Involuntary Teacher Transfers and Student Achievement: Examining Equity and Efficiency

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Abstract

Despite claims that school districts need flexibility in teacher assignment to allocate teachers more equitably across schools and improve district performance, the power to involuntarily transfer teachers across schools remains hotly contested. Little research has examined involuntary transfer policies or their effects on schools, teachers, or students. This article uses administrative data from Miami-Dade County Public Schools to investigate the district's involuntary transfer policy, including which schools utilized the opportunity to transfer teachers, which teachers were chosen, where they were moved, and how their performance—as measured by value-added and teacher work absences—compared before and after the transfer. We find that, under the policy, principals in the lowest-performing schools effectively identified relatively low-performing teachers for transfer who, based on observable characteristics, would have been unlikely to leave on their own. We also find that involuntarily transferred teachers were systematically moved to higher-performing schools, suggesting that policy may be equity-enhancing. While transferred teachers' value-added measures remained low in their new positions, they had nearly 2 fewer absences per year in their new schools, suggesting an increase in overall productivity.

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Districts and school leaders argue that having flexibility in assigning teachers to schools is necessary for improving both overall school quality and equity among schools (Cohen-Vogel & Osborne-Lampkin, 2007; Levin, Mulhern, & Schunck, 2005). Often collective bargaining agreements constrain this flexibility by restricting districts' capacity to transfer teachers involuntarily, particularly more senior teachers (Koski & Horng, 2007; Strunk & Grissom, 2010). Some have argued that such restrictions are a key reason for lower performance among schools governed by more prescriptive collective bargaining agreements (Moe, 2009). These restrictions may harm disadvantaged students in particular because they rob districts of a tool

for countering the vagaries of the voluntary sorting of better teachers towards higher-income, higher-achieving students ((Moe, 2009; Lankford, Loeb, & Wyckoff, 2002).

Calls for greater personnel assignment flexibility assume that, given the opportunity to involuntarily transfer teachers among schools, districts would do so. Furthermore, proponents assume that such moves would improve either the fairness of the distribution of teaching quality within the district, the overall performance of the district, or both (Levin, Mulhern, & Schunck, 2005). There are numerous ways involuntary transfers could have a positive impact on district equity or average performance. For example, if transfers help "match" teachers to schools where their particular set of skills will make a more positive impact, then we would expect the transfer to be efficiency-enhancing. If transfers systematically move lower-performing teachers out of low-performing schools, then the policy may also positively impact equity, particularly if the teacher's replacement is more effective. Alternatively, if involuntary transfers result in worse matches of teacher skills and student needs, or if the transfer itself hurts teacher productivity, then potential gains to efficiency or equity will be undercut. No previous work has examined the effects of involuntary transfer policies, leaving an evidentiary hole in discussions of the likely impacts of involuntary transfer policies for state or district policymakers.

This study contributes to our understanding of the policy levers districts can pull to affect the allocation of teaching quality by examining the involuntary transfer policy and its outcomes in the nation's fourth-largest school district, Miami-Dade County Public Schools (M-DCPS). Prior to the start of the 2008-09, 2009-10, and 2010-11 school years, M-DCPS exercised a clause in its collective bargaining agreement (CBA) allowing for the transfer of teachers—identified by their principals—involuntarily within the district. Approximately 375 teachers were moved involuntarily over these three years. The district provided us with the involuntary transfer list in each year, which we merged with other district administrative data on schools, personnel, and students. We use this dataset to investigate how the transfer policy impacted the performance and distribution of teachers in the district.

It is an especially opportune time to examine involuntary transfers. Tightened budgets resulting from the recent economic downturn have resulted in the elimination of teaching positions in many districts nationwide (see, for example, Chen and Hernandez (2011) on the loss of teaching positions due to budget constraints in New York City). Because teacher contracts or CBAs typically require districts to find a position elsewhere in the district for more senior teachers displaced when budget cuts eliminate slots in their schools, present budget shortfalls are likely to make involuntary transfers more common than in previous years.

Our analysis seeks to accomplish four main goals. First, we identify the characteristics of schools and principals who utilized the involuntary transfer policy. The principals in this case are especially important because district policy gave principals discretion over both whether to utilize their involuntary transfer option and, if they did, which teachers to transfer. Second, we describe teachers who were chosen for involuntary transfer, both in comparison to teachers who did not move and to teachers who transferred voluntarily in the same years from the same schools. In particular, we examine characteristics of the teacher's job, such as whether it was in a tested grade and subject, and observable qualifications, such as years of experience. We also examine teacher absences, and, when available, their value-added to student achievement gains. Third, we document the patterns in involuntary moves, comparing the characteristics of the "sending" and "receiving" schools and the students in those schools. Finally, we evaluate the impact of the district's involuntary transfer policy by assessing its effect on the distribution of teacher productivity across schools. Specifically, we compare teachers' performance, proxied by student value-added and work absences, after an involuntary transfer both to their own performance on these measures prior to the transfer and to the performance of the teachers who took their place in the sending school.

We find that schools who utilized the involuntary transfer policy were, on average, larger, more likely to be middle and high schools, and served larger populations of low-income and African American students. They were also lower-performing, scoring a D on Florida's

accountability grade, on average. Within schools that transferred at least one teacher, involuntarily transferred teachers tended to be somewhat lower in value-added (in math) and to be absent more often in the year preceding the transfer. They also tended to be more experienced than other teachers, suggesting that schools used the transfer policy to remove less productive teachers who were unlikely to leave otherwise. Moreover, we find little evidence that the involuntary transfer policy in M-DCPS merely shuffled teachers from one low-performing school to another; receiving schools were rated approximately a B and had much higher math and reading achievement than sending schools, on average. In these new schools, transferred teachers continued to achieve worse than the average teacher in value-added in both math and reading, with particularly low scores in math. However, they had fewer absences in their new schools, suggesting some productivity enhancement after the move. We also find evidence that teachers who replaced the involuntarily transferred teachers tended to be more productive as well. On the whole, the involuntary transfer policy appears to improve equity along the dimensions we examine, with some gains to efficiency as well.

How Involuntary Transfers Could Impact Efficiency and Equity

Approximately eight percent of teachers nationally move to a position in a new school each year (Grissom, 2011). The overwhelming majority of these moves can be classified as voluntary, or teacher-driven. The remainder are involuntary moves, or moves that result from a school or district staffing action. Results from the Teacher Follow-up Survey run by the National Center for Education Statistics suggest that in 2009, only 11% of teachers who changed schools did so because their contract at their prior school was not renewed (Keigher, 2010). Many of these involuntary moves are a consequence of excessing or reductions-in-force; in these instances, collective bargaining agreements often require that districts take seniority into account when moving teachers by, for example, giving more senior teachers first choice over

available positions (Cohen-Vogel & Osborne-Lampkin, 2007). In other words, the *strategic* use of involuntary transfers as a means of achieving district goals is quite uncommon.

In theory, numerous district goals could be pursued via involuntary teacher transfers. Here we focus on two broad goals. The first is *efficiency*, i.e., increasing overall district performance at relatively little cost. So long as the transfer policy imposes few resource costs on the district—i.e., marginal administrative costs, no implications for teacher pay—any change in efficiency due to the policy is a function of how it impacts teacher or school productivity. The second is *equity*, or the fairness of the distribution of resources across schools. Though fairness or equity can be defined in different ways, we focus specifically on how the policy affected teacher productivity in the schools with the largest numbers of low-achieving students.

Efficiency

The involuntary transfer of teachers would improve district efficiency if it increased district outputs without a comparable increase in district inputs. Because the policy only involves moving teachers into open positions rather than dismissing them, district inputs in the aggregate are not directly affected.[1] Thus, our efficiency analysis focuses on how the involuntary transfer policy may have affected teacher productivity.

There are multiple mechanisms through which an involuntary transfer policy might impact overall productivity, though *ex ante* the direction of these effects is unclear. One mechanism is the potential change in the "match" of teachers to their schools. That is, individual teachers likely have unique sets of attributes—e.g., instructional approaches, experiences working with particular student populations, cultural competencies—to which some students, or

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[1] Of course, it is possible that the policy had indirect effects on inputs if, for example, it caused teachers to leave the system rather than move to other schools. These effects are unlikely in this case, however, for at least two reasons that we illustrate later. First, the teachers who were moved tended to be relatively experienced, and research shows that attrition propensities decrease with experience (Guarino, Santibañez, & Daley, 2006). Second, the transfer policy systematically relocated teachers from low-achieving to high-achieving schools. The positive correlation between working conditions and school achievement status may well have meant that the policy made transferred teachers *less* likely to leave, not more (Grissom, 2011).

types of students, are more responsive than others. If districts are better able to match an individual teacher's skills to a school or student population than occurs through the typical hiring process that pairs teachers with schools, a transfer by the district could increase teacher productivity. For instance, some teachers' skills may lend themselves to working particularly well with English language learners (ELLs), while others may not be well-suited to working with ELLs. If a district can effectively identify its best ELL teachers and move them to schools with larger numbers of ELL students, this improvement in the teacher-student match can increase efficiency. On the other hand, if districts are less able to match teacher skills with school needs, the power to transfer teachers could hurt overall teacher productivity.

