Parallel Patterns

TEACHER ATTRITION IN CHARTER vs. DISTRICT SCHOOLS

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NATIONAL CHARTER SCHOOL RESEARCH PROJECT
center on **reinventing** public education

UNIVERSITY OF WASHINGTON

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The National Charter School Research Project (NCSRP) brings rigor, evidence, and balance to the national charter school debate.

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Introduction

Charter schools are public schools run by private groups or organizations outside of the traditional public education bureaucracy. Although the details vary from state to state, the basic logic of the reform is this: in exchange for public funding and freedom from some rules and regulations, charter schools are expected to meet accountability standards or risk losing their charter (i.e., contract) with the state.[1]

Charter schools were novel when they were first launched almost 20 years ago, but today they are an increasingly well-established part of the landscape in public education. According to the National Alliance for Public Charter Schools, charter schools enrolled over 1.5 million students in more than 4,900 schools across the country in the 2009–2010 school year.[2] And recent policy developments appear to favor even more charter school growth, with the U.S. Department of Education making support for charter schools a central part of its Race to the Top competition.[3]

But if charter schools are an increasingly well-established reform, they are also controversial.[4] Part of the controversy stems from the fact that charter schools typically employ non-union teachers and, in some states, non-certified teachers. Some researchers argue that this less regulated workforce allows charter schools to hire more talented teachers than traditional public schools.[5] But others worry that the lack of union protection and other supports for teachers in charter schools can make them difficult places to work, leading to burnout and high turnover rates.[6] Indeed, some accounts suggest that charter schools lose somewhere between 20 and 25 percent of their teachers each year,[7] rates that are about one and a half times those found in traditional public schools.[8] Such findings raise concerns that turnover may be a serious problem for charter schools, and yet evidence on the issue is still relatively limited.[9] On balance, the scale and nature of the turnover problem in charter schools is far less understood than it is in traditional public schools.[10]

1. Finn, Manno, and Vanourek, 2000.
2. National Alliance for Public Charter Schools, 2010.
3. Duncan, 2009.
4. Henig, 2008.
5. Hoxby, 2002; Podgursky, 2006
6. Dillon, 2009.
7. Miron and Applegate, 2007.
8. Ingersoll, 2001.
9. It is worth noting that although teacher turnover has a negative connotation, it is not inherently problematic. Charter schools might, for example, use teacher turnover to improve their teaching staff or contain staffing costs. Still, research on traditional public schools suggests that persistently high turnover rates can create a host of problems: fragmented instructional programs, the loss of teaching expertise, ongoing hiring and training costs, workplace stress, and low staff morale (see Guin, 2004; Milanowski and Odden, 2007; Roseman, 1981; Shields et al., 2001).
10. See for example, Guarino, Santibanez, and Daley, 2006.

With that in mind, this report examines how teacher turnover in charter schools resembles and differs from teacher turnover in traditional public schools. We offer two perspectives on the issue. First, we analyze broad patterns of teacher turnover using ten years of data on charter school teachers in Wisconsin. These data allow us to describe charter school turnover patterns in the context of the state's entire public school system, traditional and charter. Second, we analyze what departing charter school teachers say about their decision to leave their schools, using data from the U.S. Department of Education's Schools and Staffing Survey (SASS) and Teacher Follow-Up Survey (TFS). Like the Wisconsin data, these national surveys allow us to put the motivations of charter school teachers in the context of the broader public education system.

The results of these analyses highlight three findings. First, the Wisconsin analysis suggests that high rates of teacher turnover in charter schools may be more a function of the types of teachers that charter schools hire and where they are located than their status as charter schools. Second, the Wisconsin analysis suggests that the state's charter schools are relatively better at retaining teachers in urban environments than are its traditional public schools. Third, a descriptive analysis of the national surveys suggests that when charter teachers leave their schools they are more likely to cite job security, workplace conditions, and job responsibilities as important reasons for leaving than their counterparts in traditional public schools.

Although these results suggest that rates of teacher turnover in charter schools may be similar to rates in traditional public schools serving similar students and neighborhoods, charter school turnover rates are still often high. For charter school leaders who want to reduce turnover, our analysis suggests the importance of paying attention to teachers' fears about job loss and the risk that they become overwhelmed by the demands of teaching in a charter school.

This report presents these findings in two sections, beginning with the Wisconsin analysis and followed by the national survey analysis. Technical details are provided in the appendix.

Examining Teacher Turnover Patterns in Wisconsin

To examine broad patterns of teacher turnover we rely on data from Wisconsin. Wisconsin is a useful case for studying teacher turnover in charter schools because it has a relatively large and long-standing charter school sector. Although Wisconsin's original 1993 charter law allowed for only 20 schools, the state legislature has since lifted the 20-school cap and added new authorizers. It is worth noting that most charter schools in Wisconsin are expected to conform to the teacher contract provisions of their local district. Even though charter schools have the opportunity to hire their own teachers and have considerable control over their finances and curricula, teachers in charter schools that are considered "instrumentalities" of their local school districts—a majority of charter schools in the state—have the same employment arrangements as teachers in the local traditional public schools.[11] This unusual restriction means that in most of the state's charter schools, compensation, certification, dismissal, and terms of employment follow the traditional public school model. As a result, our analysis captures the effects of organizational and cultural differences on the mobility of charter and traditional public school teachers.

