student transferred into a charter school than in subsequent years.

- RAND Education researchers (Zimmer et al., 2008) compared the reading and math achievement of students who attended charter and traditional public schools in the School District of Philadelphia. They found that charter school students' achievement gains were not related to how long the charter school had been operating. There were no significant differences between student achievement gains at charter schools that had been in operation for three years or less and student gains at charter schools that had been operating for four or more years.
- The National Center for Education Statistics (2004) released an analysis comparing charter and traditional public school students' scores on the National Assessment of Education Progress. The report stated that the longer a charter school had been open, the lower its average reading and math scores. Contrary to expectations, only the scores of students attending charter schools that had been open one year or less were above the traditional public school average. It should be noted that the analysis was conducted on a school-level, not student-level, basis and did not account for differences in the student populations served by the two types of schools.

Studies Comparing Conversion and Start-Up Charter Schools

Several researchers have studied differences between conversion and start-up charter schools. Start-up charter schools are schools created originally as charter schools. Conversion charter schools are traditional public schools that have converted to charter status. Conversion charter schools make up only about 10 percent of charter schools nationwide (Loveless, 2010). As can be seen from the studies summarized below, research conducted to date suggests there may be little difference in student achievement at conversion versus start-up charter schools, but more studies are needed before any definitive conclusions can be drawn.

- RAND researchers (Zimmer et al., 2003) compared traditional public schools, conversion charter schools, and start-up charter schools in California. At the elementary level, no significant differences were found between students' test scores at the three types of schools. At the secondary level, start-up charter schools had a small advantage over traditional public schools and conversion charter schools in both reading and math.
- Crane and Edwards' (2007) study of 346 California charter schools included a comparison of conversion and start-up charter schools. After controlling for differences in school characteristics and enrollment, results indicated that there were no significant differences between the reading test scores of start-up and conversion charter schools. In math, start-up elementary charter schools scored lower than conversion elementary charter schools, but at the middle and senior high levels, math performance at conversion and start-up charter schools was similar.
- Two studies conducted by researchers from the Brown Center on Education Policy compared two cohorts of traditional public schools before and after they converted to charter schools. In total, test scores at 109 schools were analyzed. For both cohorts of schools, the researchers found that test scores were similar prior to and following conversion. The first cohort of schools had a small advantage as charter schools, but the second cohort's scores declined slightly (Loveless, 2010). It should be noted that the analyses focused on school-level test scores, as opposed to student-level scores, and did not control for selection bias. Therefore, no causal conclusions can be drawn from the study and the analyses serve a primarily descriptive purpose.

Charter Schools and Student Mobility

Nationwide, approximately 5 percent of students have transferred from traditional public schools to charter schools (Lake, 2010). One factor that may influence the decision to transfer to a charter school is the distance between the traditional public school and the charter school. For example, Bifulco and Ladd (2006a) found that 90 percent of student transfers from North Carolina traditional public schools to charter schools occurred when the two schools were less than 10 miles apart.

Two studies compared the rates of student mobility at charter and traditional public schools and reached two different conclusions.

- Zimmer and colleagues (2008) compared student mobility at Philadelphia charter and traditional public schools. They found that both types of schools had a similar percent of students remaining in the same school for two consecutive years (84 percent at traditional public schools versus 88 percent at charter schools).
- Bifulco and Ladd (2006a) found that the average student mobility rate was higher at North Carolina charter schools than at traditional public schools. Although the average student mobility rate was lower at charter schools that had been open for longer periods of time, it still surpassed the mobility rate at traditional public schools. For example, the average mobility rate was 25.4 percent at fifth year charter schools, compared to 13.7 percent at traditional public schools.

Two studies examined the impact of student mobility on student achievement and reported conflicting findings.

- Solmon and colleagues (2001) analyzed Arizona students' Stanford Achievement Test scores and concluded that stability in the charter sector was better than mobility within it, but that mobility within the charter sector was either preferable to or no different than being in one traditional public school for three years. Students remaining within the charter sector had score advantages in both reading and math, although the effect was weaker for math. The researchers concluded that mobility had a negative effect on test score gains, but that mobility within the charter sector was better than stability in a traditional public school.

