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Teachers' Perceptions of Their Working Conditions:

How Predictive of Policy-Relevant Outcomes?

Helen Ladd

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ABSTRACT

This quantitative study uses data from North Carolina to examine the extent to which survey based perceptions of working conditions are predictive of policy-relevant outcomes, independent of other school characteristics such as the demographic mix of the school's students. Working conditions emerge as highly predictive of teachers' stated intentions to remain in or leave their schools, with leadership emerging as the most salient dimension. Teachers' perceptions of their working conditions are also predictive of one-year actual departure rates and student achievement, but the predictive power is far lower. These weaker findings for actual outcome measures help to highlight both the strengths and weaknesses of using teacher survey data for understanding outcomes of policy interest.

INTRODUCTION

Like most other workers, teachers make their decisions about whether to remain in their current jobs based both on the level of compensation and on the quality of the work environment. For teachers, the work environment is determined in part by the educational challenges associated with the economic and racial mix of students in the school– characteristics of schools that are typically easy for the researcher to measure. In addition, their work environment includes a number of harder-to-measure factors such as the quality of the school's leadership and the extent to which teachers are given the leeway to make decisions, are supported in their efforts to improve student learning, or have opportunities to develop professionally. Until recently, little statewide data have been available on these latter components. That situation is now changing as several states have begun to invest in large statewide surveys of all teachers that generate rich data on teachers' perceptions of their working conditions. One of the leaders in this movement is the state of North Carolina.

The primary purpose of this study is to examine the extent to which these survey generated perceptions are predictive of teachers' intended departures from schools, independent of other factors, including the school's racial or socio-economic mix of students, that may predict departure. A secondary purpose is to raise some general questions about the usefulness of survey data for predicting both planned departures and other outcomes of policy interest such as actual one-year departure rates and student achievement.

This quantitative study is based on two rich data sets for North Carolina. One is an administrative data set that includes information on all North Carolina students in

public schools, teachers and schools that is available through the North Carolina Education Research Data Center. The other data set includes responses to the surveys about working conditions that have been administered to all teachers and school administrators in the state every two years since 2002 (Hirsch and Emerick, 2006). The analysis is based on the 2006 survey results because that year has far higher response rates than in previous years and is the most recent year for which information is now available on the post-survey movement of teachers.

Previous quantitative research on the relationship between teacher working conditions and teacher mobility based on large administrative data sets – much of which has been done by economists – has drawn attention to easily measured school characteristics such as the racial and economic mix of the school's students or their achievement levels (Boyd, Lankford, Loeb, and Wyckoff, 2005; Dolton and van der Klaauw, 1995; Hanushek, Kain, and Rivkin, 2004; Hanushek, Kain, O'Brien, and Rivkin, 2005; Scafidi, Sjoquist, and Stinebrikner, 2007). Other researchers have used teacher surveys or ethnographic studies to document the importance of the harder-to-measure elements of teacher working conditions (Buckley, Schneider, and Yang, 2005; Elfers, Plecki, and Knapp, 2006; Ingersoll, 2001; Johnson, Berg, and Donaldson, 2005, and citations therein; Stockard and Lehman, 2004). Such researchers emphasize the importance of the quality of the workplace both as a mediator of the effectiveness of teachers within classrooms and as a determinant of their willingness to remain in a school or in teaching more generally.

Much of the present study is in the spirit of two recent quantitative studies of teacher turnover. The first uses teacher survey data from California to examine how

teaching conditions predict teacher turnover at the school level (Loeb, Darling-Hammond, and Luczak, 2005). Differentiating the present study from the aforementioned is my focus on the departure decisions of individual teachers, the use of a far larger and richer survey of teachers, and the separate attention to the three levels of schooling. A more recent study (Grissom, 2008) addresses similar issues with data from the national Schools and Staffing Survey. Offsetting the benefits of a national sample are the limited number of respondents per school and the difficulty of examining the different forms of departures.

The following sections provide the policy context and conceptual foundation; describe the North Carolina data with particular attention to the measurement of working conditions; and present the results, first for teachers' intentions about leaving their current schools as reported on the survey, and then for actual departure rates constructed from administrative data, and for student achievement based on test scores in math and reading. Working conditions, as perceived by teachers, are highly predictive of teachers' intended departure rates even after many measurable characteristics of the school are controlled for. Further, the quality of school leadership emerges as the dominant factor among those examined in this study. In addition, consistent with the findings of Loeb, Darling-Hammond and Luczak (2005), the inclusion in the models of teachers' perceptions of their working conditions attenuates somewhat the negative relationship between high proportions of minority students and teachers' plans to leave their current school.

In addition, teachers' perceptions of their working conditions are also predictive of one-year actual departure rates and of student achievement, but the predictive power of

these perceptions is far lower than for planned departures. These weaker findings for actual outcome measures help to highlight both the strengths and weaknesses of using teacher survey data for understanding outcomes of policy interest.

POLICY CONTEXT AND CONCEPTUAL FOUNDATION

The focus on the desire of teachers to leave schools reflects current policy interest in the difficulty that many schools, especially those with low-performing students, have in attracting and retaining teachers. Although departures that reflect a poor fit between the school and the teacher, or between the teaching profession and the teacher, may be desirable and appropriate, high rates of departure from particular schools can be counterproductive. Resources are wasted if teachers who ultimately would have been good teachers leave the profession. In addition, regardless of the reason for leaving, schools with high turnover rates face high costs of recruiting and training new teachers and find it difficult to offer a coherent education program, to the detriment of the students in those schools (Alliance for Education, 2005).

Sorting out the factors associated with teacher mobility decisions is important for policy. The standard use of a uniform district-wide salary schedule means that capable teachers are often reluctant to remain in schools serving large proportions of disadvantaged students if they are able to move other schools with less challenging-to-educate students and yet earn the same salary. As a result, compared to other schools, those serving disadvantaged students often end up with teachers with weaker credentials and higher rates of turnover. One obvious policy solution – but one that to date has been politically difficult to implement on a broad scale – is to override the uniform salary

schedule and to induce quality teachers to teach in such schools by paying them higher salaries (Clotfelter, Ladd, and Vigdor, 2008). Another is to spread the disadvantaged students among schools so no one school would be at a disadvantage relative to another in its ability to attract and retain quality teachers (Ladd, 2008).

But a third policy option may also be possible. To the extent that teachers are reluctant to teach in such schools not only because of the characteristics of their students but also because of poor working conditions, efforts to improve working conditions could conceivably reduce turnover rates. This policy option could well appeal to administrators because it is likely to be far less costly, either in terms of dollars or in political costs, than either of the other two policy options. Furthermore, a broad effort to improve working conditions in schools could potentially make the teaching profession as a whole more attractive and also make teachers more productive in the classroom.

The research in this paper should be viewed as analytically descriptive and not causal. Moreover, the main analysis, which is based on survey responses about teachers' career intentions to remain in or leave their current schools, provides information about teacher preferences not about behavior or outcomes. Even the findings related to more concrete outcomes of policy interest, such as one-year actual departure rates and student achievement, are at best predictive. Any conclusions about the efficacy of workplace-related policy interventions to change those outcomes would require evaluation of specific interventions, ideally in the context of well-designed experiments.

Measuring working conditions

At the most general level, working conditions for teachers are influenced by the physical features of the work place, the organizational structure, and the sociological, political, psychological and educational features of the work environment (Johnson, 2006; Johnson, Berg, and Donaldson, 2005). Hence a comprehensive survey of working conditions could potentially be both extensive and complicated to interpret. In practice, researchers and designers are forced to focus on those elements of working conditions that they deem most likely to be relevant to important policy outcomes. I begin with an introductory discussion of the choices implicit in the North Carolina surveys, the source of my information on working conditions.

Questions about working conditions on the 2006 survey were divided into the six categories listed in the left column of Table 1, with the number of questions in each category in parentheses. The categories are leadership, facilities and resources, teacher empowerment, professional development, mentoring, and time. As suggested by the fact that the survey includes 65 questions related to professional development and 40 having to do with mentoring, state policy makers were particularly interested in using the survey to identify the details of teachers' experiences with specific programs in those areas. Given the specificity of many of those questions, I include only a subset of the professional development questions and none of the mentorship questions in the current analysis. Further, as discussed below, I use factor analysis, separately at the elementary, middle and high school levels, to reclassify a number of questions among the categories into more coherent domains.

Of interest at this point is the extent to which these categories represent a relatively comprehensive set of the working conditions that are most likely to be associated with teacher retention or student achievement. The second column provides some insight into this issue. The entries in that column are the 11 categories identified by one of the preeminent qualitative researchers in the field of working conditions, Susan Moore Johnson, in her overview of the literature on teacher working conditions completed in 2006 for the National Education Association, much of which is based on Johnson, Berg, and Donaldson (2005). For each of the listed categories, she reviewed the literature and identified what would be viewed as better or worse conditions in that category. I have listed them in a way that highlights the similarities to and differences from the North Carolina categories. Both lists include references to leadership broadly defined, facilities and resources, some aspect of teacher collaboration, and professional development. In addition, neither of the lists includes any reference to salary or benefit levels. According to Johnson, the exclusion of questions about salary is standard in the working conditions literature.[1]

A number of differences emerge between the two lists. First the North Carolina survey specifically uses the term "teacher empowerment" to refer to a number of questions about the extent to which teachers have authority over educational, planning, spending and hiring decisions at the school level. In contrast, Johnson focuses attention

[1] That is not always the case, however. Loeb, Darling-Hammond, and Luczak (2005), for example, include salaries as a component of working conditions. The exclusion of such questions from the North Carolina survey may also reflect the desire of policy makers in North Carolina to refocus attention away from salary levels to working conditions that would be far less expensive for the state to address.

on the collaborative relationships among teachers, based on the view that working collaboratively with colleagues generates a more productive and healthy working environment than working in isolation. On the North Carolina survey, most of the questions about collaboration appear in the Time category or in related questions about the specific amount of time that is available for working with other teachers. Also included in the Time category are questions about whether teachers have reasonable class sizes and time to plan and teach. The survey includes no questions, however, about the nature of their teaching assignments and in particular whether teachers are teaching in the fields for which they were trained. In addition the North Carolina survey includes no questions about the adequacy of support services for students, either those provided specifically by the school or those provided through school-family-community partnerships.

Finally, the North Carolina survey asks no questions about curriculum and testing. Johnson points out that having either an under- or an over-prescribed curriculum represents a negative element of working conditions and that having standardized tests as one part of a comprehensive assessment strategy is generally viewed as a positive component. Although North Carolina has long had a statewide curriculum and tests that are aligned with the curriculum that do not vary much across schools, the pressures imposed on schools as a result of those systems undoubtedly differ across schools. Hence, some information on teachers' perceptions of the state's system of curriculum, testing and accountability might have been a useful addition. Other studies, including those of teachers in England which has high rates of teacher attrition, indicate that teachers, especially those at the elementary level, cite accountability and administrative

pressures as a significant explanation for their departure from the profession (Ladd, 2007; Tye and O'Brien, 2002). The present study controls for accountability pressures directly by including binary indicator variables for schools facing particular pressure from either the state or the federal accountability programs.

Thus, despite its relatively comprehensive coverage, the North Carolina working conditions survey contains some gaps. Any conclusions about working conditions based on this survey information speak explicitly to the types of working conditions included in the survey, but they cannot speak to the components that are not addressed. At the same time, the survey is sufficiently broad to generate some useful conclusions about their usefulness for predictive purposes and some insights into which among them are most important.

Survey based measures vs. "objective" measures

As described in more detail below, I use factor analysis to collapse teachers' responses to 54 survey questions about their working conditions into five categories and also aggregate the responses of individual teachers to the school level. This procedure generates school-level measures of as school's working conditions as perceived by its teachers.

An alternative approach would be for a team of external evaluators to do a systematic evaluation of school working conditions using a protocol that is identical across schools. Such a protocol could potentially include some quantitative measures such as the frequency with which principals visit classrooms or the number of disciplinary incidents in the school but would undoubtedly be based primarily on a variety of qualitative measures translated into a simple quantitative scale. Even if the

categories covered were similar to those in the teacher survey, such an approach could well generate different conclusions about the quality of the working conditions in a school than the survey based measures in this study. That is true for several reasons.

