Predictors of Student Mobility and Retention in Indiana Charter Schools: 2003 to 2006

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Executive Summary
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The Office of Charter School Research (OCSR) located in Teachers College at Ball State University was created to study Indiana's Charter Schools (ICS). Student mobility is a critical issue for charter schools. Mobility compromises effective student learning, and it raises important concerns with respect to educational accountability. For example, student turnover has been associated with poor academic performance for students in public schools (Mao, Whitsett, & Mellor, 1997). This study was designed to investigate mobility and retention in Indiana's charter schools.

- Eleven of the operating schools in the ICS system were examined in this study. Data were collected from 647 students in grades 2 through 6 who were enrolled in 1 of the 11 schools between 2003 and 2006. The schools are the original set chartered in 2002 and were selected due to the maturity in the system.
- Of the original 647 students included in the study, 350 (54.1%) left the ICS system without completing the highest grade in that charter school during the period under study.
- The highest rate of student attrition occurred during the first year of attendance in ICS, when more than half of the 350 students left. A total of 68 students (10.5%) left before completing their first year in a charter school, and an additional 117 (18.1%) left after one full year.
- Non-White students were more than twice as likely to leave ICS as their White counterparts.
- Students eligible for Title 1 funding were twice as likely to leave as those who were not eligible.
- Students with higher achievement test scores in all three academic areas were more likely to leave than lower achieving students.
- Students in schools where teachers had more experience were less likely to leave ICS than those with less experienced teachers.

The results show that ICS are marked by high levels of attrition, mostly during the first year. Given the relationship between attrition and lower achievement, finding ways to reduce the high levels of attrition rates in ICS is an important goal for the future success of the students in Indiana's charter schools.

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Introduction

Student mobility is a critical issue for charter schools. Mobility compromises effective student learning, and it raises important concerns with respect to educational accountability. It is difficult to hold schools accountable for learning outcomes, for example, when student mobility decreases their exposure to the educational "treatment." Although mobility and retention are issues for any school, they may be particularly acute for public schools of choice, such as charter schools. Indeed, we know relatively little about the factors that predict mobility in charter school membership. To this end the present study was designed to investigate mobility and retention in all of the Indiana charter schools.

Student turnover has been associated with poor academic performance for students in public schools. Mao, Whitsett, and Mellor (1997) found that students who changed schools within an academic year had lower scores on the state achievement test in Texas. Osher, Morrison, and Bailey (2003) focused on the impact of student mobility on the academic performance and dropout rates of students in grades 9-12. They found that students who changed schools were more likely to have academic problems and eventually leave school without obtaining a diploma. These studies support other findings that associate student mobility with academic and social problems (Eckenrode, Rowe, Laird, & Brathwaite, 1995; FowlerFinn, 2001; Mehana, 1997; Reynolds, 2000; Rumberger & Larson, 1998). Reynolds and Robertson (2003) found that high student mobility reduced the effectiveness of a program designed to help at-risk children avoid maltreatment at the hands of caregivers. Beyond its impact on the individual who changes schools, high student turnover rates in a school have been shown to have a deleterious impact on the academic performance of those who remain in the school (Hanushek, Kain, & Rivkin, 2003).

The study of student mobility effects is not a prominent focus in extant research on charter schools. Indeed, Hassel and Terrell (2006), in their recent survey of 58 comparative analyses of charter school achievement, lamented the lack of research on outcomes other than student achievement, such as mobility, persistence and attendance rates. Often student mobility is not studied directly but is treated instead as a control variable in analyses that focus solely on achievement. In a recent analysis of California charter schools, for example, student mobility along with 13 other factors were combined into a composite "School Characteristics Control" variable (Crane, Edwards, et al., 2007).