- Booker and colleagues (2004) examined annual student gains on the reading and math Texas Assessment of Academic Skills. In contrast to Solmon and colleagues' (2001) findings, Booker and colleagues found a significant negative effect when students transitioned from a traditional public school to a charter school. The effect was of much greater magnitude than the effect of moving between traditional public schools. Analyses also found a large positive effect of transition from a charter to a traditional public school. The researchers hypothesized that the performance drop evidenced when students moved to charter schools may have been at least partially due to a different testing environment or emphasis, rather than a true decline in achievement.

Teacher Attrition in Charter Schools

Most researchers have found that teacher attrition is higher in charter schools than in traditional public schools. Summaries of two relevant studies are presented below.

- Miron and Applegate (2007) reviewed survey data from nine evaluations of six states (Connecticut, Delaware, Illinois, Michigan, Ohio, and Pennsylvania) conducted by the Evaluation Center at Western Michigan University between 1997 and 2006. Analysis indicated that the charter school teacher attrition rate averaged 31.3 percent, although rates fluctuated considerably from year to year within each state (from 15 to 40 percent). For comparison purposes, Miron and Applegate noted that attrition rates for traditional public school teachers typically range from 11-14 percent. Analysis of survey data also found that younger teachers who had limited experience and were non-certified or teaching outside of their certification areas were more likely to leave their charter schools. Attrition was found to be highest in the upper grades, especially grades 6, 7, 10, and 11.
- Researchers from Vanderbilt University studied teacher turnover using data from the National Center for Education Statistics' 2003-04 Schools and Staffing Survey and the 2004-05 Teacher Follow-Up Survey (Stuit & Smith, 2009). They found that 25 percent of charter school teachers left their schools during the 2003-04 school year, compared to 14 percent of traditional public school teachers. The odds of a charter school teacher moving to another school were 76 percent greater than those of a traditional public school teacher. Survey responses also indicated that most of the turnover in charter schools was voluntary. Charter school teachers were more likely to report that they left the profession or moved to a new school because they were dissatisfied with the school and its working conditions. Start-up charter schools had significantly higher levels of teacher turnover than conversion charter schools.

Comparison of Teacher Qualifications at Charter and Traditional Public Schools

Most studies have found that charter school teachers have less teaching experience and are less likely to be certified than traditional public school teachers (O'Brien & Dervarics, 2010; National Charter School Research Project, 2007). [The reader should note that Florida law requires teachers employed by or under contract with a charter school to be certified in the same manner as all other public school teachers in Florida.]

- Finnegan and colleagues' (2004) evaluation of charter schools in five states included data from the National Center for Education Statistics' 1999-2000 Schools and Staffing Survey. Survey data indicated that charter school teachers were less likely to have full certification and more likely to have emergency credentials, including temporary, provisional, and probationary certification, than their peers in traditional public schools. Overall, 92 percent of traditional public school teachers had full certification, compared to 79 percent of teachers in charter schools.
- Crane and Edwards' (2007) study of 346 California charter schools found that charter schools had fewer experienced and fully credentialed teachers. At the elementary level, for example, 20 percent of teachers at charter schools had a median of two years of experience or less, while only 9 percent of teachers at traditional public schools had a median of two years of experience or less.

- Burian-Fitzgerald and Harris (2004) analyzed differences between charter and traditional public school teachers using the National Center for Education Statistics' 1999 Schools and Staffing Survey. They reported that charter school teachers in North Carolina were significantly less experienced and less likely to hold a teaching certificate, but more likely to have graduated from a selective college. Approximately 40 percent of charter school teachers had transferred from traditional public schools.
- Jackson and Cowan (2009) compared teachers at traditional public schools before and after the opening of nearby charter schools in North Carolina. They found that teachers moving from traditional public schools to charter schools had below-average qualifications. The biggest differences between teachers moving to charter schools and teachers staying at traditional public schools were in licensure status and experience levels. Teachers moving to charter schools were 21 percent less likely to hold a state license and had an average of almost five fewer years of experience than teachers at the schools from which they transferred.
- Carruthers' (2009) study of North Carolina charter schools found that high rates of inexperienced and uncertified teachers moved to charter schools. Contrary to the findings reported above, however, she found that among certified teachers changing schools, the qualifications of teachers transferring to charter schools were better or no different than the qualifications of teachers transferring to other traditional public schools.

