

Collective Bargaining and Faculty Composition in Public School Districts: Evidence from California*

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Abstract

Collective bargaining agreements (CBAs) negotiated between teachers' unions and school districts uniquely govern the behavior of district faculty and administrators by setting strict boundaries for educational policy in the United States. While previous studies have focused primarily on the impact of statewide union coverage or the timing of unionization laws on faculty and student outcomes, research has not yet adequately tested the specific provisions within union contracts that serve as the mechanisms by which bargaining impacts these outcomes. Combining faculty and student demographic data with a content analysis of agreements, this paper examines whether district-level differences between union policy demands are significantly associated with the share of non-White faculty members teaching in the district. I find that district share of non-White teaching faculty is a significant predictor of contracts with a strong emphasis on teacher discipline, suggesting that collective bargaining may be an important tool in the hiring and retention of faculty of color.

Keywords: Collective bargaining, discipline, faculty demographics

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1 Introduction

According to the National Center for Education Statistics, American public school teachers have for the past several decades been predominantly White. In the 2017 to 2018 school year, 79 percent of all public high school teachers were White, a proportion not much lower than the 84 percent of nearly 20 years earlier [11].

At the same time, student enrollment in American public schools has since 2017 largely consisted of non-White (primarily Black and Hispanic) students [13]. Studies have long shown that when a teacher matches a student’s ethnicity or race, student-reported levels of “personal effort, happiness in class, the quality of student-teacher communication, and college aspirations” rise [14]. Given such a relationship, it should come as no surprise that the aforementioned faculty-student demographic mismatch has been indicated as a key driver of the school-to-prison pipeline¹ and of the broader racial achievement gap in America by economic scholars, legal advocates, and politicians alike. [35] [38].

The cultural incongruence between White teachers and students of color often leads to pedagogical practices and classroom management that clash with students’ home lives and cultural backgrounds, leading to perceived misbehavior and disproportionate suspensions and expulsions [2] [38] [32] [6] [17] [21] [34]. By contrast, research has indicated that non-White teachers are particularly well-equipped to serve as role models to students of color by encouraging ethnic minority students to succeed academically, slowing the pipeline for students between school and juvenile justice systems [4]. As such, understanding the many dynamics behind the faculty demographic composition of our public schools may have an important role to play in the mitigation of socioeconomic and racial educational inequities in America.

When asking what makes the American school workforce predominantly White, we can turn to a distinct yet related question: what factors are keeping people of color from becoming and remaining educators? Many studies have interrogated the limited entrance of non-White individuals into the teaching pipeline and have discovered a variety of factors that inhibit ethnic minorities from enrolling in teaching accreditation programs; the lack of mentors among the current teacher workforce is foremost among them [3] [25].

¹The school-to-prison pipeline describes the combination of educational and public safety policies that disproportionately push non-White students into the criminal legal system in the United States

So, too, are negative perceptions of teachers and teaching careers due to disproportionate expulsions and suspensions of students of color [16] [34]. Given that major factors in the limited flow of racial and ethnic minorities into the teaching profession are the low high school graduation, college enrollment, and college graduation rates of minority youth, America's low share of faculty of color becomes a self-perpetuating cycle: the racial achievement gap lowers the number of minority students qualified to be teachers, which in turn broadens the racial achievement gap [36].

Still others have questioned not the entrance of individuals of color into the teaching profession but, rather, the retention of them. Teachers of color have higher attrition rates than White teachers (19 percent vs. 15 percent), contributing to the shortage of non-White teachers in America: today, about 90 percent of the demand for new teaching candidates is caused by existing teachers leaving the profession [15] [5]. Factors such as hostile work environments and the tendency of teacher pathways to funnel potential candidates of color to low-income areas with poor working conditions all contribute to this elevated turnover rate [10] [15] [29] [7]. Given the rampant simultaneous causality of low minority *entrance* into the teaching pipeline, my research takes up the latter half of the question to examine potential tools that existing faculty of color can take advantage of in the face of large-scale *retention* problems for Black and Brown teachers. In particular, I interrogate the variables embedded within school district policy that may be associated with the presence and retention of non-White teachers in school districts.

At the district policy level, no legal tool quite matches the power held by collective bargaining agreements (CBAs)—legal contracts negotiated between teachers' unions and school districts—to influence school policy. Often running hundreds of pages in length, CBAs—known as a "web of rules"—directly affect every dimension of the school workplace and influence a broad swath of educational policy, from teacher compensation, evaluation measurements, and hiring practices to transfer procedures, disciplinary protocols, and salary schedules. As such, in the 35 states that allow collective bargaining, these agreements are uniquely positioned to statutorily govern the behavior of teachers and school district administrators by setting strict boundaries on district policy [30] [27] [20] [31]. Because deviation from the terms of an agreement is either highly difficult or simply illegal, changes to district-wide provisions in collective bargaining agreements provide the perfect lens to study any associated characteristic changes of district administrators and teachers.

In this paper, I ask whether differences in union collective bargaining demands are associated with differences in the share of non-White teachers in the district. If non-White faculty are utilizing collective bargaining in a way that aids their retention and decreases turnover rates (implying a higher share of non-White faculty in the district), then this association should be positive. On the other hand, if administrators in a district or White teachers bargain a contract that heightens attrition pressures for teachers of color, then this association should be negative. To measure the mechanisms by which collective bargaining may positively or negatively predict the share of teachers of color in a district, I focus on district-level differences in five common union provisions, chosen for their citations in previous empirical work [27] [28]. These five provisions are as follows:

1. procedures for disciplining teachers
2. prioritization of teacher seniority
3. rules related to teacher transfer rights and choice of school assignment
4. procedures related to the evaluation of teacher quality
5. an emphasis on equity and diversity

I focus on provisions found in collective bargaining agreements negotiated between unions for certificated teachers and district administrators in California public school districts between 2012 and 2019. Combining student and faculty demographic data from the California Department of Education with a content analysis of a sample of CBAs, I empirically test whether union emphasis on the five parameters mentioned above is associated with the share of non-White faculty members in California school districts.

California as the region of study for this paper is especially relevant given the state's broad levels of unionization and large number of school districts. State affiliates of the American Federation of Teachers (AFT) and the National Education Association (NEA), the two largest teachers unions in America, have a combined membership of 430,000 teachers and paraprofessionals in California; in the case of the California Teachers Association, this makes the affiliate the largest of its kind in the NEA [1] [33]. Indeed, combined teachers union membership in California is larger than in any other

state, allowing me to measure district-level differences from bargaining agreements selected randomly across the entire state. Moreover, the state's districts vary substantially on observable characteristics that may matter for union provisions and faculty characteristics: among these are student (and broader district) poverty levels, the average tenure of teachers in a district, and student expulsion and suspension rates. Finally, while California's share of White faculty is smaller than the national average at around 61 percent, non-White faculty members still comprise the minority, especially relative to the proportions of non-White students across the state's public school districts: Black students make up 5.2 percent of the public school population in California, but Black teachers make up less than 4 percent of faculty. Asian students make up 9.5 percent of the public school population, but only about 6 percent of public school faculty are Asian. And while 55 percent of public school students are Hispanic or Latinx, just 21 percent of faculty identify as the same [9].

District characteristics held constant, this study finds a consistent, significant, and positive relationship between union emphasis on teacher discipline and the proportion of non-White teachers in a district. These results are robust to strategies used to navigate potential connections between teacher demographics, student discipline (often a proxy for overall emphasis on discipline in the district), and student poverty. These findings, while consistent with my hypothesis that differing faculty compositions bargain differing contracts, cannot be interpreted causally and as such merit further study.

With the imbalanced racial composition of America's schools remaining stubbornly steady, it is becoming ever more important to identify the mechanisms that may influence teacher demographic composition and distribution. To examine the particular relationship between union demands and faculty demographics, this paper is organized as follows. The next section gives an overview of the existing literature and their associated advantages and disadvantages. I then describe my unique data set generated from a merging of California teacher-district contracts and demographic characteristics, after which I outline my methods to explore whether or not unions with a proclivity to one of the five mentioned qualities are associated with demographic characteristics of a district's teaching faculty. The final two sections present my results and discuss directions for further study.

2 Related Work

The literature studying the relationship between unionization, collective bargaining, and faculty and student outcomes can be broadly sorted into two main camps. The first strain of literature consists of empirical work that traces the connection of broader unionization trends to school outcome characteristics. Here, "unionization" can refer to any measure indicating the extent to which public school teachers are covered by union privileges. The most common measurements are the percent of public school teachers in an area covered by a union, union membership rates, and the number of unionized school districts in a particular region, but some studies have measured unionization through differences in the timing of the passage of state laws that facilitate teachers' unionization [22]. One insightful study traced union strength by calculating the percentage of campaign contributions to candidates for state office that come from teachers' unions [19]. School outcome characteristics can be anything from teachers' compensation and working conditions to student performance on standardized test scores to the probability of states enacting reform-oriented education policies.

The empirical assertions from this strain of literature are wide and often contradicting. [8] finds that while students of average ability who attend school in unionized districts perform better on standardized tests, low-achieving and high-achieving students at each end of the spectrum perform worse. [18], on the other hand, finds that teachers' unions have a significantly positive association with student test scores in both math and English, especially for Hispanic and Black students.

[8] also finds that teachers covered by collective bargaining tend to earn 5 to 12 percent more than those not covered by bargaining. Indeed, in this area, most previous literature is in agreement: unionization broadly benefits teachers' salaries, workplace conditions, and political interests [19] [22] [26] [27] [28]. Terry Moe, a professor of political science at Stanford University, in particular argues for the role that teachers' unions play in promoting the interests of educators while divesting from the needs of students [26] [28]. He argues that collective bargaining favors teacher comfort and job stability over performance through the prioritization of seniority during lay offs; the prioritization of seniority in the consideration of transfer rights and school assignments; the district's emphasis on discipline and equity; and the multi-step procedures for evaluating teacher performance, which hinge on subjective appraisals rather than measures such as student performance [28] [27]. He notes that these

rules make it nearly impossible to dismiss mediocre teachers and posits that the prioritization of tenure and seniority rights in unions limits the discretion of administrators in assigning teachers to classes, segregating teachers into low-income schools by ability and experience. [19] corroborates Moe's claims, finding that increased union political activity greatly reduces chances that states enact reform-oriented education policies that may threaten the flexibility of teachers' working conditions and union power.