By the 2009–2010 school year, the state had just over 200 charter schools.[12] Unlike some states, Wisconsin collects consistent administrative data on all of its public school teachers (charter and traditional), allowing us to reconstruct individual teacher careers over time to show mobility behavior (teachers who move from school to school) and attrition behavior (teachers who stop teaching in Wisconsin) in both sectors at the same time.

11. Brinson and Rosch, 2010.
12. Evers et al., 2009.

Teacher and School Characteristics

By some measures, Wisconsin's charter school teachers resemble the state's traditional teacher workforce.[13] Broadly speaking, teachers in both sectors tend to be middle-aged white women (see table 1). But there are also some subtle differences between the two sectors. The state's charter school teachers, for example, tend to hold fewer advanced degrees and earn about $1,300 less per year than teachers in traditional public schools. Wisconsin's charter school teachers are also more likely to be African Americans, something that may be a consequence of the fact that most of the state's charter schools are located in urban areas (see table 2). Although teacher demographics in the state's charter schools generally resemble those in the state's traditional public schools, the two sectors offer very different school contexts in which to teach. Charter school teachers in Wisconsin are more likely to work in schools that serve larger percentages of minority students and have lower levels of performance on state assessments. They are also less likely to work in high schools.

In the next section we consider whether or not the two sectors have different teacher turnover patterns and, if so, what might explain the difference.

13. By contrast, national averages suggest charter schools typically employ teachers who are younger and less experienced than teachers employed by traditional public schools (e.g., Burien-Fitzgerald, Luekens, and Strizek, 2003).

Table 1. Comparison of Wisconsin Charter School and Traditional Public School Teachers, 1997–2006

Teacher Characteristics	Charter Schools	Traditional Public Schools
% Female	78	72
% White	82	96
% African American	15	3
% 25 years old or younger	4	3
% 26–35 years old	24	25
% 46–55 years old	32	36
% 55 years old or older	11	12
% with BA	65	58
% with MA	32	40
Average Salary	$ 40,830	$42,158

Source: Wisconsin Department of Public Instruction All Staff File (1997–2006)

Table 2. Comparison of Wisconsin Charter Schools and Traditional Public Schools, 1997–2006

School Characteristics	Charter Schools	Traditional Public Schools
% Elementary schools	46%	47%
% Middle/Junior high schools	41%	22%
% High schools	13%	30%
% Urban	62%	28%
% Suburban/Rural	39%	73%
% African American Students	35%	10%
% Hispanic Students	11%	5%
% Students Proficient in Math	44%	58%
% Students Proficient in Reading	60%	74%

Source: Wisconsin Department of Public Instruction All Staff File (1997–2006)

Turnover Patterns

Turnover as a function of teacher characteristics and school contexts

Prior research suggests that charter schools generally have higher teacher turnover rates than traditional public schools. Harris' (2008) analysis of charter schools in Florida, for example, shows that charter school teachers are 15 percent less likely to stay in their schools than traditional public school teachers. Stuit and Smith's (2009) analysis of a sample of charter schools in sixteen states finds that 25 percent of charter teachers turned over after the 2003–2004 school year, compared with 14 percent of traditional public school teachers. Do these patterns hold in Wisconsin? If so, what is behind them?

To answer these questions we tracked newly hired charter school teachers and newly hired traditional public school teachers over an eight-year period to see if and when they left their schools during that time.[14] Importantly, our analysis with multinomial logit models accounts for the fact that as teachers progress through their careers, their chances of leaving change. The analysis also allows us to consider a host of contextual factors that vary over time, such as school performance and student demographics, that might influence a teacher's decision to leave his or her school. The data come from administrative records that capture the career trajectories of 956 newly hired charter school teachers and 19,695 newly hired traditional public school teachers in Wisconsin between 1998 and 2006.[15]

Our analysis proceeded in three steps (see figure 1). First, we estimated the odds that a teacher moved schools or left teaching between 1998 and 2006 while controlling only for the teacher's years of experience and the sector in which he or she taught (charter or traditional).[16] Consistent with prior research, the results suggest that, regardless of sector, all teachers are more likely to leave early in their careers. The results also suggest that charter school teachers are, on average, far more likely to leave their schools than traditional public school teachers: charter teachers have 40 percent greater odds of moving schools than traditional public school teachers, and 52 percent greater odds of exiting the system altogether.

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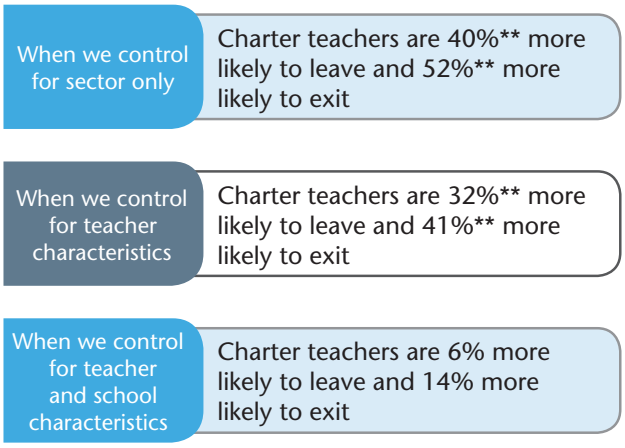
14. We provide a technical description of our methods in the appendix. For more explanation of survival analysis see Singer and Willett (2003).