Comparison of Students Attending Charter and Traditional Public Schools

A number of large-scale studies across states and districts have found that charter schools enroll a greater proportion of Black students than traditional public schools (Frankenberg et al., 2010; Miron et al., 2010; Tuttle et al., 2010; United Federation of Teachers, 2010; Abdulkadiroglu et al., 2009; Bodilly & Li, 2009; Hoxby et al., 2009; University of Indianapolis, 2009; Bifulco & Ladd, 2006a; Finnegan et al., 2004; Hoxby & Rockoff, 2004). Several studies have also reported that charter schools tend to serve a lower proportion of Hispanic students (United Federation of Teachers, 2010; Abdulkadiroglu et al., 2009; Hoxby & Rockoff, 2004). Lake (2010) confirmed that minority student enrollment nationwide was higher in charter schools than in traditional public schools (61 percent in charter schools, compared to 47 percent in traditional public schools in the states where charter schools were located). However, when Lake compared charter and traditional public schools within the same district, no differences in minority enrollment were found (61 percent minority enrollment in charter schools versus 60 percent minority enrollment in the school districts where charter schools were located).

Studies examining the proportion of low-income students in charter and traditional public schools have reported mixed findings. Several researchers concluded that charter schools enrolled fewer low-income students than traditional public schools (O'Brien & Dervarics, 2010; United Federation of Teachers, 2010; Abdulkadiroglu et al., 2009; Carnoy et al., 2005), while some studies found that charter schools enrolled more low-income students than traditional public schools (Tuttle et al., 2010; Hoxby et al., 2009; Akey et al., 2008; Finnegan et al., 2004). Lake (2010) reported that nationwide, charter schools enrolled roughly the same proportion of low-income students as traditional public schools in nearby districts (49 percent of charter school students were enrolled in free or reduced price lunch programs, compared to 45 percent of students in traditional public schools).

Most researchers agree that charter schools serve fewer special education students and English language learners than traditional public schools (Center for Urban and Multicultural Education, 2010; Jefferson County Public Schools, 2010; United Federation of Teachers, 2010; Miron et al., 2010; Abdulkadiroglu et al., 2009; Akey et al., 2009; Keating & Labbé-DeBose, 2008; Finnegan et al., 2004). In New York City, for example, 14.2 percent of traditional public school students are classified as English language learners, yet only 3.8 percent of these students attend the City's charter schools. New York City's charter schools also enroll fewer students with special needs (9.5 percent at charter schools versus 16.4 percent at traditional public schools) and anecdotal evidence suggests that charter school students mandated for

special education services have milder disabilities than students in New York City's traditional public schools (United Federation of Teachers, 2010).

Research comparing the achievement levels of students entering charter schools and students at traditional public schools has produced mixed findings. Abdulkadiroglu and colleagues (2009) found that Boston students entered charter schools with higher reading and math scores than students enrolled in traditional Boston public schools. Similarly, Ballou and colleagues (2006) reported that Idaho charter schools attracted students who had been performing at above average levels in traditional public schools. In contrast, the University of Indianapolis (2009) reported that students enrolling in new Indiana charter schools had lower levels of academic achievement than their traditional public school peers. Finally, Zimmer and associates (2009) concluded that students entering charter schools in seven locations across the country had achievement levels that were comparable to those of traditional public school students.

It should be noted that comparing the proportion of particular subgroups served in charter and traditional schools is complicated by the fact that some charter schools target specific populations of students, such as low-performing students, students from low-income families, or potential dropouts, based on the school's educational mission or program design (Miron et al., 2010; Finnegan et al., 2004).

In summary, although findings vary across locations, most research indicates that in comparison to traditional public schools, charter schools serve a higher proportion of Black students and a lower proportion of exceptional education and limited English proficient students. Studies comparing the proportion of low-income students and the achievement levels of students when they enter charter schools have produced less consistent results. Charter and traditional public school populations appear to have greater similarities when enrollment in the two types of schools is compared within the same school district, instead of on a statewide or national basis.