The second strain of literature is much more limited and concerns itself with the particular mechanisms *within* unionization that work to impact school characteristics outcomes. [30], for instance, examines whether stronger, more politically organized unions are associated with CBAs that place greater constraints on district policy options. They measure union strength through a content analysis of collective bargaining agreements, board member evaluations of union power, and union support of board members in recent elections. [8], too, performs a content analysis of collective bargaining agreements to determine that the number of provisions in CBAs have an important association with faculty salary. He finds that teachers in districts with fifty contract provisions received \$1,900 more on average than those in districts with the minimum number of items. Finally, a study of teacher evaluation policies finds that when teacher evaluations are outlined specifically in district contracts, administrators are inhibited from differentiating properly between successful and unsuccessful teachers [37].

Though narrow, it is this second strain of literature that provides a promising new lens through which future economic research can view teachers' unionization and collective bargaining. While the literature focused on the broader impact of unionization focuses on quasi-experimental approaches to establish causality between unionization and student or school outcomes, the mechanisms by which their findings are established necessarily remain untested in their studies. While Moe claims, for instance, that seniority demands within collective bargaining play a large role in facilitating a teacher "quality gap" by permitting senior teachers to transfer to schools with higher-performing and more affluent children, [24] finds no persuasive evidence that seniority preference rules independently affect the distribution of experienced teachers among schools. Nor do they find evidence that seniority preference rules exacerbate the negative relationship between high-minority, low-income schools and low-experience teachers.

My study models its approach after that used by Koski and Horng in their paper, "Facilitating the Teacher Quality Gap? Collective Bargaining

Agreements, Teacher Hiring and Transfer Rules, and Teacher Assignment Among Schools in California” [24]. Like them, I code the major provisions among my sample of collective bargaining agreements I find relevant to my study and assign each district a single score for each provision—one of five indices—that reflects the collective strength of those provisions. I identify five provisions in collective bargaining that are likely to be correlated with non-White faculty proportions in public school districts based on analyses performed by [28], [24], and [23]: emphasis on teacher seniority, teacher evaluation procedures, teacher disciplinary procedures, contract emphasis on diversity and equity, and prioritization of transfer and school choice.

First, teachers who work in high-poverty schools with students who are academically disadvantaged tend to be unfairly penalized during their evaluations; because these teachers are often non-White, this factor likely plays a role in the significant race gap in teacher-evaluation scores. [24] [23]. As such, creating two separate indices measuring the strength of union emphasis on evaluation and disciplinary procedures may yield insight into faculty demographic patterns: faculty of color may desire stricter boundaries on evaluation procedures and disciplinary steps to safeguard against administrator implicit bias. Moreover, [28] and [24] focus on the role that union emphasis on teacher seniority and transfer rights have on segregating teachers by experience into high-income, high-achieving schools. Because teacher experience and school sorting are strongly correlated with faculty racial characteristics [26] [24] [23], I create measures for emphasis on seniority and transfer rights separately. Finally, a measurement for union emphasis on diversity and equity interrogates whether there is a correlation between the share of non-White faculty in a district and a focus on race-related issues at the school level.

My study contributes to the nascent literature in two key ways. First, I add to the limited collection of studies that have performed content analyses of collective bargaining to isolate the mechanisms by which unionization impacts school outcomes. Such a focus is becoming increasingly important to the understanding of how unions operate in different capacities district by district. Second, I focus on the associations between collective bargaining demands and faculty demographic characteristics, rather than outcome variables such as student test scores and graduation rates, union political influence, or faculty wages. My study provides the first set of empirical analyses to assess the extent to which faculty demographics are associated with collective bargaining demands in an effort to understand the potential occu-

pational tools available to faculty of color in the face of large-scale attrition of minority teachers from the public school teaching workforce.

3 Data and Methods

3.1 Data

To study the links between collective bargaining agreement provisions and faculty characteristics, I merge a self-collected sample of CBAs spanning the years 2012 to 2020 with faculty and student demographic and outcome data from the state of California. The sample of collective bargaining agreements spans 161 public school districts in California, representing 17 percent of all unionized school districts in the state [9]. Out of these 161 districts, 44 have cross-sectional observations, with more than one collective bargaining agreement included per district. For instance, for the school district "Berkeley Unified", I have obtained three distinct collective bargaining agreements from the district's certificated union "Berkeley Federation of Teachers", spanning the years 2013-2015, 2015-2017, and 2017-2019. Changes in faculty demographics across years in which collective bargaining agreements are active within districts form the basis of my primary analysis.

I perform a close content analysis on my sample of collective bargaining agreements to form five indices for each measure of union emphasis on the five district policies identified above in my Introduction and Related Works sections. A detailed description of the development of these indices is described below in Methods. This close content analysis is then combined with with faculty and student demographic and outcome data from the years 2012 to 2019, made publicly available by the California Department of Education (CDE). District demographic data is collected at the individual student and teacher level by the CDE and assembled into two main repositories, known as the California Longitudinal Pupil Achievement Data System (CALPADS) and the California Basic Educational Data System (CBEDS)². The CALPEDS

²The California Longitudinal Pupil Achievement Data System is a longitudinal data system used to maintain individual-level data, including data on student demographics, courses, discipline, assessments, staff assignments, and other areas for state and federal reporting. The California Basic Educational Data System is an annual collection of district, school, and staff information as well as some aggregate data on students and staff. For information on the surveys and forms that make up CALPEDS and CBEDS,

and CBEDS data provide information on teacher and student characteristics for all California public schools and include demographic variables such as race and ethnicity, age, gender, information on the maximum degree attained for teachers, total years teaching, total years teaching in the district in question, student eligibility for free and reduced price meals, and student expulsion and suspension counts.

Because staff demographic data is limited to the academic years between 2012 and 2019, my panel, too, is limited to this time frame. Together, the sample of collective bargaining agreements and CALPEDS/CBEDS demographic data yield a combined unbalanced panel spanning 7 school years and 161 school districts. Summary statistics for the key variables within my data set are included below in Table 1.

Table 1 indicates that the typical California public school teacher is Female, is nearly 45 years of age, has obtained a Bachelors degree, and is White. She has taught 13 years total, mostly within the same school district, and has likely achieved tenure guaranteeing her employment in that district until retirement or an unlikely termination. In other words, the average California public school teacher looks much the same as the average public school teacher across America [11] [13] [10], strengthening the external validity of my study. The statistics related to California public school student characteristics, too, reflect broader patterns within the United States, though at a perhaps heightened level: 71 percent of students are non-White, while 53 percent of American public school students are non-White. 58.4 percent are eligible for free or reduced price meals under the National School Lunch Program, just above the national average of 52.1 percent [12]. Descriptive statistics of my data indicate no significant outliers among my observations (see Appendix B for outlier checks). Moreover, though relationships between dependent and independent variables in my model indicate some heteroskedasticity, my model's robust clustering of standard errors at the district level addresses any unequal scatter of variance.

For simplicity and to reduce error in my estimations, I use only bargaining agreements and demographic data from public school districts, excluding the limited charter school data from my panel. Charter schools operate autonomously through individual agreements with state or local governments rather than abiding by broader public school district policy. This flexibility

see (<https://www.cde.ca.gov/ds/sp/cl/>) and (<https://www.cde.ca.gov/ds/dc/cb/>) respectively

Table 1: Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Diversity Index	424	.017	.019	0	.096
Discipline Index	424	.037	.024	0	.119
Transfer Index	424	.183	.061	.036	.383
Evaluation Index	424	.151	.053	.049	.383
Seniority Index	424	.043	.025	.003	.176
Doctorate	424	.016	.014	0	.091
Bachelors	424	.538	.17	.003	.903
Associates	424	.003	.015	0	.158
Tenured	424	.658	.172	0	.963
Years Taught Total	424	13.637	2.471	5.833	20.401
Years In District	424	10.909	2.851	2.247	18.192
Age	366	44.677	2.076	37.833	51
Female	424	.738	.078	.5	.931
White	424	.645	.225	.005	1
Non-White	424	.355	.225	0	.995
Black	424	.033	.051	0	.443
Hispanic	424	.199	.181	0	.911
Non-White Student Rate	424	.712	.251	.11	.998
Total Expulsion Rate	420	.001	.002	0	.016
Total Suspension Rate	420	.047	.041	0	.265
Non-White Expulsion	229	.954	.072	.667	1
Non-White Suspension	417	.934	.068	.667	1
FRPM Eligible	422	.584	.264	0	.989

allows charter schools to tailor their curriculum, disciplinary procedures, and other matters generally otherwise decided at the district level to parent and stakeholder demands; as such, including these schools in my data set would disallow me from using district boundaries (and the unique policies they entail) as isolated treatment areas for my study. I also drop any collective bargaining agreements that take into effect after 2018 or before 2012, using only a subset of agreements between 2012 and 2018, so as to avoid making any inferences about the relationship between faculty demographics and union emphasis based on only partial application of the agreement.

Moreover, because certificated employees (employees who must have a certificate proving necessary credentials) and classified employees (employees that do not need certification) are covered under different unions, I subset

only certificated employee data from the CALPEDS/CBEDS data set to use, in line with my sample of certificated collective bargaining agreements. I further aggregate my faculty and student demographic data at the district level: because each school district can be uniquely identified by its representative union and its distinct set of district policies, collective bargaining agreement treatments stop at the district level and do not extend past district boundaries. Thus, my final data set contains 424 observations of collective bargaining agreements covering teachers who are a) employed within public school districts, b) certificated, c) working in non-administrative roles, and d) working in either full-time or part-time capacities.

Union agreements typically span multiple school years. Because of this, for each collective bargaining agreement in my data set, faculty and student demographic data is matched for each year the CBA takes effect. For instance, an agreement spanning the schools years between 2015 and 2017 makes up three observations in my data set for the years 2015, 2016, and 2017, with duplicated bargaining agreement characteristics for each observation and unique faculty and student data for each year. Thus, for my purposes, I can trace how an initial collective bargaining agreement is associated with demographic changes for the duration of its ratification as well as measure how changes in agreements over years are associated with demographic changes within the relevant district, all else constant.

On this finalized panel, I estimate equation (2) (specified in Methods below) connecting the movement of faculty demographics and union policy emphasis over time.