Yet, a number of studies implicate student mobility in assessments of charter school effectiveness. For example, there is evidence that transition into a charter school is associated with achievement decrements (Booker, Gilpatric, Gronberg, & Jansen, 2004). In a report comparing student achievement in charter and public schools in North Carolina, Bifulco, and Ladd (2005) found that a large reason for the relative poor showing of the charter schools was the much higher rates of student mobility. They report that transferring to a charter school is more disruptive than transferring to a regular public school, and that achievement decrements noted in the first year are not offset by gains in subsequent years. As they note, leaving charter schools is relatively easier than leaving regular public schools, which may be the main reason that student turnover rates in the state's charters was twice that of the public schools. High turnover rates in charter schools was also documented in a study sponsored by the National Bureau of Economic Research (Hanushek, Kain, Rivkin, & Branch, 2005). Here it was found that charter schools in Texas had much higher student turnover rates than did regular public schools. Moreover, moving between schools disrupts academic performance, with students frequently losing ground in their first year in a charter school (Gronberg & Jansen, 2001). Indeed, high rates of student mobility in the California charter school system was associated with lower academic achievement, as it was in regular public schools (Slovacek et al., 2002). Finally, Hanuschek et al. showed that the decision to exit a charter school is more sensitive to educational quality than is the decision to exit a regular public school,

but mostly in higher income charter schools. The cost to parents of switching schools was particularly high for low income and minority students, who were less sensitive to school quality.

Given the clear negative impact of student turnover on academic performance and other markers of school success, as well as the relatively higher rates of such turnover found in many charter schools across the country, it is important that policy makers and others have some sense as to what factors most impact the likelihood of a student leaving a charter school. Very little research has been done in this regard. As noted above, it has been shown that minority and poor students are more likely to attend schools with higher student turnover rates. However, it is not known to what extent these, or other, factors impact student mobility in general, and for charter schools in particular.

In the present study we examine these questions using data from extant Indiana charter schools, which have been in existence since spring, 2003. In particular we examined the impact of student-level and school-level variables on student turnover in the Indiana Charter School (ICS) system, using survival analysis of students tracked longitudinally over the course of charter school enrollment.

Methods

Eleven of the operating schools in the ICS system were examined in this study. Data were collected from 647 students in Grades 2 through 6 who were enrolled in 1 of the 11 schools between 2003 and 2006. These schools are the original set chartered during the fall of 2002, and were selected for this study because of their relative maturity in the system. Other schools that were chartered in later years were not included because it was believed they did not have sufficient time to establish their programs and curricula. The variables included in the data analysis were gender and race (Caucasian/non-Caucasian), free/reduced lunch status (yes/no), special education status (yes/no), participation in Title I funded programs (yes/no), and scores on Northwest Evaluation Association (NWEA) Measures of Academic Progress (MAP) language, reading, and mathematics achievement tests taken during the fall and spring of each year a student is enrolled in an ICS. Performance is expressed using a standardized metric based upon Item Response Theory, called the "Rasch Unit" score or RIT score, which range from approximately 150 to 300. At the school level the variables measured were student-teacher ratio, average years of teacher experience, average daily school attendance rate, and percent of students passing the state basic skills test.

The outcome variable of interest was time enrolled in an ICS before leaving or, for those students remaining, the time enrolled before data collection ended. School enrollment was assessed twice a year, and time was then coded as the number of these enrollment periods that students attended an ICS. The study period was from Fall 2003 to Spring 2006.

Data analysis was conducted using a multilevel Cox proportional hazards model. The Cox model allows for the modeling of censored time[1] until the event of interest, in this case leaving the ICS system, using both categorical and continuous predictor variables. The results of this analysis are expressed in terms of the strength and nature of the relationship between the independent variables and the time until a student leaves an ICS (or is censored) in the form of a regression-like coefficient. Because the explanatory variables were collected at both the school and student level, as described above, a multilevel model was appropriate to ensure that the standard error calculations accurately accounted for clustering of students within their respective schools.

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[1]*Censoring* refers to the case where a student remained enrolled in an ICS at the end of the data collection period. *Censored time* is the time elapsed from enrollment to the end of data collection.

