Teacher Turnover in Charter Schools

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Abstract

This study examines how teacher turnover differs between charter and traditional public schools and seeks to identify factors that explain these differences. Using data from the National Center for Education Statistics' (NCES) 2003-2004 Schools and Staffing Survey (SASS) and Teacher Follow-Up Survey (TFS), we found that 25% of charter school teachers turned over during the 2003-2004 school year, compared to 14% of traditional public school teachers. Fourteen percent of charter school teachers left the profession outright and 11% moved to a different school, while 7% of traditional public school teachers left the profession and 7% moved schools. Using multi-nomial logistic regression, we found the odds of a charter school teacher leaving the profession versus staying in the same school are 132% greater than those of a traditional public school teacher. The odds of a charter school teacher moving schools are 76% greater. Our analysis confirms that much of the explanation of this "turnover gap" lies in differences in the types of teachers that charter schools and traditional public schools hire. The data lend minimal support to the claim that turnover is higher in charter schools because they are leveraging their flexibility in personnel policies to get rid of underperforming teachers. Rather, we found most of the turnover in charter schools is voluntary and dysfunctional as compared to that of traditional public schools.

Keywords: Charter schools, teacher turnover, school organization

The rapid growth in charter schools over the past two decades has occurred despite inconclusive evidence that they are academically superior to their traditional public school counterparts. Five recent literature reviews all reached the same conclusion: the impact of charter schools on student achievement is "mixed" (Miron & Nelson, 2001; Carnoy, Jacobsen, Mishel, & Rothstein, 2005; Vanourek, 2005; Hassel & Terrell, 2006; Hill, Angel, & Christensen, 2006). The heterogeneous findings from five rigorous studies released in the last four years underscore this point: two studies found positive effects (Solmon & Goldschmidt, 2004; Hanushek et al., 2005); two found mixed effects (Sass, 2006; Booker et al, 2004); and one found negative effects (Bifulco & Ladd, 2005).

In light of these mixed findings, a number of researchers have called for building a better understanding of the organizational factors that mediate or moderate the effectiveness of charter schools (Betts & Loveless, 2005; Gill, Timpane, & Brewer, 2002; Zimmer et al., 2003). Recently, a panel of experts emphasized the importance of future research to open up the "black box" of charter schools. They underscored the importance of understanding differences in curricula, pedagogy, teacher quality, and remediation policies and how these differences explain variation in student outcomes within charter schools and between charter schools and their traditional public school counterparts (Betts & Hill, 2006).

This study aims to contribute to our understanding of the organizational conditions of charter schools by examining (a) how teacher turnover differs between charter and traditional public schools and (b) the school and teacher factors that explain these differences.

Our research is guided by five questions:

(1) How does the rate of teacher turnover differ between charter schools and traditional public schools?

(2) How do teacher turnover rates vary within the charter school universe and which types of charter schools have higher/lower turnover rates?

(3) To what extent are the differences in turnover rates between charter schools and traditional public schools explained by differences in teacher characteristics?

(4) To what extent are the differences in turnover rates between charter schools and traditional public schools explained by differences in organizational conditions and contextual factors?

(5) What reasons do charter school teachers give for leaving the profession or moving schools and how do these reasons differ from those given by traditional public school teachers?

The Costs of Teacher Turnover

In this study, turnover is defined as both attrition from the profession and mobility between schools. Ingersoll (2002) estimated that in 1997-1998 approximately 13% of teachers turned over, with roughly half leaving the profession outright ("leavers") and half switching schools ("movers"). We find similar estimates in this study using data from 2003-2004.

There is disagreement about whether or not the turnover rate in teaching is high in relation to other professions (see for example, Ingersoll, 2001; Ingersoll, 2003; Henke,

Zahn, & Carroll, 2001; Harris & Adams, 2007). Regardless of whether or not turnover is high in relation to other professions, there are a number of reasons to support the argument that the nature of turnover in most schools is detrimental to school quality.

For one, there is clear evidence that teachers with strong academic backgrounds are most inclined to leave the profession (Manski, 1987; Murnane, Singer, Willett, 1991; Monk, 1994; Podgursky, 2004; Henke, 2001; Lankford, Loeb, and Wyckoff, 2002). Guarino, Santibanez, and Daley (2006) reviewed the empirical literature on teacher retention and concluded: "The preponderance of evidence suggests that teachers with higher measured ability have a higher probability of leaving…" (p. 186).

A second reason is that attrition is highest among teachers that are new to the profession. Past research found teachers make important gains in effectiveness in their first three years and smaller gains over the next few years (McCaffrey, Koretz, Lockwood, and Hamilton, 2003; Hanushek, Kain, & Rivkin, 2005). Given that almost 50% of teachers leave the profession within their first five years (Ingersoll & Smith, 2003), many teachers are leaving the classroom before they have developed into optimally effective practitioners. Moreover, exiting new teachers are often replaced by similarly inexperienced teachers and consequently students in schools with high turnover may rarely be exposed to experienced teachers.

Third, turnover affects many of the organizational conditions important to effective schooling, such as instructional cohesion and staff trust. Effective schools hold shared beliefs in similar instructional goals and practices (Fuller & Izu, 1986; Bryk & Driscoll, 1988). Schools with high turnover are challenged to develop a shared commitment towards the same goals, pedagogy, and curriculum. The constant churning

of teaching staff makes it difficult to collaborate, develop standard norms of practice, and maintain progress towards common goals. This can lead to fragmented instructional programs and professional development plans that must be adapted each year to meet the needs of a teaching staff in constant flux (Guin, 2004). High turnover also makes it difficult for teachers to build relational trust, which is critical towards productive collaboration in schools (Bryk & Schneider, 2002; Guin, 2004).

In addition to the costs of turnover to school quality, there are also important pecuniary costs associated with teacher attrition and mobility. These costs include money spent to exit the teacher from the school, recruit and hire a new teacher and/or fill the vacancy with a substitute until a new teacher can be hired, and train the new teacher. In some districts, costs include signing bonuses and school material stipends granted to new teachers. Nationally, it is estimated that replacing public school teachers who left the profession costs approximately $2.2 billion; adding the costs of replacing teachers who transfer schools raises the estimate to $4.9 billion (AEE, 2005). Some estimate these costs to total about 25% of the teacher's salary and benefits.

A Conceptual Model of Teacher Turnover

Extant research suggests that charter schools have turnover levels that are higher than traditional public schools and comparable to private schools (Podgursky and Ballou, 2001; Smith & Ingersoll, 2004). Miron and Applegate (2007) reported that the range of turnover in charter schools varies from 15 to 40%, with a range from 20% to 25% most common. This study aims to establish the difference in turnover rates between charter

schools and traditional public schools and identify some of the factors that explain this difference.

Figure 1 presents the conceptual model that guides our empirical strategy. In this model, we are ultimately interested in the relationship between school sector (i.e., charter school and traditional public school) and teacher turnover (attrition and mobility). We hypothesize that the difference in turnover between sectors ("the turnover gap") is partly due to systematic differences in the characteristics of charter and traditional public school teachers. We also hypothesize that the turnover gap is partly due to differences in the organizational conditions of charter schools and traditional public schools, which may stem from charter schools' autonomy from many of the rules and regulations that govern traditional public schools. Additionally, we expect turnover to be affected by the context of the school, which we conceive of as all the factors that are outside the control of school policy and administration, including student characteristics, school characteristics, and labor market conditions.

[INSERT FIGURE 1 ABOUT HERE]

Charter School Type

Of interest to this analysis are the "within-charter" differences in teacher turnover rates. We hypothesize that turnover rates vary substantially within the charter school sector and that some types of charter schools may have more or less turnover than others, depending on certain characteristics of the school. We posit that turnover rates will vary depending on: (1) whether or not the school has contracted with a for-profit education

management organization (EMO), (2) whether it was converted from a traditional public school or a start-up charter, (3) whether it is a new school in its first three years of operation or an established school, (4) and whether it has been authorized by a public school district or by a non-district entity such as a university, state board of education, or a mayor's office.

EMOs vs. non-EMO charter schools. We predict that charter schools contracted with for-profit education management organizations (EMOs) will experience more teacher turnover than those in non-EMO charter schools. Past studies found power tends to shift from the school to the central office when an EMO is contracted to run the school (Brown et al., 2004; Bulkley, 2005). The school-level staff in EMO charters tends to have significantly less decision-making authority in domains such as human resources, curriculum, instruction, assessment, and professional development. Ingersoll (2001) and Smith and Rowley (2005) both found that a decrease in teacher decision-making authority associates with an increase in the odds of turnover.