3.2 Methods

3.2.1 Measures of Union Emphasis

To ensure that the key linguistic patterns emerging within my sample of collective bargaining agreements mirrors those patterns indicated by previous studies, I generate a word cloud of the terms found in my sample of collective bargaining agreements using the programming language R, as seen below. The word cloud confirms that my sample of collective bargaining agreements mimics, as a corpus of legal documents, the collective bargaining agreement sample used in [30] and affirms the agreement content assumptions of [28].

as an observation and each word as a unique variable. The resulting matrix is then cleaned of all stop words³ (a vector of articles and other commonly used words in the English language) such as "the", "a", "are", and "and".

Once cleared of stop words, the corpus of documents are then converted entirely to lower case, stripped of all numbers, and cleaned of any words that appeared fewer than 3 times across all documents. Though common text mining practice is to "stem" words to their core roots (for instance, "discipline" and "disciplinary" both become "discipl", and "evaluate", "evaluation", and "evaluatory" all become "evaluat"), I opt against this step. Given the need for linguistic specificity in my index formation, stemming words would open the possibility for misspecification: for example, "disciple" may be shortened to "discipl" and would then fall under my index for teacher discipline, despite being unrelated to provisions for teacher disciplinary procedures.

With my matrix of word counts cleaned, I proceed to pull key words related to my five chosen district policies based on across-document linguistic correlations and predictions made by [28], [27], and [8]. As an example, text mining analyses indicate that the word "seniority" is highly (at least 80 percent) correlated across documents with the words "tenure", "priority", "assignment", "location", "special", and "selection". Choosing two to five key terms that were correlated with each index topic by at least 85 percent, I then generate variables indicating the rate at which these words appear by document (term count divided by total word count in each document). Below, I list the key terms chosen for each index:

1. Discipline Index: discipline, disciplinary, derogatory
2. Seniority Index: seniority, senior, tenure
3. Evaluation Index: evaluation, accredited, accreditation, certified, certification
4. Transfer Index: transfer, assign, assignment, reassign, reassignment
5. Diversity Index: diverse, diversity, equity, equitable

³Stop words generally fall into three categories: determiners, which tend to mark definite nouns (examples: the, a, an, another); coordinating conjunctions, which connect words, phrases, and clauses (examples: for, and, nor, but, or, yet, so); and prepositions, which express temporal or spatial relations (examples: in, under, towards, before, upon).

Notably, my original formation for the Discipline Index included the word rates for "suspended" and "suspension". However, given that these terms are correlated with disciplinary action for both teachers and students, I chose to drop these two words from my index specification. In Appendix A, I include a table estimating the magnitudes and signs of a sample of the word rates listed above in relation to the share of non-White faculty in the district (with district and student controls included). These estimations aided, alongside the across-document linguistic correlations, in choosing which terms to include in each index. In Appendix D, I include an estimation of the relationship between non-White faculty shares and a version of the discipline index that includes "suspension" and "suspended" as a falsification test. Under this specification, the coefficient of interest loses significance.

Having isolated rates of word appearance relevant to each index, I form my five indices using the following specification:

$$\frac{\sum_{i=1}^n \alpha_i}{n} \tag{1}$$

where α_i is a vector of relevant word rates within each document. The means and standard deviations of the five indices formed are summarized in Table 1 above.

My method of item selection and index formation has a number of advantages over other ways of measuring union emphasis on various district policies. First, my method provides a simple and transparent interpretive lens for each index: a higher rate of word appearance (word counts divided by total words in the document) results in a larger index absolute value, which indicates a higher bargaining emphasis on the relevant subject. Second, my method provides an objective approach to measuring contract emphasis: items selected for inclusion arise from correlations between terms across bargaining agreements, rather than from predefined assumptions about what words are most likely to be associated with each index or with one another. It is through this method, for example, that I was able to determine that the word "derogatory" is highly correlated with the word "discipline" within my sample of collective bargaining agreements, an association I would not have expected otherwise. Upon closer inspection, this correlation reveals the request within many collective bargaining agreements for the exclusion of "derogatory" information from teacher evaluations after a set point of time during disciplinary procedures. Thus, my method of index formation allows

me to winnow out terms that are not associated with the underlying district policy I intend to estimate.

3.2.2 Estimating the Relationship Between Union Emphasis and Faculty Characteristics

To determine the relationship between union emphasis and faculty demographics, I estimate a series of Ordinary Least Squares (OLS) multivariate models of the following form:

$$(UNION\ EMPHASIS\ INDEX)_{dt} = \beta(SHARE\ NONWHITE\ TEACHERS)_{dt} + \gamma_t + D_{dt} + \epsilon_{dt} \quad (2)$$

where UNION EMPHASIS INDEX is one of the five indices formed to indicate union emphasis on teacher discipline, teacher seniority, teacher transfer rights, teacher evaluation, or diversity and equity, and where SHARE NONWHITE TEACHERS is the proportion of non-White teachers in the district. The primary coefficient of interest is β , which measures the association between the indicator of union policy emphasis and the share of non-White faculty in a district. γ_t is a vector of year fixed effects. D_{dt} is a vector of district faculty and student characteristics, including average number of years taught; average number of years taught just in district of question; proportion of teachers with doctorates, bachelors, and associates (masters omitted); proportion of teachers with tenure; proportion of female teachers; proportion of non-White students; total suspension rates (expulsion omitted due to many missing observations); non-White suspension shares; and proportion of students who are eligible for the free or reduced-price lunch programs (a measure of district poverty). Including these characteristics allows me to control for important district conditions that may affect the content of contracts independent of faculty racial demographics⁴.

Controlling for faculty education levels, years taught, and tenure levels allows me to control, by proxy, for differing wealth levels between districts: wealthier districts are likely to have more highly educated faculty, and evidence indicates that low-income school districts are far more likely to struggle

⁴I choose not to control for district-level student achievement, such as test scores or graduation rates, because student performance is likely endogenous to faculty characteristics.

with faculty retention, have quick teacher turnaround, and have younger and less experienced teachers [15] [5] [29] [7]. All of these characteristics are likely to be correlated with faculty racial demographics [15] [5] and are also likely to differentially influence district collective bargaining. For instance, wealthier districts with low teacher turnaround may be less likely to place emphasis on rights and procedures related to choice in school transfer and more likely to place emphasis on seniority rights among faculty.

Similarly, controlling for student characteristics allows me to take into account factors that might be both correlated with faculty demographics as well as associated with district collective bargaining demands. Despite broad teacher-student demographic mismatch, it remains that teachers of color often work in high poverty schools with a larger proportion of students of color [10] [15] [29]. As previously noted, this internal segregation is in part due to a demonstrated interest among teachers of color to give back to home communities and is also in part due to the tendency for the teacher pipeline to funnel faculty of color to low-income areas with teacher shortages. Because of this, my model may pick up collective bargaining emphasis due to factors related to non-White students rather than non-White teachers. For instance, schools with a large proportion of non-White (and especially Black and Hispanic) students tend to place a disproportionate emphasis on disciplinary tactics; without controlling for characteristics such as non-White student proportions and non-White student suspension shares (defined as all non-White suspensions in a district relative to the district's total suspension rate), my index for measuring teacher discipline may in fact simply be picking up a district's response to a largely non-White student body. For similar reasons, I control for the proportion of students eligible for free or reduced-price lunch programs as a measure of poverty, a factor likely to be correlated with teacher demographics and likely to impact collective bargaining demands.

My model excludes district fixed effects from its specification, clustering observations at the district level instead. Because changes in demographic characteristics over time in California school districts have been slow and relatively inconsequential over the past decade (Figure 2), district fixed effects are likely to nullify any notable variation generated by my specification between collective bargaining demands and faculty characteristics across districts. See Appendix C for a model specification that includes district fixed effects and resulting tables.

Between 2012 and 2018, the proportions of Native American, Black, and Asian faculty remain relatively constant between 0 to 10 percent of all faculty

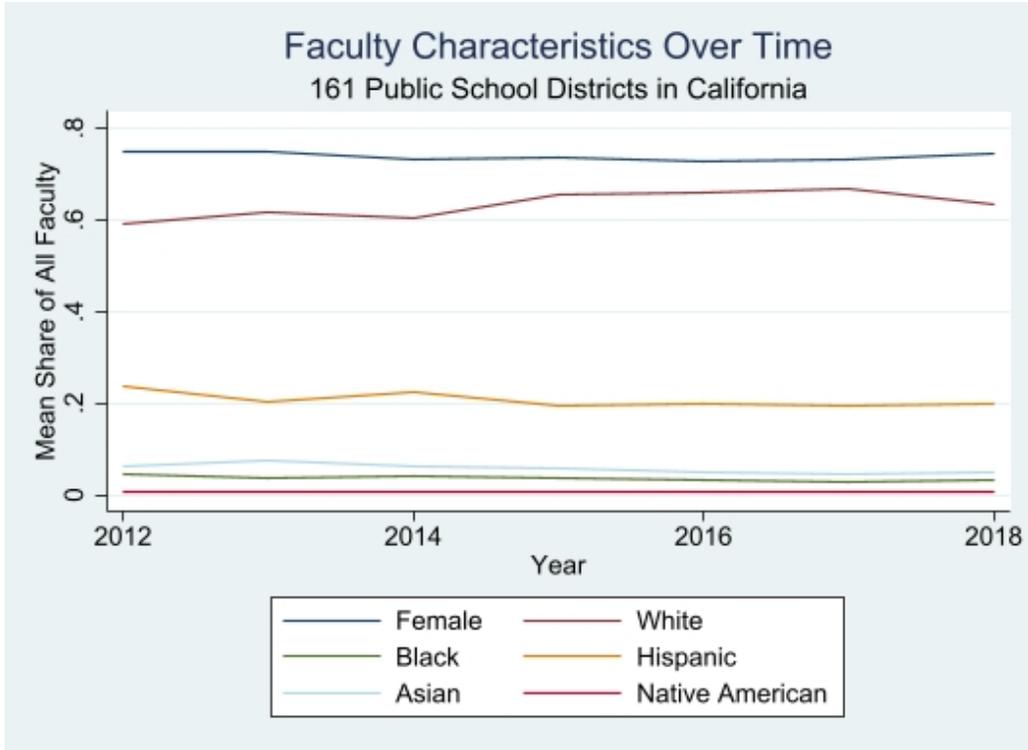


Figure 2: Faculty demographic characteristics have remained relatively stable over time.

in my sample of collective bargaining agreements. Hispanic faculty consistently make up around 20 percent of all faculty during this same period, while White faculty hover between 60 to 65 percent and Female faculty comprise a steady 75 percent of all teachers.

