How Does Minority Political Representation Affect School District Administration and Student Outcomes?

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Vladimir Kogan[†], Stéphane Lavertu[‡], and Zachary Peskowitz[§*]

Abstract: We employ a regression discontinuity design leveraging close school board elections to investigate how the racial and ethnic composition of California school boards affects school district administration and student achievement. We find some evidence that increases in minority representation lead to cumulative achievement gains of approximately 0.1 standard deviations among minority students by the sixth post-election year. These gains do not come at the expense of white students' academic performance, which also appears to improve. Turning to the policy mechanisms that may explain these effects, we find that an increase in minority representation leads to greater capital funding and an increase in the proportion of district principals who are non-white. We find no significant effects of minority representation on school segregation, the reclassification of English Language Learners, or teacher staffing.

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[†]Associate Professor, Department of Political Science, Ohio State University, kogan.18@osu.edu

[‡]Professor, John Glenn College of Public Affairs, Ohio State University, lavertu.1@osu.edu

[§]Associate Professor, Department of Political Science, Emory University, zachary.f.peskowitz@emory.edu, Corresponding Author

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Public school districts play a critical governance role in the United States. There were over 3.6 million public school teachers in 2016 and school districts spent a total of $634 billion in 2013-2014, representing more than 10 percent of overall government expenditures.[1] The vast majority of these school districts are governed by locally elected boards that determine education policies. The decisions these boards make—including negotiating teacher contracts, choosing curriculum used in the classroom, setting tax rates, approving budgets, and adopting disciplinary policies—have direct consequences for the quality of education students receive.[2]

Despite improvements in the overall academic performance of public school students in recent decades (Rindermann and Thompson 2013), the U.S. education system continues to face large and stubbornly persistent gaps in achievement between white and minority students (Lee 2002). Although the achievement gaps between minority and white students have narrowed in recent years, large differences in performance remain (Clotfeleter, Ladd and Vigdor 2009, Reardon and Galindo 2009, Reardon and Portilla 2016). Some of this gap is undoubtedly due to socioeconomic differences and other structural factors beyond the control of schools, but the actions local districts take can have an impact (Hanushek and Rivkin 2009). In this study, we examine whether (and under what conditions) increasing minority representation on school boards leads to meaningful changes in the administration of local school districts and, ultimately, academic achievement—particularly among minority students.

Survey results illustrate that there are important differences in education policy prefer-

[1]These numbers are from the National Center for Education Statistics. Total governmental expenditures in 2014 were approximately $5.9 trillion according to the Bureau of Economic Analysis.

[2]In 2015, only 10.3 percent of elementary and secondary students attended private schools and approximately 5.4 percent of public school students attended charter schools, according to the National Center for Education Statistics.

ences between white and non-white voters.[3] For example, a 2011 poll indicated that the share of African American and Latino respondents who supported increasing education spending was 18 percentage points higher than among white respondents (West, Henderson and Peterson 2012). This difference on finance issues alone suggests that minority representation on school boards could have a substantively significant effect on policy and student achievement. Indeed, such a possibility has motivated an important literature in political science examining how minority representation on school boards affects district policy decisions and student outcomes (Meier and Smith 1991, Leal and Hess 2000, Leal, Martinez-Ebers and Meier 2004, Ross, Rouse and Bratton 2010).[4] Credibly assessing the effects of minority representation has proved challenging, however, as school board composition is not random. There are many potential confounds between the demographics of school board members, policy, and student outcomes. As one example of how policy changes can affect racial representation, Abott and Magazinnik (Forthcoming) show that the California Voting Rights Act, which led to many school districts adopting ward-based elections, increased Latino representation in highly-segregated districts. The possibility of confounding is a major validity threat for much of the existing literature, as it is largely limited to examining cross-sectional variation

[3]For brevity, we will often use the term "race" instead of "race and ethnicity." Our empirical approach, as well as the coding scheme in the administrative data we use, treats racial minorities and Latinos as mutually exclusive so no candidate is classified in overlapping racial and ethnic groups.

[4]Our work also relates to a large literature on representative bureaucracy, which finds that surpassing a critical mass of racial minorities or women in the ranks of the bureaucracy is related to bureaucratic performance (Meier 1993, Selden 2015, Atkins and Wilkins 2013). In this paper, we study the effects of the demographics of elite-level policymakers and look for evidence of non-linearities in the effects of minority representation. Similarly, educational policy scholars have examined the consequences of teacher racial characteristics on student achievement. See Grissom, Kern and Rodriguez (2015) for a review.

in the proportion of minorities on school boards.