Segregation in Charter Schools

Some studies have concluded that charter schools intensify racial and economic segregation (Center for Urban and Multicultural Education, 2010; Institute on Race and Poverty, 2008; Powers, 2008). Researchers from UCLA's Civil Rights Project (Frankenberg et al., 2010) reported that at the national level, all groups of minority students attending charter schools were likely to experience more segregation in charter schools. They found that 70 percent of Black charter school students attended racially isolated minority charter schools (schools with 90-100 percent of students from under-represented minority backgrounds), compared to only 36 percent of Black students in traditional public schools. Fifty percent of Hispanic charter students attended racially isolated minority schools, compared to 38 percent of Hispanic students in traditional public schools. The researchers concluded: "Ironically, charter schools held an early promise of becoming more integrated than regular public schools because they were not constrained by racially isolating school district boundary lines. This report shows instead that charter schools make up a separate, segregated sector of our already deeply stratified public school system."

Miron and associates (2010) examined charter school segregation using a national database of schools operated by Education Management Organizations (EMOs). They found that charter schools tended to be more racially segregated for both minority and majority students compared to their local school districts. The researchers also found evidence of economic segregation. Most charter schools were divided into either very segregated high-income schools or very segregated low-income schools. Miron and associates concluded that the EMO charter school segregation patterns of 2000-01 were virtually identical to those of 2006-07.

Ni (2007) examined racial diversity in Michigan's charter schools. Statewide results indicated that charter school students were more racially diverse than students in traditional public schools. However, levels of diversity varied substantially among charter schools. Charter schools drawing students from segregated districts showed no additional racial segregation, but charter schools drawing students from racially

diverse districts were more segregated than their local districts. Ni also found that charter schools tended to be more racially segregated when they drew students from their local district, but showed some signs of racial integration when they drew students from outside their local districts.

Several researchers have concluded that students actually self-segregate into charter schools, with minority students choosing to transfer to charter schools with larger populations of students of their own ethnicity than the traditional public schools from which they came (Garcia, 2008; Zimmer et al., 2008; Bifulco & Ladd, 2006b; Booker et al., 2005a; Renzulli & Evans, 2005). Other researchers have pointed out that many charter schools have higher levels of minority student enrollment because they have educational missions or programs designed to meet the needs of these specific populations of students (Finnegan et al., 2004; Fusarelli, 2002).

Impact of Charter School Competition on Traditional Public Schools

No consensus has been reached on whether competition from charter schools has a positive impact on the academic achievement of students remaining in traditional public schools. Some studies have concluded that competition from charter schools has a small positive impact on the academic performance of traditional public school students in at least one subject area. Others, however, have found some evidence that the presence of charter schools has a negative impact on students who remain in traditional public schools.

It should be noted that any observed relationship between charter school competition and increased student achievement in traditional public schools may be the result of changes in peer quality rather than improvements in traditional public schools' effectiveness. For example, if students who transfer to charter schools are less academically advanced than students who remain in traditional public schools, average student achievement levels in traditional public schools will increase. Reduced class sizes in traditional public schools, resulting from decreased enrollment, may also partially explain higher levels of performance in traditional public schools (McEwan, 2009; Winters, 2009).

- Hoxby (2002) examined the effect of charter school competition on students in traditional public schools in Michigan and Arizona. She found that traditional public schools facing charter competition in both states had greater annual achievement gains on reading and math tests. Schools that faced no competition from charter schools had lower achievement gains, but their gains began to increase once charter schools opened nearby. The greatest gains in student achievement occurred once competition from charter schools reached a critical level (defined as a persistent drawing away of traditional public school enrollment of at least six percent of students).
- RAND researchers (Booker et al., 2005b) examined the effect of charter school competition on student achievement in Texas' traditional public schools. The study measured charter school competitiveness based on both the number of charter schools opening and the number of students that charter schools successfully attracted away from public schools. The researchers controlled for schools' demographic and peer group characteristics, as well as student and family background characteristics, and compared students' reading and math test score gains on the Texas Assessment of Academic Skills. Results indicated that charter school competition raised the performance levels of students remaining in traditional public schools, especially when students attended traditional public schools that were underperforming relative to other public schools. Although the estimated effect was relatively small, the authors pointed out that annual increases in students' value-added achievement would eventually lead to substantially higher achievement levels.
- Sass (2006) analyzed the impact of competition from charter schools on a sample of Florida traditional public schools. He found that the presence of one or more charter schools within a 2.5 mile radius was correlated with an increase in traditional public school students' math score gains. Charter schools' impact on traditional public school students' math gains diminished as their distance increased:

the presence of one or more charter schools within a 5 mile radius was associated with a smaller increase in math score gains and the presence of a charter school within 10 miles had no significant impact on math score gains. Sass also found that each additional charter school within 2.5 miles (but not 5 or 10 miles) was associated with larger math score gains at traditional public schools. For reading, the presence of a nearby charter school on traditional public school students' performance was positive, but not significant for any of the three geographic distances. Increases in the number of charter schools operating within 2.5 to 10 miles of traditional public schools had no impact on traditional public school students' reading test scores.

Sass also used the percentage of traditional public school students who transferred to a charter school as a measure of competition. He found that math achievement in traditional public schools was positively correlated with the number of students transferring to charter schools when charter schools were located within 2.5 miles and 10 miles, but not within 5 miles of the school. (No hypothesis for the inconsistency of this finding was provided.) Overall, traditional public school reading scores remained relatively unchanged. Sass concluded that the existence of charter schools did not harm students who remained in traditional public schools and likely produced some net positive impacts on mathematics achievement.

- Bifulco and Ladd (2006a) estimated the effect of charter school competition on student achievement. After controlling for school fixed effects, they found that for reading, charter school competition resulted in small, insignificant student test score gains at traditional public schools located within 2.5 miles of a charter school. Charter schools located between 2.5 and 10 miles had no effect on reading gains at traditional public schools. In math, charter school competition had no effect on the test score gains of students at traditional public schools, regardless of geographic distance.

Bifulco and Ladd (2006a) also examined whether charter school effects were larger when there were multiple charter schools located near a traditional public school. The researchers examined the effects of one, two, or more than two charter schools located within five miles of a traditional public school. Contrary to expectation, they found a negative effect for reading when nearby charter schools were more numerous. In math, the positive effects of charter school competition on test score gains grew as the number of charter schools within five miles increased, but none of the estimates was significant. Bifulco and Ladd (2006a) concluded that the effect of charter school competition on the achievement of North Carolina students in traditional public schools was negligible.

- Researchers from RAND Education (Buddin & Zimmer, 2005) studied the effect of charter school competition on traditional public schools in six California school districts (Los Angeles, San Diego, Fresno, Chula Vista, Napa Valley, and West Covina). The analysis used several measures of charter school competition, including presence of a charter school within 2.5 miles, number of charter schools within 2.5 miles, and the percent of students transferring to charter schools. Overall, charter competition was not found to have a positive impact on the performance of traditional public school students. Only the result for middle school math indicated that the presence of a charter school within 2.5 miles of a traditional public school had a positive effect on student performance. Two significant effects were the opposite of those predicted by charter competition theory: (1) in elementary schools, a nearby charter school actually resulted in lower reading scores at traditional public schools; and (2) in high schools, reading scores at traditional public schools were higher when charter schools were located further away.

Some research suggests that charter schools create pressure on districts as a whole to improve, even if they do not have an effect on the academic achievement of students at nearby individual schools.

- Teske, Buckley, and Clark (2000) studied five school districts (District of Columbia Public Schools, two districts in Massachusetts, and two districts in New Jersey) to determine if charter schools influenced traditional public schools. Interviews with district superintendents, school board leaders, principals,

charter school heads, teachers' union leaders, and other district leaders found that competition was not perceived to have led to major changes in district-wide operations. However, many traditional public school superintendents and principals reported that they reacted to charter school competition by trying to create more appealing and effective schools and by adopting new programs when they learned that parents wanted those programs. Teske and colleagues found that charter schools and traditional public schools differed in the pattern of innovations they adopted. Charter schools tended to adopt many innovations at one time and integrate them into the culture of their schools, whereas traditional public schools were more likely to adopt single reforms, such as extended day programs, without changing their mission, style of management, or standard operating procedures.