Turnover in EMO-managed charters may also be higher because of differences in teacher compensation. Ascher, Phenix, and Luekens (2009) used the 1999-2000 SASS and found that teachers in EMO charter schools have lower salaries than other charter school teachers after controlling for school urbanicity and region.

Conversion vs. start-up charters. The origins of the charter school might also influence turnover. Charter schools that were converted from traditional public schools will likely retain many of the school districts' policies, practices, and personnel (Buddin & Zimmer, 2005). If teachers in conversion charter schools maintain their tenure status, position on the salary schedule, and teaching assignment, turnover rates will likely

remain stable. Charter schools that are started from scratch will probably behave differently. "Start-up" charters often have difficulty securing enough start-up capital to secure adequate facilities and instructional resources (Krop & Zimmer, 2005). Financial constraints will likely impact working conditions and salaries and cause teachers to look elsewhere.

On the other hand, start-up charters may also have an advantage in that teachers who are a part of the founding team may feel particularly attached to the school because they were involved in the initial school planning and likely had input into the school's mission and instructional design. This may lead to greater commitment and lower turnover rates.

New vs. established charter schools. Teachers in charter schools that are in their first few years of operation may also exhibit different turnover behavior, however, there is little basis for predicting if the turnover levels will be lower or higher for new charter schools. Teachers in new charter schools may be involved in a great deal of collaborative activity that supports a strong teacher community, which in turn may reduce turnover rates (Cannata, 2007). However, if teachers came on-board after the new school planning process was complete, they may feel disconnected from the school's mission and not have the level of commitment needed to endure the stress and uncertainties of the early years of the school.

Teacher Characteristics

Our framework postulates that some of the gap in turnover between charter and traditional public schools is driven by systemic differences in the types of teachers that charter schools and traditional public schools hire. Critics argue that charter schools are

more likely to attract young and inexperienced teachers. If this is the case, one can expect turnover to be higher given past research indicating that young teachers are at greater risk of leaving. Ingersoll (2001) estimated that the relative odds of leaving the profession are 171 percent higher for young teachers (less than 30 years old) than for middle-aged teachers.

Ingersoll (2001) also found that special education teachers are more likely to depart than other teachers. This finding has implications for charter school turnover given past research suggests that some types of charter schools serve fewer special education students and/or have difficulty amassing the human capacity needed to meet the needs of disabled children (Lacireno-Paquet et al., 2002; Rhim & McLaughlin, 2001).

Charter schools may hire more uncertified teachers because many state charter school laws give them the flexibility to do so and uncertified beginning teachers tend to turnover at a higher rate than certified teachers (Smith 2006). In addition, schools with more uncertified teachers will likely experience higher turnover levels because the federal No Child Left Behind (NCLB) Act mandates all public schools have a "highly qualified" teacher in every classroom. To be "highly qualified" a teacher must have a full state license or certificate. Therefore, it is possible that many non-certified teachers were involuntarily leaving the profession in 2004 as charter schools worked to comply with NCLB.

Another teacher characteristic that is of interest in this analysis is whether the teacher attended a selective college. We predict that teachers who attended selective colleges will be at greater risk of leaving the profession because they may have better career options outside of teaching. Similarly, we predict that teachers whose major field

of study was not in education will also be at greater risk of leaving, in part because their degree may provide more professional opportunities outside of education.

Organizational Conditions

We predict that the impact of teacher characteristics on turnover rates is mediated by the organizational conditions of the school. Our review of the literature suggests five related organizational dimensions that are theoretically distinctive of charter schools and may influence teacher turnover: (1) personnel policies, (2) professional community, (3) teacher decision-making, (4) working conditions, and (5) compensation.

Non-traditional personnel policies. Some researchers hypothesize that charter schools will use the flexibility they are granted over personnel policy to attract and retain high-performing teachers (Finn et al., 2000; Hanushek & Rivkin, 2001; Hoxby, 2000). What flexibility do charter school leaders have relative to traditional public school leaders? Foremost is the flexibility to operate outside the parameters of school district collective bargaining agreements. Freedom from the schedules that dictate teacher salaries gives principals the ability to reward good teachers with bonuses and pay raises. At the same time, freedom from tenure and seniority rules gives school leaders the ability to streamline the process of getting rid of underperforming teachers and the authority to recruit and hire the most appropriate applicants (Ballou & Podgursky, 1997).

There is empirical evidence to support the notion that charter schools do embrace more market-based personnel policies. Hoxby (2002), using data from the 1993-1994 Schools and Staffing Survey, found that charter schools target certain teacher characteristics and pay higher wage increments for such characteristics, such as selectivity of colleges. Podgursky and Ballou (2001) surveyed a random sample of

charters in seven states in 2000. The authors found that nearly one-half of charters considered teacher performance in determining salary growth and more than 30 percent did not base salary growth on experience. Many of the surveyed schools valued their flexibility to hire uncertified teachers. Podgurskey (2006) analyzed data from the 1999-2000 SASS and found that administrators in charter schools were willing to hire uncertified teachers if there had other desirable attributes and that only 62 percent of charter schools reported using a salary schedule to set pay.

Some argue that "market-based" compensation schemes will make teaching a more attractive career option for those with high aptitude and provide the necessary monetary incentives to stay in the profession (Hoxby, 2002). However, there may be unintended consequences that accompany these policies. Teachers who value security and predictability in their wages and benefits may shy away from charter schools, most of which are at-will employers that often do not participate in state public employee retirement programs. If this is the case, then a principal's ability to improve their teaching force by getting rid of underperforming teachers may be impeded by the supply of quality teachers who are willing to accept less job security in exchange for other pecuniary and non-pecuniary benefits of working in a charter school.

Professional Community. Some have proposed that charter schools have an opportunity to create strong professional communities of teachers that share common goals and values (Wohlstetter & Griffin, 1998; Hassel, 1999). Since most charter schools are not subject to district rules governing school and classroom assignment (i.e., seniority rules), it is presumed those teaching in charter schools made voluntary decisions to work in the school. Voluntary association has been shown to facilitate trust and improve

organizational effectiveness (Bryk & Schneider, 2002). Charter schools provide an opportunity for teachers to self-sort into voluntary communities of likeminded professionals, which may facilitate a stronger professional community by making teachers more inclined to engage together in reflective dialogue and collaborate on school-wide projects (Bryk, Camburn, and Louis, 1997). In principal, stronger professional community will reduce teacher turnover by creating stronger teacher commitment to the school (Rowan, 1990; Ingersoll, 2002, 2003).

Administrator support is a critical to developing and sustaining a strong professional community (Louis, 1991; Murphy, 1994). Charter school principals may influence professional community by hiring likeminded teachers that share the school's mission, providing time and resources for collaboration, and sharing school leadership responsibilities.

Currently there is limited research to support the notion that charter schools experience stronger professional community than their traditional public school counterparts. Cannata (2007) analyzed the 1999-2000 Schools and Staffing Survey (SASS) and found charter school teachers reported higher levels of professional community than traditional public school teachers, although the effect size was small. A handful of surveys of charter school teachers found that the opportunity to teach with like-minded educators was an important factor for seeking employment in a charter school (Miron & Applegate, 2007; Malloy & Wohlstetter, 2003; Miron & Nelson, 2004).

Teacher Decision-Making. Koppich et al. (1998) found that the majority of teachers were attracted to charter schools for the freedom to teach the way they want to teach. One might expect turnover in charter schools to be moderated if they attract

teachers who are seeking more input into school decision-making and looking for an environment where they are free to innovate in their classrooms. Of course this will only be the case if these teachers' expectations are met. To date, there is limited research on the level of influence that charter school teachers exude in school and classroom decision-making. Bomotti et al. (1999) found that teachers in Colorado charter schools had a greater sense of autonomy over their classrooms, but less autonomy at the school level than their traditional public school counterparts.

Working Conditions. There is growing evidence that working conditions in charter schools are different from those in traditional public. Past studies found some charter school teachers are dissatisfied because of inadequate facilities, insufficient instructional resources, and heavy workloads (Horn & Miron, 1999; Khouri et al., 1999; Miron & Nelson, 2000). Miron and Applegate (2007) examined charter school teacher survey data from six states and found a large number of teachers were dissatisfied with working conditions and consequently leaving the schools, or "voting with their feet".