15. We restricted our sample to only those teachers who entered the Wisconsin state public education system between 1998 and 2006 (the total number of unique individuals working during this time period include over 72,000 traditional public school teachers and just over 2,400 charter school teachers). To determine who entered, we had to compare the teaching corps in one year to the core in the prior year. As such, we had to drop the first year of the data (1997). We made this restriction to ensure that we knew exactly how many years of experience each teacher had in the Wisconsin system—a central concern in attrition research. In addition, to remove the complication of teachers temporarily leaving the system, we removed all teachers who we observed leaving the system then returning at a later data.

16. In a multi-nomial logit model all estimates are considered to be relative to a baseline condition. In our models, the baseline condition is staying in the school. As such, these models estimate the odds that a teacher moves schools or leaves the system relative to staying in the school. Again, for the specification of the model please see the technical appendix.

Figure 1. A Disadvantaged School Problem, Not a Charter School Problem



** *Charter school indicator is statistically significant (p <.001)*

To see how much these differences reflect the types of teachers employed in both sectors, we re-estimated the results with additional controls for individual teacher characteristics, including academic degrees, age, gender, ethnicity, salary, and certification. When we make these more controlled comparisons, the turnover gap between the two sectors shrinks: charter teachers now have 32 percent greater odds of moving schools compared to similar teachers in traditional public schools and 41 percent greater odds of leaving the system. Charter teacher turnover is still higher, but the large differences found in the first analysis appears to be partly explained by the types of teachers working in charter schools, not just their charter status.[17]

Finally, we re-estimated the results with additional controls for school characteristics, such as the concentration of minority students, percent of students passing assessments, locale, and grade span.[18] When we control for teacher characteristics and school characteristics, the gap shrinks further. Charter teachers now have only 6 percent greater odds of moving and 14 percent greater odds of leaving the system than similar traditional public school teachers in similar school environments. Moreover, the charter school "effect" in these models is no longer statistically significant (see appendix for full regression results).

17. Previous research on traditional public school teachers has already identified many of these relationships between teacher characteristics and attrition (Guarino et al., 2006). What is interesting is that these factors explain a good portion of the mobility gap between charter and traditional public school teachers, even though there is only a modest degree of variation in these factors in Wisconsin.

18. These distinctions matter. As we saw in table 2, charter schools in Wisconsin tend to be concentrated in urban regions and serve more minority and lower-performing students. Previous research consistently shows that such conditions are associated with increased odds of both moving schools and leaving teaching (Guarino et al., 2006).

Taken together, these results suggest that the dramatic differences in turnover rates between charter and traditional public schools in Wisconsin stem in large part from the types of teachers who work in charter schools and the places where charter schools operate. In other words, high turnover rates in Wisconsin's charter schools appear to be a disadvantaged school problem, rather than a charter school problem per se.[19]

Relatively Better at Retaining Teachers in Urban Schools

Previous research has suggested that charter school teachers leave their schools for different reasons than public school teachers. Harris (2008), for example, found that charter school teachers were slightly less likely to leave schools serving poor students than traditional public school teachers (although, overall, both groups of teachers were more likely to leave poor students than wealthy students). Harris also found that charter school teachers were more likely to leave low-performing schools than were traditional public school teachers (though again, both groups were generally more likely to leave low-performing schools than high-performing schools).

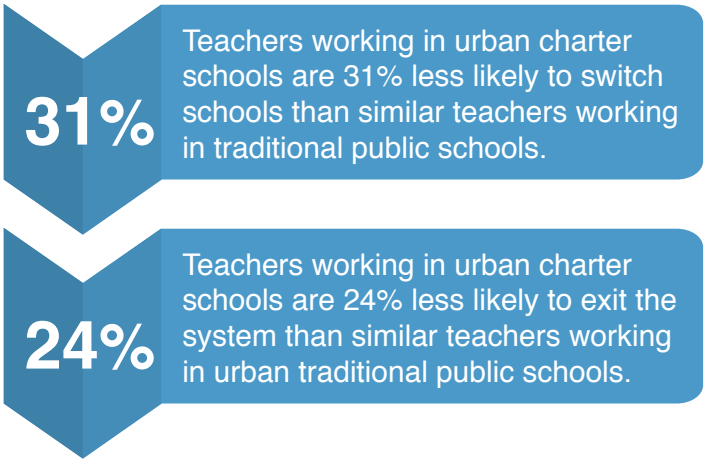
To explore whether or not these patterns hold in Wisconsin, we analyzed the influence of student performance and school urbanicity (which in Wisconsin is highly correlated with student poverty) on teacher mobility and attrition in both sectors by introducing a series of interaction terms into our models. On balance, the results suggest that charter school teachers in Wisconsin are less likely than traditional public school teachers to leave disadvantaged schools. For every 10 percent decrease in student performance on state math assessments, we find that charter school teachers are 9 percent less likely to switch schools; for the same decrease in performance, traditional public school teachers are 1 percent more likely to switch schools. Teachers working in urban charter schools in Wisconsin also appear less likely to switch schools and exit the system compared to teachers who work in urban traditional public schools (see figure 2), a result that runs against long-standing patterns of teacher attrition in public education.[20]

19. Similar findings appear in Harris (2008), showing that the relative inexperience of charter school teachers accounts for at least part of the differences in attrition between charter and traditional public school teachers in Florida.