- Researchers from RAND Education (Buddin & Zimmer, 2005) surveyed all California charter school principals and a matched sample of traditional public school principals. Respondents indicated that they did not think charter schools had much effect on overall traditional public schools' operational practices. However, a substantial portion of traditional public school principals (between 19 and 25 percent) believed that charter schools had an effect on certain individual operational practices, such as revising instructional strategies, restructuring teacher compensation, and modifying professional development opportunities.
- Jackson and Cowan (2009) compared teachers at North Carolina traditional public schools before and after charter schools opened nearby. They found that schools facing increased charter school competition did not experience any increased teacher turnover. In addition, competition from charter schools did not lead to a decline in the quality of teachers at traditional public schools. However, the researchers did find that competition from charter schools had an impact on teacher salaries at traditional public schools. Specifically, each additional charter school in the district was associated with a 0.156 percent increase in teacher base pay. For example, if the number of charter schools in a district increased from 0 to 10, teacher salaries in that district were 1.56 percent higher.

On a Local Note

Charter schools have operated in Florida since the 1996-97 school year, when five schools opened following passage of the state's charter law in 1996. During the 2009-10 school year, there were 423 charter schools in Florida, serving an estimated 128,359 students, or approximately five percent of the state's public school students. State law places no limits on the number of charter schools allowed to operate within the state and no caps on charter school student enrollment (National Alliance for Public Charter Schools, 2009).

The charter school movement in Florida has grown rapidly. Researchers from UCLA's Civil Rights Project (Frankenberg et al., 2010) reported that student enrollment in Florida charter schools increased by 266 percent over seven years (from 26,893 students in 2000-01 to 98,519 students in 2007-08). Over that same time period, the number of Florida's charter schools increased by 110 percent (from 145 to 305).

In 2008-09, Florida ranked second across all 41 charter school states in its share of the national charter school population, enrolling eight percent of all U.S. charter school students (California ranked first with 20 percent). Nine percent of the nation's charter schools are located in Florida. From 2004 to 2009, Florida and California opened 24 percent of the country's charter schools (Lake, 2010).

Florida law provides that charter schools must be open to any student residing within the school district; however, charter schools are allowed to target students within specific age groups or grade levels or students considered at-risk of dropping out or failing. Enrollment preference may be given to siblings of current charter school students or children of the charter school governing board members or employees. Charter schools must admit students via a random selection process when the number of applicants exceeds the capacity of the program, class, grade level, or building (Florida Department of Education, n.d.).

Florida law allows local school boards, state universities (for charter lab schools only), and community college district boards of trustees (for charter technical career centers only) to serve as authorizers. In practice, however, almost all of the state's charter schools are authorized by local school boards. The length of time for which charters are granted varies but most are granted for three to five years. The authorizing agency may close a charter school if it fails to meet the student performance outcomes agreed to in the charter, fails to meet generally accepted standards of fiscal management, violates the law, or shows other good cause. Charter schools are evaluated and assigned a school grade using the same state standards and criteria as traditional public schools. Charter school students are required to take the FCAT (National Alliance for Public Charter Schools, 2009; Florida Department of Education, n.d.).

Charter schools are exempt from participation in any district collective bargaining agreements; however, the law requires that teachers employed by or under contract with a charter school be certified in the same manner as all other public school teachers in Florida (Florida Department of Education, n.d.).

As of September 2010, 92 charter schools operated in Miami-Dade County (Table 1). All of the county's charter schools are under the authority of The School Board of Miami-Dade County, Florida. The county's charter schools are typically operated by nonprofit corporations or municipalities, but may be managed by for-profit educational management corporations. Private schools, parochial schools, and home education programs are not eligible for charter status (Miami-Dade County Public Schools, 2010).

Table 1. Miami-Dade County Charter Schools, 2010-11

School Type	Number of Schools
Elementary Schools	23
K-8 Centers	20
Middle Schools	19
Combination Schools*	7
Senior High Schools	23
Total Miami-Dade County Charter Schools	92

* Combination schools are schools that combine elementary, middle, and/or senior high grades, such as K-9 or 6-12.