We focus on two dimensions of school working conditions: class size and teacher workload. Evidence from the 1999-2000 SASS shows self-contained and departmentalized classes were slightly larger in charter schools than traditional public schools (NCES, 2002). Larger class sizes may exacerbate teacher turnover. Mont & Rees (2005) analyzed high school teachers in New York and found that smaller class sizes reduce the probability of leaving the profession.[1] Kirby, Berends, & Naftel (1999) found in their longitudinal analysis of Texas teacher attrition that a one unit increase in the student-to-teacher ratio associates with roughly a three percent increase in teacher

[1] The class size variable may be biased in this model if class size is related to teacher effectiveness, which it may be if better teachers get more students and vice versa

attrition. Similarly, Eller, Doerfler, & Meier (2000) found that a five student increase in class size associates with a 2.3% increase in teacher turnover.

High workloads and "burnout" are often cited as a concern for charter school teachers (Weiss, 1997; Vasaduva & Grutzik, 2002; Malloy & Wohlstetter, 2003). Malloy & Wohlstetter (2003) made the interesting observation that increased decision-making may have the unintended consequence of increasing workloads and consequently leading to burnout for charter school teachers. They found that while charter school teachers valued participation in the school decision-making process, the time commitment that accompanies inclusive decision-making puts them at risk of burnout.

Compensation. Compensation in charter schools also tends to differ from traditional public schools. In 2002, the average beginning teacher salary in charter schools was slightly higher than the average teacher salary in traditional public schools, but experienced teachers made considerably less in charter schools (NCES, 2002). Wohlstetter and Malloy (2003) synthesized past research and concluded that charter school teachers earn significantly less than public school teachers. Lower compensation is expected to increase teacher turnover. The 1999-2000 SASS and 2000-2001 Teacher Follow-up Survey (TFS) data showed that 19.1% of teachers who moved schools cited better salary or benefits as very important or extremely important in their decision to change schools. Loeb, Darling-Hammond, and Luczak (2005) examined California teacher survey data and found that salaries (as well as class size) was a statistically significant predictor of turnover.

School Context

The impact of the aforementioned organizational conditions on turnover will be moderated by the schooling context. We conceive of the schooling context to encompass the characteristics of the students and school that are outside the control of school policy and administration as well as the conditions of the local teacher labor market in which the schools operate.

Student Characteristics. Teacher turnover is related to the enrollment of poor and/or minority students. Ingersoll (2002) found that high-poverty schools (poverty enrollment over 50%) have more turnover than low-poverty schools (poverty enrollment under 15%). Others found that turnover levels are higher in schools that serve more minority students (Rosenholtz, 1985; Kozol, 1991).

School Characteristics. Some of the variation in turnover between charters and traditional publics may be due to differences in the structural characteristics of the schools. Past research indicates that teacher turnover is lower in secondary schools than elementary, middle schools, and K-12 combined schools (Ingersoll, 2002). Therefore, we might expect turnover to be higher in charter schools because they are more likely to serve the lower grades, where teachers are more inclined to turnover.

Turnover is slightly higher in urban schools than suburban and rural schools (Ingersoll, 2002). Therefore, part of the reason turnover is higher in charter schools may be that they are concentrated in urban neighborhoods. In 2003-2004, the locations of 34.1% of all charters were classified by the U.S. Census as large city urban, compared to 12.2% of all public schools. Twenty percent of charter schools were classified as mid-size city urban, compared to 12.4% of all public schools (NCES, 2006).

There may also be a connection between school enrollment size and turnover. Past studies have shown that it is more difficult to facilitate a sense of community in large schools, which may lead to higher turnover (Bryk et al, 1990). According to the NCES Public Elementary/Secondary School Universe Survey, the average charter school enrollment in 2005-2006 was less than half of the national public school enrollment. The charter school average enrollment was 267, compared to 521 for all public schools in the same year.

Teacher Labor Market Conditions. The supply of and demand for teachers within a will also influence turnover levels. Ingersoll (2003) points out that teacher supply and demand varies based on the teaching field and the school location. Demand for teachers varies based on teaching field, with science and mathematics teachers in greatest demand. Demand also varies by school location, with urban and rural schools have the most difficulty filling open positions.

We anticipate that the labor market conditions will influence turnover in at least two ways. First, we expect that schools that have difficulty filling positions will have less involuntary turnover, because administrators will have less capacity to replace poor performing teachers with better teachers from the shallow labor pool. Second, we expect that schools that have difficulty filling positions will have more voluntary turnover, with the same conditions that contribute to hard to fill vacancies contributing to turnover as well. An example of this would be a teacher in an urban school moving to a suburban school in order to secure better working conditions and/or a higher salary.

Sample and Data

To test our conceptual model we use data from the 2003-2004 Schools and Staffing Survey (SASS) administered by the National Center for Education Statistics (NCES). The SASS was given to a stratified random sample of public and private schools and teachers. The survey data includes design weights which allow for inferences to the national population of teachers and schools, however in our case we restrict the sample to the sixteen states with at least four charter schools represented in the SASS.[2]

Additionally, we use data from the 2004-2005 Teacher Follow-Up Survey (TFS), which is administered to a sample of teachers that participated in the SASS in the previous year, some of whom moved schools or left the teaching profession. The TFS sample is used solely for descriptive analysis of the reasons given by teachers for leaving the profession or moving schools.

Methods and Measures

To answer our questions we use descriptive statistics and hierarchical generalized linear regression (HGLM) to account for the clustering of teachers within schools and the categorical nature of the outcome variable. Details on the measures used in this analysis are presented in the appendix. In the HGLM, the dependent variable (status) is constrained to its range of 1 to 3 (1 = stayed in the school, 2 = moved to a new school, and 3 = left the profession) using a multinomial logit link function. In multinomial regression, one category of the outcome variable is selected as the reference category.

[2] The final number of weighted observations in the sixteen state sample include 1,753,390 traditional public schools teachers in 45,820 schools and 35,570 charter school teachers in 1,900 schools; States included in the analyses were AZ, CA, CO, DC, FL, MA, MI, MN, NC, NJ, NY, OH, PA, SC, TX, WI

Thus, a variable with three categories will generate two equations that display the coefficients for all possible combinations among the three groups. In our model, staying in the same school serves as the reference category and the estimates are interpreted as the change in the odds of leaving teaching (or moving schools) relative to staying in the same school associated with a one unit change in the independent variable of interest.

The purpose of the HGLM is to see how much of the difference (or gap) in turnover rates between charters and traditional publics can be explained by four sets of independent variables: charter school types, teacher characteristics, organizational conditions, and school context variables. Our procedure is to add the measures of these constructs in blocks into the model and assess the significance and magnitude of their effect on the dependent variable as well as the impact of their introduction to the model on the significance and magnitude of the estimated difference in turnover between charter schools on teacher turnover.

At the teacher level in the unrestricted HGLM model, teacher's status is predicted:

$$\ln \frac{p(leaving)}{p(staying)} - or - \ln \frac{p(moving)}{p(staying)} = \beta_{0j} + \beta_{1j\ldots}\beta_{9j}(characteristics) \quad (1)$$

Where *characteristics* is a vector comprised of nine teacher characteristics that we expect to associate with turnover likelihood: an indicator if the teacher is under 30 years of age, an indicator if the teacher is over 50 years of age, an indicator if the teacher is male, an indicator if the teacher is minority (non-white), an indicator if the teacher is uncertified (does not hold any type of state certification), an indicator if the teacher is a

special education teacher, an indicator if the teacher is part time, an indicator if the teacher's undergraduate college/university had a Carnegie classification of "selective" or "more selective", , and an indicator if the teacher received their degree from a school of education. In this analysis, only the intercept (the adjusted log odds of leaving as opposed to staying or moving as opposed to staying), B_{0j}, is allowed to vary between schools. All variables in the teacher-level model are left un-centered.

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(charter)_j + \gamma_{02...04}(chartertype)_j + \gamma_{05..10}(context)_j + \gamma_{11..21}(organization)_j + \upsilon_{0j} \quad (2)$$

The variables in the school level are included to explain the variation in the adjusted school mean of turnover odds – B_{0j}. Of primary interest to the analysis is the value of γ_{01}, which indicates the difference in log odds of leaving (moving) relative to staying between charter schools and traditional public schools. The analysis involves examining how γ_{01} changes when additional blocks of variables are added to the model. All continuous variables in the intercept model were centered on the grand mean of the sample and all dichotomous variables were left un-centered.