20. Guarino et al., 2006.

These urban school patterns also hold when we look at differences within the two sectors. For instance, comparisons of urban charter school teachers to non-urban charter school teachers show that the odds of an urban charter school teacher switching schools are 25 percent lower than they are for a non-urban charter school teacher (the gap is similar for exiting the system). By contrast, comparisons of urban and non-urban teachers within Wisconsin's traditional public schools show that teachers in urban traditional public schools are 3 percent more likely to leave than their counterparts in traditional non-urban schools.

Figure 2. Better at Retaining Teachers in Urban Schools



Examining Teachers' Motivations Using National Data

Without survey data on teachers in Wisconsin, we turn to a national survey to examine what motivates charter school and traditional public school teachers who leave their schools. The connection between this analysis and our analysis of turnover patterns in Wisconsin is necessarily tentative—as we have already noted, Wisconsin's charter school teachers and traditional public school teachers are much closer in age (a strong factor in teacher mobility) than is the case nationally and most of Wisconsin's charter school teachers work under contract provisions that resemble those in the state's traditional public schools. Upon closer examination, however, the differences we see between Wisconsin demographics and the national demographics do not appear to be driving the reasons teachers say they leave their schools.[21]

The national data come from the U.S. Department of Education's Schools and Staffing Survey (SASS) and Teacher Follow-up Survey (TFS). The TFS is a follow-up survey administered to a subsample of the baseline SASS respondents. The SASS and TFS allow us to identify teachers who stayed in their schools in both surveys ("stayers"), teachers who moved to new schools by the time they responded to the TFS ("movers"), and teachers who left the profession by the time they responded to the TFS ("leavers"). The TFS asks "movers" and "leavers" about the schools they left and why they left them.

We analyzed data from the 1999–00 SASS and the 2000–01 TFS on how satisfied movers and leavers were with the schools they left, and the reasons they gave for moving and leaving. Although dated, these older surveys are preferable to more recent versions of the SASS-TFS because they were sent to a census of charter schools and include a substantially larger sample of charter school teachers than more recent surveys.[22] At the same time, these older data clearly raise concerns about whether they can inform our understanding of the charter school experience ten years later. To be sure, the specific charter schools included in the older versions of the SASS-TFS have likely changed and matured over the last decade (if they remain open), and today, teachers in those specific schools may have very different experiences than their counterparts in the earlier survey. At the same time, we

21. The one exception is in the role of retirement in decisions to leave teaching. Charter school teachers in the national sample are significantly younger than traditional public school teachers in the national sample. Unsurprisingly, charter school teachers were substantially less likely to identify retirement as the reason they left teaching. In contrast, retirement was a significant reason for leaving teaching among traditional public school teachers.

22. The Teacher Follow-Up Survey was also conducted in 2004–05 school year. Unfortunately, the 2004–05 TFS sampled only 325 charter school teachers, considerably fewer than the 1,050 charter school teachers in the survey we use. For this reason, we opted to perform our analysis with the earlier but larger sample of charter school teachers.

think the earlier data are useful if we consider that the ongoing and steady growth of the charter school movement means that many charter schools today are arguably at the same stage of organizational development as those included in the earlier survey.

Charter School Movers and Leavers Are More Dissatisfied with Their Schools

When asked about the schools they left, teachers in both sectors expressed similar types of dissatisfaction. Compared to teachers who stayed in their schools and teachers who left the profession (which includes retirees), movers in both sectors were less satisfied with many aspects of their schools, from how they were paid to their teaching assignments. Moreover, charter school movers were more dissatisfied with their schools than traditional public school movers, with one exception: their teaching assignment. In addition, the gaps in satisfaction between stayers and movers/leavers in the charter school sector appear to be larger than the gaps between stayers and movers/leavers in the traditional public school sector.

Table 1 shows average levels of satisfaction (higher numbers mean more satisfied) across six areas: rewards and tenure; workplace safety; student, parent, and community culture; teaching assignments; professional culture and development; and materials and equipment.[23]

23. Rewards and tenure captures teachers' satisfaction with their salary, benefits, and job security. Workplace safety reflects teachers' satisfaction with their school's facility conditions, safety on and around campus, school security policies, and student behavior. Student, parent, and community culture captures teachers' satisfaction with the support, motivation, and commitment to academic progress from students, parents, and the school's community. The teacher assignments item reflects teachers' satisfaction with the class and subject assignment. Professional culture and development reflects teachers' satisfaction with their professional opportunities, professional community, and the autonomy and influence they have over their classroom and school policy. Finally, materials and equipment captures teachers' satisfaction with the resources available in the school and for their classroom. In some cases, "leavers" in the traditional public school sector appear more satisfied than "stayers" in the traditional public school sector—a result that may stem in part because "leavers" in the traditional public school sample included a large share of retirees.