In the first stage of my analysis, I run several versions of the model outlined in equation (2) to isolate any significant relationships between faculty demographic characteristics and union emphasis. After running ten specifications of equation (2) for my five indices (a specification with and without controls for each index), I identify the indices most likely to be significantly related to faculty diversity.

I then run specifications of equation (2) using just the indices isolated from stage one, removing and including various district and student characteristic controls to test significance. I run these models as linear regression models such that the coefficient of interest can be interpreted as the change in emphasis of a contract on a specific district policy associated with a percentage point increase in the share of non-White teachers in the district.

Having identified the strongest and most likely relationship between union policy emphasis and faculty demographic characteristics, I run two further sets of analyses replacing the independent variable of interest (the share of non-White faculty in the district) with similar indicators (the share of Black and Hispanic faculty in the district) to test the unique significance of my findings.

3.2.3 Threats to Identification

There are three fundamental concerns with the specification outlined in equation (2). First, there may be mismeasurement of the outcome variable due to potential misspecification in my index formation. In other words, an index may be measuring something else correlated with faculty diversity within a contract rather than the index's assumed specification; for instance, my index on "evaluation" may be measuring student evaluation measures rather than teacher evaluation procedures. Moreover, an index may be offset during bargaining procedures by another provision within the contract that is not included within my specification, causing my model to overestimate my coefficient of interest.

To evaluate the likelihood of this happening, I make minor changes in my specification to ensure my results are significant and relevant. First, I test the validity of my index formation by adding a term to the formation of the Discipline Index that measures both teacher suspensions from work and student suspensions from school (Table 8 in Appendix D). After adding this term and controlling for student characteristics such as non-White suspension shares and the free or reduced-price meal eligibility of students, the coefficient of interest drops in magnitude and loses its significance. This is likely due to the endogeneity of the new measure of "discipline" with the non-White teacher rate: this new index is likely merely picking up the tendency of non-White teachers to teach in districts with mostly non-White students, which is likely to be correlated with heightened scrutiny on student discipline. This falsification test reduces concern that my index is mismeasuring the association between union emphasis on teacher discipline and faculty demographic characteristics within a district. Similar falsification tests were performed on the other four indices but are not included in this paper due to the later irrelevance of the Transfer, Evaluation, Seniority, and Diversity indices in my analysis.

I also estimate equation (2) by replacing the variable for the share of non-White teachers in the district with the share of Black teachers and the share of Hispanic teachers. My coefficient of interest loses significance in each of these falsification tests: the association with the Discipline Index does not hold on a smaller subset of the non-White faculty population. My estimations remain stable throughout these falsification tests, indicating that my specification contains a relatively accurate and unique association between non-White faculty shares and union emphasis. Detailed results of these falsification tests can be found in Appendix D.

My second main concern with my specification of equation (2) is that I may be omitting a key variable from the model: there are several potential factors that I am not accounting for that may be correlated with district non-White teacher shares and may impact collective bargaining demands. For instance, parents might be more likely to pressure administrators for harsher teacher evaluation standards in districts with a higher share of non-White teachers due to implicit racial bias. Being unable to control for parental demand would positively bias my coefficient of interest for the specification with the Evaluation Index as the dependent variable—my model would overestimate the (positive) association between non-White teachers and collective bargaining focus on evaluation procedures. Similarly, the political leanings of school districts may impact bargaining demands; more liberal districts may argue for more measures related to diversity and equity in bargaining, for instance. Being unable to control for district political characteristics would positively bias my coefficient of interest if liberal political views are correlated with non-White demographics or may negatively bias my coefficient of interest if liberal political views are correlated with wealthier (and hence Whiter) districts. On another level, if teachers are most likely to teach near where they live, then area income demographics may impact collective bargaining more than race: teachers of color, who are likely to live and teach in poorer districts, may more strongly emphasize transfer rights, for instance, which would positively bias the coefficient of interest in the relevant specifications.

Given that my estimates remain relatively stable across a wide variety of controls, I conclude that my specification is reasonably robust and does not suffer from omitted variable bias. Most of my controls can be considered instruments for a broad spectrum of potentially omitted variables (particularly for district wealth and poverty), such as student eligibility rates for free and reduced price meals, tenure rates, and education levels of teachers. Running specifications of equation (2) using multiple measures of teacher turnover

rates (district tenure rates, average years taught in the district, and average number of years taught total), a measure of district poverty commonly used in previous studies (student eligibility for free or reduced-price meals), and multiple measures of student-teacher tensions (non-White student expulsion and suspension rates and total district expulsion and suspension rates), the stability of my estimations reduce the concern that I am neglecting a key variable from my model.

Finally, because my data is unable to trace the movement of teachers between districts from one year to the next (individual records are not uniquely identified and thus cannot be traced over time), I am unable to measure faculty characteristics beyond demographic proportions. As such, I am unable to distinguish whether a rise in the proportion of non-White teachers indicates an influx of non-White faculty or an outflow of White faculty members. The data's omission of this factor is particularly regrettable, as it is among the major reasons why my specification cannot be interpreted causally. Still, given my interest in reviewing tools that may be correlated (not causally linked) with increased shares of faculty of color, for the purposes of this study the particular mechanism driving increased non-White faculty shares is inconsequential. As described above, I correct for potential sources of omitted variable bias and endogeneity that may otherwise throw my results into question. Hence, I am confident that the relationships reported in this work do in fact imply that districts with a larger share of non-White teachers have a stronger emphasis on teacher discipline. Nonetheless, I am careful to interpret my results simply as associations between union emphasis and faculty diversity that have likely causal interpretations.

4 Results

In this section, I first present the results from stage one of my analysis—the initial estimations of the relationship each of my indices has with district faculty demographic characteristics. I find that of all five indices, only the Discipline Index remains significant when controlling for various district and student characteristics. These estimations can be found in Table 2.

Table 3 examines the particular relationship between a union's emphasis on teacher discipline and faculty demographics, tested with and without various controls. I find that unions with a strong emphasis on teacher discipline are significantly and positively correlated with the share of non-White

teachers in a district: as a district's faculty becomes less White, collective bargaining increasingly focuses on disciplinary boundaries for teachers. The magnitude of this relationship increases slightly when I add controls for district context and student characteristics and remains significant at the .05 level (regressions 9 and 10 in Table 3). These results indicate that districts with a higher share of non-White faculty have a stronger emphasis on discipline, defined as penalties short of termination for teacher occupational misconduct, than districts with a lower share of non-White faculty.

The directions and significance of my control variables remain, for the most part, consistent in all of my specifications and impact the significance and magnitudes of my coefficients of interest. As such, I choose to retain them in all of my estimations.

Table 2 indicates that a percentage point increase in the share of non-White teachers in a district is associated with heightened bargaining around teacher discipline in California public school districts. Because my index formation is an average of key term counts within my collective bargaining agreements, each index takes on values between 0 and 1, with 0 indicating no contract emphasis on the policy in question and 1 indicating full (100 percent) contract emphasis on the policy in question. Therefore, the magnitude of the relationship between faculty demographics and union emphasis in Model 10 (Table 2) can be interpreted as a .034 unit increase, or a 3.4 percent increase, in the contract's emphasis on teacher discipline for a one percentage point increase in the district's share of non-White teachers.

I do not find evidence in Table 2 that districts with a higher share of socioeconomically disadvantaged students (measured by the share of students in a district eligible for free or reduced-price meals (FRPM)) are significantly associated with union emphasis on any of my indices. On the other hand, though Table 2 indicates that just the Discipline Index retains significance with the share of non-White teachers in my sample of collective bargaining agreements, there are some notable findings within my estimations for my other indices that merit further study. The suspension share of non-White students in districts is significantly and negatively correlated with my Diversity Index and positively correlated with my Transfer Index. While the interpretations of the magnitudes of these coefficients are unclear without further study and included control variables, possible rationales for the relationship of non-White student suspension shares with union emphasis on diversity are that as non-White student-teacher tensions decrease within a district (indicated by a decreased share of non-White students suspended),

Table 2: *Initial Regressions: Indices With and Without Controls*

	(1)	(2)	(3)	(4)	(5)
	Diversity	Diversity	Transfer	Transfer	Evaluation
NonWhite Teacher Rate	-0.0111 (-1.36)	-0.00200 (-0.20)	0.0251 (1.10)	-0.0285 (-0.88)	-0.0267 (-1.48)
NonWhite Student Rate		0.0229 (1.40)		-0.0286 (-0.74)	
NonWhite Suspension Share		-0.115* (-2.22)		0.316* (2.40)	
FRPM Eligible		0.00400 (0.52)		-0.0371 (-1.55)	
Constant	0.0208* (5.90)	0.127* (2.04)	0.174* (17.88)	-0.0790 (-0.67)	0.161* (19.78)
District Controls	No	Yes	No	Yes	No
<i>N</i>	424	416	424	416	424
	(1)	(2)	(3)	(4)	(5)
	Evaluation	Seniority	Seniority	Discipline	Discipline
NonWhite Teacher Rate	-0.0233 (-0.67)	0.0117 (1.14)	-0.00349 (-0.24)	0.0192* (2.01)	0.0363* (2.25)
NonWhite Student Rate	-0.0000298 (-0.00)		-0.0148 (-0.64)		-0.0171 (-0.67)
NonWhite Suspension Share	-0.0482 (-0.27)		0.0191 (0.31)		0.0188 (0.27)
FRPM Eligible	0.0195 (0.75)		0.0236* (2.24)		-0.0113 (-0.97)
Constant	0.247 (1.35)	0.0384* (10.57)	-0.0353 (-0.59)	0.0301* (7.96)	0.0507 (0.75)
District Controls	Yes	No	Yes	No	Yes
<i>N</i>	416	424	416	424	416

t statistics in parentheses

+ $p < 0.10$, * $p < 0.05$

teachers are more likely to be amenable to questions of equity and are more likely to bargain contracts with an emphasis on diversity and equity. Similarly, as the share of non-White student-teacher tensions increase within a district (indicated by an increased share of non-White students suspended), teachers are more likely to bargain contracts with an emphasis on the right to transfer schools within or across districts. These findings indicate possible areas for future study of the relationship between union collective bargaining and district demographic characteristics.