One reason for this is teachers' perceptions of their working conditions may differ from some objective reality. For example, based on objective data, a school may appear relatively safe, but for a variety of reasons – perhaps a few specific incidents in the school – teachers in the school may perceive it to be quite unsafe. Another is that teachers in any one school may not have enough experience with other schools to evaluate aspects of their school in a way that would make their judgments comparable across schools. Third, the teachers who respond to the survey may represent a biased sample of the full complement of teachers in the school. At the same time, any systematic external evaluation is likely to generate biases of unknown direction given the difficulty of assuring consistency among evaluators and the limited information that may be available to them.

Whether one approach for compiling information on working conditions is preferred to the other is not clear. Ideally it would be useful to compare the two approaches in terms of their power to predict policy-relevant outcomes. The absence of "objective" measures rules out that comparison for this study. All that can be done here is to examine the predictive power of the survey-generated measures.

Empirical model of planned departure rates

To examine the predictive power of teacher working conditions, I estimate the following model for each individual teacher i in school j:

$$\text{Planned probabilility of leaving}_{ij} = f(WC_j, S_j, W_j, X_{i,}) \quad (1)$$

where WC_j is a vector of working conditions as perceived by all teachers in the school based on survey data, S_j is a vector of the objective characteristics of the school, W_j is a measure of the salary level in the school (or district), and X_i is a vector of characteristics of the individual teacher.

Although the qualitative literature strongly implicates working conditions as a determinant of teacher decisions to leave a school (Johnson, Berg, and Donaldson, 2005; Bulkey, Schneider, and Shang, 2005), survey-based responses about working conditions could potentially add little additional explanatory power to this empirical model. That would be the situation if the measured working conditions are irrelevant to the moving decision, or if they are highly correlated with the measurable characteristics of schools that predict departure.

For example, survey questions about the extent to which teachers can control the school budget may elicit differences across schools in teacher control, but teachers may differ in their views about whether such control of the budget is a good thing. In addition, regardless of whether they believe that more control is desirable, teachers may not care enough about the issue for it to influence their desire to remain in or leave the school.

The second possibility is that teachers' perceptions of working conditions in a school may be so highly correlated with the measurable characteristics of that school that the working conditions exert no additional predictive power. That would occur if the behavior of administrators were so determined by the mix of students in the school that it is impossible to isolate the effects of the behavior. Further, even very specific questions about the quality of the principal, for example, need not generate additional independent

information because, given the operation of the labor market for educators, there could be a strong correlation between the quality of the principal at particular schools and the characteristics of those schools (Clotfelter, Ladd, and Vigdor, 2007).

Two additional concerns complicate the interpretation of the empirical results, both of which relate to the non-random matching of teachers with their working conditions. One arises because teachers sort themselves among schools in nonrandom ways and the second arises because of the nonrandom distribution of "working conditions" to the various schools.

Across schools with any given set of measurable characteristics, for example, teachers may gravitate to schools whose working conditions are most consonant with their own working styles. For example, a teacher who wants some autonomy and discretionary power might choose to work in a school that values those behaviors rather than in a school in which the principal maintains full authority. The more extensive is this type of matching, the less likely it is that teachers' perceptions of their working conditions will emerge empirically as an important predictor of teacher movement. That movement instead would reflect idiosyncratic factors related to the teacher and her situation. It is worth noting here that the analytic problem in this situation is not that the working conditions are based on teachers' perceptions rather than on objective measures, but rather that teachers sort themselves among schools based on the working conditions in the school. As a result of that confounding one must be cautious about making causal statements about the relationship between teacher working conditions, however measured, and teacher movement.

In practice, however, such matching is likely to be quite imperfect and also less perfect than for the more readily apparent school characteristics, such as the racial mix of the students or salary levels. As teachers accept their first jobs, they typically often have far less information about working conditions within the school than about the observable characteristics of the school. How much information they have will depend on how extensive the interviewing process is for that school and, in particular, whether they are hired directly by the principal or by the district (Johnson and Birkeland 2003). Even in subsequent job placements where the fit is likely to be better, it may still be imperfect because of the incomplete set of options available to teachers interested in moving to a new school. Further, teachers who start out in schools with working conditions with which they are quite comfortable may end up in a disequilibrium situation with the arrival of a new principal with a different leadership style.

A second form of reverse causation also poses a problem. To the extent that policy makers compensate schools that have high teacher turnover or low test scores by efforts to improve their working conditions, such as by upgrading facilities or providing more professional development opportunities, better working conditions might well appear to generate higher, rather than lower, teacher departure rates. Within the context of a cross sectional study of this type, not much can be done to address this issue. At best, the reader should remain alert to the issue, and once again be careful not to attribute causation to the reported results.

In summary, whether survey-based measures of working conditions emerge as predictors of teacher mobility is an empirical question. If they do not, then policy makers need to be careful about attributing teacher mobility to poor working conditions rather

than to other factors related to the more easily measured characteristics of the school. If teachers' perceptions of their working conditions do emerge as important, then it would be useful to design and evaluate policy interventions specifically intended to improve working conditions within schools and to compare their efficacy with strategies, such as higher salaries, designed to offset the reluctance of teachers to teach in schools with poor working environments. Ideally such policy interventions would be based on random assignment of schools to treatment and control groups so as to isolate the causal impacts of specific interventions, something that is not possible with the observational data used in this paper.

NORTH CAROLINA DATA

North Carolina represents an excellent state for this study of working conditions, as perceived by teachers. Not only is it a large and diverse state, but it also has made available to researchers extensive administrative data on student, teacher, school and district characteristics. In addition, it is the first state to have administered a statewide survey of working conditions to all teachers and administrators. The survey was first initiated by the governor in 2002 and has been administered to all teachers and administrators by the Center for Teaching Quality every second year since then. Though the response rates were below 50 percent for the first two years of the survey, they exceeded 70 percent in both 2006 and 2008. I focus here on the survey results for 2006, the most recent year for which we also have teacher departure data.

The surveys are administered electronically, with teachers receiving their access codes not from the school or state officials, but by teacher representatives within each

school. All surveys are anonymous. To encourage participation in 2006, the North Carolina business community provided financial incentives in the form of weekly drawings for prizes from among the schools with high response rates, and helped the state explain to teachers the importance of responding. Provided that the response rate of teachers in a school is at least 40 percent, the findings from the survey are posted on the school's web page. In addition, schools are encouraged to use the survey results for internal discussions about how to improve working conditions.

Overall response rates and the patterns across schools grouped into poverty quartiles by level of school are reported in the first panel of Table 2. The poverty quartiles are based on the percentages of students eligible for free or reduced price lunch, calculated separately by level of school. The average ranges from 63 percent in high school to 75 percent in elementary school. The differences across quartiles are largest at the high school level, where they range from 71 percent in the poorest schools to 69 percent in the more affluent schools. The bottom panel reports the percentages of schools with teacher response rates greater than 40 percent.

Table 3 provides descriptive information for all the variables used in the planned departure models, organized into the following groups.

Working conditions domains and additional time variables

Working conditions are divided into five domains, or factors, for each level of schooling that were derived from the 54 questions to which teachers responded based on a five-point Likert scale. For some questions the scale is 1) strongly disagree, 2) somewhat disagree, 3) neither disagree nor agree, 4) somewhat agree or 5) strongly agree. For others, the scale is 1) no role at all 2) small role, 3) moderate role, 4) large role, and 5) the

primary role. Specifically, I use factor analysis with a varimax (orthogonal) rotation based on to construct the five measures.[2] To allow the constructs to differ by level of school, the analysis was done separately for elementary, middle and secondary schools. Included in each factor are survey questions that have a factor loading of 0.3 or above, and each survey question is included in only one factor. Emerging from this analysis are five quite comparable factors for elementary and middle schools, but a slightly different set of factors at the high school level. Though I have given names to each of the five factors that are quite similar to those used in the actual survey, just because a question is contained in a category such as "Time" in the survey instrument need not mean it is in the Time domain for this analysis.[3] The resulting factors are as follows:

Leadership (all three levels)

In addition to about 20 statements labeled leadership on the survey instrument, this factor includes several questions categorized on the survey under the teacher empowerment category. Included in this factor are questions about the overall quality of school leadership such as "Overall, the school leadership in my school is effective" or the "School leadership consistently supports teachers" and about the efforts of the leadership to address teacher concerns about facilities and resources, professional development or use of time. Also included are statements about whether

[2] For this analysis I used only the survey responses of teachers and only those that were complete (that is, those that had responses to all of the relevant questions with the five-point scale). In addition, the sample was restricted to teachers in traditional public schools. Thus, survey responses of administrators and those of teachers in charter schools were excluded. The use of five factors for each level of schooling was based on the criterion that the eigenvalue for a factor be greater than one. Had we determined the number of factors instead by the criterion of a significant drop in eigenvalue, we would have ended up with a single factor.

[3] The complete set of questions by factor for each level of schooling and their loadings are currently included in an appendix table, but upon publication that table could be made available on request.

teachers are involved in decision making or trusted to make sound professional decisions about instruction. The elementary and middle school factors also include questions related to teacher performance evaluations.

Facilities and resources (all three levels)

This factor includes seven to nine questions, depending on the school level, that are all listed under facilities in the survey instrument. The questions refer to the sufficiency of teacher access to appropriate instructional materials, technology, office supplies, and professional space, and to the cleanliness, and safety of school environments.

Teacher empowerment (all three levels)

This factor includes seven or eight questions about the role teachers have in selecting instructional materials, setting grading and assessment practices, hiring new teachers and school improvement planning.

Professional development (all three levels, with some differentiation by level)

At the elementary level and middle school level, this factor is based on five questions about the sufficiency of funds, resources and time for teachers to take advantage of professional development opportunities. At the high school level, this factor also includes two questions about the time available to collaborate with colleagues.

Time domain (elementary and middle school only)

At the elementary school level, this factor includes five statements about class size, time available to teachers to meet the needs of their students or to collaborate with colleagues, and the extent to which teachers are protected from administrative duties. At the middle school level, only three of the questions are included. The class size question does not appear in any factor at the middle school level. Time does not emerge as a separate factor at the high school level.

Teacher evaluation (high school only)

This factor embodies three statements related respectively to the consistency, usefulness and appropriateness of the evaluation of teachers. These questions fit into

the leadership domain at the lower levels of schooling.

Each of these factors were aggregated to the school level and then normalized so that across teachers in the each of our regression samples, the means of each factor are equal to zero and the standard deviations are equal to one. Aggregating to the school level averages out the random elements across teachers and reduces the noise relative to the signal. In addition, it helps counter the problem of reverse causation that can occur when both the dependent and the independent variables are based on the survey. Regardless of the true reason a teacher may want to leave a school, for example, she may rationalize her decision in part by giving the school a poor rating in terms of working conditions. In that case, any observed relationship between her perceptions of working conditions and her desire to leave the school, would be spurious. Averaging responses about working conditions across all responding teachers within each school, as well as weighting the regressions by the number of responses, helps to minimize, but does not eliminate, this problem.[4]

In addition to these working condition domains, the models include two time-use questions for which teachers were asked to give more quantitative answers. The first question reads: "In an average week of teaching, how many hours do you have for non-instructional time during the regular school day?" Follow-up questions make it clear that this is time for individual planning or structured collaborative planning. The second

[4] In earlier regressions, I also omitted the respondent' own response when I calculated the average responses at the school level, a procedure that generates teacher-specific measures of working conditions within each school. I present results for the simpler specifications in this paper so that the working conditions variables are identical at the school level in the planned and actual departure models.

question reads: “In any average week of teaching, how many hours do you spend on school-related activities outside the regular school work day?” Both questions provide five possible answers ranging from none to more than 10 hours. In each case, I have collapsed the responses into 0-1 variables, with 0 indicating less than three hours and 1 indicating more than 3 hours. As shown in Table 3, only 38 percent of the responding elementary school teachers said they had three of more hours of time for planning in an average work week, which is far below the 62 percent at the middle and high school levels. At all three levels about 81 to 83 percent of the respondents said they spent more than 3 hours on school related activities outside the regular work day.

Data on School Characteristics

Information on school characteristics comes primarily from state administrative data available through the North Carolina Education Research Data Center. The models include 15 variables intended to measure school characteristics. These variables include six measures of the characteristics of the students in the school: the fractions of black students, Hispanic students or students of another race; the fractions of students eligible for free and reduced price lunch or with limited English proficiency and the fraction of students whose parents do not have a college degree. No measure of the average achievement of the students in the school is included because the intent is to measure student characteristics that are outside the immediate control of the teachers in the school.