Our study makes two primary contributions to the literature examining minority representation on school boards. First, we use an identification strategy that allows us to draw more credible causal inferences than previous studies. We employ a regression discontinuity design to estimate the impact of plausibly exogenous changes in the race and ethnicity of California school board members on educational, administrative, and fiscal outcomes in the years following the election. Second, we systematically examine and test a broader set of representational theories through which school board composition can affect district administration and student outcomes. Most notably, we find evidence that even small gains in minority representation can have a meaningful impact on policy and student learning even when school boards remain majority white. In other words, a minority election need not result in a majority-minority board in order to yield changes in policy and outcomes. This result is consistent with Austin's (2002) finding that minority city council members are typically successful in forming cross-racial working coalitions, rather than being outvoted by their white colleagues. Equally important, our results are inconsistent with the notion that increasing diversity on governing boards leads to gridlock and reduces investment in public goods.

Using our preferred measure of student achievement, we find that greater representation of racial and ethnic minorities on school boards has a positive effect on the achievement of non-white students. Electing one additional minority school board member leads to student achievement gains of approximately 0.1 student-level standard deviations by the sixth post-election year. We provide suggestive evidence that higher school facility spending is one mechanism contributing to this effect, which is consistent with the delay we observe between the change in school board composition and improved student achievement. In particular, we find that greater minority school board representation increases the probability that a school board proposes and obtains voter approval for a school facilities bond. Importantly, we find no evidence that the improvements in non-white student performance come at the

expense of white students.

In addition to documenting the impact of minority representation on student achievement and bond passage, we systematically examine a variety of other potential policy mechanisms that may be responsible for the learning gains we find. Our analysis is motivated by the scholarly literature on student achievement and includes an examination of staffing levels, the racial and ethnic composition of employees, school-level segregation, the number of bilingual-certified teachers, and English-language learner reclassification. We find little evidence that minority representation on school boards affects the total number of employees or the racial and ethnic composition of rank-and-file workers. Nor does school board composition appear to have a consistent effect on school-level segregation. We do, however, find evidence that the share of school district principals who are non-white increases when minorities win more school board seats, providing another potential policy lever through which changes in board composition may affect student learning.

California School Boards

California school boards can affect student outcomes through a number of channels. They are responsible for hiring and firing superintendents and other senior district managers, which enables them to have an impact on day-to-day decision-making. They also have final say over collective bargaining agreements with district teachers and staff; make curricular decisions, such as choosing textbooks; and set a variety of policies on matters like English language learner reclassification, student discipline procedures, course completion standards for grade advancement, and requirements for high school graduation. Finally, boards are responsible for fiscal governance, such as adopting district budgets, putting school bond measures on the ballot, and more rarely, proposing "parcel" (non-*ad valorem*) property taxes for voter

approval.[5]

California school board elections are non-partisan contests. While party labels do not appear on the ballot, candidates can provide information on their occupation or whether they currently serve as an incumbent. Until recently, many California school board elections were off-cycle, when turnout is generally low (Berry and Gersen 2010, Anzia 2011, Kogan, Lavertu and Peskowitz 2018). Given the lack of partisan information on the ballot, low levels of media coverage, and relatively low turnout and high roll-off in many cases, interest groups play a significant role in informing and mobilizing voters. For example, using data on union endorsements in California school board elections, Moe (2006) finds that a teachers' union endorsement significantly increases the probability that a candidate wins, with an effect larger than that of incumbency.

Theories of Board Decisionmaking

We study three potential ways in which minority school board representation could affect policy outcomes. First, adding representatives who are members of a minority group may increase the group's informal influence and formal bargaining power on the board (e.g., see Baron and Ferejohn 1989). If school boards generally follow norms of consensus and collaboration in their decision-making process, adding a new voice with distinct preferences could result in different policy decisions (Mendelberg, Karpowitz and Oliphant 2014). For example, scholars have found that increasing the representation of minorities affects collective decisionmaking by juries (Anwar, Bayer and Hjalmarsson 2012) and judicial appellate panels (Kastellec 2013), even when a majority of the body's members are white.