Table 3 divides the relationship of union emphasis on teacher discipline into four main components: the share of non-White teachers in a district, the share of non-White students in a district, the share of non-White suspensions in a district, and the share of students FRPM-eligible in a district. We can draw two interesting conclusions about the relationships between union emphasis and district characteristics from this decomposition: first, the significant and positive association between the share of non-White faculty in a district and remains robust to controls for student outcome and demographic characteristics and to district controls. Models 2 and 3 indicate the increasing significance and magnitude to the coefficient of interest as we add controls first for district faculty characteristics and next for student outcome and demographic variables. Model 4 indicates that districts with a higher share of non-White faculty have contracts significantly more focused on teacher disciplinary procedures.

Second, student demographic and outcome variables are not significantly associated with union emphasis on teacher discipline. This finding indicates that the relationship between union emphasis on discipline and faculty diversity within a district is a unique one and is not simply measuring broader district-level emphasis on discipline for teachers and students alike.

Figure (3) depicts a binned scatter plot⁵ of the relationship between the Discipline Index and the share of non-White teachers in districts and includes the best linear approximation to the conditional expectation function using the OLS multivariate regression of my model. The plot controls for covariates by first regressing the dependent and independent variables on a set of specified control variables and then generating residuals from those

⁵Binned scatter plots are a non-parametric method of plotting the conditional expectation function—that is, the average "y" value for each "x" value. The plot is generated by grouping the independent variable into 20 equal-sized bins, computing the mean of the independent and dependent variables within each bin, and then creating a scatter plot of these data points.

Table 3: *Ordinary Least Squares (OLS) Analysis of the Relationship Between Union Emphasis on Discipline and Faculty Demographics*

	(1)	(2)	(3)	(4)
	Discipline	Discipline	Discipline	Discipline
NonWhite Teacher Rate	0.0192*	0.0195 ⁺	0.0318 ⁺	0.0363*
	(2.01)	(1.93)	(1.88)	(2.25)
NonWhite Student Rate			-0.0198	-0.0171
			(-0.79)	(-0.67)
NonWhite Suspension Share			0.0202	0.0188
			(0.28)	(0.27)
FRPM Eligible			0.00126	-0.0113
			(0.12)	(-0.97)
Constant	0.0301*	0.0507	0.0204	0.0507
	(7.96)	(1.15)	(0.39)	(0.75)
District Controls	No	Yes	No	Yes
<i>N</i>	424	424	416	416

t statistics in parentheses

⁺ $p < 0.10$, * $p < 0.05$

regressions. The residualized x-variable is then grouped into 20 equal sized bins, and the means of the x-variable and y-variable residuals are computed and plotted. In other words, each point on the binned scatter plot in Figure (3) represents the average level of union emphasis on teacher discipline for a given level of non-White teacher representation within a district, holding controls constant.

In this visual representation of a multivariate regression with 417 observations and several covariates, there is a clear linear relationship between my Discipline Index and the share of non-White teachers in the district. The slope of this linear relationship matches the coefficient of interest in Model 4 of Table 3, indicating that the relationship between district non-White faculty shares and union emphasis on disciplinary procedures is as follows: a one percentage point increase in the share of non-White faculty in a district is associated with a .036 unit (3.6 percent) increase in collective bargaining emphasis on discipline. This regression is, again, robust to controls for a

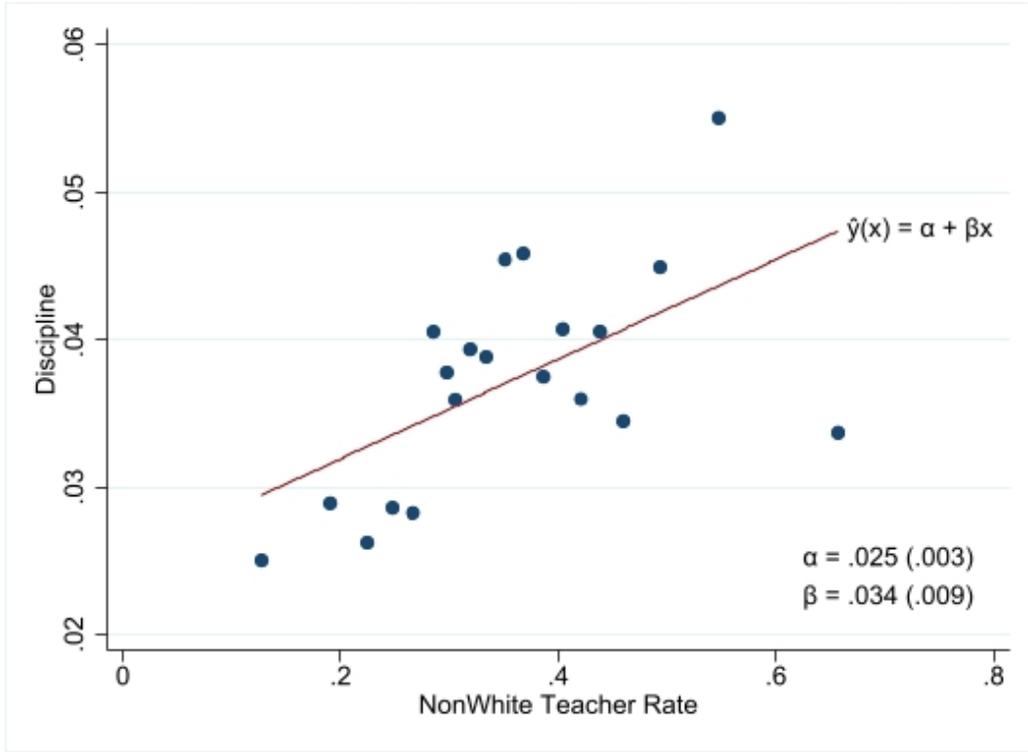


Figure 3: *Binned Scatter Plot Depicting the Linear Relationship between the Share of Non-White Teachers in Districts and Union Emphasis on Teacher Discipline*

number of characteristics affecting faculty demographics and collective bargaining outcomes. The binned scatter points are tight to the regression line, indicating that this slope is precisely estimated and that the regression standard error is small. The even dispersion around the linear regression indicates statistical significance of my coefficient of interest.

As discussed in my Methods section, I am not able to convincingly establish true causal effect of faculty demographic characteristics on union emphasis. Omitted variable bias makes it likely that my specification may be picking up some other factor related to union emphasis on discipline that is related to teacher diversity. As such, I focus on establishing that the association between faculty demographics and union emphasis on discipline is not merely incidental through a series of falsification tests, detailed in Appendix D. When I switch my independent variable of interest for related indicators such as the share of Black faculty in a district and the share of Hispanic faculty in a district, the coefficient loses significance, indicating that the re-

relationship established by my specification uniquely exists between a broad designation of teachers of color and union emphasis. Moreover, Figure (4) depicts a binned scatter plot of the relationship between union emphasis on teacher discipline and the summed rates of Black and Hispanic faculty per district. This relationship boasts far less linearity than the relationship between the Discipline Index and the share of non-White teachers in California public school districts, and the binned scatter points are widely dispersed, indicating an imprecisely estimated slope, large regression error, and low statistical significance to the relationship.

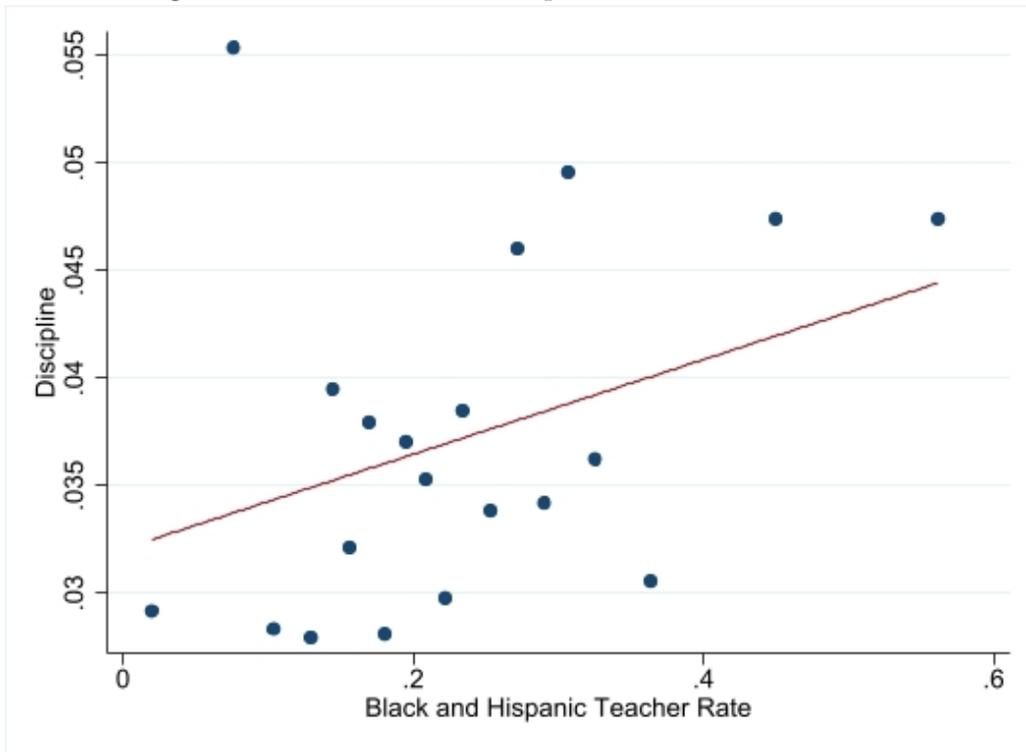


Figure 4: *Binned Scatter Plot Depicting the Non-Relationship between the Share of Black and Hispanic Teachers and Union Emphasis on Teacher Discipline*

Finally, the binned scatter plots of each of the other four indices (depicted below in Figures 5 through 7) show no clear relationship between union emphasis on the other four policy areas and faculty demographics. The binned scatter points for each index are loosely dispersed around the linear regression, and the large regression errors and low statistical significance of the coefficient of interest (β) indicate that my specification accurately

measures the distinct relationship that exists between the Discipline Index and the share of non-White faculty in a district.