Miami-Dade County is home to 22 percent of Florida's charter schools, enrolling 27 percent of the state's charter school students. Researchers from The Civil Rights Project at UCLA identified seven metropolitan areas within the state of Florida that had at least ten charter schools during the 2007-08 school year. They reported that the Miami-Fort Lauderdale-Pompano Beach metropolitan area had the most charter schools of any metropolitan area in Florida (130 schools) and enrolled 44 percent of the state's charter school students (Frankenberg et al., 2010).

According to Assessment, Research, and Data Analysis figures, Miami-Dade County had 35,138 students enrolled in charter schools as of September 2010, or 10.1 percent of the District's students. Table 2 contains a breakdown of charter school students by grade level.

Miami-Dade County charter schools serve a higher percentage of public school students than do charter schools nationwide or throughout the state of Florida. While Miami-Dade County charter schools enrolled over 10 percent of the District's students in 2009-10, Florida charter schools statewide enrolled approximately five percent of public school students. The most recent data available (2008-09) indicate that charter schools nationwide enrolled 2.9 percent of all public school students (Lake, 2010).

Table 2. Number of Students Enrolled in Miami-Dade County Charter Schools, 2010-11

Grade Level	Number of Charter School Students
Pre-K	98
Kindergarten	3,082
Grade 1	2,979
Grade 2	2,709
Grade 3	2,596
Grade 4	2,352
Grade 5	2,267
Grade 6	4,084
Grade 7	3,890
Grade 8	3,286
Grade 9	2,393
Grade 10	2,149
Grade 11	1,618
Grade 12	1,635
Total	35,138

A report published by Jefferson County Public Schools (2010) stated that accountability in Florida's charter schools is a continuing problem. An *Orlando Sentinel* investigation found that in 2007, 43 percent of the state's charter schools went ungraded. In comparison, about 20 percent of traditional public schools were ungraded (Shanklin & Deslatte, 2008).

In August 2010, School Performance Grades were released only for elementary, K-8, and middle schools. The state will release high school performance grades that include alternate measures of student achievement in addition to the FCAT in late fall 2010. Of the 60 elementary, K-8, and middle charter schools operating in Miami-Dade County as of December 2009, 47 schools (78 percent) received a 2009-10 School Performance Grade from the state. Reasons charter schools are not assigned performance grades include: insufficient number of standard curriculum students (less than 30) with valid FCAT scores in both the current and previous year who are enrolled in the same school for the October and February FTE periods; a grade configuration that does not include grade levels in which the FCAT is administered (i.e., pre-kindergarten, kindergarten, and grades 1, 2, 11, and 12); or they are an alternative charter school that chooses to receive a School Improvement Rating instead of a School Performance Grade. Table 3 provides the number and percent of Miami-Dade County charter schools receiving each performance grade.

Table 3. Grades Assigned to Miami-Dade County Charter Schools, 2009-10

School Performance Grade	Number of Miami-Dade County Charter Schools	Percent of Miami-Dade County Charter Schools
A	28	60%
B	5	11%
C	5	11%
D	4	9%
F	5	11%
No Grade Assigned	3	22%

An analysis conducted on schools that received 2008-09 School Performance Grades found that the average charter school made greater reading and mathematics learning gains than the average non-charter school, with the exception of mathematics gains at the elementary level (Table 4). Differences between charter and non-charter school performance ranged from two to nine percent. The largest performance discrepancy was found in reading between senior high charter and non-charter schools (nine percent).

Table 4. Comparison of Charter and Non-Charter School Average Learning Gains, 2008-09

School Type		Average Percent Making Reading Gains	Average Percent Making Mathematics Gains
Elementary	Charter Schools	71%	60%
	Non-Charter Schools	69%	66%
	Difference	2%	6%
Middle	Charter Schools	69%	69%
	Non-Charter Schools	64%	66%
	Difference	5%	3%
Senior	Charter Schools	61%	82%
	Non-Charter Schools	52%	75%
	Difference	9%	7%
Combination*	Charter Schools	72%	73%
	Non-Charter Schools	68%	68%
	Difference	4%	5%
Total	Charter Schools	68%	70%
	Non-Charter Schools	66%	67%
	Difference	2%	3%

* Combination schools are schools that combine elementary, middle, and/or senior high grades, such as K-9 or 6-12.