Charter type is a vector of the three interaction terms that are included to determine if there are significant differences in turnover rates between different types of charter schools. The vector includes an indicator if the school is managed by an EMO, an indicator if the charter school was converted from a traditional public school, and an indicator if the school is in one of its first three years of operation. Each of these variables was interacted with the main charter school indicator (*charter*) such that their

interpretations are the difference in the log odds of turnover from non-EMO, non-conversion, charter schools that have been operating for more than 3 years.

We use six variables as measures of the school *context*. To understand the impact of student characteristics and behavior on the difference between charter schools and traditional publics, we include the percentage of the school's students that participate in the federal free and reduced-price lunch program. We also include an indicator if the school's location is designated as urban by the U.S. Census, an indicator if the school's location is designated as rural by the U.S. Census, an indicator if the school is a high school and services students exclusively within grades 9-12, and an indicator if the school enrolls more than 500 students. Finally, as a measure of the local labor market, which we expect to influence both voluntary and involuntary teacher turnover, we include the principals' rating of the difficulty in hiring a new teacher.

Adding the organizational conditions (*organization*) to the model will reveal the impact on teacher turnover of the organizational conditions that are theoretically distinctive of charter schools. This vector includes eleven variables measuring the five organizational constructs (personnel policies, professional community, teacher decision-making, working conditions & compensation) where past research and theory suggest charter schools may differ from traditional public schools in ways that influence likelihood of turnover.

To determine if variation in personnel policies impacts the difference in turnover between charter schools and traditional publics, we include three measures: (1) the principal's rating of their own power/influence over hiring decisions, (2) an indicator if the principal responded "yes" when asked whether tenure was a barrier to dismissing a

poor-performing teacher, and (3) an indicator if the school's teaching staff is part of a union.

To determine if variation in professional community impacts the turnover difference, we include a measure of administrative support and teacher collaboration. Administrative support is the mean response of the school's teachers to four items about the level of support and direction they receive from the school's administration (see appendix for individual items; alpha reliability coefficient of 0.85). Teacher collaboration is the mean rating of the amount of cooperative effort among teachers.

Teacher decision-making is demarcated into school-level and classroom-level decision-making. School level decision-making is measured as the teachers' average rating of seven items inquiring about their influence over school policy (alpha reliability coefficient of 0.80). Classroom level decision-making is the teachers' average rating of six items on their influence over classroom practices (e.g. selecting teaching techniques, selecting content). The alpha reliability coefficient of these six items is 0.72, indicating they have an acceptable amount of internal consistency.

Schools' working conditions are measured with three variables: (1) the school's mean response of teachers' reported satisfaction with their class sizes, (2) an indicator if average number of hours worked in the school is over 60, and (3) the school's mean response of teachers' overall reported satisfaction with teaching at their school. Finally, teacher compensation is measured as the mean response of the schools' teachers reported satisfaction with their respective salaries.

For each equation (leaving vs. staying and moving vs. staying) we estimated five HGLM models. Model 1 is a simple means-as-outcomes model which includes no level-

1 predictors and only the indicator for charter school at level 2, this model establishes the baseline difference in leaver (mover) log odds between charter and traditional public schools. Model 2 introduces the three charter school type interactions to the model. Model 3 introduces teacher characteristics to level 1 and model 4 adds the measures of the school context. Finally, model 5 is the unrestricted model that adds the organizational condition variables and includes all variables of interest.

Results

Table 1 presents the means of the independent variables from the SASS sample disaggregated by charter and traditional public school.[3] These descriptive results are interpreted in concert with the HLGM results shown in tables 2 and 3. In table 2, the HGLM estimates are interpreted as the ratio of the odds of leaving the school to the odds of staying in the school. In table 3, they are interpreted as the ratio of the odds of moving to a new school to the odds of staying in the same school.

[INSERT TABLE 1 ABOUT HERE]

Turnover Differences between Charters and Traditional Publics

Together, the descriptive statistics and HGLM estimates confirm that teacher turnover is practically and statistically higher in charter schools than traditional public schools. The turnover levels for the sixteen states in the sample are presented graphically in figure 2. Overall, 25% of charter school teachers turned over after the 2003-2004

[3] Observations are weighted in the HGLM analysis using the final SASS design weights for teachers.

school year, compared to 14% of traditional public school teachers.[4] Charter school teachers had a significantly higher percentage of leavers than traditional public schools; 14% of charter school teachers left the profession outright, compared to 7% of traditional public school teachers. Likewise, charter schools had a significantly higher percentage of movers; close to 11% of charter school teachers switched schools, compared to 7% of traditional public school teachers.

[INSERT FIGURE 2 ABOUT HERE]

The descriptive statistics in figure 2 are confirmed in the first HGLM model. The first column of table 2 reveals that after adjusting for the clustering of teachers within schools, the predicted probability of a traditional public school teacher leaving the profession relative to staying in the school is roughly .08 or 8%. The odds of charter school teachers leaving relative to staying were 2.3 times greater than that of traditional public school teachers (odds ratio = 2.32, $p < .01$). The findings for teacher moving in table 3 are similar, but not as striking. The odds of a traditional public school teacher moving schools versus staying in the same school were 8% and the likelihood of a teacher moving schools relative to staying is 76% greater in charter schools than traditional public schools (odds ratio = 1.76, p ,.001).

[INSERT TABLES 2 AND 3 ABOUT HERE]

[4] Similar turnover levels are found when we use the full 50 state 2003-2004 SASS sample: 15.6 percent of charter school teachers left the profession and 10.4 percent moved schools, 7.1 percent of traditional public school teachers left the profession and 7.1 percent moved schools.

Turnover Differences within the Charter School Sector

To investigate differences in turnover within the charter school sector, we first disaggregate the charter schools by the three indicators of charter school type and test for statistically significant mean differences. Table 4 reveals that of the three charter school characteristics, the origin of the charter associates with the largest differences in turnover rates. Conversion charter schools had leaving rates that were only slightly higher than traditional public schools and moving rates that were slightly lower. In contrast, start-up charter schools had almost twice as high of leaving rates as conversion charter schools and almost three times as high of moving rates. The total turnover rate for the start-up charters was 29%.

[INSERT TABLE 4 ABOUT HERE]

Contrary to our hypothesis, EMO charters did not have significantly different turnover rates than their non-EMO counterparts. There also was not a significant difference in turnover between new charter schools and those that have operated for more than 3 years.

The HGLM analysis confirms that conversion charter schools have significantly less turnover than start-up charters. Model 2 of table 2 shows that the odds of leaving to the odds of staying in conversion charter schools are less than 50% that of the odds in start-up charters schools. Model 2 of table 3 reveals that teachers in conversion charter schools have significantly lower odds of moving schools relative to staying in the same school than those in start-up charter schools. This is consistent with our hypothesis that

teachers in conversion charters will behave more like teachers in traditional public schools.

Notice the coefficient for the charter indicator increases from 2.32 to 3.30 in table 2, which indicates that for established start-up charters that are not managed by an EMO, the odds of a teacher leaving the profession relative to staying in the school is 2.3 times that of the odds of a traditional public school teacher doing the same. The difference in moving likelihood between charter schools and traditional publics also increases in table 3. Whereas in model 1, the odds of a teacher moving schools relative to staying in a charter school was 76% greater in charter schools than traditional publics, in model 2, charter school teachers are predicted to be 177% more likely to move than to stay when the sample is held to those in established start-up charters that are not managed by an EMO.

Teacher Characteristics and Turnover Differences

It is expected that some of the difference in turnover between charter schools and traditional public schools is due to differences in composition of their respective teaching forces. The descriptive statistics in table 1 show some important differences between the two teaching forces. Thirty-four percent of charter school teachers in the sample are under 30 years of age, compared to 20% for traditional public schools ($F=55.88$, $p. <.01$). Conversely, 18% of charter school teachers are over the age of 50, compared to 29 percent of traditional public school teachers ($F=52.65$, $p. <.01$). Due to these differences, we can expect that charter school teachers will have higher turnover because of their

younger staff, but this difference will be attenuated because traditional public schools have higher concentrations of staff that are closer to retirement.