In addition, school characteristics include four measures of the qualifications of all teachers in the school: the fractions of teachers with graduate degrees, teachers with 0-3 years of experience or with greater than ten years of experience, and the average teacher test score. Further I include two indicator variables for the age of the school (one

denoting a school of average age and the other an old school), and measures of school size and district size. Also included are two variables indicating how the school fared the previous year under the federal and state accountability programs to represent the stress that teachers may be under to improve test scores (Tye and O'Brien, 2002; Darling-Hammond, and Sykes, 2003). The first variable – Did not meet AYP (05) – indicates the school did not make the adequate yearly progress requirements under the federal No Child Left Behind Act , and the second – Did not meet expected growth (05) – indicates that the school did not meet the achievement growth requirements under the state's accountability system.

Salary data

North Carolina has a statewide salary schedule but then allows its local districts to supplement salaries if they wish, which means the local supplements are the only source of variation across districts for a teacher with specified characteristics. I estimate a single salary for each district, based on the statewide salary for a teacher with a master's degree and eight years of experience plus my best estimate of the salary supplement, in logarithmic form.[5] Importantly for this analysis, nominal salaries do not differ much across districts, with the full range being $36,830 to $42,910. Moreover, evidence suggests that this variation is attributable in part to variation in the cost-of-living and to salary supplements that are higher in districts with higher proportions of novice teachers,

[5] In general information is available only on the total supplemental payments and the number of recipients. For some districts, more detail is available on the web about how the supplements are distributed among teachers. In other cases, we had to make reasonable assumptions about its distribution.

presumably as a way to recruit more teachers.[6] Adjusting the salaries for cost-of-living differences would most likely reduce the variation even further, rending it minuscule compared to the three-to-one differential in adjusted salaries across districts in California reported in Loeb, Darling-Hammond, and Luczak (2005). Given this small variation, and the fact that teachers have already made their initial job decision with full knowledge of the salary, I expect salary differentials are likely to have little or no predictive power in this cross sectional analysis.

Characteristics of individual teachers and geographic indicators

The data on individual teachers in the planned departure models are all self-reported on the survey. As shown in Table 3, the 13 variables in the equation denote whether the teacher is black, Hispanic or "other race"; whether the teacher is male, five experience categories, whether the teacher currently has a graduate degree or is National Board Certified, and whether her initial training was in a master's program or whether she entered through an alternative entry program. These teacher characteristics control for the teacher specific characteristics that may be associated with teacher movement.

Finally, the model includes 10 geographic indicator variables. These indicator variables distinguish schools in each of the four largest districts, other than Charlotte-Mecklenburg which serves as the base, as well as those in the urban and rural regions of three main regions in the state – mountain, Piedmont and coastal. These indicator variables are included to control for the differing labor market conditions across the state,

[6] This statement is based on Walden and Sogutlu (2001) and on our own unpublished estimates for a more recent year.

as well as policy differences among districts related to teachers.

Dependent variables

I construct planned departure variables from the following survey question: "Which best describes your future intentions for your professional career?" For the basic models, the responses are divided into two categories: remain in the school or leave the school. For the supplemental multinomial choice models the outcomes are split into four categories: remain in the school, leave "this school", leave "this district", and leave the profession.[7] As shown in Table 3, the proportion of respondents intending to leave their schools for any reason is 11 percent in elementary schools and about 14 percent in middle and high schools. At each level, the proportion of teachers intending to change schools within the same district is somewhat smaller than the proportions planning to move to another district or to leave the profession.

PLANNED DEPARTURES OF SURVEY RESPONDENTS

Table 4 presents some initial simple descriptive linear probability regressions to illustrate the relationship between a respondent's plans to leave a school and the average working conditions in the school, as perceived by its teachers (Panel A) and school demographics (Panel B). I report basic results from linear probability models because of their ease of interpretation; the patterns are virtually identical for comparable logit models. All the

[7] The five response categories are 1) continue teaching at my current school, 2) continue teaching at my current school until a better opportunity comes along 3) continue teaching but leave this school as soon as I can 4) continue teaching but leave this district as soon as I can 5) leave the profession all together. We coded responses 1 and 2 as remaining in the current school.

regressions in this and subsequent tables are limited to the survey respondents in schools in which at least 40 percent of the teachers responded and are weighted by the number of responding teachers. In addition, the errors are clustered at the school level.

The equations in each panel of Table 4 include no variables other than those reported within the relevant panel. Emerging from Panel A is the descriptive finding that at all three levels of schooling, the probability of departure is negatively correlated with the perceived quality of school leadership. The coefficients indicate that a one standard deviation difference in the school leadership measure is associated with about a 5 percentage point difference in the other direction in the probability that a teacher intends to leave the school at both the elementary and middle school levels, and about half that at the high school level. At that level, the empowerment of teachers, which some people interpret as a form of distributive leadership, exhibits a larger coefficient than the leadership factor. Empowerment also emerges as statistically significant at the elementary level, but with a very small coefficient. More time for planning and collaboration is associated with lower departure rates at the middle school level.

Emerging from Panel B for the demographic characteristics of the schools is the typical finding that teacher departure rates are higher in schools with larger fractions of black students, and, at the middle school level, also with the fraction of Hispanic students. The consistently large correlation between departure rates and the fraction of black students justifies our attention to that specific demographic variable in much of the discussion below. I emphasize, however, that that the fraction of black students in a school may be serving as a proxy for a variety of student characteristics that are correlated with race, such as a high prevalence of single parent families, and need not

indicate race alone. Though the coefficients on some of the racial mix variables appear relatively large they must be multiplied by the standard deviations of the specific variable to make them comparable to the coefficients for the working conditions variables. Based on the standard deviations in Table 3, the coefficients for the fraction black translate into standardized coefficients of 0.031 at the elementary level, 0.025 at the middle school level, 0.040 at the high school level, and the Hispanic coefficient for middle schools translates into a standardized coefficient of 0.015. Thus, purely at this descriptive level of analysis it appears that variation across schools in the perceived quality of leadership is a potentially important predictor of teachers' planned departure rates and possibly more predictive than the racial demographics of the school.

Full linear probability models

To address the research question of whether the working conditions survey information generates useful predictive power over and above what is available from administrative data, the working conditions variables must be incorporated into the full models that include school, district, and respondent characteristics. The results for these models are reported in Table 5. Of most interest are the findings for the working conditions variables.

Even with the addition of the control variables, including the student demographic variables, some of the working conditions variables continue to be predictive of teacher departures. In particular, school leadership enters with large and statistically coefficients at all three levels. The coefficients are about 40 percent of the mean intended departure rates at the two lower levels, and about 30 percent at the high school level. In addition, the empowerment of teachers appears to protect against teacher departures, but only at

the high school level. As indicated by the negative coefficient on the Time factor at the middle school level, more time for collaboration and planning at that level is associated with lower departure rates. Although the Time factor itself is not predictive at the elementary level, the positive coefficient on the indicator variable representing more than three hours a week spent working outside the school day suggests that time pressures are predictive of teacher departures at that level as well.

Of interest is that the coefficients on the fraction of black students are now substantially lower than they were in Table 4, which reflects, as we discuss further below, not only their correlation with the working conditions variables but also with many of the other control variables included in the full models. Although only a few of the other school level variables are statistically significant, most enter with expected signs. One result is worth highlighting. At the elementary level, the positive coefficient on the state-specific accountability variable is fully consistent with our previous work on how accountability affects teachers in low performing schools (Clotfelter, Ladd, Vigdor, and Diaz, 2004). For teachers to earn bonuses under the state's program, their school must achieve its expected growth in student achievement. Hence, the positive coefficient on that variable, but not on the comparable variable for the federal NCLB program which includes sanctions but no bonuses, suggests that teachers leave, at least in part, to increase the chances of getting a bonus. More of the coefficients related to the respondent characteristics are statistically significant, with most having reasonable signs.

Table 6 provides additional insight into the usefulness of the survey data on working conditions by comparing estimated coefficients for selected variables, as well as the explanatory power of the regressions, across four model specifications, by level of

school. In all cases, the results are based on the full model with only the indicated variables deleted. For purposes of comparison, the entries in the first column replicate those for the selected variables from the previous table. I draw attention here to the patterns for elementary schools, starting with the explanatory power of the equation. Though the R^2 is very low for each specification – reflecting the fact that I am using individual data with a linear specification – the working conditions variables appear to contribute some policy significant explanatory power. In particular, the R^2 rises from 0.027 in the model with no working conditions (last column) to 0.044 in the full model (first column). Moreover, the observation that the absolute value of the coefficient of the leadership variable is larger in the model that excludes all the school characteristics (column 2) suggests that perceptions of leadership quality are correlated, at least to some extent, with those characteristics. The newly statistically significant entries in column 3 in which the leadership domain is excluded suggests that good leadership in elementary schools is positively correlated with the other working conditions measures.

Finally, I note that the coefficient on the fraction of black students falls about 16 percent -- from (0.061) to (0.051) -- in moving from the model with no working conditions to the full model. Most of the reduction from the coefficient of 0.132 reported in Table 4 to the 0.051 in the full model is attributable to the more easily measured school characteristics, not to the working conditions variables. Thus, I conclude that models with controls for working conditions attenuate, but only somewhat, the effect of the racial mix variable on teachers' plans to leave an elementary school. With some qualifications, the conclusions for the middle and high school levels are quite comparable to these for elementary schools.

In additional specifications (not reported) I interact the working conditions variables with the fraction of black students in the school. Consistent with Grissom's (2008) finding that leadership is more important in hard-to-staff schools, I find a statistically significant interaction effect between leadership and the fraction black. In particular, teachers in schools with higher fractions of black students are even more responsive to the quality of school leadership than in other schools with respect to their intended departure decisions.[8]

Multinomial choice models

So far, all the models focus on the probability of leaving a school regardless of the destination or reason. Table 7 reports results for the key working conditions and school demographic variables of a disaggregated competing risks model of the four planned outcomes: remain in the same school, move to another school in the district, move to another district, and leave the profession. (See Table 3 for the distributions of these outcomes.) For each level of schooling, I ran a single multinomial logit model with the same set of variables as in Table 5. Sample sizes and school clusters are identical to those in that table. To facilitate the interpretation of the results, they are all reported as relative risk ratios. Entries less than one indicate that the variable is associated with lower chances of the specific outcome relative to the base option of remaining in the same

[8] I also interact the working conditions separately with variables for inexperienced teachers (those with three or fewer years of experience) and black teachers. A few statistically significant differences emerge. At both the elementary and the middle school levels, in making their departure decisions, inexperienced teachers appear to be more somewhat more responsive to the quality of school leadership than are more experienced teachers. In contrast, black teachers at the elementary school level emerge as somewhat less responsive to the quality of school leadership than their white counterparts.

school and coefficients grater than one are associated with higher chances of the specified outcome.

Consistent with the simpler models, school leadership emerges as the most consistently relevant measure of working conditions. The table shows that the relative risk ratio is, as expected, less than one (but not always statistically significant) in all but one case, and is smallest for moving to another school in the same district, at each level of schooling. Stated differently, teachers in schools with high quality leadership are not only less likely to leave the school than are comparable teachers in schools with less good leadership, but they are also relatively less likely to move to another school within the same district than to choose either of the other two options. Further there is little evidence that the quality of school leadership is directly implicated in the departure of teachers from the profession at the elementary and middle school levels, although that is not true at the high school level. Also noteworthy is the role of the Time factor (and for elementary school teachers the Outside Work-Day time variable) at the elementary and middle school levels.

At the same time, some unexpected results also emerge. These include the positive risk ratios for switching schools for the facilities factor at the elementary and middle school levels and the professional development factor at the high school level. . They also include the empowerment results at the middle school district for moving to another district. In each case, one can provide possible explanations for the unexpected ratios – such as the reverse causation that would arise if districts provide compensatory materials and technology or more extensive professional development in some difficult-to-staff schools or that the exercise of authority in schools that empower teachers better

prepare those teachers to seek alternative situations – but such explanations would be speculative at best at this point.

Most striking are the patterns of risk ratios based on the racial composition of the students (final row for each level). Although most of the ratios exceed 1, in no case is a higher proportion of black students associated with a statistically significantly higher relative risk that a teacher will switch schools within the district. Instead, the very high risk ratios of 5.13 at the elementary level and 8.108 and 2.008 at the high school level are associated with intentions to leave the district, or, in the case of high school teachers, to leave the profession entirely. Thus, while low-quality leadership in a specific school may influence teacher movements within a district, the presence of racially segregated schools appears to be more predictive of cross-district moves than within district moves, all else held constant.

Not reported in the summary table but also of interest is the finding that the state accountability variable enters with a coefficient greater than one for all three options, but is largest and only statistically significant for the option of moving to another school within the same district.