Table 3. The Average Satisfaction of Charter School Teachers and Traditional Public School Teachers with Conditions in their School, by Mobility Status

1=very dissatisfied; 5=very satisfied

		Rewards and Tenure	Workplace Safety	Student, Parent, and Community Culture	Teaching Assignments	Professional Culture and Development	Materials and Equipment
Charter School Teachers	Leaver	3.10**	3.41**	3.45**	3.34	3.09**	2.95**
	Mover	2.98**	3.12**	3.16**	3.22	2.63**	2.91**
	Stayer	3.41	3.70	3.66*	3.61**	3.51**	3.44
Traditional Public School Teachers	Leaver	3.52	3.73	3.63	3.36	3.29	3.19
	Mover	3.33	3.43	3.33	3.24	3.16	3.09
	Stayer	3.47	3.69	3.59	3.40	3.37	3.38

** Indicates a statistically significant difference between charter and traditional teachers at 95% level of confidence.
* Indicates a statistically significant difference between charter and traditional teachers at a 90% level of confidence.

Reasons for Moving and Leaving Are Similar Across Sectors, With a Few Exceptions

In addition to asking teachers how satisfied they were with the school that they left, the survey asked movers and leavers why they left.[24] Table 2 shows the five most common reasons cited by movers and leavers in both sectors. Although the results suggest movers and leavers in both sectors cite many of the same factors, charter school teachers are more likely to cite job security and job duties as reasons for leaving. Although movers in both sectors said salary was among the top five reasons for moving, charter school teachers were more likely than traditional public school teachers to cite salary as a reason for leaving (40 percent versus 22 percent). Other issues were more of a concern for charter school teachers than traditional public school teachers. For instance, job security showed up in the top five reasons for charter school movers, but not for traditional public school movers (who typically receive tenure by their 3rd or 4th year of teaching).[25]

24. The TFS asked movers the extent to which factors including personal concerns (new career, change of residence, family issues), workplace conditions (facilities, resources), terms of work (salary, benefits, job security, and job description), professional development and opportunity, layoff or involuntary transfer, and community support influenced their decision to move to a new school. The TFS asked leavers a similar set of questions, although it also asked if personal reasons such as retirement, child rearing, health issues, or pursuing further education influenced their decision..

25. Job security was the 7th most common concern among traditional public school teachers who moved schools. Nineteen percent of these teachers responded that improving their job security was a very or extremely important reason for moving.

For leavers, salary and benefits appear to be a bigger issue in charter schools. Salary and benefits were cited by 26 percent of charter school leavers as important factors in their decision, but cited by only 19 percent of traditional public school leavers. Dissatisfaction with job descriptions or duties is also a bigger issue for charter school leavers: 22 percent said it influenced their decision, while the issue did not even make the top five among traditional public school leavers.[26] In sum, the national survey data suggest that although teachers in both sectors cite similar reasons for leaving and moving—administrator support, workplace conditions, and the desire for a better assignment, for example – job security and job duties appear to be more of an issue of concern for charter school teachers who left their schools.

Table 4. Top Five Issues Identified as Very or Extremely Important Factors in the Decision to Move or Leave Schools, by Sector

Charter School Teachers		Traditional Public School Teachers	
	Percent of Teachers		**Percent of Teachers**
Reasons for Moving Schools			
Lack of administrator support	65%	Better teaching assignment[1]	47%
Workplace conditions	58%	Lack of administrator support	45%
Better teaching assignment	52%	Workplace conditions	37%
Higher job security	46%	Change of residence	27%
Better salary/benefits	40%	Better salary/benefits	22%
Reasons for Leaving Schools			
Another career	33%	Retirement	29%
Family or personal reasons	32%	Family or personal reasons	23%
Better salary/benefits	27%	Another career	20%
Pregnancy/child rearing	22%	Better salary/benefits	19%
Dissatisfaction with job description or duties	22%	Pregnancy/child rearing	16%

[1]A better assignment is defined as a more preferred subject area or grade level. Note: 38 and 62 % of traditional public and charter school teachers, respectively, who moved schools reported that they were "dissatisfied for other reasons" in the survey. We excluded this category from our analysis because we had no information on the issues represented by this category.

26. When we break out these responses by the major categories identified in the Wisconsin analysis—age and school location—few differences emerge.

What About Dismissals?

As table 4 shows, charter school teachers point to a lack of job security as an important reason for leaving their school. This is understandable. Many charter school teachers work under one-year, renewable, at-will contracts; and the general absence of collective bargaining agreements in the charter school sector raises the possibility that teachers who move or leave charter schools do so on different terms than teachers in the traditional public school sector, where dismissal is relatively rare. Some media reports portray teacher dismissals as common and, at times, capricious, in charter schools.[27] Recent case studies conducted by the Center on Reinventing Public Education, for example, suggest that charter school principals view dismissal as an important management tool for quickly removing teachers who do not fit with the school or are not performing to expectations.