There are other important differences between the two sectors. Charter schools have close to twice as high a representation of non-white teachers. In addition, 14.5% of charter school teachers do not hold any type of state certificate, while this is true for only 1.5% of traditional public school teachers. This is likely to be a major source of the difference in the odds of leaving the profession between charter school teachers and traditional public school teachers because many of these teachers will not be able to meet NCLB's "highly qualified" standards and thus their schools will be compelled to replace them.

Traditional public school teachers were 4% more likely to be special education teachers, while charter school teachers were more likely to be part time. Seventy-seven percent of traditional public school teachers received their undergraduate degrees from schools or departments of education, compared to only 64% of charter school teachers.

The effects of these teacher characteristics on the difference in turnover rates between charter schools and traditional public schools are shown in model 3 of tables 2 and 3. In table 2, model 3 shows that both young and old teachers are more likely to leave the profession than their middle-aged counterparts. The largest coefficient is that of the indicator for uncertified teachers, which reveals that the odds of an uncertified teacher leaving the profession are 200% greater than those of certified teachers. Part time teachers were found to be twice as likely to leave than full time teachers, while teachers with education degrees were 18% less likely to leave than those with other types of degrees.

Given that charter school teachers are younger, more likely to be uncertified, more likely to be part time, and less likely to have an education degree, it comes as no surprise that when these variables are added to the HGLM model, they explain a large portion of the "turnover gap". The addition of these variables to model 3 reduces the odds ratio of leaving the profession to staying in the school for the charter indicator to by 20% from 3.301 to 2.643. This confirms our hypotheses that as least part of the reason why attrition is so much higher in charter schools than traditional public schools is due to systematic differences in the types of teachers they employ. Simply put, the teaching staff of charter schools have higher concentrations of teachers that are at risk of leaving the profession.

Adding teacher characteristics to the model also tempers the difference in teacher mobility between the charter and traditional public sectors. Model 3 of table 3 shows that young teachers are 117% more likely to move schools than middle-aged teachers. Older teachers (those over 50), while more likely to leave the profession, are significantly less likely to move schools than middle-aged teachers. We did not find a significant difference in the odds of moving of uncertified teachers, which may be because teachers without state certificates have trouble finding new positions in other schools. Part time teachers were 120% more likely to move schools than full time teachers.

Accounting for these teacher characteristics causes the difference in odds of moving to staying between charters and traditional publics to drop from 2.8 to 2.1. Again, this indicates that turnover is higher in charter schools because they tend to hire people that are at greater risk of both leaving the profession and moving schools.

School Context and Teacher Turnover

Model 4 introduces the measures of the school context (school characteristics, student characteristics, and labor market conditions) to the HGLM model. Table 1 revealed a few significant differences between charter schools and traditional public schools in a number of dimensions of school context. Fifty-four percent of charter schools were located in urban areas, compared to 31% of traditional public schools. Charter schools served slightly more economically disadvantaged students than the sample of traditional public schools. Sixty-two percent of traditional public schools enrolled more than 500 students, compared to only 21% of charter schools. In addition, charter school principals were more likely to indicate that finding a replacement was an important consideration in deciding to get rid of a poor-performing teacher. Thirty-eight percent of charter school principals indicated finding a replacement was a problem, compared to only 17% of traditional public schools.

Model 4 of tables 2 and 3 shows the impact of the context variables on turnover. An increase in percent of students on free and reduced-price lunch slightly increases the odds of a teacher leaving the profession and the odds of a teacher moving schools. Interestingly, teachers in urban schools did not have significantly different probabilities of leaving the profession or moving schools than those in suburban schools. Teachers in secondary schools were 40% more likely to leave the profession than elementary teachers. This may be because they hold content area degrees that are more marketable outside of the field of education. However, secondary teachers were about 30% less likely to move schools than elementary teachers.

The indicator of the labor market conditions – i.e. if the principal indicated that finding a suitable replacement was a barrier to dismissing a poor-performing teacher –did not significantly impact the odds of teachers leaving the profession, but significantly increased the odds of teachers moving schools by over 50%. This is most likely because there is more demand for teachers in these markets and thus teachers have greater ability to "shop" for schools.

Note that the difference in odds of leaving the profession between charters and traditional publics decreases slightly when school context variables are added to the model. In part, this may be due to the fact that charter schools enroll slightly higher proportions of students on free and reduced-price lunch, which has an independent effect on teacher attrition.

The difference in odds of teachers moving schools between charters and traditional publics also decreases with the school context variables in the model. This is also likely due to our control of the percentage of free and reduced-price lunch students in the school. In addition, it is likely due to the addition of the difficulty that principals have in finding suitable replacements. Charter school principals were more likely to indicate they had difficulty finding suitable replacements and difficulty finding replacements associates with an increase in mobility rates.

Organizational Conditions and Turnover Differences

The final model (model 5) introduces measures of the organizational conditions that past research and theory suggest are central to the logic of charter schools. In table 2, we find a one point increase (on a four point scale) in the grand mean of principal's

reported power over hiring associates with a 12% reduction in the odds of a teacher leaving. However, principal's authority over hiring did not associate with the odds of teachers moving schools.

Teachers in schools where the average work week is more than 60 hours are 61% more likely to leave the profession than stay in the same school. This lends support to the argument that over-work leads teachers to burn-out.

Teachers' overall satisfaction level was similar for charter schools and traditional public schools. The indicator of teacher's overall satisfaction with working in the school had the largest estimated effect on teachers' odds of leaving and teachers' odds of moving schools. A point increase on the four point satisfaction scale above the grand mean in the sample (which indicates a decline in satisfaction) associates with an 80% increase in the odds of leaving the profession and a 55% increase in the odds of moving schools.

The addition of the organizational conditions to the model has an interesting effect on the turnover gap. The difference in the predicted odds of leaving the profession between charter school teachers and traditional public school teachers increases when the organizational condition measures are added to the model. Specifically, the log odds of leaving versus staying increase from 2.56 to 3.036. This implies that the organizational conditions of charter schools temper teacher attrition more so than the organizational conditions of traditional public schools.

A different effect is seen for the odds of moving schools versus staying in the same school (shown on table 3, model 5). The addition of the organizational conditions associates with a decrease in the charter school gap, thus indicating that the

organizational conditions of charter schools do not deter teacher mobility but rather exacerbate it. This may be because charter school teachers reporting being less satisfied with their schools and satisfaction had a large significant effect on the odds of moving schools.

Teachers' Reasons for Leaving the Profession or Moving Schools

The above analysis focused on establishing the difference in teacher turnover rates between charter schools and traditional public schools and identifying some of the determinants of that difference. The second part of the analysis uses responses from the 2004-2005 Teacher Follow-up Survey (TFS) to explore differences in the type of turnover. The 2004-2005 TFS was administered to a sample of teachers who completed the SASS in 2003-2004. The TFS administers one questionnaire to teachers who left the profession since the 2003-2004 SASS and another question for teachers who are still currently teaching in either the same school as the previous year or in a different school. As with the SASS, the TFS includes design weights that allow for inferences from the entire population of U.S. public schools and teachers.

The main purpose of this analysis is to determine the extent to which there are systematic differences in the type of turnover that occurs in charter schools and traditional public schools. While it is difficult to discern if the turnover of any given teacher is detrimental or beneficial to a school, it is possible with the TFS data to make some broad categorizations of the type of turnover. These categories allow for a rudimentary assessment of how much of the turnover in charter schools and traditional

public schools is functional (i.e. beneficial to the organization) and how much is dysfunctional (i.e. detrimental to the organization).

Tables 5 and 6 break down the primary reasons that teachers provided for leaving the profession. We categorize these reasons into three categories: (1) *life changes*, which we term all reasons that relate to natural changes in teachers' lives that cause them to leave the profession or move schools, but are most likely not due to their experience in their last school or general satisfaction with the teaching profession; (2) *voluntary turnover*, which includes all reasons that relate to their experience in their past school and/or satisfaction with teaching as a profession that cause them to voluntarily leave the profession or move schools; (3) *involuntary turnover*, which includes the reasons where teachers are involuntarily removed from their position due to a staffing action at the school.

[INSERT TABLES 5 AND 6 ABOUT HERE]

Of particular interest is the difference in voluntary vs. involuntary turnover in charter publics and traditional publics. Charter advocates posit that their freedom from district collective bargaining agreements and state regulations makes it easier to remove underperforming teachers. If this is the case, we would expect to see higher rates of involuntary turnover in charter schools, although if charter schools use their freedom from tenure and teacher seniority rules to hire teachers that are a good fit for the school, turnover could be lower.