OTHER OUTCOME MEASURES

The results to this point are clear: teachers' perceptions of working conditions at the school level are highly predictive of an individual teacher's intentions to leave a school, with the perceived quality of school leadership the most salient factor. It is useful, however, to extend the analysis to other outcome measures that are based on actual rather than survey data for several reasons. First, some observers may be concerned that stated

intentions are either not believable or not useful unless they ultimately translate into actions of interest to policy makers. A second is that measuring working conditions at the school rather than the individual level may not completely eliminate the reverse causation mentioned earlier that arises when the dependent variable is generated by the survey; such reverse causation will still be present, for example, if many teachers want to leave a school and all rationalize it by complaining about working conditions. Third, the intended departure rates are based only on the respondents to the survey which could, under certain conditions, generate an overestimate of the role of working conditions.

Hence, I look briefly at two other outcome measures – actual one-year departure rates at all school levels and student achievement at the elementary level. In both cases, leadership emerges as a statistically significant predictor but the overall predictive power of the working conditions variables, as measured by changes in the R^2 is far lower than for the planned departure rates.

Actual one-year departure rates

Using administrative data, I calculated one-year actual departure rates for teachers by comparing the schools that the teachers were teaching in as of 2005/06 to the schools they were teaching in the following year. One shortcoming of this approach is that teachers who leave the profession cannot be distinguished from those who leave the administrative data set. For example, teachers who remain in teaching but move to another state, teachers who leave for short periods perhaps to have children, or who do not appear in the data set because of a data glitch all are treated as leavers of the profession. As a result, the proportions of teachers categorized as actual leavers are higher than the comparable proportions of intended departures for survey respondents (18

vs. 11 percent in elementary school, 21 vs.15 percent in middle school and 20 vs. 14 percent in high school), with the differential in each case almost entirely attributable to the larger proportion in the category of leaving the data set. [9]

Figures 1A, 1B and 1C depict the relationships between planned and actual departure rates aggregated to the school level for all schools with at least a 40 percent response rate. The two departure measures are positively correlated at each level of schooling, but far from perfectly so. The data concerns just mentioned account for part of the variation. Another explanation is that actual departure rates represent the outcome not only of teacher preferences but also of the availability of open positions in any one year. Finally, the survey asks about career intentions, not intentions for the following year.[10]

The full linear probability models for the actual departure rates are reported in Table 8. The sample sizes in this table are larger for those in table 5 because all teachers in each school are now included, but the number of school clusters is somewhat smaller because data problems force me to delete some schools.[11]

As was the case for the planned departures, the most consistent findings for the working conditions variables emerge for the leadership factor. The negative coefficients

[9] At the elementary level, the proportions in each of the four categories (remain in school, stay in district, move to another district, or leave the profession) are 82,0, 4.4, 2.7, and 10.9. At the middle school level, the proportions are 78.6, 5.4,3.9 and 12.1 and at the high school level, 80.1, 3.50, 3.60 and 12.79

[10] Because the question about planned departure rates was not asked on previous waves of the working condition survey it was not possible to use those earlier surveys to look at longer movement patterns.

[11] In particular, we deleted some schools because of calculated departure rates of 100 percent. Had these rates reflected school closures, we would have deleted them from the planned regressions as well, but we were not able to confirm that that was the case, so we have just deleted them from the actual regressions.

indicate once again that teachers are more likely to leave schools with poor leadership than those with strong leadership, all else held constant, but the magnitudes are far smaller than in the planned departure equations in Table 5. At the same time, however, the coefficients on the fraction of black students in the elementary and middle school equations are as large as or larger than those in the planned departure equations. This pattern of coefficients indicates that both absolutely and relative to the school demographic variables, the working conditions variables are far less important for actual departures than for intended departures.[12]

Nonetheless, at the elementary level, the association of the leadership factor with actual departure rates still remains comparable or slightly higher than the comparable association for the fraction black variable. More specifically**,** the 0.018 predicted effect of a one standard deviation difference in the standardized leadership factor is slightly higher than 0.016 (= 0.068* 0.236) which is the predicted effect of a one standard deviation difference in the fraction of black students. Consistent with this parity of coefficient magnitudes, the addition of the whole set of working conditions controlling for school characteristic, or the addition of all school characteristics controlling for working conditions, both increase the explanatory power of the regression by about 15

[12] At least two other considerations could account for the fact the smaller coefficients on the working conditions variables but not on the demographic variables. One is the potential upward bias that could emerge for the working conditions variables in the planned regression because of the confounding referring to above- namely that teachers who plan to leave may rationalize their decisions by badmouthing the school and the other is the possibility that grumpy teachers may say they want to leave even if they in fact do not actually intend to do so. There is no clear evidence of either possibility. In the first case, the estimates of the working conditions variables in the actual departure rates would most likely be similarly biased upward. For the second case, the departure rates are no higher in the planned departure samples than in the actual departure samples.

percent. In contrast, at the middle school level, the racial mix of the students has more predictive power than the quality of leadership.

Student achievement – test scores

One additional outcome of policy interest is student achievement as measured by test scores. To analyze the extent to which teachers' working conditions are predictive of test scores, I estimated a two- stage model based on standardized test scores in math and reading for all students in grades 4 and 5. The first stage is a standard value model in which a student's achievement in math or reading in the current year is estimated a function of his/her prior year test score and other characteristics such as race and gender; teacher characteristics such as experience and graduate education, and school fixed effects. The second stage models the variation in the school fixed effects across more than 1070 schools in each case as a function of the working conditions variables and other school level measures. Of interest are the coefficients of the working conditions variables in the second stage and their contributions to the explanatory power of those regressions**.**

Table 9 reports the results for both math and reading. For math, two of the survey measures enter with statistically significant positive coefficients: leadership and the quantitative time variable indicating that teachers have more than three hours of time for planning. These two variables are also positive for reading but only the latter is statistically significant, and the coefficient of the leadership factor is less than half the size of the comparable coefficient for math. For reading, teachers' perceptions of facilities are also predictive of positive school effects but, contrary to expectations, a higher rating for professional development opportunities within the school is predictive

of negative achievement effects. This latter finding most likely illustrates one of the statistical problems noted earlier, namely that policy makers do not distribute resources randomly across schools. In this case, it appears that more professional development opportunities are provided to schools that are performing less well in reading than other schools with the same types of students.

A comparison of the explanatory power of these second-stage regressions with and without the working conditions variables (the five factors and the two quantitative time variables) indicates that for math, the survey variables augment the explanatory power by almost 15 percent and in reading by about 12 percent.[13] Thus, teachers' perceptions of their working conditions contribute modestly to school-specific differences in student achievement across primary schools, with the contribution somewhat larger for math achievement than for reading.

CONCLUSION

North Carolina's statewide working conditions survey provides a potential model for other states. Before states invest too heavily in such an endeavor, however, it would be useful to know the extent to which teachers' perceptions of their working conditions are

[13] Among the other determinants of the school fixed effects in Table 9, the positive coefficients on the fraction of students who are black deserve comment. Recall that these coefficients apply to the school effects that remain after taking out the contributions of individual student characteristics including their race. Consistent with other studies, in the first stage regressions (not shown), the coefficients on indicators denoting students are black, Hispanic, limited English dependent, eligible for free or reduced price lunch, or receiving special education all enter with large negative coefficients. The positive coefficients on fraction black in the second stage indicate that concentrations of black students are associated with higher student achievement. Working in the other direction, however, is that large concentrations of students whose parents are not-college educated are associated with lower levels of student achievement.

predictive of outcomes of policy interest, which is the goal of this study. The main conclusion is that working conditions of the type on the NC survey are highly predictive of teachers' career plans to leave schools, but are far less predictive of one-year actual departure rates and student achievement. Even for actual departure rates at the elementary school level, however, working conditions taken as a group are as predictive as the more commonly analyzed school characteristics.

As documented in Table 5, a one standard deviation difference in the perceived quality of school leadership is associated with planned departure rates that differ by close to 40 percent of the mean planned departure rates at the elementary and middle school levels, and about 30 percent at the high school level. Moreover, as shown in Table 6, the combined contribution of all the working conditions variables to the explanatory power of the regressions is 40 percent for middle schools, 60 percent for middle schools and 80 percent for high schools. These contributions are large not only absolutely, but also relative to the contributions of the more easily measured characteristics of the school such as its demographic mix of students.

Interestingly given current policy interest in empowering teachers, no statistically significant evidence of lower planned departure rates emerges at the elementary or middle school levels when teachers have more decision making authority (as measured by the teacher empowerment factor), after the school's measurable characteristics have been controlled for. Only at the high school level does teacher empowerment emerge as a predictor of lower planned departure rates. Time constraints appear to play a more important role at the elementary and middle school levels than at the high school level. Finally, it appears that the quality of leadership in a school is more predictive of planned

moves within a district, while the school's racial mix of students is more predictive of planned moves out of the district.

Such findings tend to provide strong support for the views of teachers' organizations that policy makers would do well to pay far more attention to working conditions than they have to date and to provide a strong rationale for periodic surveys of teachers. At the same time, however, these results say more about teacher preferences than about some of the specific behaviors or outcomes in which policy makers may be interested. Moreover, some nagging concerns remain about potential biases associated with the fact the teachers' stated intentions and their perceptions of working conditions may be confounded on the survey.

Consistent with these concerns, the predictive power of perceived working conditions are far smaller for the two policy outcomes I was able to analyze: actual one-year departure rates and student achievement in elementary school, as measured by test scores in math and reading. Other outcomes of potential interest would include teacher movements in and out of schools over a longer period of time, as well as the attractiveness of the teaching profession to potential teachers.

Leadership still emerges as a predictor of actual departure rates, but the coefficients are much smaller than for planned departures. Even for this outcome, however, leadership differences across elementary schools are associated with differences in departure rates that are comparable in magnitude to those associated with differences in the fraction of black students in those schools. Taken as a group, variation in the working conditions variables accounts for about 15 percent of the explained variation in actual departure rates in elementary schools, 13 percent in middle schools, and 10 percent

in high schools. The much higher estimated contribution of working conditions reported in the Loeb et al. (2005) study of teachers at the school level primarily reflects the fact that those authors include salaries – which vary greatly across California schools—in their concept of working conditions. In addition, it could well reflect the more limited data available for that study. The bottom line is that working conditions as defined in the present study do matter for teacher mobility decisions, but not as much as indicated by the planned regressions or nor as much as was suggested by the Loeb et al. (2005) study.

The quality of school leadership also emerges as predictive of student achievement for elementary school students, but only in math. Taken together, the working conditions variables account for 10 to 15 percent of the explained variation in math and reading scores across schools, after controlling for individual and school level characteristics of schools.