The SASS-TFS data show, however, that charter school movers are generally no more likely than traditional public school movers to report that they moved because of an involuntary transfer or layoff.[28] The result for charter school leavers is more intuitive: they were more than four times as likely as traditional public school leavers to report that a lay off or involuntary transfer led to their exit, suggesting that layoffs may be more common in the charter sector. But to put this in perspective, only 13 percent of charter school teachers said they left because of an involuntary exit, ranking it as the 10th most common of 16 possible reasons for quitting teaching.

27. See for example, Alpert, 2009; Kunichoff, 2009; Rivera, 2007.

28. However, younger charter school movers were more likely to cite involuntary transfers or layoffs than younger traditional public schools movers.

Summary

This report examines teacher turnover in charter schools and how it resembles and differs from teacher turnover in traditional public schools. The idea for this study grew out of concerns, based on research and media reports, that teacher turnover rates in charter schools are alarmingly high. To gain a better understanding of the nature of teacher turnover in charter schools, we analyzed state and national data on the career trajectories and opinions of both charter and traditional public school teachers.

The report highlights three key findings. First, evidence from Wisconsin suggests that high rates of teacher turnover in charter schools may be mostly a function of the types of teachers charter schools hire and where they are located, not their status as charter schools. Second, evidence from Wisconsin suggests that the charter school sector may be relatively better than the traditional school sector at retaining teachers in urban schools. To the extent that charter schools explicitly seek teachers committed to disadvantaged students and structure their missions around serving urban students, they might be better at keeping teachers in the classroom. Third, evidence from the SASS-TFS suggests that charter school teachers who do leave their schools are more apt to cite a lack of job security and the expansive nature of the job as reasons for their departure. Overall, then, these findings are consistent with prior studies that suggest that charter school teachers bring a strong commitment to their school's education program and mission, but because of the focus on serving disadvantaged students, they also work under demanding conditions that, if left unattended by school leaders, put them at risk of moving schools or leaving the teaching profession.[29]

These results may quiet some fears that charter schools are particularly susceptible to teacher turnover. That does not mean, however, that turnover is not an issue for charter schools. Leaders of the charter sector need to work on solving a problem that confronts many public schools: keeping teachers in—and therefore stabilizing—schools that enroll underserved students in urban areas.

29. Malloy and Wohlstetter, 2003.

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Appendix: Wisconsin Analysis

Data

The Wisconsin analysis uses teacher and school data for all of the state's charter schools and traditional public schools for the years 1997 to 2006. The teacher data include each teacher's race, gender, age, education, and area of specialization. For our analysis we only use data on full-time classroom teachers. The school data include each school's geographic location, type, size, and student demographics. Together these data allow us to follow the career paths of over 75,000 newly hired teachers for eight years across both sectors.

Analysis

We explore two types of teacher mobility: movement to a new school and exits from the Wisconsin public education system. We estimate the odds that a teacher makes each of these types of moves with a multinomial logistic model specified in equation 1.

$$\log \frac{\Pr(Y_{it} = mobility_z)}{\Pr(Y_{it} = stay)} = \mathsf{a}_{it} + \mathsf{b}_{1z} t + \mathsf{b}_{2z} C_{it} + \mathsf{b}_{3z} X_{it} + \mathsf{b}_{4z} Z_{it} + \mathsf{e}, \quad (1)$$

where z indicates one of two outcomes (moving schools or leaving the system), t indicates the year of the teacher's career, Cit is a charter school flag, Xit is a vector of individual teacher characteristics for teacher i at time t (see table A1 for a complete list of variables included), and Zit is a vector of school characteristics for the school in which teacher i is teaching at time t (see table A1 for a complete list of variables included).

The model estimates the log odds that a teacher at each point in his or her career either moves to a new school or leaves the system relative to staying in the same school. Because log odds are not directly interpretable, we transform these estimates into odds ratios that indicate the percent change in the odds of an event given a specific condition.

As noted in the text, we also extended our analysis to explore the possibility that the mobility of charter and traditional public school teachers relate differently to various school-level factors by including interaction terms into the basic model. Interaction terms reveal how the effects of different predictor variables relate to each other by separating the overall effect of the predictor variable (e.g., the effect of being in an urban school for all teachers) from the effect of the predictor variable when coupled with some other condition (e.g., being in a charter school). In our analysis we explore the interaction between charter schools and all school-level conditions from the vector of school characteristics. Tables A1 and A2 present the full results of the models.[30]

30. Note that all of the models in Tables A1 and A2 include year controls (e.g., 1997–98 school year), though we do not report the coefficients here.