The TFS data show that involuntary attrition is significantly higher in charter schools than traditional public schools. Fifteen percent of charter school teachers that left

the profession after the 2003-2004 school year did so because of a school staffing action, which would include employment termination due to underperformance, but would also include situations such as a school closure, a reduction in teaching staff, or a school re-organization. In contrast, only six percent of traditional public school teachers left the profession involuntarily. This finding may imply that charter schools are using their flexibility in personnel policies to remove underperformers at a higher rate than traditional public schools. However, it could also be evidence that charter schools are getting rid of teachers to comply with NCLB's Highly Qualified teacher mandate; recall that in 2003-2004, 14.5% of charter school teachers were uncertified, compared to 1.5% of traditional public school teachers. It also may be due to the fact that charter schools are more likely to shut down and leave teachers without a position for the following year. The terms of charter contracts require charter schools to demonstrate academic and financial viability in order to remain in operation. Teachers may be involuntarily leaving the profession because their charter school was closed by their authorizer or closed because of low student enrollment.

Table 6 shows that involuntary mobility is lower in charter schools than traditional public schools. Seventeen percent of traditional public school teachers moved schools because they were laid off or involuntarily re-assigned, while this was true for eight percent of charter school teachers. This finding is in opposition to the hypothesis that charter schools are getting rid of underperforming teachers at a greater rate than traditional public schools.

There were significant differences in the level of voluntary turnover in charter schools and traditional public schools. Overall, 59% of charter school teachers who left

the profession did so voluntarily for reasons that directly relate to their experience in the school or their satisfaction with teaching as a career, compared to 38% of traditional public school teachers. Similarly, 80% of charter school teachers who moved schools did so voluntarily, compared to 65% of traditional public school teachers.

The data show that teachers' satisfaction with their school was an important factor behind the difference in rates of voluntary attrition and mobility. Note that 19% of charter school teachers who left the profession did so because they were dissatisfied with the school, compared to 7% of traditional public school teachers. Similarly, 23% of charter school teachers who moved schools did so because they were dissatisfied with the workplace conditions of the school, compared to 7% of traditional public school teachers. These findings support those of Miron and Applegate's 2007 study of charter school teacher attrition, which found that charter school teachers were "voting with their feet" and leaving charter schools because of dissatisfaction with workplace conditions of the schools.

The data also show that charter school teachers were more inclined to leave the profession or move schools in search of better salaries or benefits. Thirteen percent of charter school teachers who left the profession did so primarily because they sought a job with a better salary or benefits, compared to 6% of traditional public school teachers. Likewise, 13% of charter school teachers who moved schools did so for a better salary or benefits package, while this was the case for only 6% of traditional public school teachers. This could be related to the fact that average salaries in charter schools tends to be lower and benefits are not as attractive. However, it could also be due to the fact that

charter schools recruit non-traditional candidates who do not intend to stay in education for a long time and leave to pursue careers with better salaries.

Finally, it is interesting to note the difference between charter schools and traditional public schools in the turnover that is due to life changes. Fifty-two percent of traditional public school teachers who left the profession did so because of a change in residence, pregnancy/child rearing, health, retirement, or other personal reasons, compared to 22% of charter school teachers who left the profession.

Discussion

Teacher turnover is a critical issue within K-12 public education. High turnover is expected to have detrimental effects on school quality as well as lead to substantial pecuniary costs to schools and districts. Therefore, understanding the nature of turnover as well as the factors that explain why it is higher in some schools than others is an important topic.

This study examined how turnover rates differ between traditional public and charter public schools and the extent to which these differences are explained by differences in teacher characteristics, school organizational conditions, and contextual factors. In addition, we examined how turnover varies within the charter school sector by examining differences in turnover between EMO managed and non-EMO charter schools, conversion and start-ups, and new and established charter schools.

Our results support previous research by finding that both the rate that teachers leave the profession and that move schools is significantly higher in charter schools than traditional public schools. Before controlling for teacher and student characteristics, we found the odds of a charter school teacher leaving the profession versus staying in the

same school were 130% greater than those of a traditional public school teacher. Similarly, the likelihood of moving schools relative to staying is 76 percent greater in charter schools than traditional public schools.

We find that turnover rates vary within the charter school sector. Charter schools that are started from the ground up experience significantly more attrition and mobility than those that were converted from traditional public schools. This finding aligns with Buddin and Zimmer's (2005) conclusion that conversion charter schools behave more like traditional public schools than start-up charter schools. Contrary to our hypothesis, EMO-managed charter schools did not have significantly different turnover rates than their non-EMO counterparts.

As expected, a substantial amount of the gap in turnover rates between charter schools and traditional public schools is explained by differences in the characteristics of their respective teaching forces. Charter school teachers are on average younger than traditional public school teachers, which make them more likely to leave the profession and move schools.

Our HGLM analysis of the SASS data found limited evidence that the organizational conditions of charter schools (i.e. personnel policies, working conditions, teacher decision-making, and professional community) tempered teacher attrition. However, the TFS data showed that charter school teachers were much more likely to leave the profession due to dissatisfaction with the conditions of their school. This likely indicates that the source of teacher dissatisfaction was not accounted for in the SASS measures of organizational conditions.

The HGLM analysis of the SASS and the descriptive analysis of the TFS support the conclusion that dissatisfaction with working conditions is an important reason why voluntary teacher mobility is significantly higher in charter schools than traditional public schools. The most common reason given by charter school teachers for voluntarily leaving the teaching profession was that they were dissatisfied with the school. Furthermore, 47% of charter school teachers who voluntarily switched to new schools did so because they were dissatisfied with either the workplace conditions or administrator support.

Involuntary attrition is also significantly higher in charter schools, which may stem from the fact that charter schools have fewer regulatory barriers to dismissing poor-performing teachers, but may also be due to other factors, such as school closings due to charter revocations, or the dismissal of uncertified teachers in order to comply with NCLB's highly qualified teacher mandate.

Collectively, the findings from this study illuminate a critical challenge facing charter schools and may explain part of the reason why charter schools are not systematically outperforming their traditional public school counterparts. Charter schools are experiencing rates of both attrition and mobility that are high by any standard. The evidence presented herein suggests charter schools may be leveraging their flexibility in personnel policies to get rid of underperforming teachers. Nevertheless, most of the turnover charter schools are experiencing appears to be dysfunctional. Compared to traditional public school teachers, charter school teachers are more likely to voluntarily leave the profession or move to a new school because they are dissatisfied with the school and its working conditions. The organizational disruption caused by this high

level of dysfunctional turnover likely makes it difficult for the charter schools to maintain a level of instructional quality from year to year.

Tables and Figures

Figure 1.