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FIGURES

Figure 1A. Actual vs. Planned Departures, Elementary

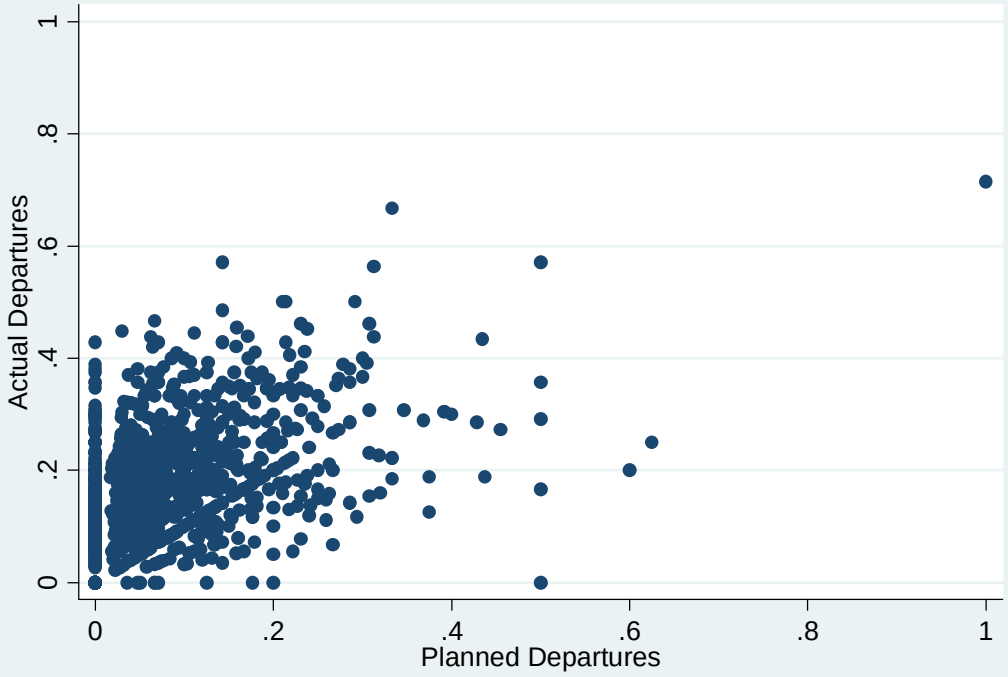


Figure 1B. Actual vs. Planned Departures, Middle

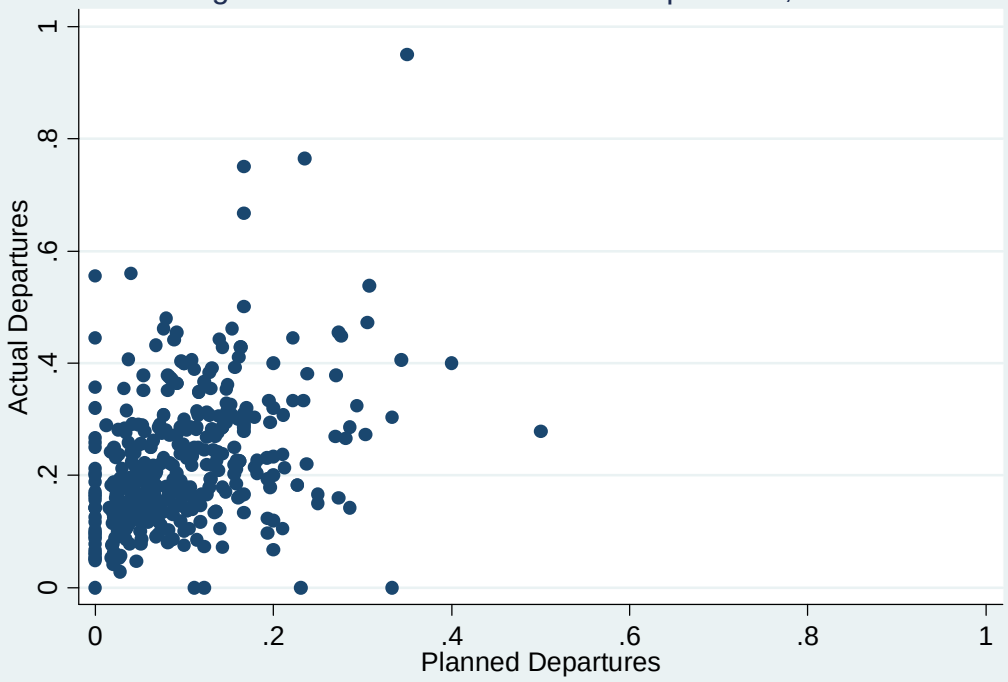
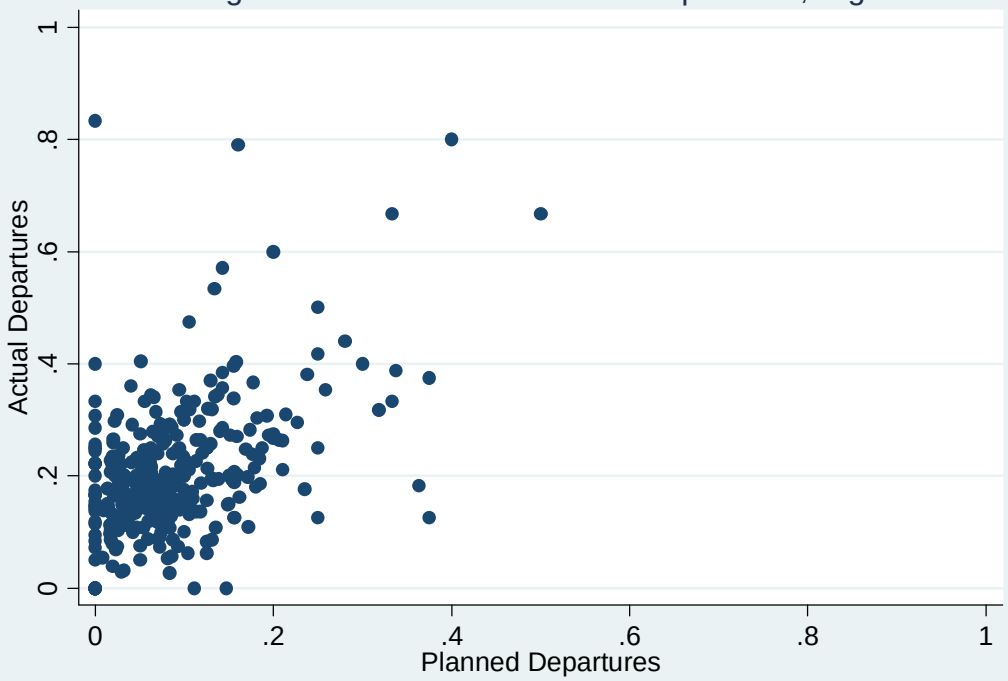


Figure 1C. Actual vs. Planned Departures, High



TABLES

Table. 1. Components of working conditions categories on North Carolina survey compared to categories in the literature

Categories in North Carolina survey instrument (Number of questions on survey)	Categories in Susan Moore Johnson (2006)
Leadership (24) **Teacher empowerment (17)**	**Principal's leadership.** Active broker of workplace conditions is good, **Working relationships with colleagues.** Collaboration is good.
Facilities and resources (12)	**Facilities** . Safe, well maintained, well equipped facilities are best **Resources and materials**. Sufficient resources with teacher stipends for extras is good.
Professional Development (65)	**Professional development**. One shot workshops are bad. **Professional influence and career growth** Opportunities for expanding influence and career growth are good.
Mentoring (41) **Time (11))**	**Support for new teachers** Interactions with experienced colleagues is good. . **Teaching assignment.** In field better than out of field; manageable work load. **Support of students.** Comprehensive student support services, school-family-community partnerships is desirable. . **Curricular Support.** Under or overprescribed curriculum not aligned with standards is bad. **Student assessment**. Standardized tests as one part of a comprehensive assessment strategy is good.

Table 2. Response rates by poverty quartile, by level of school, 2006.

	1 (high poverty)	2	3	4 (lowest poverty)	Total
Response rates of teachers (percent)					
Elementary	77	74	77	74	75
Middle	66	68	64	68	67
High school	71	65	62	59	63
Schools with response rates greater than 40 percent (percent)					
Elementary	89	87	91	91	89
Middle	81	87	82	87	84
High school	89	84	87	88	87

Table 3. Descriptive statistics for the planned departure models, by level of school.						
	Elementary		Middle		High	
Variable Name	Mean	S.D.	Mean	S.D.	Mean	S.D.
Dependent Variables						
Probability of leaving	0.107	0.310	0.145	0.352	0.138	0.344
Remain in school	0.893	0.310	0.855	0.352	0.862	0.344
Change school (same district)	0.040	0.195	0.055	0.228	0.041	0.199
Change district	0.026	0.159	0.032	0.177	0.034	0.180
Leave profession	0.042	0.200	0.057	0.233	0.063	0.242
Working Conditions						
Leadership	0	1	0	1	0	1
Facilities	0	1	0	1	0	1
Empowerment	0	1	0	1	0	1
Professional development	0	1	0	1	0	1
Time factor	0	1	0	1	n/a	n/a
Evaluation	n/a	n/a	n/a	n/a	0	1
Time – planning	0.380	0.154	0.615	0.110	0.621	0.093
Time - outside work day	0.809	0.095	0.806	0.091	0.826	0.085
School Characteristics						
Fraction of students:						
Black	0.299	0.237	0.327	0.229	0.322	0.228
Hispanic	0.103	0.106	0.076	0.071	0.058	0.048
"Other"	0.037	0.083	0.032	0.060	0.036	0.077
Free/Reduced Lunch	0.417	0.204	0.385	0.180	0.298	0.147
Limited English Proficient	0.060	0.070	0.036	0.037	0.027	0.027
With Non-College Parent	0.499	0.196	0.480	0.183	0.292	0.109
Fraction of Teachers with:						
Master's Degree or Higher	0.391	0.091	0.386	0.090	0.422	0.085
0-3 Years Experience	0.213	0.097	0.225	0.093	0.208	0.072
>10 Years Experience	0.545	0.122	0.527	0.109	0.579	0.088
Average Teacher Test Score	0.024	0.270	-0.058	0.325	0.112	0.368
Average aged school	0.516	0.500	0.532	0.499	0.673	0.469
Old School	0.233	0.423	0.181	0.385	0.148	0.355
Log of school membership	6.260	0.414	6.514	0.486	7.002	0.685
New administrator 2005	0.177	0.382	0.241	0.428	0.179	0.384
New administrator 2006	0.206	0.405	0.257	0.437	0.265	0.441
Did not meet AYP 2005	0.293	0.455	0.664	0.472	0.628	0.483
Did not meet growth 2005	0.277	0.447	0.522	0.500	0.090	0.286
Log of teacher salary	10.589	0.036	10.588	0.035	10.589	0.036
Unemployment rate	4.939	1.179	4.986	1.209	4.977	1.131
Log of district membership	9.930	1.115	9.911	1.108	9.923	1.148

Respondent Characteristics						
Black teacher	0.089	0.284	0.142	0.349	0.110	0.313
Hispanic teacher	0.010	0.099	0.010	0.097	0.011	0.103
Other teacher	0.028	0.165	0.039	0.193	0.043	0.203
Male teacher	0.065	0.246	0.245	0.430	0.372	0.483
Teacher Experience:						
2-3 years	0.113	0.317	0.128	0.334	0.134	0.340
4-6 years	0.149	0.356	0.174	0.379	0.156	0.362
7-10 years	0.164	0.370	0.164	0.370	0.165	0.371
11-20 years	0.260	0.439	0.236	0.425	0.242	0.428
>20 years	0.245	0.430	0.223	0.416	0.223	0.416
Has a graduate degree	0.323	0.468	0.329	0.470	0.387	0.487
NBCT	0.110	0.313	0.103	0.304	0.127	0.333
Trained in master's program	0.173	0.378	0.155	0.362	0.181	0.385
Alternative training program	0.043	0.203	0.135	0.341	0.182	0.386
Geographic Indicators						
Urban Coastal	0.098	0.298	0.097	0.296	0.085	0.279
Urban Piedmont	0.090	0.286	0.094	0.293	0.103	0.303
Urban Mountain	0.063	0.244	0.075	0.264	0.071	0.257
Rural Coastal	0.065	0.247	0.072	0.258	0.081	0.272
Rural Piedmont	0.249	0.432	0.245	0.430	0.238	0.426
Rural Mountain	0.147	0.354	0.135	0.342	0.137	0.344
Wake County LEA	0.095	0.294	0.095	0.293	0.082	0.275
Guilford County LEA	0.062	0.240	0.060	0.238	0.053	0.225
Cumberland County LEA	0.034	0.180	0.038	0.192	0.042	0.200
Winston-Salem/Forsyth LEA	0.051	0.219	0.054	0.225	0.038	0.191
Number of Observations	22,941		9,101		10,829	

Table 4. Planned departures by working conditions and school demographics, by level of school, no controls.

	Elementary		Middle		High	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Panel A. Working Conditions (Survey)						
Leadership	-0.048*	(0.005)	-0.049*	(0.008)	-0.023*	(0.012)
Facilities	-0.003	(0.004)	0.006	(0.006)	-0.000	(0.006)
Empowerment	-0.009*	(0.004)	-0.010	(0.007)	-0.044*	(0.007)
Prof. development	0.006	(0.004)	-0.002	(0.007)	0.008	(0.007)
Time factor	-0.000	(0.004)	-0.018*	(0.006)	n/a	n/a
Evaluation	n/a	n/a	n/a	n/a	0.001	(0.008)
Constant	0.105*	(0.003)	0.143*	(0.004)	0.135*	(0.004)
R^2	0.028		0.037		0.025	
Observations	22,941		9,101		10,829	
No. of School Clusters	1,118		378		340	
Panel B. School Demographics						
Fraction black	0.132*	(0.018)	0.110*	(0.032)	0.175*	(0.045)
Fraction Hispanic	-0.003	(0.031)	0.222*	(0.096)	0.174	(0.154)
Fraction "other"	0.052	(0.047)	0.013	(0.076)	-0.024	(0.060)
Fraction free/red. lunch	0.017	(0.022)	0.044	(0.049)	-0.022	(0.068)
Constant	0.058*	(0.007)	0.075*	(0.013)	0.080*	(0.016)
R^2	0.011		0.011		0.012	
Observations	22,941		9,101		10,829	
No. of school clusters	1,118		378		340	

Estimates from separate linear probability models, one for each level of schooling within each panel. The dependent variable is a 0-1 variable that takes on the value 1 if the teacher plans to leave her current school and 0 if she plans to stay in the school. The equations are analytically weighted by the number of responses in each school. Standard errors (in parentheses) are clustered at the school-level. * indicates significance at the 0.05-level, and # significance at the 0.10-level. n/a signifies not applicable.