Appendix Tables A1 and A2

Table A1: Teachers' **Moves to a New School** Relative to Staying in the Same School: Results from Seven Models of Attrition of Charter and Traditional Public School Teachers in Wisconsin, 1997–2006

	Model 1			Model 2			Model 3			Model 4: Interactions		
	Log Likelihood	Odds Ratios	P>z	Log Likelihood	Odds Ratios	P>z	Log Likelihood	Odds Ratios	P>z	Log Likelihood	Odds Ratios	P>z
Consecutive Years of Teacher Experience												
1 year	1.851	6.363	0.000	1.269	3.559	0.000	1.209	3.349	0.000	1.208	3.348	0.000
2 years	1.190	3.285	0.000	0.766	2.152	0.000	0.708	2.031	0.000	0.707	2.028	0.000
3 years	0.903	2.468	0.000	0.593	1.810	0.000	0.548	1.729	0.000	0.547	1.728	0.000
4 years	0.697	2.008	0.000	0.469	1.598	0.000	0.447	1.564	0.000	0.447	1.563	0.000
5 years	0.520	1.683	0.000	0.375	1.455	0.000	0.362	1.436	0.000	0.361	1.435	0.000
6 years	0.366	1.443	0.000	0.265	1.303	0.000	0.253	1.288	0.000	0.253	1.288	0.000
7 years	0.329	1.389	0.000	0.266	1.305	0.000	0.265	1.304	0.000	0.266	1.305	0.000
8 years	0.096	1.100	0.129	0.053	1.055	0.399	0.087	1.091	0.188	0.089	1.093	0.177
9 years (ref)												
Charter School	0.340	1.405	0.000	0.274	1.315	0.000	0.061	1.063	0.177	-0.047	0.954	0.859
Male				0.015	1.015	0.310	0.117	1.125	0.000	0.117	1.125	0.000
Teacher Age												
25 or younger				0.185	1.203	0.000	0.202	1.224	0.000	0.203	1.225	0.000
Between 26 and 35				0.157	1.170	0.000	0.143	1.154	0.000	0.143	1.154	0.000
Between 36 and 45 (ref)												
Between 46 and 55				-0.213	0.808	0.000	-0.213	0.808	0.000	-0.215	0.807	0.000
Older than 56				0.769	2.157	0.000	0.778	2.176	0.000	0.776	2.172	0.000
Teacher Race						0.000						
Asian				0.169	1.184	0.065	0.001	1.001	0.991	0.003	1.003	0.977
Black				0.537	1.712	0.000	0.097	1.102	0.010	0.098	1.103	0.010
Hispanic				0.341	1.407		0.105	1.111	0.116	0.106	1.112	0.114
Nat Am				-0.207	0.813	0.150	-0.265	0.767	0.082	-0.263	0.769	0.084
White (ref)												
Teacher Education/Specialization												
Associates Degree or less				0.666	1.947	0.000	0.375	1.455	0.000	0.371	1.449	0.000
Bachelors (ref)												
Masters				0.165	1.179	0.000	0.190	1.210	0.000	0.190	1.209	0.000
Specialist				0.777	2.174	0.000	0.825	2.283	0.000	0.827	2.286	0.000
Doctoral				0.353	1.424	0.013	0.280	1.322	0.062	0.272	1.312	0.069
Other Deg				0.537	1.712	0.000	0.326	1.386	0.000	0.325	1.384	0.000
New Masters Degree				-0.012	0.988	0.753	-0.034	0.966	0.391	-0.035	0.966	0.387
Bilingual				0.262	1.300	0.001	0.090	1.095	0.279	0.082	1.086	0.325
Special Ed				0.496	1.642	0.000	0.472	1.604	0.000	0.472	1.604	0.000
Salary & Benefits (z stand)				-0.326	0.722	0.000	-0.344	0.709	0.000	-0.344	0.709	0.000
School Characteristics												
Elementary (ref)												
Jr. High							-0.005	0.995	0.807	-0.008	0.992	0.713
High School							-0.379	0.684	0.000	-0.384	0.681	0.000
% Hispanic (z stand)							0.022	1.023	0.002	0.023	1.023	0.002
% Black (z stand)							0.098	1.103	0.000	0.097	1.102	0.000
% Meeting Math Standard							-0.027	0.973	0.054	-0.001	0.999	0.021
% Meeting Reading Standard							-0.080	0.923	0.000	-0.005	0.995	0.000
Urban School Dist							0.028	1.029	0.109	0.034	1.035	0.056
Charter School Context Interactions												
x Jr. High										0.377	1.457	0.006
x High School										0.243	1.275	0.188
x z_%_Hispanic										-0.080	0.923	0.195
x z_%_Black										0.017	1.017	0.685
x z_Math Score										0.008	1.008	0.053
x z_Reading Score										-0.003	0.997	0.597
x Urban										-0.327	0.721	0.010
Model Fit Statistics												
Wald Chi^2	8585.410			27412.870			26879.060			26926.870		
Degrees of Freedom	32			68			82			96		
Chi^2 P Value	0.000			0.000			0.000			0.000		
Log pseudolikelihood	-165334.020			-154926.280			-140967.220			-140941.410		
Likelihood Ratio				20815.480			27918.120			-51.620		
LR Degrees of Freedom	32			36			14			14		
LR P Value	0.000			0.000			0.000			0.000		

Table A2: Teachers' **System Exits** Relative to Staying in the Same School: Results from Seven Models of Attrition of Charter and Traditional Public School Teachers in Wisconsin, 1997–2006