Second, and relatedly, involuntary transfers may impact *measured* productivity by changing the distribution of teacher effectiveness across grades and subjects. If a low-performing teacher is assigned to teach a core subject in a grade that is subject to standardized testing (and thus accountability pressure), the school may benefit from moving that teacher out, perhaps to a non-core or untested subject. Such a move may not be possible within-school, however, if no such positions are available for which the teacher is certified. In facilitating a move for that teacher to a non-core or untested subject in another school, an involuntary transfer could improve measured productivity, though again this improvement is conditional on the district succeeding the transferred teacher with a higher-performing replacement.

A third mechanism is the potential impact on teacher effort. There could be both indirect and direct effects. Indirectly, the *threat* of a transfer could impact everyone's effort at any school allowed to identify teachers for transfer. These effects could be positive if teachers see the transfer threat as a potential consequence that increased effort can help them avoid. They could be negative if, for example, the transfer threat hurts teacher morale. Involuntary transfers can also have direct effects on the effort level of teachers chosen for transfer, though again, the predicted direction is ambiguous. Transferred teachers may work harder if they see the transfer as a signal that they need to improve their performance or if they are relocated to a school

environment that encourages extra effort because, for example, they are surrounded by more productive teacher peers (Jackson & Bruegmann, 2009). In contrast, they may decrease their effort post-transfer if they find the transfer demoralizing or discouraging.

Equity

Involuntary transfers may also affect the fairness of the distribution of teacher quality or effectiveness within a district. Here the primary mechanism is clear. A robust literature suggests that the teacher labor market tends to sort more qualified teachers into schools with more advantaged students and low-performing teachers into schools with less advantaged students (e.g., Boyd, Lankford, Loeb, & Wyckoff, 2005). An involuntary transfer policy gives the district a strategy for counteracting this tendency. By redistributing effective and ineffective teachers across schools, district-initiated transfers can be used to increase the concentration of high-quality teachers in schools with less advantaged, lower-achieving students.

Presumably, districts could use the transfer policy to intervene in both directions. That is, the policy could be used to move relatively effective teachers to schools with more disadvantaged populations, and to move less effective teachers to more advantaged, higher-performing schools. Though both kinds of moves enhance equity, the former direction is less likely to be feasible without additional expense for the district. Because student characteristics and working conditions are correlated, positions in schools serving lower-achieving students are less desirable (Loeb, Darling-Hammond, & Luczak, 2005; Grissom, 2011; Ladd, 2011). Unless the district offers additional compensation, good teachers transferred to more difficult schools may seek employment elsewhere. Moreover, while it is in principals' best interest to identify less effective teachers for transfer out of their schools, it is not in their best interest to identify their highly effective teachers for transfer, meaning that a policy aimed at transferring more effective teachers would benefit less from principals' willing participation. Thus we would predict that an

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involuntary transfer policy would more often be used to move relatively low-performing teachers out of low-achieving schools.

Of course, an involuntary transfer policy need not improve the distributional equity of teachers across schools. While it is perhaps unlikely that such a policy would be used to *intentionally* move teachers in an inequitable direction—e.g., high-performing teachers out of low-performing schools—such moves may occur if districts have poor information about teacher performance or make decisions about teacher moves arbitrarily without considering teacher performance information.[2] Alternatively, the district might be good at identifying ineffective teachers to transfer, but it may not do a good job at moving them in ways that increase equity overall. For example, the district may shuffle low-performing teachers to other disadvantaged schools, a "dance of the lemons" with no effect on equity. Similarly, if teachers transferred out of low-performing schools are replaced with less effective teachers, the capacity for the policy to improve equity is undermined.

Importance of Policy Implementation

The capability of a given involuntary transfer policy to positively affect either efficiency or equity goals depends on the details of that policy, how it is implemented, and the district context. As an example, consider the question of who determines which teachers are moved. If this decision is made by district-level leaders, the efficacy of the policy for helping meet district goals requires that district personnel have good information on teacher effectiveness, which they may or may not have. Alternatively, the district may give school-level leaders discretion over which teachers to transfer out. School leaders likely have better, more detailed information about the relative merits of their teachers, but they may not have the district's policy goals in mind.

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[2] Arbitrary use of the policy will have at best null impacts on efficiency as well, and in fact the long-term impacts may be negative as teachers become dissatisfied with district capriciousness.

Policy effects also depend on which schools are allowed to involuntarily transfer their teachers and the process for reallocating them. If high-achieving schools are given involuntary transfer rights, the policy could reduce equity, particularly if those schools are more likely to exercise their involuntary transfer options. Districts thus may have an interest in limiting transfers only to some kinds of schools. Similarly, the district may have to set guidelines for which schools *can* accept transferred teachers to prevent low-performing teachers from moving to low-performing schools, and for which schools *must* accept teacher transfers to prevent high-performing schools from refusing low-performing teachers.

In sum, while involuntary transfer policies have the potential to further district goals, there are numerous reasons to expect that a given policy may be ineffective or even deleterious. This topic is thus ripe for empirical examination. In the next section, we describe the involuntary transfer policy investigated in this study, in Miami-Dade County Public Schools, before turning to our empirical analysis of the effects of the district's policy.

Miami-Dade County Public Schools' Involuntary Transfer Policy

The district's bargaining agreement with the United Teachers of Dade, the local affiliate of the American Federation of Teachers, supplies the framework governing teacher transfers in M-DCPS. According to Article XII, Section 8 of the CBA, the district may involuntarily transfer teachers across schools "when deemed in the best interest of the school system" (M-DCPS/UTD Successor Contract, 2009; NCTQ, 2009). The vagueness in this provision gives district administrators discretion—provided the transfers can be justified as promoting the district's interests—over the use of involuntary teacher transfers. A recent analysis of CBAs throughout Florida found such discretion to be relatively typical (Cohen-Vogel & Osborne-Lampkin, 2007).[3]

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[3] Cohen-Vogel & Osborne-Lampkin (2007) found that administrators had at least some discretion over selection for involuntary transfers in 24 of the 66 contracts they studied in Florida, or about 36%. A larger fraction (55%) granted administrators discretion in consideration of voluntary transfer requests.

In the months prior to the 2008-09, 2009-10, and 2010-11 school years, the district utilized this provision by soliciting from principals a list of teachers in their schools for whom a move would be in the district's interest. Each school in M-DCPS is overseen by one of five (formerly six) regional offices—which in turn report to the central administration—and principals discussed the teachers they identified for transfer and the reasons why with administrators in their regional office. With regional office approval, names of teachers selected for involuntary transfer were then forwarded to the Instructional Staffing division in the district central office, which sought a new placement for each teacher, taking into account the availability of openings in a subject area in which the teacher was certified, the staffing needs of receiving schools, and the preferences of regional and school administrators.[4] Unless the teacher decided to exit the district in the interim, each involuntarily transferred teacher was in place in his or her new school by the start of the respective school year.[5]

At least three characteristics of the district's involuntary transfer policy are important for our analysis. The first is the indeterminate nature of the criteria used for teacher selection. "The best interest of the school system" need not mean, for example, that moves must target ineffective teachers or teachers in low-performing schools. Second—and related—is the role in the involuntary transfer policy played by school administrators. Not only could principals exercise discretion in identifying teachers to transfer (or even in *whether* to identify any teachers), but they continued to participate in the administrative process following a teacher's identification by working with regional and district administrators. These functions suggest that characteristics of the principal, such as having greater skills in human resources or more experience navigating the district bureaucracy, may help explain which schools utilized the involuntary transfer policy. Third is the informality of the process to place a teacher chosen for transfer. The absence of clear placement rules means that, for example, when principals in low-

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[4] Source: Authors' personal communications with officials from M-DCPS Human Resources, August 2011 and May 2012.
[5] According to M-DCPS Human Resources, a handful of transferred teachers were shuffled again at the start of the school year because of enrollment fluctuations at the receiving school.

achieving schools successfully identify ineffective teachers to be transferred out, they could—in theory—simply be moved to another low-performing school, though district officials suggest that Instructional Staffing was told not to do so.[6] Our analysis examines each of these three factors.