Conceptual model of the relationship between school sector and teacher turnover

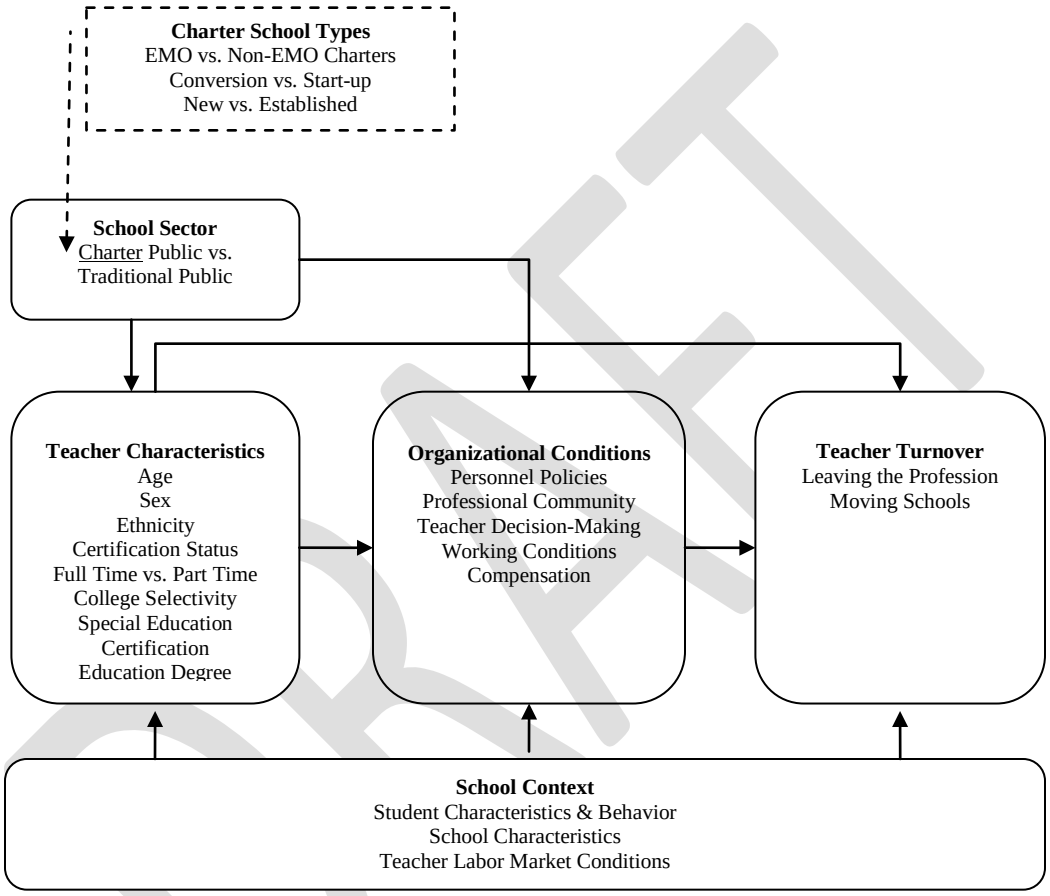

Figure 2.

Baseline Turnover Rates: Charter Schools and Traditional Public Schools

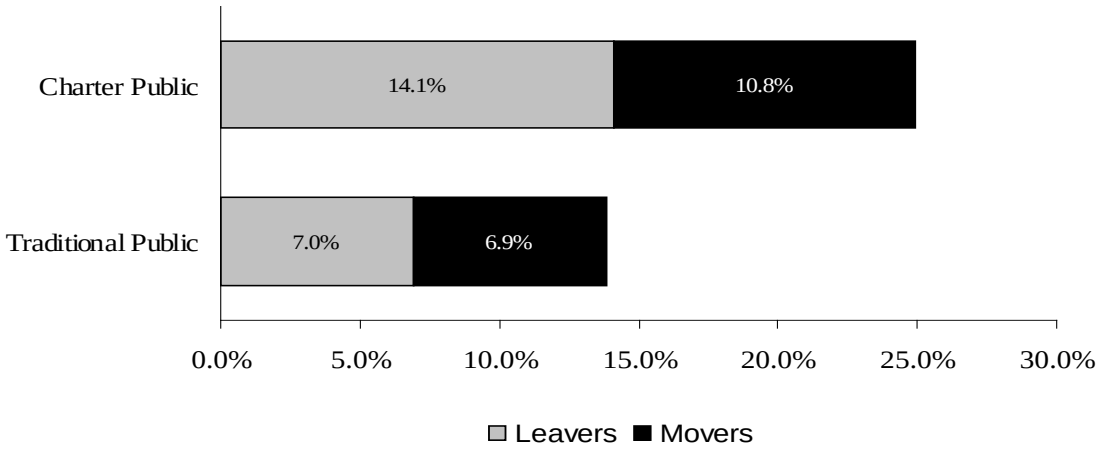

Table 1.

Descriptive Statistics of the Sample

	TPS	Charter	F Statistic
Teacher Characteristics			
Under 30 (1 = under 30 years of age)	19.6%	33.8%	55.88*
Over 50 (1 = under 50 years of age)	29.0%	17.9%	52.65*
Male (1 = male)	26.1%	25.8%	0.04
Minority (1 = nonwhite)	10.2%	19.4%	36.38*
Uncertified (1 = no state certificate of any kind)	1.5%	14.5%	130.24***
Special Education (1 = special ed. teacher)	11.2%	7.3%	10.86*
Part Time (1 = part time teacher)	8.7%	14.0%	14.56*
Selective College (1 = selective undergraduate university/college)	25.1%	25.0%	0
Education Degree (1 = undergraduate degree from ed. school)	76.5%	64.1%	44.58***
School Context			
% Free and Reduced-Price Lunch	44.9%	49.8%	3.84*
Urban School	31.0%	53.8%	39.08***
Rural School	18.6%	13.0%	3.41*
High school	22.7%	23.3%	0.03
Large School (1 = more than 500 students)	62.3%	21.2%	181.42*
Difficulty finding teacher replacements (1= Yes)	17.2%	37.9%	26.12*
Organizational Conditions			
Principal's Power over hiring (1 = no influence, 4 = major influence)	3.84	3.95	21.35***
Tenure (1 = tenure barrier to replacing teacher)	70.0%	14.8%	346.08***
Unionized (1= all teachers in school are members of union)	95.4%	39.0%	200.56***
Administrative Support (1=strong support, 4 = little support)	1.60	1.50	7.45**
Collaboration (1 = high collaboration, 4 = low collaboration)	1.75	1.74	0.05
Teacher School Decision-making (1 = no influence, 4 = great influence)	2.25	2.48	15.23**
Teacher Classroom Decision-Making (1 = no influence, 4 = great influence)	3.32	3.38	2.75*
Satisfied with Class Size (1 = strongly agree, 4 = strongly disagree)	2.03	1.71	44.3**
Hours per Week >60 (1 = school average work hours per week >60)	8.0%	10.5%	0.82
Satisfied with working in school (1 =strongly agree, 4 = strongly disagree)	1.50	1.60	5.38**
Satisfied with Salary (1 =strongly agree,4 = strongly disagree	2.64	2.57	1.68

* p < .10 ** p < .05 *** p < .01

Table 2.

Odds Ratio of Leaving vs. Staying from HGLM Analysis

	Leave Vs. Stay				
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Constant	0.078***	0.078***	0.044***	0.032***	0.047*
Charter	2.316***	3.301***	2.643***	2.566***	3.036***
Charter types					
New Charter		0.760	0.714	0.703	0.633
Conversion Charter		0.413**	0.403***	0.420***	0.452***
EMO Charter		0.650	0.713	0.702	0.742
Teacher Characteristics					
Under 30			1.875***	1.867***	1.877***
Over 50			2.847***	2.828***	2.891***
Male			1.103	1.040	1.015
Minority			1.127	1.001	0.955
Uncertified			3.016***	3.036***	3.002***
Special Education			1.237	1.263	1.268
Part Time			2.075***	2.154**	2.239***
Selective College			1.064	1.133	1.112
Education Degree			0.822*	0.863*	0.861*
School Context					
% Free and Reduced-Price Lunch				1.002*	1.001*
Urban School				0.889	0.830
Rural School				1.001	1.028
Secondary				1.417***	1.316**
Large School				0.903	0.854*
Labor Market Conditions				1.040	0.985
Organizational Conditions					
Principal's Power over hiring					0.876*
Tenure					1.064
Unionized					1.395
Administrative Support					0.871
Collaboration					1.235
School Decision-making					0.989
Instructional Decision-Making					0.974
Satisfaction with Class Size					1.779
Hours per Week >60					1.608**
Overall satisfaction with school					1.779***
Satisfaction with Salary					0.910

* p < .10 ** p < .05 *** p < .01

Table 3.

Odds Ratios of Moving vs. Staying from HGLM Analysis

	Moving Vs. Stay				
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Constant	0.079***	0.079***	0.069***	0.051*	0.081*
Charter	1.760***	2.771***	2.130***	1.556***	1.210**
Charter types					
New Charter		0.856	0.876	0.881	0.9550
Conversion Charter		0.326*	0.345*	0.377**	0.444*
EMO Charter		0.763	0.751	0.789	0.954
Teacher Characteristics					
Young (Under 30)			2.168***	2.147***	2.138***
Old (Over 50)			0.509***	0.506***	0.581***
Male			1.138	1.242	1.223
Minority			1.005	0.871	0.768*
Uncertified			1.493	1.549	1.502***
Special Education			1.578***	1.621***	1.634***
Part Time			2.286***	2.349***	2.441***
Selective College			0.964	1.092	1.087
Education Degree			0.854	0.867	0.876
School Context					
% Free and Reduced-Price Lunch				1.006*	1.006*
Urban School				1.101	1.019
Rural School				0.837	1.014
Secondary				0.683***	0.657***
Large School				0.836	0.788***
Labor Market Conditions				1.537***	1.474***
Organizational Conditions					
Principal's power over hiring					0.983
Tenure					0.951
Unionized					0.802
Administrative Support					0.834
Collaboration					1.301
School Decision-making					0.936
Instructional Decision-Making					0.789
Satisfaction with Class Size					0.983
Hours per Week >60					1.178
Overall satisfaction with school					1.545***
Satisfaction with Salary					0.963

* p < .10 ** p < .05 *** p < .01

Table 4.