	Model 1			Model 2			Model 3			Model 4: Interactions		
	Log Likelihood	Odds Ratios	P>z	Log Likelihood	Odds Ratios	P>z	Log Likelihood	Odds Ratios	P>z	Log Likelihood	Odds Ratios	P>z
Consecutive Years of Teacher Experience												
1 year	0.435	1.544	0.000	0.669	1.953	0.000	0.615	1.849	0.000	0.609	1.839	0.000
2 years	-0.029	0.971	0.503	0.288	1.334	0.000	0.241	1.272	0.000	0.236	1.266	0.000
3 years	-0.142	0.867	0.002	0.174	1.190	0.000	0.132	1.141	0.011	0.128	1.137	0.013
4 years	-0.261	0.770	0.000	0.032	1.033	0.520	-0.008	0.992	0.872	-0.011	0.989	0.828
5 years	-0.263	0.769	0.000	0.015	1.015	0.764	-0.020	0.981	0.709	-0.022	0.978	0.679
6 years	-0.254	0.775	0.000	-0.003	0.997	0.960	-0.023	0.977	0.680	-0.025	0.975	0.653
7 years	-0.187	0.830	0.000	-0.016	0.984	0.756	-0.017	0.983	0.752	-0.019	0.981	0.730
8 years	-0.103	0.903	0.055	-0.002	0.998	0.968	-0.017	0.983	0.772	-0.018	0.982	0.767
9 years (ref)												
Charter School	0.418	1.518	0.000	0.345	1.412	0.000	0.134	1.144	0.021	0.108	1.114	0.763
Male				0.269	1.309	0.000	0.200	1.222	0.000	0.200	1.221	0.000
Teacher Age												
25 or younger				0.704	2.022	0.000	0.718	2.050	0.000	0.715	2.045	0.000
Between 26 and 35				0.675	1.963	0.000	0.686	1.986	0.000	0.685	1.984	0.000
Between 36 and 45 (ref)												
Between 46 and 55				0.439	1.551	0.000	0.468	1.596	0.000	0.467	1.595	0.000
Older than 56				2.620	13.740	0.000	2.651	14.168	0.000	2.651	14.163	0.000
Teacher Race												
Asian				0.191	1.210	0.109	0.016	1.016	0.899	0.008	1.008	0.950
Black				0.389	1.475	0.000	0.025	1.025	0.607	0.033	1.033	0.500
Hispanic				0.174	1.190	0.042	-0.006	0.994	0.946	-0.009	0.991	0.919
Nat Am				-0.011	0.989	0.948	-0.231	0.794	0.233	-0.227	0.797	0.241
White (ref)												
Teacher Education/Specialization												
Associates Degree or less				0.708	2.030	0.000	0.585	1.794	0.000	0.593	1.809	0.000
Bachelors (ref)												
Masters				0.155	1.167	0.000	0.152	1.164	0.000	0.152	1.164	0.000
Specialist				0.537	1.711	0.018	0.553	1.738	0.024	0.546	1.726	0.025
Doctoral				0.444	1.558	0.002	0.345	1.411	0.020	0.343	1.409	0.020
Other Deg				0.180	1.198	0.132	0.047	1.048	0.704	0.053	1.055	0.669
New Masters Degree				-0.221	0.802	0.000	-0.234	0.791	0.000	-0.235	0.790	0.000
Bilingual				-0.008	0.992	0.947	-0.027	0.974	0.821	-0.039	0.962	0.743
Special Ed				-0.045	0.956	0.075	-0.080	0.923	0.003	-0.079	0.924	0.003
Salary & Benefits (z stand)				-0.323	0.724	0.000	-0.322	0.725	0.000	-0.323	0.724	0.000
School Characteristics												
Elementary (ref)												
Jr. High							0.167	1.182	0.000	0.182	1.200	0.000
High School							0.210	1.233	0.000	0.212	1.236	0.000
% Hispanic (z stand)							0.031	1.032	0.002	0.034	1.035	0.001
% Black (z stand)							0.147	1.158	0.000	0.140	1.150	0.000
% Meeting Math Standard							-0.039	0.961	0.021	-0.002	0.998	0.026
% Meeting Reading Standard							0.060	1.062	0.000	0.004	1.004	0.001
Urban School Dist							0.073	1.076	0.000	0.089	1.093	0.000
Charter School Context Interactions												
x Jr. High										-0.259	0.772	0.159
x High School										0.024	1.024	0.915
x z_%_Hispanic										0.057	1.059	0.404
x z_%_Black										0.128	1.136	0.026
x z_Math Score										0.0026	1.0026	0.591
x z_Reading Score										0.0002	1.0002	0.973
x Urban										-0.383	0.682	0.022
Model Fit Statistics												
Wald Chi^2	8585.410			27412.870			26879.060			26926.870		
Degrees of Freedom	32			68			82			96		
Chi^2 P Value	0.000			0.000			0.000			0.000		
Log pseudolikelihood	-165334.020			-154926.280			-140967.220			-140941.410		
Likelihood Ratio				20815.480			27918.120			-51.620		
LR Degrees of Freedom	32			36			14			14		
LR P Value	0.000			0.000			0.000			0.000		

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The National Charter School Research Project (NCSRP) aims to bring rigor, evidence, and balance to the national charter school debate. For information and research on charter schools, please visit the NCSRP website at www.ncsrp.org. Original research, state-by-state charter school data, and links to charter school research from many sources can be found there.

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