Data

We conduct our analyses using rich administrative databases on students, staff, and schools in Miami Dade County Public Schools (M-DCPS), the fourth largest public school district in the United States. M-DCPS serves approximately 380,000 students, with an ethnic distribution of about 9% white, 26% black, and 63% Hispanic students. Over 60% of students are eligible for subsidized lunch, and 15% are English language learners. Instruction is delivered by a teacher force of around 23,500 across approximately 400 schools.

To facilitate our analysis of transfers, M-DCPS human resources provided us with lists of all teachers who were involuntarily transferred to different schools within the district in the summer prior to the 2008-09, 2009-10, and 2010-11 academic years. We linked these lists with longitudinal administrative databases containing information about school, staff, and student characteristics, also provided by the district. School characteristics include enrollment size, school level, student racial/ethnic composition, proportion of subsidized lunch eligible students, and school performance ratings based on Florida's accountability system. Staff characteristics include teacher and principal gender, ethnicity, age, number of years in the district and current position, and academic degree. The district also provided us with teacher absence data for some years. Student characteristics include scores on the Florida Comprehensive Assessment Test (FCAT), absence and disciplinary records, and demographic information, including gender, race, subsidized lunch status, and whether the student is limited English proficient. We link student records to both their teachers and classrooms.

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[6] Source: Authors' personal communications with officials from M-DCPS Human Resources, February 2012.

Table 1 presents summary statistics for schools that utilized the involuntary transfer policy in 2008-09, 2009-10, and 2010-11 and for the teachers who were involuntarily transferred from those schools. Of the 73 schools transferring at least one teacher in at least one of these years, 45% are high schools, 19% are elementary schools, 25% are middle schools, and 11% are K-8 schools. The student population in these schools is 72% African American, 26% Hispanic, and 83% subsidized lunch-eligible. According to Florida's school accountability system, the schools are, on average, very low-performing; though the grades range from 1 (F) to 5 (A), the average is 2.22, or approximately a D.[7]

Across the three years in our study, the schools involuntarily transferred 375 teachers. Of these teachers, 72% were female, 59% were African American, and 21% were Hispanic. They were also a relatively experienced group, with 60% having 5 or more years of experience and only 8% having one year or less. In addition, 51% held a bachelor's degree as the highest degree, 35% held a master's degree, and 4% held a doctorate.

Methods

Our analysis seeks to understand the equity and efficiency implications of the district's involuntary transfer policy. We begin by identifying the characteristics of schools and principals who were likely to utilize the involuntary transfer option. Examining principals is especially interesting because district policy gave principals discretion over both whether to utilize the involuntary transfer option and, if they did, which teachers were chosen for transfer. Thus we might expect that relatively more experienced principals, for example, were more likely to have the skills to identify teachers and push their transfers through the district process, though new principals may feel less attachment to teachers and, as a result, be more willing to identify publically their lowest performers. A more central goal of this analysis is to see whether schools

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[7] Use of the involuntary transfer policy was concentrated among schools overseen by the district's Education Transformation Office (ETO), which supports the district's most persistently low-achieving schools, though some non-ETO schools utilized the policy as well.

that have low-achieving or otherwise more in-need students are more likely to utilize the policy. If schools with higher-achieving students systematically take advantage of the policy then it is unlikely to have positive distributional effects.

We begin by comparing schools that used the involuntary transfer option to those who don't using t-tests. We then use logit models to predict the likelihood that a school uses the involuntary transfer policy as a function of school and principal characteristics. Equation 1 represents this analysis:

$$Pr(uses\ involuntary\ transfer\ policy)_{s,y} = \frac{e^f}{1+e^f} \qquad (1)$$

where

$$f = \beta_0 + S_{s,y}\beta_1 + P_{s,y}\beta_2 + \delta_y + \varepsilon_{s,y}$$

In the above equation, the probability that school s, in year y, utilizes the involuntary transfer policy is a function of school characteristics $S_{s,y}$ (enrollment size, level, percentage of students eligible for subsidized lunch, and percentage of students who are black[8]), principal characteristics $P_{s,y}$ (gender, black, Hispanic, total experience in the district, years in current position,[9] highest academic degree), school year indicator variables δ_y, and a random error term $\varepsilon_{s,y}$. Estimates of Equation 1 cluster standard errors at the school level.

Next, we identify the characteristics of teachers who were chosen for involuntary transfer, both in comparison to teachers who did not move and to teachers who transferred voluntarily in the same years from the same schools. We again use both bivariate and multivariate analysis. In particular, we examine characteristics of the teacher's job, such as whether it was in a tested grade and subject, and observable qualifications, such as years of experience. We also examine two measures of teacher performance or productivity. One is total

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[8] Because the correlation between percent black and percent Hispanic is approximately -0.9 across schools, percent Hispanic is omitted from our models.

[9] In the administrative files, years in current position measures the number of years in the same job code and school level combination, not necessarily the years in the same school. In other words, a principal who works in one high school for 3 years then transfers to another high school for 2 years will have 5 years in the current position. M-DCPS personnel files do not track years in same school.

teacher absences in the year prior to the transfer, which is the sum of sick leave, personal leave, and other absences, excluding absences for professional development. The other is teachers' value-added to student achievement gains in math and reading, which we can calculate for a subset of teachers in the analysis. The Appendix provides a description of how we created these value-added measures.

For the multivariate analysis, we use multinomial logit models to predict the likelihood that a teacher within a school is involuntarily transferred, voluntarily transfers, or leaves M-DCPS relative to staying at their school. Equation 2 describes these analyses:

$$P_{tsy}(teacher\ status = m) = \frac{e^f}{1 + \sum_{j=2}^{M} e^f} \qquad (2)$$

where

$$f = \beta_0 + T_{sy}\beta_1 + P_{sy}\beta_2 + \varepsilon_{sy}$$

In Equation 2, teacher status can be defined as one of four categories, m: (1) stays at school, (2) involuntarily transferred, (3) voluntarily transfers, and (4) leaves M-DCPS. The probability that teacher t in school s is in categories 1, 2, 3, or 4 following year y is a function of teacher characteristics T_{sy}, principal characteristics P_{sy}, and a random error term ε_{sy}. Standard errors are clustered at the school level.

Next in our assessment of the effects of the involuntary transfer policy, we document two sets of patterns. First, we compare the characteristics of the "sending" and "receiving" schools—i.e., those who transferred teachers out and those where transfers were placed. If the policy is equity-enhancing, we expect that receiving schools will generally be of higher status than sending schools. Second, we compare the characteristics of the involuntarily transferred teachers to those who replace them. If the replacements are as (or more) ineffective as those who left, then the transfer policy is unlikely to benefit the sending school. We use simple t-tests for both of these comparisons.

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Lastly, we evaluate whether and how teacher productivity changed among those who were involuntarily transferred. For one part of this analysis, we compare involuntarily transferred teachers' performance, proxied by their value-added to student achievement gains, before and after the transfer. If the transferred teacher was less effective in his or her initial school than in the post-transfer school, there is evidence of an efficiency gain. Equation 3 describes our approach to this analysis.

$$A_{itsy} = \beta_0 + A_{its(y-n)}\beta_1 + E_{ty}\beta_2 + X_{itsy}\beta_3 + (IT_{ty})\beta_4 + (IT \times P)_{ty}\beta_5 + C_{tsy}\beta_6 + S_{sy}\beta_7 + \delta_y + \varepsilon_{itsy} \quad (3)$$

We predict achievement for student *i* with teacher *t* in school *s* in year *y* as a function of prior achievement $A_{its(y-n)}$, teacher experience indicators E_{ty}, time-varying student characteristics X_{itsy}, an indicator of whether the teacher has ever been involuntarily transferred IT_{ty}, school year indicator variables δ_y, the interaction of ever having been involuntarily transferred and post-transfer indicators $IT \times P_{ty}$, classroom characteristics C_{tsy}, time-varying school characteristics S_{sy}, and a random error term ε_{sy}. Estimates of Equation 3 allow us to see whether involuntarily transferred teachers are more effective after the move than they were before the move, both across schools (without school fixed effects) and within schools (with school fixed effects). In some models we also include indicators for whether the teacher ever transferred voluntarily, plus the interaction between the voluntary transfer and the time period after the transfer, to further differentiate the effect of the involuntary transfer from the effect of moving in general. In all of these models, standard errors are clustered at the teacher-year level.