Table 5. Planned departures, full linear probability models, by level of school.						
	Elementary		Middle		High	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Working Conditions						
Leadership	-0.040*	(0.005)	-0.056*	(0.008)	-0.039*	(0.010)
Facilities	0.003	(0.004)	0.008	(0.007)	-0.004	(0.006)
Empowerment	-0.001	(0.004)	0.006	(0.007)	-0.014#	(0.008)
Professional development	0.000	(0.004)	-0.006	(0.007)	0.010	(0.007)
Time factor	-0.007	(0.004)	-0.019*	(0.006)	n/a	n/a
Evaluation	n/a	n/a	n/a	n/a	0.000	(0.007)
Time - planning	0.007	(0.018)	0.040	(0.041)	0.005	(0.052)
Time - outside workday	0.082*	(0.031)	-0.046	(0.052)	-0.094	(0.062)
School Characteristics						
Fraction of Students						
Black	0.051*	(0.020)	0.041	(0.036)	0.124*	(0.044)
Hispanic	0.015	(0.061)	0.083	(0.121)	0.116	(0.154)
"Other"	0.011	(0.045)	-0.066	(0.066)	0.013	(0.046)
Free/reduced lunch	0.016	(0.027)	0.053	(0.052)	-0.092	(0.082)
Limited English proficient	-0.077	(0.086)	-0.035	(0.231)	0.070	(0.296)
Non-college parent	0.013	(0.023)	0.014	(0.042)	0.015	(0.073)
Fraction of Teachers with:						
Master's degree or Higher	-0.034	(0.029)	-0.047	(0.061)	-0.003	(0.068)
0-3 years experience	0.082#	(0.044)	-0.012	(0.084)	0.027	(0.085)
4-10 years experience (base)	-	-	-	-	-	-
>10 years experience	-0.033	(0.035)	-0.010	(0.066)	-0.032	(0.077)
Average Teacher Test Score	-0.014	(0.012)	-0.029#	(0.017)	0.006	(0.010)
Age of school (base is new school)						
Average aged school	0.004	(0.006)	-0.011	(0.010)	0.015	(0.011)
Old school	0.001	(0.007)	-0.021#	(0.012)	-0.001	(0.013)
School membership (log)	-0.008	(0.007)	-0.026*	(0.012)	-0.031*	(0.010)
New administrator 2005	0.002	(0.007)	-0.007	(0.010)	0.036*	(0.013)
New administrator 2006	0.013*	(0.006)	-0.005	(0.010)	0.012	(0.009)
Did not meet AYP 2005	0.000	(0.005)	0.006	(0.009)	-0.009	(0.009)
Did not meet expected growth 2005	0.011#	(0.006)	0.012	(0.010)	-0.015	(0.015)
Teacher Salary (log)	0.217	(0.145)	0.318	(0.237)	0.295	(0.263)
Unemployment rate	0.000	(0.003)	0.003	(0.004)	0.005	(0.006)
District membership (log)	-0.003	(0.005)	0.010	(0.008)	0.005	(0.008)
Respondent Characteristics						
Black teacher	-0.015#	(0.009)	-0.059*	(0.012)	-0.031*	(0.013)
Hispanic teacher	-0.019	(0.019)	-0.052#	(0.029)	-0.070*	(0.024)

Other teacher	0.057*	(0.018)	0.072*	(0.028)	-0.010	(0.019)
Male teacher	0.036*	(0.010)	-0.004	(0.009)	-0.000	(0.009)
Teacher Experience						
0-1 year (base)	-	-	-	-	-	-
2-3 years	0.020#	(0.010)	-0.009	(0.020)	0.037*	(0.016)
4-6 years	0.016	(0.010)	-0.022	(0.019)	0.031#	(0.018)
7-10 years	-0.004	(0.009)	-0.061*	(0.019)	-0.022	(0.015)
11-20 years	-0.015	(0.009)	-0.077*	(0.019)	-0.030*	(0.014)
>20 years	-0.008	(0.009)	-0.062*	(0.019)	-0.003	(0.014)
Has a graduate degree	-0.004	(0.006)	0.019*	(0.010)	0.009	(0.012)
NBCT	-0.003	(0.007)	-0.008	(0.012)	-0.013	(0.009)
Trained in master's program	0.015*	(0.007)	-0.005	(0.013)	0.018	(0.014)
Alternative training program	-0.018#	(0.010)	-0.002	(0.012)	-0.008	(0.010)
Geographic Indicators						
Urban Coastal	-0.023	(0.018)	-0.014	(0.036)	-0.051	(0.031)
Urban Piedmont	-0.053*	(0.017)	-0.000	(0.037)	-0.039	(0.032)
Urban Mountain	-0.030	(0.019)	-0.025	(0.036)	-0.065*	(0.032)
Rural Coastal	-0.064*	(0.021)	-0.018	(0.041)	-0.006	(0.036)
Rural Piedmont	-0.051*	(0.017)	-0.047	(0.036)	-0.037	(0.029)
Rural Mountain	-0.030	(0.021)	-0.025	(0.041)	-0.048	(0.033)
Charlotte.-Mecklenburg LEA	-	-	-	-	-	-
Wake County LEA	-0.044*	(0.014)	-0.026	(0.032)	-0.062*	(0.019)
Guilford County LEA	-0.032#	(0.016)	-0.015	(0.030)	0.005	(0.028)
Cumberland County LEA	0.011	(0.022)	-0.042	(0.034)	-0.043#	(0.024)
Winston-Salem/Forsyth LEA	-0.059*	(0.015)	-0.039	(0.034)	-0.069*	(0.023)
Constant	-2.161	(1.531)	-3.098	(2.522)	-2.747	(2.806)
R^2	0.044		0.056		0.042	
Observations	22,941		9,101		10,829	
No. of school clusters	1,118		378		340	

Dependent variable takes on the value 1 if the respondent plans to leave the school. Equation estimated by OLS, analytically weighted by teacher responses at the school level, with errors clustered at the school level. * indicates statistical significance at 0.05 level; # at the 0.10 level. NA signifies not applicable.

Table 6. Alternative specifications, selected coefficients, by level of school.								
	Full		No School Characteristics		No Leadership		No Working Conditions	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Elementary School								
Leadership	-0.040*	(0.005)	-0.046*	(0.005)	n/a	n/a	n/a	n/a
Facilities	0.003	(0.004)	-0.003	(0.004)	-0.002	(0.004)	n/a	n/a
Empowerment	-0.001	(0.004)	-0.004	(0.004)	-0.022*	(0.004)	n/a	n/a
Prof. development	0.000	(0.004)	0.004	(0.004)	-0.008#	(0.004)	n/a	n/a
Time fomain	-0.007	(0.004)	-0.001	(0.004)	-0.013*	(0.004)	n/a	n/a
Black students (fraction)	0.051*	(0.020)	n/a	n/a	0.057*	(0.020)	0.061*	(0.023)
R^2	0.044		0.040		0.040		0.027	
Middle School								
Leadership	-0.056*	(0.008)	-0.053*	(0.008)	n/a	n/a	n/a	n/a
Facilities	0.008	(0.007)	0.003	(0.006)	0.002	(0.007)	n/a	n/a
Empowerment	0.006	(0.007)	-0.005	(0.007)	-0.018*	(0.007)	n/a	n/a
Prof. development	-0.006	(0.007)	-0.002	(0.007)	-0.023*	(0.008)	n/a	n/a
Time factor	-0.019*	(0.006)	-0.014*	(0.007)	-0.027*	(0.007)	n/a	n/a
Black students (fraction)	0.041	(0.036)	n/a	n/a	0.025	(0.040)	0.039	(0.047)
R^2	0.056		0.050		0.050		0.031	
High School								
Leadership	-0.039*	(0.010)	-0.034*	(0.010)	n/a	n/a	n/a	n/a
Facilities	-0.004	(0.006)	-0.003	(0.006)	-0.011#	(0.006)	n/a	n/a
Empowerment	-0.014#	(0.008)	-0.026*	(0.008)	-0.034*	(0.007)	n/a	n/a
Prof. development	0.010	(0.007)	0.015*	(0.007)	0.007	(0.008)	n/a	n/a
Evaluation	0.000	(0.007)	-0.005	(0.007)	-0.016*	(0.006)	n/a	n/a
Black students (fraction)	0.124*	(0.044)	n/a	n/a	0.124*	(0.049)	0.163*	(0.062)
R^2	0.042		0.037		0.040		0.030	

Dependent variable takes on the value 1 if the respondent plans to leave the school. Equation estimated by OLS, analytically weighted by teacher responses at the school level, with errors clustered at the school level. Equations also include 10 location indicators, four for specific large districts, and six for districts grouped by urban, Piedmont or mountain location and by urban or rural; the left out location is Charlotte/Mecklenburg. * indicates statistical significance at 0.05-level; # at the 0.10-level. n/a signifies not applicable.

Table 7. Planned departures by type of move, multinomial logit models, by level of school (relative risk ratios)

	Move to another school in same district	Move to another district	Leave the profession
Elementary			
Leadership	0.483*	0.711*	1.010
Facilities	1.120#	0.979	0.960
Empowerment	0.939	1.032	0.956
Professional development	1.059	1.080	0.910
Time factor	1.059	0.867#	0.790*
Time -- planning	0.843	1.659	1.394
Time - outside work day	3.126*	3.428#	1.658
Black students (fraction)	1.086	5.124*	1.363
Middle			
Leadership	0.487*	0.653*	0.867
Facilities	1.175#	1.110	0.925
Empowerment	1.043	1.229#	0.971
Professional development	0.929	0.788*	1.049
Time factor	0.815*	0.836#	0.854#
Time – planning	2.438	1.355	0.740
Time - outside work day	0.529	0.433	1.113
Black students (fraction)	1.428	1.756	0.932
High			
Leadership	0.578*	0.966	0.743*
Facilities	0.901	0.847	0.988
Empowerment	0.869	0.771#	0.918
Professional development	1.294#	1.015	1.077
Evaluation	0.901	1.008	1.110
Time – planning	0.726	1.712	1.592
Time - outside workday	0.106*	2.686	0.718
Black students (fraction)	1.456	8.108*	2.008#

Selected coefficients from multinomial logistic models, estimated separately by level of school. The relative risk ratios refer to the chances of the specified option relative to the case in which the teacher plans to remain in the same school. Sample sizes and numbers of school clusters are identical to those in Table 4, by level of school. All estimates are weighted by the number of responses in each school and errors are clustered at the school level.. * signifies that the coefficient is statistically significant at the 5 percent level; # signifies statistical significance at the 10 percent level.