Summary

During the 2009-10 school year, there were more than 5,000 charter schools in the United States, enrolling over 1.5 million students, or three percent of the nation's public school students. Results of studies conducted on charter school student achievement are mixed. Most studies have concluded that charter schools produce achievement gains that are about the same or lower than those found in traditional public schools, although a few studies have reported that charter schools have a small positive effect on student achievement. These inconsistent findings have led some researchers to conclude that the rapid growth of the charter school movement has significantly outpaced the evidence supporting its impact on student achievement. Researchers have confirmed that there is wide variation in academic quality among charter schools, with some charter school students performing at much higher levels than traditional public school students and others performing at significantly lower levels. Because there is such disparity from state to state in charter schools' mission, funding, student populations, size, grade level coverage, and independence from regulations and teacher contracts, there may never be a single definitive study that determines if charter or traditional public schools provide students with better learning opportunities.

Studies have consistently found that charter schools in their first year of operation have a negative effect on student achievement; however, no consensus has been reached regarding the performance of students attending older, more established charter schools. Research comparing conversion and start-up charter schools suggests there may be little difference in student achievement at the two types of schools, but more studies are needed before definitive conclusions can be drawn.

Researchers have not determined if charter schools have higher rates of student mobility than traditional public schools, although higher rates of teacher attrition have consistently been reported at charter schools. In addition, studies have found that charter school teachers are less likely to be certified and tend to have less teaching experience than teachers at traditional public schools.

Most research indicates that in comparison to traditional public schools, charter schools serve a higher proportion of Black students and a lower proportion of exceptional education and limited English proficient students. Studies comparing the proportion of low-income and low-achieving students in charter and traditional public schools have produced inconsistent results. Most researchers agree, however, that charter schools are more racially and economically segregated than traditional public schools.

The impact of charter schools on traditional public schools does not appear to be as significant as had originally been anticipated. Some studies suggest that charter school competition has a small positive impact on the academic performance of traditional public school students, although a few studies have actually found that nearby charter schools have a negative impact on students who remain in traditional public schools.

The Center for Urban and Multicultural Education at Indiana University (2010) offered the following concluding comment:

“The substantial challenges charters encounter when teaching diverse learners raise questions about how and the extent to which they serve high-cost student populations (ELL/LEP students and students with disabilities); the impact on student academic achievement and development when a significant portion of their teachers are under-certified, underpaid, and have high rates of attrition; and the overall effects of schools with high concentrations of poverty and racial and social isolation. When coupled with inconclusive evidence on student achievement in charter schools, these issues raise more questions about the long-term benefits of charter schools, their economic impact on traditional public schools, and the overall direction of the public education system.”

During the 2009-10 school year, there were 423 charter schools operating in Florida, serving an estimated 128,359 students, or approximately five percent of the state’s public school students. The charter movement in Florida has grown rapidly, with enrollment in the state’s charter schools increasing by 266 percent from 2000-01 to 2007-08. Twenty-two percent of Florida’s charter schools are located in Miami-Dade County. In 2009-10, Miami-Dade County’s 92 charter schools enrolled 35,138 students. Miami-Dade County charter schools serve a higher percentage of public school students than do charter schools nationwide or throughout the state of Florida. While over ten percent of the District’s students attend charter schools, Florida charter schools statewide enroll approximately five percent of public school students and charter schools nationwide enroll approximately three percent of all public school students.

In August 2010, School Performance Grades were released only for elementary, K-8, and middle schools. The state will release high school performance grades that include alternate measures of

student achievement in addition to the FCAT in late fall 2010. The majority (60 percent) of Miami-Dade County elementary, K-8, and middle charter schools received a School Performance Grade of “A” in 2009-10, but 22 percent of charter schools did not receive a School Performance Grade from the state. Until the Florida Department of Education releases School Performance Grades for high schools, it will be difficult to fully assess the overall performance of the county’s charter schools. An analysis conducted on schools that received School Performance Grades in 2009 found that the average charter school made greater reading and mathematics learning gains than the average non-charter school, with the exception of mathematics gains at the elementary level.

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Literature Review
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