In the second part of the productivity analysis, we examine whether teachers were absent more or less often following an involuntary transfer. For this analysis, as in Equation 3, we model the total number of teacher absences as a function of whether the teacher has ever been involuntarily transferred and the interaction between ever having been involuntarily transferred and a post-transfer indicator. The model also controls for teacher and school characteristics and indicator variables for year. Again, in some models we include an indicator for voluntary

transfers and an interaction with the post-voluntary transfer period. Absence models cluster standard errors at the teacher level.

Results

Which Schools Involuntarily Transferred Teachers?

The M-DCPS transfer policy gave principals discretion over whether any teachers in their schools should be identified for involuntary transfer. As Table 1 shows, only 73 of the district's roughly 390 schools utilized the involuntary transfer option during the three-year window we examine. Utilization of the policy required both that principals chose one or more teachers to transfer and that the district agreed that those transfers were appropriate.[10] To assess whether schools and principals who utilized the policy differed from those that did not, we first conduct *t*-tests of differences in their observable characteristics.

Table 2 shows the results of these tests. Schools that utilized the involuntary transfer policy were, on average, larger and served a higher percentage of black and subsidized lunch-eligible students than did non-utilizing schools. The difference in school size follows from the fact that high schools, which have larger enrollments than other school levels, accounted for 46% of the schools that utilized the involuntary transfer policy. In addition, schools that utilized the policy were much lower-achieving as reflected by FCAT math and reading scores and proficiency levels, and accountability grades. The average state accountability grade for schools using the involuntary transfer policy was 2.2 (D), compared with an accountability grade of 4.2 (or about a B) for schools that did not use the policy. In short, the typical school utilizing the involuntary transfer policy was a low-performing high school with a relatively high proportion of black and low-income students.

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[10] Though the distinction between these two steps is conceptually important, in our data we cannot observe cases in which principals nominated teachers for transfer but the district denied their choices.

The principals who involuntarily transferred teachers had served as a principal for less than 2 years, compared to more than 4 years for principals who did not involuntarily transfer teachers. This finding appears inconsistent with the conjecture that more experienced principals possess skills or institutional savvy that allowed them to successfully make use of the policy, though the bivariate analysis is not definitive because of the higher rates of principal turnover in the kinds of schools where involuntary transfers might be more likely. In addition, the principals who utilized the involuntary transfer policy included a greater proportion of male and black principals than their colleagues who did not utilize the policy.

Next, we examine the same question in a multivariate framework. Table 3 presents the logit estimates as odds ratios for Equation 1, which predicts the probability that a school transferred any teachers. Column 1 shows only school characteristics. Column 2 adds average standardized FCAT math and reading scores (combined) as a measure of school performance. Columns 3 and 4 add principal characteristics.

Across models, controlling for other school and principal characteristics, larger schools that served a higher population of black and subsidized lunch-eligible students were significantly more likely to involuntarily transfer teachers. K-8, middle, and high schools were all significantly more likely than elementary schools to utilize the involuntary transfer policy, with *high school* being an especially large predictor. Moreover, schools were less likely to utilize the involuntary transfer policy as test scores increased, even conditional on other student characteristics.

Among principal characteristics, only two predictors are statistically significant. The first is years in current position. As in the bivariate analysis, column 3 shows that more experienced principals were *less* likely to involuntarily transfer teachers, even after conditioning on school characteristics, including FCAT scores. Taking a closer look at time as a principal in column 4 by operationalizing it as a series of indicator variables (zero is the omitted category), we see that beginning principals (0-1 years) are the mostly likely to utilize the policy, with the likelihood

falling off thereafter; principals who have been in the position 6 or more years are the least likely to use it. The other statistically significant principal characteristic is gender, with female principals less likely than their male counterparts to transfer teachers.

Which Teachers Were Involuntarily Transferred?

Conditional on a school choosing to utilize the involuntary transfer policy, we next ask *which teachers* within those schools were chosen for transfer. In keeping with the above analyses, we start by conducting *t*-tests that compare the characteristics of teachers who are involuntarily transferred, those who voluntarily transfer, and those who leave M-DCPS with teachers who stay at the school. We use staying teachers as the reference group because these are the teachers who could have been involuntarily transferred but were not. Teachers who moved on their own or left the district presumably did not need to be transferred involuntarily by the district to remove them from the school.

Table 4 presents comparisons among the four groups of teachers. Teachers who were involuntarily transferred were more likely to be female and black than were teachers who stayed, voluntarily transferred, or left M-DCPS. Teachers who were involuntarily transferred were virtually identical to stayers in both age and total M-DCPS experience, though involuntary transfers had about one less year in the current position, and involuntary transfers were older and more experienced than voluntary transfers. As an example, only 8 percent of involuntary transfers had zero or one year of experience, compared with 22 percent of voluntary transfers and 53 percent of leavers. Education profiles for stayers and involuntary transfers were similar. Notably, however, involuntarily transferred teachers were much more likely than any of the other groups both to teach in a tested grade/subject combination in the transferring school *and* to have previously been moved from a tested classroom to a non-tested classroom. This latter difference may suggest that schools previously had attempted to act strategically in moving teachers away from subject/grade combinations important to school accountability before

moving the teacher to another school altogether.[11] This suggestion is backed up by the performance results. Involuntarily transferred teachers were absent more often than other teachers (10.7 days, on average, vs. approximately 9 for both the stayer and voluntary transfer groups).[12] In math, involuntarily transferred teachers had statistically significantly lower value-added scores than stayers in the year of the transfer, based on a value-added model that includes school fixed effects (i.e., estimates are within-school). They also had lower value-added scores in reading, though this difference is not statistically significant.

We use multinomial logit models to predict the likelihood that a teacher within a school is involuntarily transferred, voluntarily transfers, or leaves M-DCPS relative to staying at his or her school as a function of teacher and principal characteristics. Again, only schools involuntarily transferring at least one teacher are included. Table 5 presents the estimates of these models in terms of relative risk ratios, with "stayer" as the base group. Model 1 includes only teacher characteristics. Model 2 adds principal characteristics. Model 3 adds indicators for race and gender congruence between the teacher and principal.

All three models provide similar estimates of the relationship between teacher characteristics and the three types of job transition. Black teachers are more likely to be involuntarily transferred, though they are less likely to leave the district, as are Hispanic teachers. Other factors positively predicting the likelihood of an involuntary transfer are age, experience, and number of absences. The relative risk ratio for value added (math and reading averaged) is smaller than 1 but not statistically significant.[13]

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[11] As further evidence, we also found that while 35% of involuntarily transferred teachers were in tested subjects and grades prior to the move, after the transfer, this percentage had fallen to 30%.

[12] Absences for the "leavers" category are very low compared to the other groups. On average, however, teachers in the leavers category were only present for 35% of the days in the 180-day school year according to the data, so we assume they had fewer absences because they left early in the year.

[13] We also ran models including only math value added or only reading value added. For math only, the value-added coefficient was negative (i.e., relative risk ratio below 1) and statistically significant at the 0.10 level in some models for involuntary transfer. For reading the coefficients were always negative but never statistically significant. We also estimated models using the average of all previous years of value-added that could be calculated and did not find qualitatively different results.

No principal characteristics are statistically significant predictors of involuntary turnover probability (model 2). When we add indicators for whether the gender and race/ethnicity of the teacher and principal match, however, we do find some evidence that this match matters (model 3). Principals are less likely to involuntarily transfer teachers of the same gender and also of the same racial or ethnic background. These results are consistent with other evidence suggesting that gender and race congruence among teachers and their principals influences teacher labor market outcomes (Grissom & Keiser, 2011; Grissom, Nicholson-Crotty, & Keiser, 2012).

Where Were Involuntarily Transferred Teachers Moved?

To assess patterns in the involuntary movement of teachers, we use *t*-tests to compare characteristics of schools that involuntarily transfer teachers and schools that receive teachers who have been involuntarily transferred. We refer to schools that involuntarily transferred at least one teacher as "sending" schools and schools where these teachers are placed after the transfer as "receiving" schools. Table 6 presents comparisons of characteristics of sending and receiving schools from the year of the transfer.

The table shows that teachers were involuntarily transferred to much different school environments than the ones they left, on average. In particular, while transferred teachers were more likely to come from high schools, elementary schools were the most likely to receive transfers. Compared to sending schools, receiving schools had fewer black (72% to 33%) and free or reduced price lunch-eligible (84% to 72%) students, and higher numbers of Hispanic and limited English proficient students.