Results

Of the 647 students included in the study, 350 (54.1%) left the ICS system without completing the highest grade in that charter school during the period under study. The highest rate of student attrition occurred during the first year of attendance in an ICS, when more than half of the 350 students left. Specifically, a total of 68 individuals (10.5%) left before completing their first year in a charter school, and an additional 117 (18.1%) left after one full year. Complete attrition results appear in Figure 1.

Figure 1
Indiana Charter School Attrition by Year
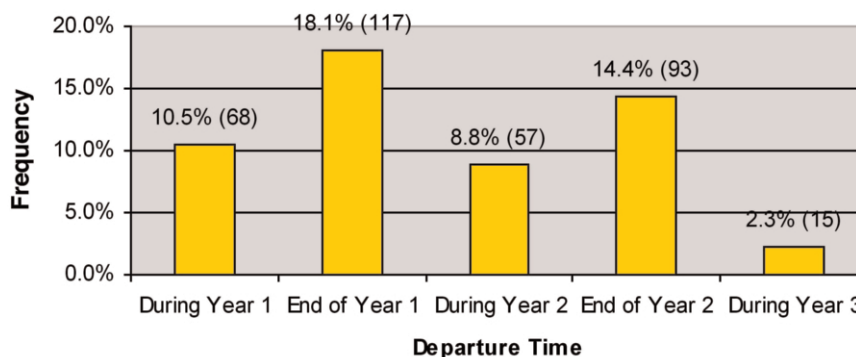
As described above, in order to identify pertinent factors for predicting student attrition in the ICS system, the hierarchical Cox proportional hazards model was used. The results of this analysis indicated that the race of the student; participation in Title 1; scores on math, language, and reading achievement tests; and teacher experience were all significantly related to the likelihood that a student would leave an ICS. Specifically, non-White students were more than twice as likely to leave an ICS as were their White counterparts, and those eligible for Title 1 funding were twice as likely to leave as those who were not eligible. In addition, individuals with higher achievement test scores (in all three subject areas) were more likely to leave an ICS than were those with lower scores. Finally, students in schools where the teachers had more experience, on average, were less likely to leave than were those in schools with less experienced teachers.

Conclusion

Research has demonstrated that student mobility has a negative impact on a host of academic outcomes for those who switch schools, including achievement test scores and graduation rates (Mao, Whitsett, & Mellor, 1997). Furthermore, it has been shown that individuals who remain in schools with higher student turnover rates suffer academic deficits despite the fact that they do not move (Hanushek, Kain, & Rivkin, 2003). Given that charter schools in various locales have demonstrated higher student turnover rates than traditional public schools, it is important for policy makers to have some sense as to what factors at the individual and school levels might reliably predict a student's leaving. Armed with such knowledge, charter school leaders can work to mitigate situations that might lead to greater student mobility and in turn improve the educational enterprise in their schools.

Our results show that Indiana charter schools are marked by high attrition, mostly in the student's first year. Minority students, students who are eligible for Title 1 services, students with higher achievement scores, and students at schools with less experienced teachers are at greater risk of leaving an ICS. This pattern of predictive factors suggests

that school-leaving decisions are complex. For example, the fact that students with higher initial achievement scores were more likely to leave a charter might suggest a greater sensitivity to educational quality as noted in previous research (e.g., Hanushek et al., 2005). Although Hanushek et al. reported that sensitivity to school quality was not particularly strong in minority and low-income families, our data shows that minority status and eligibility for Title I services also predicted school-leaving in Indiana charter schools. Hence, academically able, minority, and Title 1-eligible students may leave a charter for somewhat different reasons. The inexperience of teachers may signal poorer educational quality for able students. In addition, the relative lack of Title 1 programs (or experienced teachers in Title-1 programs) may trigger school-leaving in other students. Hence, perception of educational quality and availability of Title-1 programs may point to special vulnerabilities that confront Indiana charter schools.

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