Turnover Differences by Charter School Characteristics

	Conversion	**Start-Up**	**Significance**
% Leaving	8.7%	16.2%	11.08***
% Moving	5.1%	13.0%	16.79***
% Total	13.8%	29.2%	29.07***
	EMO	**Non-EMO**	**Significance**
% Leaving	14.6%	12.4%	.79
% Moving	10.7%	11.1%	.02
% Total	25.3%	23.5%	0.24
	New	**Established**	**Significance**
% Leaving	11.8%	15.0%	1.77
% Moving	10.0%	11.1%	.17
% Total	21.8%	26.1%	1.63

* p < .10 ** p < .05 *** p < .01

Table 5.

Primary Reasons for Leaving the Profession

	Charter Public	Traditional Public	F Statistic
Life Changes			
Change in Residence	3.0%	6.0%	1.37
Pregnancy/ child rearing	7.1%	14.2%	2.58
Health	1.0%	4.4%	9.54**
Retirement	5.9%	23.9%	13.15***
Other family or personal reasons	12.3%	7.6%	0.53
Total	**22.2%**	**51.5%**	**20.46*** **
Voluntary Attrition			
To take courses to improve career in education	1.8%	3.3%	0.77
For better salary or benefits	13.4%	6.4%	1.09
To pursue a position other than K-12 teacher	7.5%	13.6%	2.76*
To take courses to improve career outside of education	5.2%	3.1%	0.55
Dissatisfied with teaching as a career	8.8%	4.9%	1.35
Dissatisfied with previous school	19.2%	6.7%	5.36**
Total	**55.8%**	**38.1%**	**8.85** **
Involuntary Attrition			
School staffing action	14.9%	5.9%	4.71**
Total	**14.9%**	**5.9%**	**4.87** **

* p < .10 ** p < .05 *** p < .01

Table 6.

Primary Reasons for Moving Schools

	Charter Public	Traditional Public	F Statistic
Life Changes			
New school closer to home	10.5%	18.2%	3.06*
Total	**10.5%**	**18.2%**	
Voluntary Mobility			
Salary or benefits are better	13.3%	5.7%	2.96*
Better job security	7.0%	3.2%	1.37
Opportunity for a better teaching assignments	3.9%	15.6%	20.76***
Dissatisfied with workplace conditions	22.5%	7.1%	7.46**
Dissatisfied with administrator support	24.0%	17.8%	0.94
Dissatisfied with changes in my job description	1.8%	2.9%	0.34
Did not have enough autonomy	0.0%	0.7%	4.44**
Dissatisfied with opportunities for pd	0.0%	2.1%	2.95*
Dissatisfied with last year's school for other reasons	7.3%	10.1%	0.82
Total	**79.7%**	**65.2%**	
Involuntary Mobility			
Laid off or involuntarily transferred	9.8%	16.6%	3.18**
Total	**9.8%**	**16.6%**	

* p < .10 ** p < .05 *** p < .01

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Appendix

Figure A-1.

Measures used in the Descriptive and HGLM Analyses

Measure	Description
School Type	
Charter	A dichotomous variable equal to 1 if the school is a public charter school
Charter Types	
New Charter	A dichotomous variable where 1 = charter school that has been operational for three or less years since the time of the SASS administration
Conversion Charter	A dichotomous variable where 1 = charter school that was converted from a traditional public school into a charter school
EMO Charter	A dichotomous variable where 1 = charter school is managed by a for-profit Education Management Organization
Teacher Characteristics	
Under 30	A dichotomous variable where 1 = teacher is 30 years of age or younger at the time of the SASS administration
Over 50	A dichotomous variable where 1 = teacher is 50 years of age or older at the time of the SASS administration
Male	A dichotomous variable where 1 = male teacher and 0 = female teacher
Minority	A dichotomous variable where 1 = non-white teachers and 0 = white teachers
Uncertified	A dichotomous variable where 1 = teacher does not have any state teaching certifications and 0 = other teachers
Special Education	A dichotomous variable where 1 = special education teacher and 0 = other teachers
Part Time	A dichotomous variable = 1 if the teacher indicating they were part time
Selective College	A dichotomous variable =1 if the 2003 Carnegie Undergraduate Profile Classification of the teacher's undergraduate college/university was "selective" or "more selective"
Education Degree	A dichotomous variable =1 if the teacher's undergraduate degree was awarded by a university's department or college of education
School Context	
% Free and Reduced-Price Lunch	Percent of students in the school that participate in the free and reduced-price lunch program
Urban School	dichotomous variable =1 if the school's location is classified as "large city" by U.S. Census Bureau
Rural School	A dichotomous variable =1 if the school's location is classified as rural by the U.S. Census Bureau
Secondary	A dichotomous variable =1 if the school serves grades 9-12 exclusively
Large School	A dichotomous variable =1 if the school enrolls more than 500 students
Labor Market Conditions	A dichotomous variable =1 if the principal indicating that finding a replacement teacher was a barrier to dismissing a poor-performing teacher (Item: *Are the following considered barriers to the dismissal of poor-performing or incompetent teachers at this school? Difficulty in obtaining suitable replacements*)

Figure A-1 (cont.)

Measures used in the Descriptive and HGLM Analyses

Measure	Description
Organizational Conditions	
Principal's Power over hiring	Principal's rating of influence over hiring of teachers; ordinal variable ranging from 1 = no influence to 4 = major influence (Item: *How much ACTUAL influence do you think each group or person has on decisions concerning the following activities? Hiring New Full-Time Teachers at This School*)
Tenure	A dichotomous variable =1 if the principal reported that tenure is a barrier to dismissing a poor-performing teacher? (Item: *Are the following considered barriers to the dismissal of poor-performing or incompetent teachers at this school? Tenure*)
Unionized	A dichotomous variable =1 if all the teachers in the school are members of the teachers' union
Administrative Support	Mean response of school's teachers to 4 items on adminstration support; ordinal variable on scale from 1 = strongly agree to 4 = strongly disagree (Items: *The school administration's behavior toward the staff is supportive and encouraging; The principal lets staff members know what is expected of them; My principal enforces school rules for student conduct and backs me up when I need it; The principal knows what kind of school he/she wants and has communicated it to the staff.)* Alpha of 4 items = 0.85.
Collaboration	Mean response of school's teachers to 3 items on level of cooperation in school among teachers on scale from 1 = strongly agree to 4 = strongly disagree (Items: *I make a conscious effort to coordinate the content of my courses with that of other teachers; There is a great deal of cooperative effort among the staff members; Most of my colleagues share my beliefs and values about what the central mission of the school should be*)
School Decision-making	Mean response of school's teachers to seven items (below) on level of school decision-making influence; ordinal variable on scale of 1 = no influence to 4 = great influence. (Items: *Setting performance standards for students at this school; Establishing curriculum; Determining the content of in-service professional development programs; Evaluating teachers; Hiring new full-time teachers; Setting discipline policy; Deciding how the school budget will be spent*). Alpha of 7 items = 0.80.
Instructional Decision-Making	Mean response of school's teachers to 6 items (below) on classroom/instructional decision-making; ordinal variable on scale of 1 =no influence to 4 = great influence (Items: *Selecting textbooks and other instructional materials; Selecting content, topics, and skills to be taught; Selecting teaching techniques; Evaluating and grading students; Disciplining students; Determining the amount of homework to be assigned*). Alpha of 6 items =0.72

Figure A-1 (cont.)

Measures used in the Descriptive and HGLM Analyses

Measure	Description
Satisfaction with Salary	Mean response of school's teachers to item on satisfaction with salary; ordinal variable on scale of 1 = strongly agree and 4 = strongly disagree. (Item*: I am satisfied with my teaching salary*).
Satisfaction with Class Size	Mean response of school's teachers to item on satisfaction with class size; ordinal variable on scale of 1 = strongly agree and 4 = strongly disagree (Item: *I am satisfied with my class size).*
Avg. Hours per Week >60	Dichotomous variable equal to 1 if a school's teachers reported working more than 60 hours per week on average
Overall teacher satisfaction	Mean response of school's teachers to question on their overall satisfaction as a teacher at this school (Item: *I am generally satisfied with being a teacher at this school*).