In M-DCPS, Hispanic students, the district's largest ethnic group, are more concentrated in high-achieving schools. Consistent with this observation, the table shows that involuntarily transferred teachers were moved to much higher-achieving schools than the ones they left; FCAT math and reading scores were approximately half a standard deviation higher, on average, in their new schools. Similarly, math and reading proficiency rates were much higher: 47% to

66% in math and 28% to 56% in reading. On Florida's accountability grading system, teachers were moved, on average, from D schools (2.2) to B schools (4.0). These results are consistent with the policy aim of moving low-performing teachers out of low-performing schools. There is little evidence that the policy resulted in a "dance of the lemons."

Did Involuntary Transfers Affect Teacher Productivity?

Our final goal is to understand whether teacher productivity changed as a result of the involuntary transfer policy. We begin by examining the association between being taught by an involuntarily transferred teacher and a student's test score growth. For this analysis, we estimate Equation 3 separately for math and reading using data from the 2005-06 through 2010-11 school years. The results are shown in Table 7. All models control for extensive student, classroom, and school characteristics, plus school fixed effects, year effects, and teacher experience dummy variables (one for each year through 20, then 20+), though for simplicity, coefficients for the control variables are omitted from the table.[14]

Columns 1 and 2 show the results for math. The first coefficient in column 1 shows that, conditional on other characteristics, students in classrooms of involuntarily transferred teachers performed worse on average than other students in the same schools. The second coefficient shows that the new students of involuntarily transferred teachers performed even worse relative to the average student in their schools after the transfer. Column 2 adds indicator variables for whether the teacher ever transferred (voluntarily) and an interaction between that variable and the post-transfer period, which lets us rule out the possibility that the coefficients are picking up

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[14] The control variables generally behave as expected. Lagged test scores are highly predictive of current test scores in both subjects at the student, classroom, and school level. Among other student-level characteristics, lagged absences predict lower current test score performance in all models, as do lagged suspensions, free/reduced lunch status, and being black or Hispanic. Female students, on average, are lower performing in math but not reading.

an effect common to all transfers.[15] The inclusion of these variables leaves the point estimates for the two involuntary transfer variables unaffected.

The results for reading differ slightly. In both columns, the "ever involuntary transfer" variable is negative and significant, suggesting again that involuntarily transferred teachers are relatively less productive than the mean teacher in their schools, on average. The coefficient on the post-transfer interaction, while negatively signed in both columns, is near zero and not statistically significant, providing no evidence of a difference in productivity compared to teachers in their new schools.

One difficulty with using student test score growth to assess the impact of the involuntary transfer policy on teacher productivity—aside from the concern that these models capture teacher contributions only with substantial measurement error—is the problem of the shifting comparison group. It is important to include a school fixed effect to control for school context and compare teachers only to other teachers in the same environment. But the involuntary transfer policy moved teachers to higher-performing schools, meaning the comparison group of teachers post-transfer in the school fixed effects models is a relatively more productive group, as measured by test scores. So, although we see that post-transfer the involuntarily transferred teachers are substantially worse than the average teacher in their school, at least in math, the fact that they are worse among a higher-performing group makes coming to conclusions about whether the policy affected their performance in *absolute* terms a challenge.

Teacher absences before and after the transfer, however, can be compared directly and provide an alternative (and more basic) measure of teacher productivity. In Table 8, we model total teacher absences using a similar approach to the test score analysis, this time at the teacher

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[15] If a teacher transferred more than once, the *post-transfer* indicator is set equal to 1 in any period after the *first* transfer.

level and controlling for teacher and school characteristics. Even-numbered columns include school fixed effects (and drop school characteristics).

On average, teachers who were involuntarily transferred were absent between 1.6 and 2 days more often than similar teachers in similar (or identical) school environments. This average is offset, however, in the post-transfer period, with the coefficients suggesting that involuntarily transferred teachers are absent between 1.2 and 1.6 days *less* often after being moved. These coefficients are significant at the 0.01 level in all four models. We interpret this table as showing evidence that the transfer policy identified less productive teachers (i.e., those with higher absence rates) for transfer and that these teachers responded to the transfer by being absent less often, suggesting the policy resulted in higher productivity for these teachers[16].

In the final step of our assessment of the impact of the involuntary transfer policy on district productivity, we consider the characteristics of the teachers who replaced the transferred teachers after they moved. Replacing relatively ineffective teachers with similarly ineffective teachers will have no impact on performance in the schools utilizing the policy, and in fact, if the replacements are substantially lower performing, productivity gains from moving teachers— such as the ones evidenced by the absences analysis in Table 8—could be completely offset. Unfortunately, making direct comparisons between exiting and entering teachers is difficult because of the restructuring of staff positions that occurred at some schools, but we attempt to assess the characteristics of transferred teachers relative to their replacements, first by comparing them to their direct subject-grade replacements if we could identify them (this could be done for approximately 30% of transferred teachers), and then by comparing them to all new hires in the school the following year.

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[16] Removing controls from the analyses did not change the teacher absence patterns we observed. In other words, it appears teachers were absent less after the involuntary transfer in absolute terms, not only in comparison to teachers in similar positions.

Table 9 shows the results of *t*-tests comparing the characteristics of replacements and new hires in year *t* with the characteristics of the involuntary transfers in year *t-1*.[17] We find that, compared to the involuntarily transferred teachers, replacements and new hires were younger and had significantly fewer years of experience within M-DCPS. In addition, new hires were comprised of a somewhat smaller proportion of black teachers than for involuntarily transferred teachers.

Next, we consider productivity. Involuntarily transferred teachers were absent 11 days, on average, in the year before they were transferred. The replacement teachers and new hires, however, were absent only an average of 9 days ($p < 0.01$ for both differences). When possible, we also compared value-added in both math and reading among the three groups. The sample sizes for these comparisons are significantly smaller because value-added can only be estimated for teachers with multiple years of teaching in the district in tested grades and subjects; this information is not available for the large fraction of replacements and new hires who are beginning teachers or for those whose previous teaching was outside tested classrooms. Still, the patterns are consistent with the conclusion that replacement teachers were higher performers than the involuntarily transferred teachers. Comparing direct replacements to transfers shows differences of +0.06 s.d. in math and 0.46 s.d. in reading, though only the latter difference is statistically significant ($p < 0.05$). For all new hires, a larger group, the differences are +0.09 s.d. in math and 0.40 s.d. in reading, with the reading difference statistically significant at the 0.05 level. Overall, these results suggest that the involuntarily transferred teachers were replaced by more productive teachers when they were moved out of their schools.

Discussion and Conclusions

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[17] The figures for the involuntary transfers differ somewhat from those shown in Table 1 because they are calculated only for the first two transfer cohorts (2009 and 2010). Data from 2012 are not yet available, so we cannot identify replacements and new hires for the 2011 cohort.

Can involuntary teacher transfer policies be used to promote efficiency and equity in urban schools? Evidence from the implementation of such a policy in Miami-Dade County Public Schools suggests that they can. Our analysis shows that M-DCPS used the policy to target relatively less productive teachers in its lowest-performing schools. These teachers were less effective in math and more likely to be absent from work than teachers who left the same schools voluntarily. They were also more experienced and had served longer in the same position, suggesting that the policy was used to move teachers out of low-achieving schools who would not have moved otherwise. Moreover, when these teachers were moved, they were sent to positions in much higher-performing schools with fewer disadvantaged students rather than shuffled to other schools similar to the ones they left. We also find evidence that, in replacing these teachers, the district was able to bring in teachers who achieved higher student test scores and were absent from work less often. Taken together, this evidence suggests that the involuntary transfer policy as implemented in M-DCPS enhanced equity across schools by increasing the quality of the teaching resources directed towards the students who needed them most.

The implications of the policy for district efficiency are less straightforward but suggest net gains as well. Given the low costs of implementing the policy, the question for efficiency is whether the policy increased overall district performance. On one hand, the analysis of transferred teachers' test score gains prior to and after the involuntary transfer does not indicate that the district achieved substantially higher performance from its existing teachers by improving the match between teachers and their schools through the transfers. Transferred teachers may even have performed worse in math after the transfer than they did before, which cuts against an efficiency improvement. The recency of the transfer policy implementation, however, gives us only a few years with which to estimate post-transfer effects, so these results should be interpreted with caution.

More consistent with the claim that the policy improved efficiency are the results for teacher absences. Transferred teachers' absenteeism rates declined significantly in their new schools. Their replacements in their old schools also had fewer absences. Given research that shows that student learning increases when teachers miss work less often (Miller, Murnane, & Willett, 2008), these results suggest that the transfer policy improved teacher productivity in the aggregate.