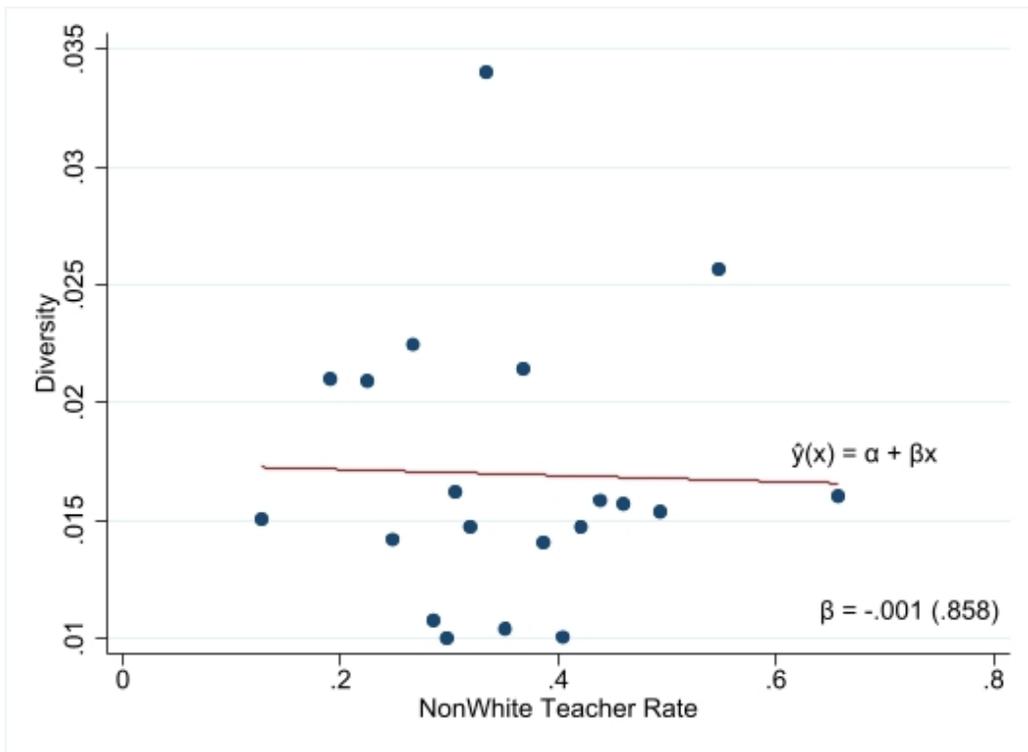


Figure 5: *Binned Scatter Plot Depicting the Non-Relationship Between the Share of Non-White Teachers Union Emphasis on Diversity*

Because my specification is unable to establish causality, the significant association between the Discipline Index and the share of non-White teachers in a district has multiple interpretations. The strongest interpretation of this positive relationship based on my estimations is that non-White teachers bargain contracts that place stricter boundaries on when and how faculty members can be disciplined as a safeguard against potential implicit bias. Studies have indicated that teachers of color face harsher criticism, higher standards, and stricter disciplinary action at their places of employment than White teachers [15] [29] [5]. In anticipation of these dynamics, faculty of color in districts with a concentrated share of other faculty of color may focus collective bargaining on protections against harsher disciplinary standards by, for instance, demanding the exclusion of parent feedback from evaluation standards, requiring disciplinary procedures to follow a strict or-

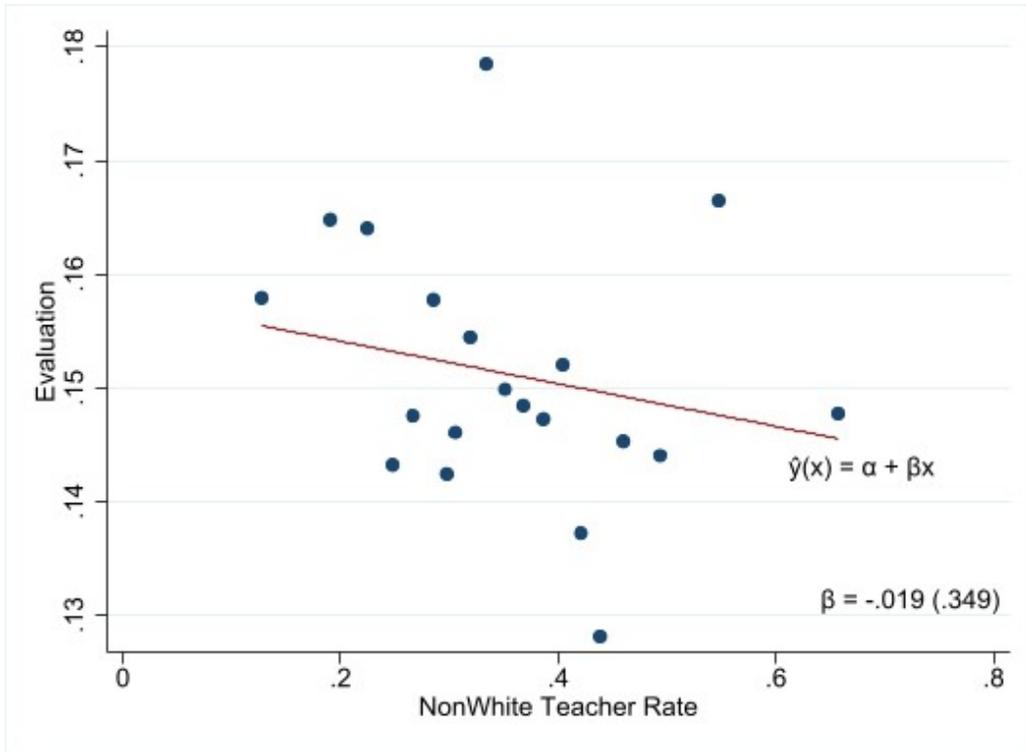


Figure 6: *Binned Scatter Plot Depicting the Non-Relationship Between the Share of Non-White Teachers Union Emphasis on Evaluation*

der and timeline, and requiring the exclusion of "derogatory" material when disciplining a teacher unless certain protocol demands it.

Still, simultaneous and reverse causality are both highly likely scenarios in my estimation. It is possible, for instance, that contracts that place more restrictive boundaries on when and how teachers can be disciplined repel White teachers, who may desire fewer boundaries and more flexibility, and thus increase the share of non-White faculty in the district. On the other hand, unions may place heavier emphasis on teacher disciplinary procedures because administrators in a district may, operating through implicit racial bias, be concerned that teachers in districts with a larger share of non-White faculty and students will fail to meet occupational expectations. Finally, it may be the case that unions that emphasize strict boundaries around teacher disciplinary procedures because of factors other than faculty diversity shelter faculty of color from over-harsh disciplinary standards, which in turn attract faculty of color to the district.

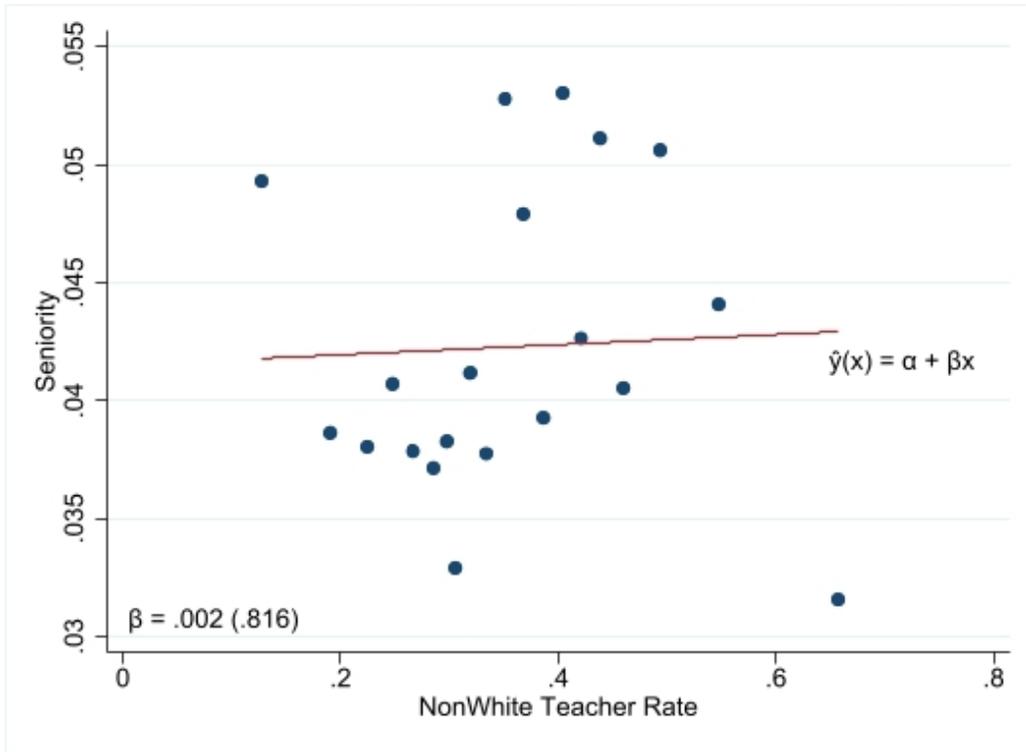


Figure 7: *Binned Scatter Plot Depicting the Non-Relationship Between the Share of Non-White Teachers Union Emphasis on Seniority*

Despite the several interpretations for the positive relationship between the Discipline Index and the share of non-White faculty members in California public school districts, the consistency of this relationship across a wide variety of district and student characteristic controls and the loss of this relationship during falsification tests establish that the association found in this study is unique, significant, and highly specific to interactions between teachers and collective bargaining.