Table 8. Actual departures, full linear probability models, selected coefficients, by level of school.						
	Elementary School		Middle School		High School	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Working Conditions						
Leadership	-0.018*	(0.006)	-0.018#	(0.010)	-0.028*	(0.012)
Facilities	0.010*	(0.005)	0.012	(0.007)	0.003	(0.007)
Empowerment	-0.004	(0.005)	-0.008	(0.008)	-0.008	(0.008)
Prof. development	-0.006	(0.005)	-0.003	(0.009)	0.002	(0.007)
Time factor	0.005	(0.005)	0.001	(0.007)	n/a	n/a
Evaluation	n/a	n/a	n/a	n/a	0.008	(0.009)
Time –planning	-0.001	(0.026)	0.019	(0.052)	-0.016	(0.047)
Time - outside work-day	0.048	(0.035)	-0.002	(0.061)	-0.100#	(0.060)
School Characteristics						
Fraction of students:						
Black	0.068*	(0.023)	0.128*	(0.042)	-0.036	(0.075)
Hispanic	0.108	(0.069)	0.363*	(0.143)	0.175	(0.157)
"Other"	0.025	(0.040)	0.021	(0.068)	0.034	(0.047)
Free/reduced lunch	-0.004	(0.031)	-0.017	(0.055)	0.254	(0.211)
Limited English proficient	-0.146	(0.105)	-0.501#	(0.263)	-0.221	(0.282)
Non-college parent	-0.011	(0.026)	0.016	(0.047)	-0.271#	(0.145)
Fraction of Teachers with:						
Master's degree or higher	-0.051	(0.042)	0.095	(0.067)	-0.041	(0.076)
0-3 years experience	0.034	(0.053)	0.177#	(0.093)	0.180#	(0.100)
4-10 years experience (base)	-	-	-	-	-	-
>10 years experience	-0.073#	(0.041)	-0.048	(0.065)	-0.077	(0.076)
Average teacher test score	-0.031*	(0.014)	0.014	(0.020)	-0.012	(0.018)
School age (base is new school)						
Average Age	0.011	(0.007)	-0.005	(0.011)	0.019	(0.012)
Old School	0.014	(0.010)	-0.003	(0.015)	-0.003	(0.014)
Log of school membership	-0.006	(0.013)	-0.026	(0.017)	-0.016	(0.015)
New administrator 2005	0.013#	(0.007)	0.017	(0.011)	-0.008	(0.011)
New administrator 2006	0.023*	(0.009)	0.042*	(0.012)	-0.007	(0.008)
Did not meet AYP 2005	0.010	(0.007)	0.009	(0.011)	-0.005	(0.009)
Did not meet growth 2005	0.011	(0.007)	-0.000	(0.011)	-0.039#	(0.020)
Teacher salary (log)	0.525*	(0.174)	0.221	(0.293)	0.558	(0.458)
Unemployment rate	0.004	(0.004)	-0.002	(0.005)	0.022#	(0.011)

District membership (log)	0.008	(0.006)	0.005	(0.009)	-0.004	(0.009)
Teacher Characteristics						
Black	-0.008	(0.008)	0.008	(0.012)	0.008	(0.012)
Hispanic	0.065*	(0.032)	0.110*	(0.048)	-0.023	(0.026)
"Other"	0.029*	(0.010)	-0.006	(0.008)	0.003	(0.007)
Male	-0.009	(0.010)	-0.016	(0.016)	-0.012	(0.014)
Teacher Experience:						
0-3 years (base)	-	-	-	-	-	-
4-6 years	-0.020*	(0.010)	-0.071*	(0.013)	-0.075*	(0.012)
7-10 years	-0.066*	(0.009)	-0.124*	(0.014)	-0.125*	(0.010)
11-20 years	-0.106*	(0.008)	-0.133*	(0.010)	-0.149*	(0.009)
>20 years	-0.056*	(0.008)	-0.111*	(0.012)	-0.119*	(0.010)
Has a graduate degree	0.018*	(0.007)	0.020*	(0.010)	0.030*	(0.010)
Geographic indicators						
Urban Coastal	0.040	(0.029)	0.020	(0.051)	-0.032	(0.033)
Urban Piedmont	0.006	(0.028)	-0.028	(0.049)	0.002	(0.034)
Urban Mountain	0.038	(0.031)	0.013	(0.052)	-0.009	(0.037)
Rural Coastal	0.030	(0.033)	-0.013	(0.055)	0.025	(0.038)
Rural Piedmont	0.050	(0.031)	-0.002	(0.052)	0.026	(0.035)
Rural Mountain	0.056	(0.035)	0.005	(0.057)	-0.012	(0.035)
Charlotte-Mecklenburg LEA (base)	-	-	-	-	-	-
Wake County LEA	-0.003	(0.023)	-0.024	(0.040)	-0.006	(0.024)
Guilford County LEA	-0.003	(0.024)	-0.007	(0.043)	0.007	(0.021)
Cumberland County LEA	0.042	(0.028)	-0.043	(0.046)	-0.018	(0.030)
Winston-Salem/Forsyth LEA	-0.025	(0.027)	-0.051	(0.045)	0.005	(0.035)
Constant	-5.448*	(1.860)	-2.031	(3.092)	-5.451	(4.913)
R^2	0.029		0.041		0.044	
Observations	30,618		14,130		18,240	
No. of School Clusters	1,116		378		340	

Dependent variable takes on the value 1 if the teacher left the school after the 2005/06 school year. Equation estimated by OLS, analytically weighted by teacher responses at the school level, with errors clustered at the school level. * indicates statistical significance at 0.05 level; # at the 0.10 level. n/a signifies not applicable.

Table 9 – Achievement models, second stage regressions				
	Math		Reading	
	Coefficient .	Standard error	Coefficient	Standard error
Working Conditions				
Leadership	0.021*	0.009	0.009	0.007
Facilities	0.005	0.008	0.019*	0.006
Empowerment	0.000	0.008	0.003	0.006
Professional development	-0.005	0.008	-0.014*	0.005
Time factor	0.009		-0.005	0.006
Time – Planning	0.133*	0.053	0.106*	0.039
Time - Outside work-day	0.010	0.037	-0.004	0.027
Fraction of students:				
Black	0.106*	0.035	0.073*	0.026
Hispanic	-0.068	0.132	-0.153	0.098
"Other"	-0.167*	0.062	-0.134*	0.045
Free/reduced lunch	0.009	0.052	0.028	0.039
Limited English proficient	0.390*	0.190	0.333*	0.141
Non-college parent	-0.194*	0.042	-0.190*	0.031
Fraction of Teachers with:				
Master's degree or higher	0.146*	0.058	0.103*	0.043
0-3 Years Experience	0.056	0.082	0.006	0.061
>10 Years Experience	-0.022	0.065	0.008	0.048
Average teacher test score	0.008	0.0211	-0.000	0.015
School of average age	-0.001	0.013	0.003	0.010
Old school	-0.005	-0.015	0.003	0.003
School membership (log)	-0.005	0.013	0.013	0.009
New administration. 2005	0.013	0.013	0.009	0.010
New administration 2006	-0.004	0.013	-0.014	0.009
Did not meet AYP 2005	0.000	0.012	-0.019*	0.009
Did not meet growth 2005	-0.019	0.011	0.008	0.009
Teacher salary (log)	0.215	0.266	0.406*	0.193
District membership (log)	0.019	0.008	-0.002	0.006
Constant	-2.82	2.777	-4.42*	2.05
R^2 (full model)	0.175	--	0.199	--
R^2 (no WC)	0.152		0.177	
No. of observations	1074		1073	
The dependent variables are the estimated school fixed effects from first stage regressions of standardized test scores in math and reading for fourth and fifth graders in all schools serving those grades in which at least 40 percent of the teachers responded to the survey. First stage regressions include characteristics of individual students and of their teachers, an indicator of fifth grade, and school fixed effects.				

These two tables are to be made available on request

Table A. Working Conditions Domains based on factor analysis by level of school.

ELEMENTARY DOMAIN 1: LEADERSHIP		
Variable	Load	Question
empowerme~a1	0.534	Teachers are centrally involved in decision making about educational issues.
empowerme~a2	0.521	Teachers are trusted to make sound professional decisions about instruction.
empowerme~a3	0.660	The faculty has an effective process for making group decisions and solving problems.
empowerme~a4	0.709	In this school we take steps to solve problems.
empowerme~a5	0.321	Opportunities for advancement within the teaching profession (other than administration) are available to me.
leadershi~10	0.726	The faculty and staff have a shared vision
leadershi~11	0.604	Teachers are held to high professional standards for delivering instruction.
leadershi~12	0.746	Teacher performance evaluations are handled in an appropriate manner.
leadershi~13	0.737	The procedures for teacher performance evaluations are consistent.
leadershi~14	0.739	Teachers receive feedback that can help them improve teaching.
leadershi~a1	0.722	There is an atmosphere of trust and mutual respect within the school.
leadershi~a2	0.510	The faculty are committed to helping every student learn.
leadershi~a3	0.778	The school leadership communicates clear expectations to students and parents.
leadershi~a4	0.677	The school leadership shields teachers from disruptions, allowing teachers to focus on educating students.
leadershi~a5	0.736	The school leadership consistently enforces rules for student conduct.
leadershi~a6	0.758	The school leadership support teachers' efforts to maintain discipline in the classroom.
leadershi~b1	0.597	Facilities and resources*
leadershi~b2	0.629	The use of time in my school*
leadershi~b3	0.569	Professional development*
leadershi~b4	0.715	Empowering teachers*
leadershi~b5	0.737	Leadership issues*
leadershi~b6	0.634	New teacher support*
leadership_c	0.637	Overall, the school leadership in my school is effective
leadership~7	0.516	Opportunities are available for members of the community to actively contribute to this school's success.
leadership~8	0.811	The school leadership consistently supports teachers.
leadership~9	0.695	The school improvement team provides effective leadership at this school.
core_e	0.485	At this school, we utilize results from the Teacher Working Conditions survey as a tool for improvement
* Indicates the question reads: The school leadership makes a sustained effort to address teacher concerns about…		

ELEMENTARY DOMAIN 2: FACILITIES AND RESOURCES		
Variable	Load	Question
facilities_a	0.507	Teachers have sufficient access to appropriate instructional

		materials and resources
facilities_b	0.652	Teachers have sufficient access to instructional technology, including computers, printers, software, and internet access.
facilities_c	0.629	Teachers have sufficient access to communications technology, including phones, faxes, email, and network drives.
facilities_d	0.486	Teachers have sufficient access to office equipment and supplies such as copy machines, paper, pens, etc.
facilities_e	0.527	The reliability and speed of Internet connections in this school are sufficient to support instructional practices.
facilities_f	0.491	Teachers have adequate professional space to work productively.
facilities_g	0.420	Teachers and staff work in a school environment that is clean and well maintained
facilities_h	0.437	Teachers and staff work in a school environment that is safe.

ELEMENTARY DOMAIN 3: TEACHER EMPOWERMENT		
Variable	Load	Question
empowerme~b1	0.586	Selecting instructional materials and resources.**
empowerme~b2	0.554	Devising teaching techniques.**
empowerme~b3	0.490	Setting grading and student assessment practices.**
empowerme~b4	0.574	Determining the content of in-service professional development programs.**
empowerme~b5	0.462	Hiring new teachers.**
empowermen~6	0.486	Establishing and implementing policies about student discipline.**
empowermen~7	0.543	Deciding how the school budget will be spent.**
empowermen~8	0.517	School improvement planning.**
** Indicates the question reads: Please indicate how large a role teachers at your school have in each of the following…		

ELEMENTARY DOMAIN 4: PROFESSIONAL DEVELOPMENT		
Variable	Load	Question
prodev_a1	0.508	Sufficient funds and resources are available to allow teachers to take advantage of professional development activities.
prodev_a2	0.493	Teachers are provided opportunities to learn from one another
prodev_a3	0.633	Adequate time is provided for professional development
prodev_a4	0.511	Teachers have sufficient training to fully utilize instructional technology.
prodev_a5	0.512	Professional development provides teachers with the knowledge and skills most needed to teach effectively.

ELEMENTARY DOMAIN 5: TIME		
Variable	Load	Question
time_a1	-0.395	Teachers have reasonable class sizes, affording them time to meet the educational needs of all students.
time_a2	-0.580	Teachers have time available to collaborate with their colleagues.
time_a3	-0.524	Teachers are protected from duties that interfere with their essential role of educating students.
time_a4	-0.441	School leadership tries to minimize the amount of routine administrative paperwork required of teachers.
time_a5	-0.587	The non-instructional time provided for teachers in my school is sufficient.