Our findings suggest that an involuntary transfer policy can be used to promote school district goals and benefit students. Consistent with other studies finding that more restrictive transfer provisions in district-teacher contracts are associated with more unequal distributions of teacher qualifications across schools (Moe, 2005), our results demonstrate that district-initiated teacher transfers can be used strategically to "undo" the well-documented systematic sorting of less qualified teachers into the neediest schools (e.g., Lankford, Loeb, & Wyckoff, 2002). They can also boost the productivity of relatively low-performing teachers. Of course, the operative word in both of the preceding sentences is *can*. Our data came from just one urban district with a particular plan for identifying teachers for transfer and moving them to new schools. In M-DCPS, utilization of the policy was concentrated among fewer than 10% of the district's schools and mostly in its lowest performers. An implementation plan with more widespread usage among schools may have yielded different results. While this case demonstrates that such a plan can be used effectively, design and implementation choices matter, and we do not know whether transfer policies in other districts applied in different political and organizational contexts would be as successful.

Our results are also consistent with other work demonstrating that school principals can, when given the opportunity, successfully identify less productive teachers for staffing actions. Like Jacob's (2011) study of teacher dismissals in Chicago, we find that principals are more likely to act to move teachers out of their schools who have lower value-added scores and who are absent from work more often. Also like that study, we find some evidence that principals are

less likely to identify teachers with whom they share demographic characteristics, though we differ in finding little evidence of a relationship between principal experience and the likelihood the policy was used. These findings suggest the need for additional research into the complexities of how principals make human resource decisions in their schools.

The study faces several limitations in addition to this concern about generalizability. First, we analyze the effects of the M-DCPS transfer policy over a relatively short time frame. A longer term study utilizing more data might obtain more precise or more nuanced results. We would especially benefit from process data collected from schools to help us understand how principals went about identifying some teachers over others and, in receiving schools, whether principals approached working with transferred teachers differently. Second, we are able to examine only a subset of the ways in which utilization of the involuntary transfer policy affected efficiency and equity in the district. For example, it may be that the threat of being involuntarily transferred affects the productivity of teachers in a school—either positively or negatively—beyond those chosen for transfer. Data constraints prevent us from testing for this effect.

Future work might examine the written involuntary transfer policies and their use in other districts to assess whether the patterns we have described are characteristics of district implementation of such policies more broadly. Researchers might also examine the impact of involuntary transfer policies on other organizational outcomes, such as teacher turnover and morale, for which such policies may have unintended consequences.

Appendix: Estimating Teacher Value-Added

Equation A1 describes our teacher value-added model, which predicts the achievement gain between year *t-1* and year *t* for student *i* with teacher *j* in school *s* as a function of time-varying student characteristics (X_{ijsts}), classroom characteristics (C_{jt}), time-varying school characteristics, (S_{st}), student fixed effects (π_i), and a teacher by year fixed effect (δ_{jt}).

$$A_{ijst} - A_{ijs(t-1)} = \beta X_{ijst} + \eta C_{jt} + \gamma S_{st} + \pi_i + \delta_{jt} + \varepsilon_{ijst} \qquad \textbf{(A1)}$$

The parameter δ reflects the contribution of a given teacher to growth in student achievement each year, after controlling for all observed time-varying student and school characteristics, observed and unobserved time-invariant student characteristics, and characteristics of students' classrooms that may be associated with learning. It shows whether the achievement gain for a given student is higher or lower the year they have a particular teacher relative to their average gains from years they are in classes with other teachers.

The test scores used to generate the value-added estimates are the scaled scores from the FCAT, standardized to have a mean of zero and a standard deviation of one for each grade in each year. Subscripts for subjects are omitted for simplicity, but we estimate Equation A1 separately for student achievement gains in math and reading. Gains in math and reading are attributed to teachers of self-contained elementary school classrooms for students in grades 5 and below. For older students (who have multiple teachers), gains in math and reading are attributed to math and English teachers. These teachers are identified from student course records, which list the course title and instructor for each of a student's courses in each year. Since we have eight years of test data (i.e., 2003 through 2011) and students are tested in a wide range of grades (3-10), we observe over half of tested students in two or more schools.

After estimating Equation A1, we save the teacher by year fixed effects and their corresponding standard errors. The estimated coefficients for these fixed effects include measurement error as well as real differences in achievement gains associated with teachers. We

therefore shrink the estimates using the empirical Bayes method to bring imprecise estimates closer to the mean. After shrinking the value-added estimates, we standardize them to have a mean of 0 and a standard deviation of 1 in each year to facilitate interpretation.

References

Boyd, D., Lankford, H., Loeb, S., & Wyckoff, J. (2005). Explaining the short careers of high-achieving teachers in schools with low-performing students. American Economic Review, 95, 166–171.

Chen, D.W., & Hernandez, J.C. (2011, May 6). Mayor announces plan to lay off thousands of teachers. The New York Times. Retrieved from http://www.nytimes.com/2011/05/06/nyregion/bloomberg-budget-will-seek-400-million-more-in-cuts.html?_r=1.

Cohen-Vogel, L., & Osborne-Lampkin, L. (2007). Allocating quality: Collective bargaining agreements and administrative discretion over teacher assignment. Educational Administration Quarterly, 43, 433-461.

Grissom, J.A. (2011). Can good principals keep teachers in disadvantaged schools? Linking principal effectiveness to teacher satisfaction and turnover in hard-to-staff environments. Teachers College Record, 113, 2552-2585.

Grissom, J.A., & Keiser, L. (2011). A supervise like me: Race, representation, and the satisfaction and turnover decisions of public sector employees. Journal of Policy Analysis and Management, 30, 557-580.

Grissom, J.A., Nicholson-Crotty, J., & Keiser, L. (2012). Does my boss's gender matter? Explaining job satisfaction and employee turnover in the public sector. Journal of Public Administration Research and Theory, in press.

Guarino, C., Santibañez, L., & Daley, G. (2006). Teacher recruitment and retention: A review of the recent empirical literature. Review of Educational Research, 36, 63-87.

Jackson, K.C., & Bruegmann E. (2009). Teaching students and teaching each other: The importance of peer learning for teachers. American Economic Journal: Applied Economics, 1, 85-108.

Jacob, B. A. (2011). Do principals fire the worst teachers? *Educational Evaluation and Policy Analysis,* 33(4), 403–434.

Koski, W.S., & Horng, E.L. (2007). Facilitating the teacher quality gap? Collective bargaining agreements, teacher hiring and transfer rules, and teacher assignment among schools in California. Education Finance and Policy, 2, 262-300.

Keigher, A. (2010). Teacher attrition and mobility: Results from the 2008–09 Teacher Follow-up Survey (NCES 2010-353). U.S. Department of Education. Washington, DC: National Center for Education Statistics. Retrieved [date] from http://nces.ed.gov/pubsearch.

Ladd, H.F. (2011). Teachers' perceptions of their working conditions: How predictive of planned and actual teacher movement? Educational Evaluation and Policy Analysis, 33, 235-261.

Lankford, H., Loeb, S., & Wyckoff, J. (2002). Teacher sorting and the plight of urban schools: A descriptive analysis. Educational Evaluation and Policy Analysis, 24, 37-62.

Levin, J., Mulhern, J., & Schunck, J. (2005). Unintended consequences: The case for reforming the staffing rules in urban teachers union contracts. Brooklyn, NY: The New Teacher Project.

Loeb, S., Darling-Hammond, L., & Luczak, J. (2005). How teaching conditions predict teacher turnover in California schools. Peabody Journal of Education, 80, 44-70.

M-DCPS/UTD Successor Contract, 2006. Amended 2009. Retrieved [date] from http://www2.dadeschools.net/employees/labor_union/UTD/index.htm.

Miller, R.T., Murnane, R.J., & Willett, J.B. (2008). Do teacher absences impact student achievement? Longitudinal evidence from one urban school district. Educational Evaluation and Policy Analysis, 30, 181–200.

Moe, T.M. (2005). Bottom-up structure: Collective bargaining, transfer rights, and the education of disadvantaged children. Unpublished paper, Stanford University.

Moe, T.M. (2009). Collective bargaining and the performance of the public schools. American Journal of Political Science, 53, 156-174.

National Council on Teacher Quality. (2009). Teacher rules, roles, and rights: Miami-Dade County School District, Florida. Retrieved [date] from http://www.nctq.org/tr3/districtHomepage.jsp?districtId=5.

Strunk, K.O., & Grissom, J.A. (2010). Do strong unions shape district policies? Collective bargaining, teacher contract restrictiveness, and the political power of teachers' unions. Educational Evaluation and Policy Analysis, 32, 389-406.