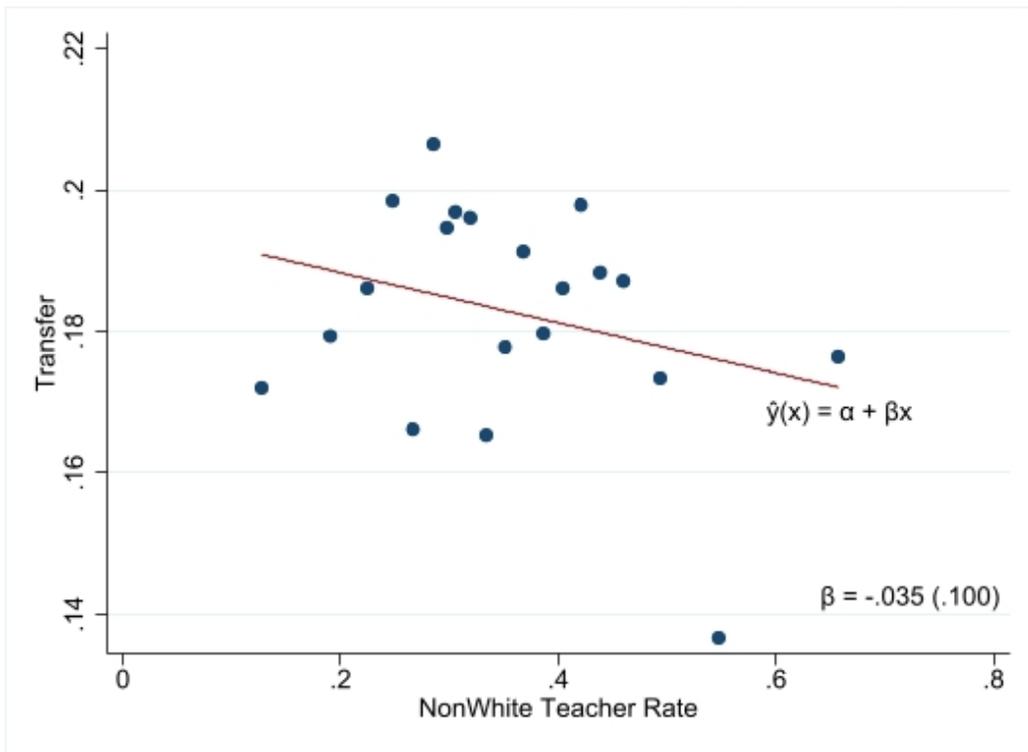


Figure 8: *Binned Scatter Plot Depicting the Non-Relationship Between the Share of Non-White Teachers Union Emphasis on Transfer Rights*

5 Discussion

This study provides the first set of empirical analyses to assess the extent to which faculty demographics are associated with collective bargaining demands in an effort to understand the potential occupational tools available to faculty of color in the face of large-scale attrition of minority teachers from the public school teaching workforce.

In this empirical analysis, I have sought to accomplish the following objectives: a) identify collective bargaining demands that are associated with higher shares of faculty of color in California public school districts; b) estimate the magnitude of the relationship between relevant measures of union policy emphasis and faculty demographics; and c) investigate whether collective bargaining can serve as a tool for faculty of color to aid in the hiring and retention of racial and ethnic minority teachers.

Using a panel of district level faculty and student demographic variables matched with a sample of collective bargaining agreements from 161 California public school districts, I find that district policy related to discipline short of termination for faculty is highly associated with the share of non-White teachers of color in a district. I estimate that higher shares of non-White faculty in districts are associated with a 3.6 percent increase in a union's focus on teacher disciplinary procedures. This estimate holds its significance and magnitude when controlling for broader district characteristics and student outcomes that may be associated with collective bargaining and correlated with faculty diversity.

After confirming the existence and relevance of this positive association through falsification tests, I find evidence in support of the hypothesis that collective bargaining may be an important tool in the arsenal of teachers of color in combating factors that lead to high attrition rates for racial and ethnic minority faculty. When teachers of color concentrate in school districts, they face heightened scrutiny, harsher disciplinary standards, and large turnover rates. The strong positive association I find between union emphasis on teacher disciplinary procedures and non-White teacher rates suggests that existing faculty of color in public school districts across California may be utilizing collective bargaining to protect their interests and safeguard against expected implicit bias from district administrators and evaluators: by bargaining for clearer boundaries around teacher disciplinary procedures, faculty may leave less room for discriminatory practice. This association is striking,

considering claims by [28] [19] that argue for the role that collective bargaining may play in harming the interests of faculty of color.

While my study intends to establish significant associations between union policy emphasis and faculty demographics, I am unable to establish a causal relationship due to questions of reverse causality and omitted variable bias. Still, my specification indicates that unions and collective bargaining play a non-trivial role in the story of our country's missing educators of color and provides insight into the types of tools teachers of color may benefit from in the future.

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A Index Formation

See table on the following page.

Table 4: *Relationship of Key Term Rates to the Share of Non-White Faculty*

	(1) NonWhite
accredited_rate	-6.022 (-1.49)
certification_rate	0.304 (0.26)
derogatory_rate	1.091 (0.50)
discipline_rate	-0.0483 (-0.03)
diverse_rate	-0.957 (-0.78)
equity_rate	0.0303 (0.03)
evaluation_rate	-0.0100 (-0.04)
reassignment_rate	0.0484 (0.12)
seniority_rate	1.128 ⁺ (1.81)
suspension_rate	0.543 (1.18)
tenure_rate	-0.607 (-0.76)
transfer_rate	0.531 (1.37)
<i>N</i>	367

t statistics in parentheses

⁺ $p < 0.10$, * $p < 0.05$

B Outlier and Robustness Checks

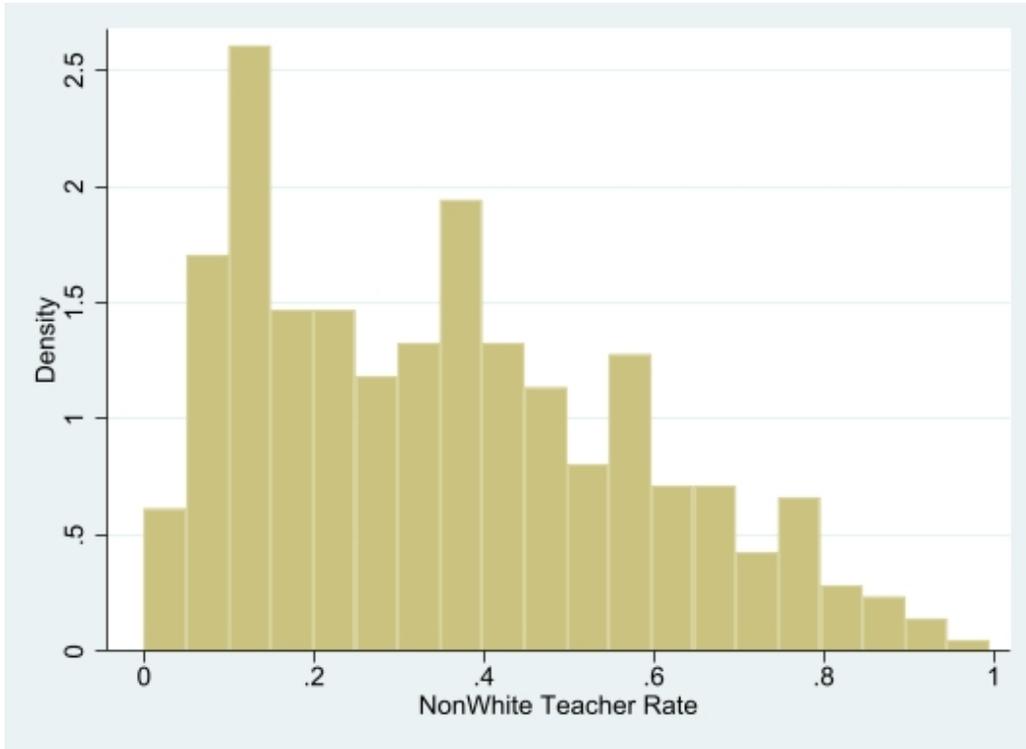


Figure 9: *Histogram of the Shares of Non-White Teachers Across 161 California Public School Districts*

Though a histogram of my key independent variable of interest—the share of non-White teachers in public school districts—is positively skewed, there are no significant outliers within my data for this variable. The spread of the data is from 0 to .995, with 0 indicating a district with an all-White teaching faculty (for example, the small school district of Lagunitas Elementary, which serves just over 180 students) and .995 indicating a 99.5 percent non-White teaching faculty.

A box plot of the share of non-White teachers in my sample indicates, again, a positive skew but no significant outliers.

A histogram of measures of union emphasis on teacher discipline indicates a relatively normal (and slightly positively skewed) distribution, with a small cluster of positive outliers. A box plot (Figure 12) of the Discipline Index shows the same. After examining these outliers, I determined that they

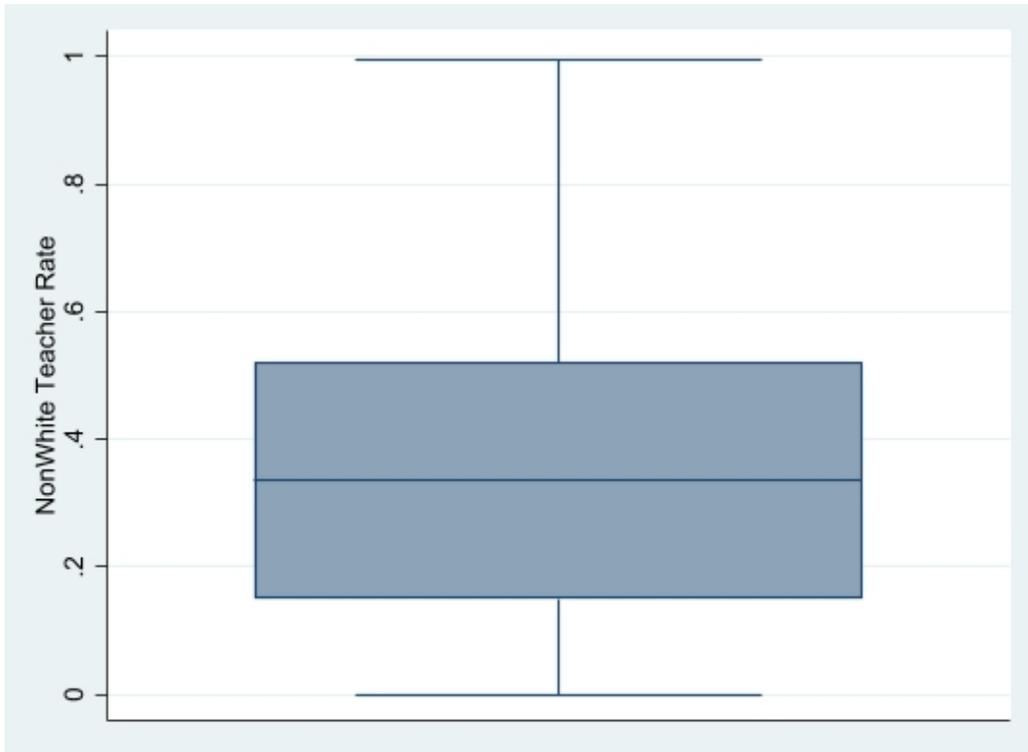


Figure 10: *Box Plot of the Shares of Non-White Teachers Across 161 California Public School Districts*

did not threaten the validity of my results— they remain within twice the interquartile range and are not inaccurate measures of union emphasis.