MIDDLE DOMAIN 1: LEADERSHIP		
Variable	Load	Question
empowerme~a1	0.604	Teachers are centrally involved in decision making about educational issues.
empowerme~a2	0.560	Teachers are trusted to make sound professional decisions about instruction.
empowerme~a3	0.685	The faculty has an effective process for making group decisions and solving problems.
empowerme~a4	0.745	In this school we take steps to solve problems.
empowerme~a5	**0.364**	**Opportunities for advancement within the teaching profession (other than administration) are available to me.**
empowermen~6	0.487	Establishing and implementing policies about student discipline.**
facilities_h	0.470	Teachers and staff work in a school environment that is safe.
leadershi~10	0.707	The faculty and staff have a shared vision
leadershi~11	0.557	Teachers are held to high professional standards for delivering instruction.
leadershi~12	0.681	Teacher performance evaluations are handled in an appropriate manner.
leadershi~13	0.671	The procedures for teacher performance evaluations are consistent.
leadershi~14	0.677	Teachers receive feedback that can help them improve teaching.
leadershi~a1	0.714	There is an atmosphere of trust and mutual respect within the school.
leadershi~a2	0.449	The faculty are committed to helping every student learn.
leadershi~a3	0.768	The school leadership communicates clear expectations to students and parents.
leadershi~a4	0.712	The school leadership shields teachers from disruptions, allowing teachers to focus on educating students.
leadershi~a5	0.766	The school leadership consistently enforces rules for student conduct.
leadershi~a6	0.785	The school leadership support teachers' efforts to maintain discipline in the classroom.
leadershi~b1	0.592	Facilities and resources*
leadershi~b2	0.662	The use of time in my school*
leadershi~b3	0.573	Professional development*
leadershi~b4	0.752	Empowering teachers*
leadershi~b5	0.761	Leadership issues*
leadershi~b6	0.613	New teacher support*
leadership_c	0.701	Overall, the school leadership in my school is effective
leadership~7	0.509	Opportunities are available for members of the community to actively contribute to this school's success.
leadership~8	0.814	The school leadership consistently supports teachers.
leadership~9	0.685	The school improvement team provides effective leadership at this school.
core_e	0.538	At this school, we utilize results from the Teacher Working Conditions survey as a tool for improvement
time_a4	0.492	School leadership tries to minimize the amount of routine administrative paperwork required of teachers.
* Indicates the question reads: The school leadership makes a sustained effort to address teacher concerns about…		
** Indicates the question reads: Please indicate how large a role teachers at your school have in each of the following…		

MIDDLE DOMAIN 2: FACILITIES AND RESOURCES		
Variable	Load	Question
facilities_a	0.543	Teachers have sufficient access to appropriate instructional materials and resources
facilities_b	0.615	Teachers have sufficient access to instructional technology, including computers, printers, software, and internet access.
facilities_c	0.610	Teachers have sufficient access to communications technology, including phones, faxes, email, and network drives.
facilities_d	0.513	Teachers have sufficient access to office equipment and supplies such as copy machines, paper, pens, etc.
facilities_e	0.505	The reliability and speed of Internet connections in this school are sufficient to support instructional practices.
facilities_f	0.517	Teachers have adequate professional space to work productively.
facilities_g	0.438	Teachers and staff work in a school environment that is clean and well maintained

MIDDLE DOMAIN 3: TEACHER EMPOWERMENT		
Variable	Load	Question
empowerme~b1	0.546	Selecting instructional materials and resources.**
empowerme~b2	0.537	Devising teaching techniques.**
empowerme~b3	0.464	Setting grading and student assessment practices.**
empowerme~b4	0.490	Determining the content of in-service professional development programs.**
empowerme~b5	0.427	Hiring new teachers.**
empowermen~7	0.492	Deciding how the school budget will be spent.**
empowermen~8	0.495	School improvement planning.**
** Indicates the question reads: Please indicate how large a role teachers at your school have in each of the following…		

MIDDLE DOMAIN 4: PROFESSIONAL DEVELOPMENT		
Variable	Load	Question
prodev_a1	0.484	Sufficient funds and resources are available to allow teachers to take advantage of professional development activities.
prodev_a2	0.503	Teachers are provided opportunities to learn from one another
prodev_a3	0.625	Adequate time is provided for professional development
prodev_a4	0.500	Teachers have sufficient training to fully utilize instructional technology.
prodev_a5	0.527	Professional development provides teachers with the knowledge and skills most needed to teach effectively.

MIDDLE DOMAIN 5: TIME		
Variable	Load	Question
time_a2	-0.460	Teachers have time available to collaborate with their colleagues.
time_a3	-0.450	Teachers are protected from duties that interfere with their essential role of educating students.
time_a5	-0.504	The non-instructional time provided for teachers in my school is

		sufficient.

HIGH SCHOOL DOMAIN 1: LEADERSHIP		
Variable	Load	Question
empowerme~a1	0.614	Teachers are centrally involved in decision making about educational issues.
empowerme~a2	0.567	Teachers are trusted to make sound professional decisions about instruction.
empowerme~a3	0.686	The faculty has an effective process for making group decisions and solving problems.
empowerme~a4	0.733	In this school we take steps to solve problems.
empowerme~a5	0.343	Opportunities for advancement within the teaching profession (other than administration) are available to me.
empowermen~6	0.461	Establishing and implementing policies about student discipline.**
facilities_h	0.488	Teachers and staff work in a school environment that is safe.
leadershi~10	0.689	The faculty and staff have a shared vision
leadershi~11	0.491	Teachers are held to high professional standards for delivering instruction.
leadershi~a1	0.709	There is an atmosphere of trust and mutual respect within the school.
leadershi~a2	0.401	The faculty are committed to helping every student learn.
leadershi~a3	0.742	The school leadership communicates clear expectations to students and parents.
leadershi~a4	0.725	The school leadership shields teachers from disruptions, allowing teachers to focus on educating students.
leadershi~a5	0.759	The school leadership consistently enforces rules for student conduct.
leadershi~a6	0.782	The school leadership support teachers' efforts to maintain discipline in the classroom.
leadershi~b1	0.569	Facilities and resources*
leadershi~b2	0.669	The use of time in my school*
leadershi~b3	0.531	Professional development*
leadershi~b4	0.743	Empowering teachers*
leadershi~b5	0.751	Leadership issues*
leadershi~b6	0.561	New teacher support*
leadership_c	0.715	Overall, the school leadership in my school is effective
leadership~7	0.463	Opportunities are available for members of the community to actively contribute to this school's success.
leadership~8	0.809	The school leadership consistently supports teachers.
leadership~9	0.664	The school improvement team provides effective leadership at this school.
core_e	0.515	At this school, we utilize results from the Teacher Working Conditions survey as a tool for improvement
time_a3	0.454	Teachers are protected from duties that interfere with their essential role of educating students.
time_a4	0.552	School leadership tries to minimize the amount of routine administrative paperwork required of teachers.
* Indicates the question reads: The school leadership makes a sustained effort to address teacher concerns about…		
** Indicates the question reads: Please indicate how large a role teachers at your school have in each of the following…		

HIGH DOMAIN 2: FACILITIES, RESOURCES, AND TEACHING LOAD*		
Variable	Load	Question
facilities_a	0.547	Teachers have sufficient access to appropriate instructional materials and resources
facilities_b	0.626	Teachers have sufficient access to instructional technology, including computers, printers, software, and internet access.
facilities_c	0.589	Teachers have sufficient access to communications technology, including phones, faxes, email, and network drives.
facilities_d	0.500	Teachers have sufficient access to office equipment and supplies such as copy machines, paper, pens, etc.
facilities_e	0.479	The reliability and speed of Internet connections in this school are sufficient to support instructional practices.
facilities_f	0.493	Teachers have adequate professional space to work productively.
facilities_g	0.410	Teachers and staff work in a school environment that is clean and well maintained
time_a1	0.351	Teachers have reasonable class sizes, affording them time to meet the educational needs of all students.

***This domain name may need to be changed because time_a5 was removed. Perhaps not including "teaching load" in the domain name?**

HIGH DOMAIN 3: TEACHER EMPOWERMENT		
Variable	Load	Question
empowerme~b1	0.568	Selecting instructional materials and resources.**
empowerme~b2	0.566	Devising teaching techniques.**
empowerme~b3	0.511	Setting grading and student assessment practices.**
empowerme~b4	0.444	Determining the content of in-service professional development programs.**
empowerme~b5	0.450	Hiring new teachers.**
empowermen~7	0.477	Deciding how the school budget will be spent.**
empowermen~8	0.491	School improvement planning.**
** Indicates the question reads: Please indicate how large a role teachers at your school have in each of the following…		

HIGH DOMAIN 4: PROFESSIONAL DEVELOPMENT AND COLLABORATION		
Variable	Load	Question
prodev_a1	-0.468	Sufficient funds and resources are available to allow teachers to take advantage of professional development activities.
prodev_a2	-0.559	Teachers are provided opportunities to learn from one another
prodev_a3	-0.629	Adequate time is provided for professional development
prodev_a4	-0.478	Teachers have sufficient training to fully utilize instructional technology.
prodev_a5	-0.512	Professional development provides teachers with the knowledge and skills most needed to teach effectively.
time_a2	-0.430	Teachers have time available to collaborate with their colleagues.
time_a5	**-0.309**	**The non-instructional time provided for teachers in my school is sufficient.**

HIGH DOMAIN 5: TEACHER EVALUATION		
Variable	Load	Question
leadershi~12	0.642	Teacher performance evaluations are handled in an appropriate manner.
leadershi~13	0.626	The procedures for teacher performance evaluations are consistent.
leadershi~14	0.559	Teachers receive feedback that can help them improve teaching.

Table A.2. Comparisons of respondent and full teacher samples.												
	Elementary School				**Middle School**				**High School**			
	Respondents		Actual Teachers		Respondents		Actual Teachers		Respondents		Actual Teachers	
Variable	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
White Teacher	0.874	(0.332)	0.864	(0.343)	0.810	(0.393)	0.801	(0.399)	0.836	(0.370)	0.834	(0.372)
Black Teacher	0.089	(0.284)	0.116	(0.320)	0.142	(0.349)	0.177	(0.382)	0.110	(0.313)	0.139	(0.346)
Hispanic Teacher	0.010	(0.099)	0.008	(0.087)	0.010	(0.097)	0.008	(0.089)	0.011	(0.103)	0.013	(0.113)
Other Teacher	0.028	(0.165)	0.013	(0.112)	0.039	(0.193)	0.014	(0.116)	0.043	(0.203)	0.014	(0.118)
Male Teacher	0.065	(0.246)	0.069	(0.254)	0.245	(0.430)	0.253	(0.435)	0.372	(0.483)	0.369	(0.483)
Teacher Experience												
0-1 Year	0.069	(0.254)	0.124	(0.329)	0.075	(0.263)	0.129	(0.335)	0.081	(0.272)	0.129	(0.335)
2-3 Years	0.113	(0.317)	0.106	(0.308)	0.128	(0.334)	0.102	(0.303)	0.134	(0.340)	0.089	(0.284)
4-6 Years	0.149	(0.356)	0.138	(0.345)	0.174	(0.379)	0.145	(0.352)	0.156	(0.362)	0.122	(0.327)
7-10 Years	0.164	(0.370)	0.158	(0.365)	0.164	(0.370)	0.157	(0.364)	0.165	(0.371)	0.147	(0.355)
11-20 Years	0.260	(0.439)	0.254	(0.435)	0.236	(0.425)	0.247	(0.432)	0.242	(0.428)	0.260	(0.439)
>20 Years	0.245	(0.430)	0.236	(0.425)	0.223	(0.416)	0.238	(0.426)	0.223	(0.416)	0.270	(0.444)
Has a Graduate Degree	0.323	(0.468)	0.139	(0.346)	0.329	(0.470)	0.147	(0.354)	0.387	(0.487)	0.175	(0.380)
Urban Coastal	0.098	(0.298)	0.100	(0.300)	0.097	(0.296)	0.103	(0.304)	0.085	(0.279)	0.086	(0.281)
Urban Piedmont	0.090	(0.286)	0.091	(0.288)	0.094	(0.293)	0.092	(0.290)	0.103	(0.303)	0.107	(0.309)
Urban Mountain	0.063	(0.244)	0.065	(0.247)	0.075	(0.264)	0.076	(0.264)	0.071	(0.257)	0.074	(0.262)
Rural Coastal	0.065	(0.247)	0.064	(0.244)	0.072	(0.258)	0.067	(0.251)	0.081	(0.272)	0.074	(0.262)
Rural Piedmont	0.249	(0.432)	0.242	(0.429)	0.245	(0.430)	0.246	(0.430)	0.238	(0.426)	0.224	(0.417)
Rural Mountain	0.147	(0.354)	0.145	(0.352)	0.135	(0.342)	0.134	(0.341)	0.137	(0.344)	0.145	(0.352)
Wake County LEA	0.095	(0.294)	0.082	(0.274)	0.095	(0.293)	0.088	(0.283)	0.082	(0.275)	0.081	(0.273)
Guilford County LEA	0.062	(0.240)	0.061	(0.240)	0.060	(0.238)	0.058	(0.234)	0.053	(0.225)	0.054	(0.225)
Cumberland County LEA	0.034	(0.180)	0.039	(0.194)	0.038	(0.192)	0.043	(0.204)	0.042	(0.200)	0.042	(0.200)
Winston-Salem/Forsyth LEA	0.051	(0.219)	0.048	(0.214)	0.054	(0.225)	0.048	(0.214)	0.038	(0.191)	0.035	(0.184)
Charlotte-Mecklenburg LEA	0.047	(0.211)	0.063	(0.242)	0.034	(0.181)	0.045	(0.206)	0.070	(0.255)	0.078	(0.268)
Observations	22,941		30,618		9,101		14,130		10,829		18,240	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