Table 1: Descriptive Statistics for Schools Utilizing Transfer Policy and Teachers Transferred

Variable	N	Mean	SD	Min	Max
Transferring school characteristics					
Percent female students	73	48.2	3.0	41.3	57.1
Percent Black students	73	71.8	21.6	22.2	96.2
Percent Hispanic students	73	25.7	20.3	3.4	69.5
Percent subsidized lunch eligible	73	83.4	11.4	50.3	98.1
School size (in 100s)	73	11.6	7.8	3.0	30.6
Proportion elementary school	73	0.19		0	1
Proportion K-8 school	73	0.11		0	1
Proportion middle school	73	0.25		0	1
Proportion high school	73	0.45		0	1
School accountability grade	73	2.22	0.82	1	5
Transferred teacher characteristics					
Female	375	0.72		0	1
Black	375	0.59		0	1
Hispanic	375	0.21		0	1
Age	375	45.65	11.44	23	74
Experience (in years)	375	9.43	8.42	0	41
0 to 1 years	375	0.08		0	1
2 to 4 years	375	0.32		0	1
5+ years	375	0.60		0	1
Current position years	375	4.82	4.85	0	23
Bachelor's degree	375	0.51		0	1
Master's degree	375	0.35		0	1
Doctorate degree	375	0.04		0	1

Table 2: Comparison of Schools that Utilized vs. Did Not Utilize Involuntary Transfers

Variable	No Involuntary Transfers	Involuntary Transfers
School Characteristics		
School size (in 100s)	7.76	11.63***
Percentage female	48.55	48.18
Percentage free/reduced lunch students	68.98	83.39***
Percentage limited English proficiency students	48.4	35.12***
Percentage Black students	28.26	71.77***
Percentage Hispanic students	61.35	25.66***
Standardized math score	-0.13	-0.51***
Standardized reading score	-0.11	-0.55***
Proficient in math	0.64	0.47***
Proficient in reading	0.57	0.28***
School accountability grade	4.24	2.22***
Elementary school	0.46	0.19***
K-8 school	0.12	0.11
Middle school	0.17	0.25*
High school	0.14	0.45***
Principal Characteristics		
Female	0.71	0.49***
Black	0.28	0.52***
Hispanic	0.14	0.10
Experience (in years)	21.58	19.23***
Current position years	4.33	1.90***
Masters degree	0.62	0.52*
Doctorate degree	0.20	0.24

Note: Asterisks indicate significant differences from schools that did not utilize involuntary transfers * $p < .10$, ** $p < .05$, *** $p < .01$

Table 3: Predicting the Likelihood a School Involuntarily Transferred Any Teachers

Variable	(1)	(2)	(3)	(4)
School Characteristics				
School size (in 100s)	1.097**	1.216***	1.256***	1.254***
	(0.043)	(0.072)	(0.083)	(0.084)
Percentage free/reduced lunch	1.154***	1.172***	1.196***	1.195***
	(0.033)	(0.044)	(0.050)	(0.050)
Percentage Black	1.051***	1.060***	1.072***	1.070***
	(0.009)	(0.011)	(0.015)	(0.014)
K-8 school	5.902**	10.379***	18.273***	17.839***
	(5.335)	(8.706)	(14.620)	(13.995)
Middle school	12.321***	12.132***	8.533***	8.192***
	(7.808)	(8.436)	(6.376)	(6.303)
High school	227.854***	228.845***	309.156***	279.097***
	(199.168)	(236.479)	(323.382)	(290.525)
2010 year dummy	0.233***	0.173***	0.115***	0.114***
	(0.059)	(0.053)	(0.047)	(0.051)
2011 year dummy	0.246***	0.201***	0.143***	0.143***
	(0.078)	(0.070)	(0.063)	(0.071)
Combined math and reading score		0.005***	0.003***	0.003***
		(0.006)	(0.004)	(0.004)
Principal Characteristics				
Experience in district (in years)			1.016	1.003
			(0.026)	(0.025)
Current postion years			0.696***	
			(0.063)	
1 year				0.920
				(0.403)
2-3 years				0.331*
				(0.197)
4-5 years				0.242**
				(0.157)
6+ years				0.050***
				(0.035)
Female			0.396**	0.451*
			(0.166)	(0.201)
Black			0.587	0.571
			(0.303)	(0.300)
Hispanic			0.761	0.581
			(0.481)	(0.399)
Masters degree			1.258	1.252
			(0.847)	(0.852)
Doctorate degree			2.007	2.007
			(1.588)	(1.652)
Specialist degree			3.920	2.974
			(4.301)	(3.282)
Observations	1073	1043	1006	1006
Pseudo R-squared	0.470	0.572	0.637	0.639

Note: Logit models. Standard errors in parentheses, clustered at school level. Odds ratios shown. * p < .10, ** p < .05, *** p <.01.

Table 4: Teacher Characteristics by Status in Sending Schools

Variable	Stayers	Involuntary Transfers	Voluntary Transfers	Leavers
Female	0.64	0.72***	0.62	0.63
White	0.35	0.22***	0.33	0.37
Black	0.49	0.59***	0.54**	0.54**
Hispanic	0.12	0.14	0.10	0.06***
Age	45.21	45.65	42.55***	42.58***
Experience (in years)	9.45	9.43	7.21***	4.87***
0 to 1 years	0.14	0.08***	0.22***	0.53***
2 to 4 years	0.26	0.32***	0.28	0.23
5+ years	0.60	0.60	0.50***	0.24***
Current position years	5.75	4.82***	3.70***	2.35***
Bachelors degree	0.03	0.04	0.04	0.04*
Masters degree	0.09	0.10	0.08	0.06***
Doctorate degree	0.34	0.35	0.31	0.25***
Teach tested subject/grade	0.18	0.35***	0.19	0.12***
Ever moved to non-tested subject/grade	0.23	0.48***	0.29***	0.11***
Absences (in days)	9.05	10.73***	9.32	3.76***
N	3786	375	509	742
Math value-added math (within-school)	0.09	-0.10*	0.03	-0.04
N	381	54	45	39
Reading value-added math (within-school)	-0.07	-0.11	-0.04	0.11
N	369	63	56	42

Note: Asterisks indicate significant differences from Stayers category (*t*-tests). * p < .10, ** p < .05, *** p <.01. On average, teachers in Leavers category were only present for about 35% of the 180-day school year.

Table 5: Predicting Teacher Status Next Year

	Involuntary Transfer			Voluntary Transfer			Leaver		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Teacher Characteristics									
Female	0.81	0.83	0.80	0.81	0.82	0.78	0.81	0.83	0.82
	(0.17)	(0.18)	(0.19)	(0.21)	(0.22)	(0.21)	(0.22)	(0.23)	(0.22)
Black	1.73***	1.64**	1.82**	1.14	1.06	1.05	0.72*	0.65**	0.67*
	(0.36)	(0.36)	(0.43)	(0.33)	(0.32)	(0.31)	(0.14)	(0.13)	(0.14)
Hispanic	1.33	1.30	1.23	1.11	1.15	1.15	0.25*	0.23*	0.21*
	(0.52)	(0.49)	(0.41)	(0.43)	(0.47)	(0.48)	(0.19)	(0.18)	(0.17)
Age	1.02*	1.02*	1.02**	1.00	1.00	1.00	0.99	0.99	0.99
	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
Experience	1.04**	1.04**	1.04**	1.04	1.04	1.04	1.01	1.02	1.02
	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.04)	(0.05)	(0.05)
Current position years	0.95	0.96	0.96	0.91**	0.90**	0.90**	0.80*	0.79*	0.79*
	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.10)	(0.10)	(0.10)
Masters degree	0.81	0.81	0.77	0.99	0.92	0.90	0.42	0.41	0.39
	(0.31)	(0.32)	(0.32)	(0.42)	(0.38)	(0.38)	(0.34)	(0.33)	(0.33)
Doctorate degree	1.09	1.08	1.04	1.26	1.27	1.26	0.64*	0.65*	0.65*
	(0.23)	(0.24)	(0.25)	(0.37)	(0.36)	(0.36)	(0.17)	(0.17)	(0.17)
Value Added (Math & Rdg. avg.)	0.64	0.65	0.61	0.67	0.58	0.59	0.86	1.08	1.04
	(0.42)	(0.43)	(0.40)	(0.57)	(0.48)	(0.49)	(0.75)	(1.02)	(0.98)
Absences	1.07***	1.07***	1.07***	1.06**	1.06***	1.06***	0.96	0.96	0.96
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.04)	(0.04)	(0.04)
Principal Characteristics									
Female		1.03	1.42		1.44	1.61		1.02	1.09
		(0.25)	(0.41)		(0.52)	(0.61)		(0.33)	(0.39)
Black		1.45	1.84**		2.05**	2.09**		2.14***	2.24***
		(0.47)	(0.55)		(0.61)	(0.60)		(0.49)	(0.52)
Hispanic		1.04	1.02		1.75	1.74		0.30	0.28*
		(0.46)	(0.43)		(0.89)	(0.90)		(0.23)	(0.21)
Experience		1.02	1.01		0.98	0.98		1.00	1.00
		(0.02)	(0.02)		(0.03)	(0.03)		(0.02)	(0.02)
Current position years		0.96	0.97		1.12	1.12		1.02	1.02
		(0.05)	(0.05)		(0.09)	(0.09)		(0.04)	(0.04)
Doctorate degree		1.04	1.02		0.52	0.51		0.94	0.96
		(0.34)	(0.34)		(0.31)	(0.30)		(0.34)	(0.35)
Masters degree		1.04	0.96		0.54	0.52*		1.26	1.23
		(0.40)	(0.36)		(0.21)	(0.20)		(0.43)	(0.43)
Specialist degree		0.48	0.54		0.43	0.43		0.32	0.32
		(0.23)	(0.27)		(0.26)	(0.26)		(0.40)	(0.40)
Teacher-Principal Gender Congruence			0.45***			0.75			0.87
			(0.11)			(0.16)			(0.22)
Teacher-Principal Race Congruence			0.59***			0.97			0.76
			(0.11)			(0.21)			(0.14)
Observations	999	999	999	999	999	999	999	999	999
Adjusted R-squared	0.10	0.12	0.13	0.10	0.12	0.13	0.10	0.12	0.13