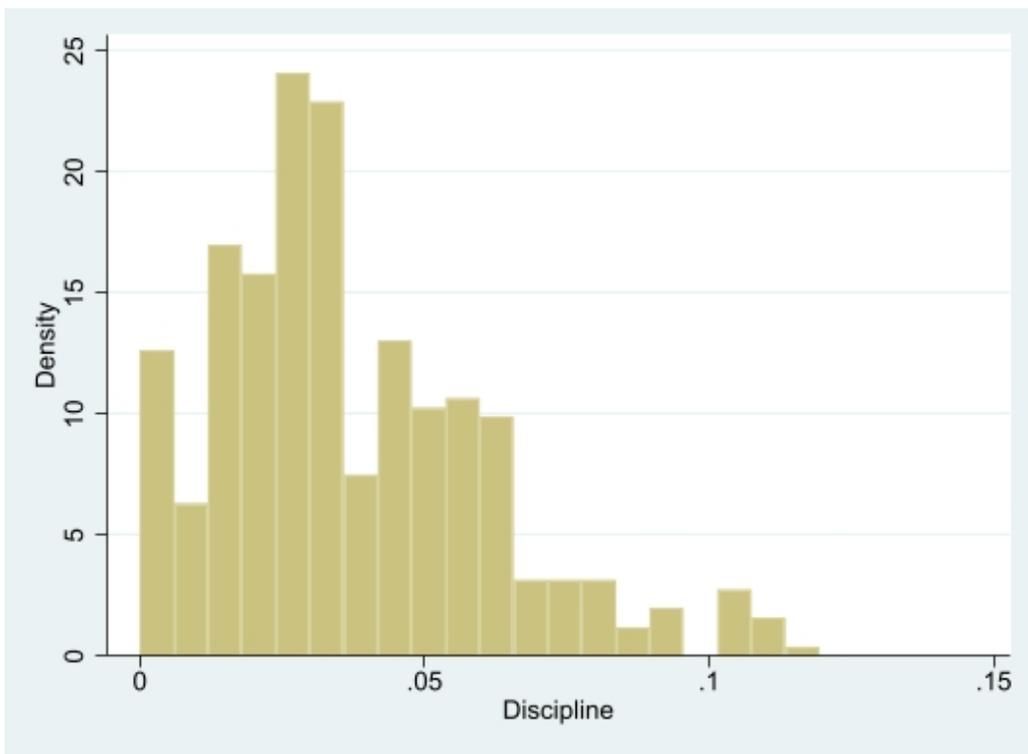


Figure 11: *Histogram of Measures of Union Emphasis on Teacher Discipline Across 161 California Public School Districts*

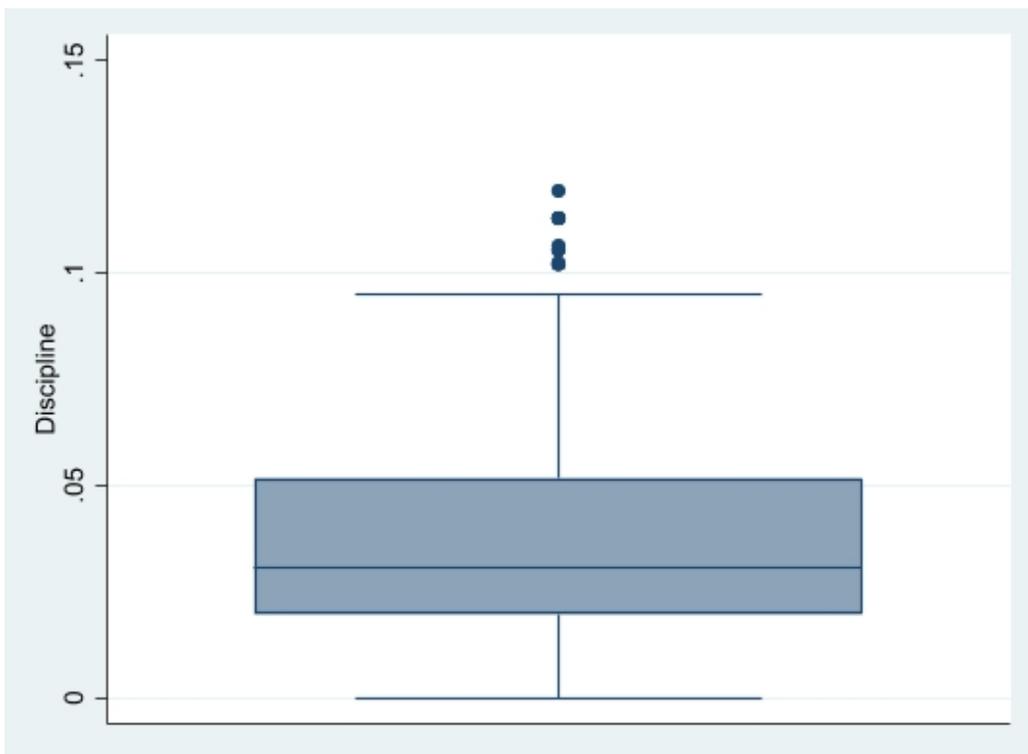


Figure 12: *Box Plot of Measures of Union Emphasis on Teacher Discipline Across 161 California Public School Districts*

C Specification Including District Fixed Effects

Table (5) below depicts estimations of my model including district fixed effects. As predicted, the relatively unvarying levels of faculty demographics between 2012 and 2019 nullify any notable variation between district demographics and bargaining demands when district fixed effects are included. As a result, I chose to exclude district fixed effects from my specification.

Table 5: *Model Specification Including District Fixed Effects*

	(1)	(2)	(3)	(4)
	Discipline	Discipline	Discipline	Discipline
NonWhite Teacher Rate	-0.00112 (-0.69)	-0.00220 (-0.93)	-0.000868 (-0.45)	-0.000334 (-0.22)
NonWhite Student Rate			-0.0251 (-1.40)	-0.0237 ⁺ (-1.68)
NonWhite Suspension Share			0.00623 (1.51)	0.00953 (1.53)
FRPM Eligible			-0.000418 (-0.23)	-0.00156 (-0.63)
Constant	0.0373* (65.36)	0.0250* (3.23)	0.0499* (3.98)	0.0379* (3.62)
District Controls	No	Yes	No	Yes
<i>N</i>	377	377	367	367

t statistics in parentheses

⁺ $p < 0.10$, * $p < 0.05$

D Falsification Tests

To establish the significance and relevance of the positive association my specification predicts between union emphasis on teacher disciplinary procedures and the share of non-White teachers in a district, I run a series of falsification tests, changing minor characteristics of my specification to see if my results lose validity. I first replace the variable "NonWhite Teacher Rate" with seemingly similar indicators of non-White faculty, i.e. Black faculty rates and Hispanic faculty rates within a district. When the specification is run using these two as independent variables of interest, my model loses validity: the association with the Discipline Index does not hold on a smaller subset of the non-White faculty population.

Table 6: *Ordinary Least Squares (OLS) Analysis of the Relationship Between Union Emphasis on Discipline and Hispanic Faculty Demographics*

	(1)	(2)	(3)	(4)
	Discipline	Discipline	Discipline	Discipline
Hispanic Teacher Rate	0.0244 ⁺ (1.80)	0.0229 (1.62)	0.0307 (1.40)	0.0358 (1.52)
NonWhite Student Rate			-0.0124 (-0.51)	-0.00880 (-0.35)
NonWhite Suspension Share			0.0322 (0.43)	0.0302 (0.42)
FRPM Eligible			-0.00273 (-0.24)	-0.0160 (-1.20)
Constant	0.0321* (9.82)	0.0520 (1.21)	0.0114 (0.21)	0.0437 (0.65)
District Controls	No	Yes	No	Yes
<i>N</i>	424	424	416	416

t statistics in parentheses

⁺ $p < 0.10$, * $p < 0.05$

Table 7: *Ordinary Least Squares (OLS) Analysis of the Relationship Between Union Emphasis on Discipline and Black Faculty Demographics*

	(1)	(2)	(3)	(4)
	Discipline	Discipline	Discipline	Discipline
Black Teacher Rate	-0.0220 (-0.75)	-0.0446 (-1.10)	-0.0453 (-1.28)	-0.0638 (-1.40)
NonWhite Student Rate			0.00752 (0.36)	0.0134 (0.62)
NonWhite Suspension Share			0.0116 (0.17)	0.00248 (0.04)
FRPM Eligible			0.00320 (0.31)	-0.00733 (-0.65)
Constant	0.0376* (15.22)	0.0690+ (1.86)	0.0206 (0.41)	0.0694 (1.05)
District Controls	No	Yes	No	Yes
<i>N</i>	424	424	416	416

t statistics in parentheses

+ $p < 0.10$, * $p < 0.05$

I then test the validity of my index formation by adding a term to the formation of the Discipline Index that measures both teacher suspensions from work and student suspensions from school (Table 8). After adding this term, the new index appears to be significantly and positively correlated with the rate of non-White teachers in the school district. However, after adding in controls for student characteristics such as non-White suspension shares and the FRPM-eligibility of students, the coefficient of interest drops in magnitude and loses its significance. This is likely due to the endogeneity of the new measure of "discipline" with the non-White teacher rate: this new index is likely merely picking up the tendency of non-White teachers to teach in districts with mostly non-White students, which is likely to be correlated with heightened scrutiny on student discipline. This falsification test reduces concern that my index is mismeasuring the association between union emphasis on teacher discipline and faculty demographic characteristics within a district.

Table 8: *Falsification Test: Relationship Between Union Emphasis on Discipline (Student and Teacher) and Faculty Demographics*

	(1)	(2)	(3)	(4)
	Discipline 2	Discipline 2	Discipline 2	Discipline 2
NonWhite Teacher Rate	0.0238*	0.0166	0.0213	0.0232
	(2.25)	(1.49)	(1.06)	(1.23)
NonWhite Student Rate			-0.0135	-0.0152
			(-0.47)	(-0.51)
NonWhite Suspension Share			0.0740	0.0744
			(0.83)	(0.84)
FRPM Eligible			-0.00281	-0.0159
			(-0.22)	(-1.03)
Constant	0.0349*	0.0599	-0.0217	0.0139
	(8.00)	(1.17)	(-0.33)	(0.16)
District Controls	No	Yes	No	Yes
<i>N</i>	424	424	416	416

t statistics in parentheses

+ $p < 0.10$, * $p < 0.05$