Note: Multinomial logit models estimated with "stayers" as the base group. Relative risk ratios shown. Models only estimated for schools involuntarily transferring at least one teacher. Models also include year indicator variables and indicators for school level. Standard errors in parentheses, clustered at school level. * $p < .10$, ** $p < .05$, *** $p < .01$.

Table 6: Comparison of Schools Sending and Receiving Involuntary Transfers

Variable	Sending Schools	Receiving Schools
School size (in 100s)	10.97	12.32
Percentage female	0.48	0.49
Percentage free/reduced lunch students	0.84	0.72***
Percentage limited English proficiency students	0.35	0.49***
Percentage Black students	0.72	0.33***
Percentage Hispanic students	0.25	0.56***
Elementary school	0.21	0.32*
K-8 school	0.11	0.15
Middle school	0.25	0.26
High school	0.43	0.24***
Standardized math score	-0.52	-0.04***
Standardized reading score	-0.56	-0.04***
Proficient in math	0.47	0.66***
Proficient in reading	0.28	0.56***
School accountability grade	2.15	3.97***
N	73	196

Note: Asterisks indicate significant differences from schools that utilized the involuntary transfer policy * $p < .10$, ** $p < .05$, *** $p < .01$.

Table 7: Test Score Growth for Students Taught by Involuntarily Transferred Teachers

	Math Achievement (FCAT)		Reading Achievement (FCAT)	
	(1)	(2)	(3)	(4)
Teacher Transfer Indicators				
Ever involuntary transfer	-0.0245**	-0.0237**	-0.0181**	-0.0182**
	(0.0106)	(0.0106)	(0.0082)	(0.0082)
Ever involuntary transfer x	-0.0671***	-0.0683***	-0.0067	-0.0090
post-transfer interaction	(0.0211)	(0.0212)	(0.0134)	(0.0134)
Ever transfer		-0.0150***		0.0056
		(0.0045)		(0.0036)
Ever transfer x		0.0046		-0.0205***
post-transfer interaction		(0.0117)		(0.0078)
Constant	0.1487***	0.1500***	0.1813***	0.1806***
	(0.0117)	(0.0117)	(0.0110)	(0.0110)
Observations	715884	715884	678940	678940
Adjusted R-squared	0.647	0.647	0.615	0.615

Note: Standard errors in parentheses, clustered at teacher-year level. * $p < .10$, ** $p < .05$, *** $p < .01$. All models include school fixed effects, plus student characteristics (two lagged test scores in the same subject as the dependent variable, lagged number of absences, lagged number of suspensions, female, black, Hispanic, limited English proficiency status, free/reduced price lunch eligibility), classroom characteristics (average lagged test score, average lagged absences, average lagged suspensions, percent black, percent Hispanic, percent female, percent free/reduced lunch eligible, percent limited English proficient), school characteristics (average test score, enrollment size, percent free/reduced lunch eligible, percent black, percent Hispanic), and indicators for year and teacher experience level.

Table 8: Involuntarily Transfers and Teacher Absences

	(1)	(2)	(3)	(4)
Teacher Transfer Indicators				
Ever involuntary transfer	1.57***	2.01***	1.58***	2.02***
	(0.20)	(0.22)	(0.20)	(0.22)
Ever involuntary transfer x	-1.15***	-1.62***	-1.17***	-1.62***
post-transfer interaction	(0.31)	(0.32)	(0.31)	(0.32)
Ever transfer			0.35***	0.30***
			(0.08)	(0.08)
Ever transfer x			-0.23*	-0.06
post-transfer interaction			(0.13)	(0.14)
Teacher Characteristics				
Female	1.05***	1.05***	1.06***	1.06***
	(0.07)	(0.07)	(0.07)	(0.07)
Black	-0.18**	-0.19***	-0.18**	-0.19***
	(0.07)	(0.07)	(0.07)	(0.07)
Hispanic	0.20***	0.19***	0.20***	0.18***
	(0.07)	(0.07)	(0.07)	(0.07)
Age	-0.07***	-0.07***	-0.07***	-0.07***
	(0.00)	(0.00)	(0.00)	(0.00)
Experience	0.05***	0.05***	0.05***	0.05***
	(0.00)	(0.00)	(0.00)	(0.00)
Current position years	0.06***	0.05***	0.06***	0.06***
	(0.01)	(0.01)	(0.01)	(0.01)
Masters degree	0.12**	0.12**	0.12**	0.12**
	(0.05)	(0.05)	(0.05)	(0.05)
Doctorate degree	0.06	0.11	0.05	0.11
	(0.22)	(0.22)	(0.22)	(0.22)
School Characteristics				
School size (in 100s)	0.02***		0.02***	
	(0.01)		(0.01)	
Percentage free/reduced lunch	-0.32		-0.33	
	(0.23)		(0.23)	
Percentage Black students	0.70*		0.68*	
	(0.40)		(0.40)	
Percentage Hispanic students	0.93**		0.92**	
	(0.38)		(0.38)	
K-8 school	-0.09		-0.10	
	(0.08)		(0.08)	
Middle school	-0.01		-0.03	
	(0.07)		(0.07)	
High school	-1.12***		-1.16***	
	(0.12)		(0.12)	
Constant	9.08***	9.56***	9.03***	9.50***
	(0.27)	(0.14)	(0.27)	(0.15)
Observations	78234	78234	78234	78234
Adjusted R-squared	0.041	0.033	0.041	0.033

Note: Standard errors in parentheses, clustered at teacher level. * p < .10, ** p < .05, *** p <.01 . Even-numbered models include school fixed-effects. All models include indicator variables for year.

Table 9: Comparing Involuntary Transfers to the Teachers Who Replaced Them

Variable	Involuntary Transfers	Replacements	New Hires
Female	0.70	0.66	0.66
Black	0.58	0.50	0.49**
Hispanic	0.16	0.22	0.21
Age	45.53	41.18***	42.02***
Experience (in years)	9.25	4.71***	5.72***
0 to 1 years	0.10	0.23***	0.29***
2 to 4 years	0.33	0.42	0.36
5+ years	0.57	0.35***	0.35***
Bachelors degree	0.04	0.04	0.03
Masters degree	0.10	0.08	0.07*
Doctorate degree	0.34	0.27	0.30
Absences (in days)	10.98	8.80***	9.11***
N	323	96	408
Math value-added math (within-school)	-0.092	-0.029	0.001
N	48	14	55
Reading value-added math (within-school)	-0.15	0.310**	0.246**
N	50	17	50

Note: Values for involuntary transfer teachers taken for school year preceding the transfer. Values for other two groups taken in the year following the transfer. The teachers in the Replacements category only account for roughly 30% of the teachers in the Involuntary Transfers category. The teachers in the Replacements category are also included in the New Hires category. Asterisks indicate significant differences from Involuntary Transfers category, * $p < .10$, ** $p < .05$, *** $p < .01$