Second, in some instances, changing the identity of an individual school board member changes the race or ethnicity of the median school board member. In unidimensional mod-

[5]Due to Proposition 13, California school districts have no discretion to increase their operational *ad valorem* property tax revenues.

els of legislative bargaining with single-peaked preferences, the median legislator is decisive (Black 1948, Krehbiel 1998). If the policy preferences of school board members are systematically correlated with their race or ethnicity, these models would predict that electing one minority member to a school board that was previously all white is unlikely to affect policy because the identity of the median school board member would remain unchanged. However, when adding an additional minority representative changes the race or ethnicity of the median member, there is a potential for the election to affect educational policy outcomes.

Third, increasing diversity on a school board may make it more difficult for members to come to an agreement. Alesina, Baqir and Easterly (1999) develop a model in which racial or ethnic diversity reduces the provision of public goods because groups have heterogenous preferences or groups derive less utility when a public good is consumed by members of other groups.[6] In empirical work at the municipal level, Beach and Jones (2017) study California city councils and find that when a candidate of non-modal race wins an election against a modal race candidate, public spending decreases. Similarly, Hopkins (2009) finds that elites are less likely to place a tax measure on the ballot when citizen diversity increases suddenly.

Table 1 summarizes the theoretical predictions for these alternative theoretical accounts. Our interpretations of these models implicitly assume some level of racial polarization among candidates and the electorate. While our theoretical predictions do not require that all citizens vote only for candidates of their race or ethnicity or that there is no overlap between the policy positions of white and non-white candidates, we do assume that minority group membership and policy preferences of school board candidates are correlated. Our reading of opinion polling data and contemporaneous accounts of education politics in California during our sample period suggest that there were important policy differences between white and

[6]Alesina, Baqir and Easterly (1999) develop their theoretical model as a direct democracy where voters directly decide on the level and type of public goods. In a representative democracy with legislators who faithfully represent the preferences of citizens of the same race or ethnicity, the prediction of diversity decreasing public goods provision would hold.

Table 1: Summary of Theoretical Predictions

Analytic Sample	Theory	Literature	Empirical Implications
Minority Win	Policy is made by informal norms of consensus where all members' views are incorporated into policy views. Individual policymakers can influence the behavior of colleagues during deliberation process and/or use their agenda power strategically.	Sommers (2006), Mendelberg, Karpowitz and Oliphant (2014), Kastellec (2013), Baron and Ferejohn (1989), Sances and You (2017)	Increasing minority representation on school board affects policy outcomes. A minority candidate's electoral win results in increased public funding of education, more diverse district staff, increased resource allocation to minority students, and improved student achievement among these students.
Non-Modal Win	Increasing diversity on the school board increases conflict and policy gridlock.	Alesina, Baqir and Easterly (1999), Hopkins (2009), Beach and Jones (2017)	School board diversity reduces education spending and the odds of policy change from the status quo. Achievement stays the same or even suffers as a result of gridlock and disinvestment.
Pivotal Win	Policy is made by majority rule, with the median school board member determining outcomes. Race and ethnicity of school board members are correlated with spatial preferences.	Black (1948), Krehbiel (1998)	Electoral victory by a single minority candidate is insufficient to affect policy outcomes. An election producing majority-minority board results in increased public funding of education, more diverse district staff, increased resource allocation to minority students, and improved student achievement among these students.

non-white voters and school board candidates, with minorities supporting higher levels of education spending than whites. For example, Alvord and Rauscher (2019) show that the probability of passing an education bond increases in California school districts with larger African American and Latino populations, suggesting that African American and Latino voters are more supportive of education funding than white voters.

The theoretical predictions we lay out are not mutually exclusive and, for some configurations of school board composition, make similar predictions. For example, the argument that

a victory by a single minority candidate on an otherwise all-white board can affect education policy would also predict that subsequent minority candidate victories, including a pivotal minority win, could produce further policy change. Similarly, in districts where the modal candidate is non-white, several of the above theories would predict that electing an additional white member would reduce support for education expenditures. Nevertheless, each theory suggests a distinct set of predictions that we can test empirically, allowing us to evaluate whether the aggregate results are more consistently in line with one theoretical model than the others. Most of the empirical scholarship on minority school board representation has implicitly focused on the first representational theory by studying how the proportion of minority representation affects policy outcomes (see, e.g., Meier and Smith 1991, Leal and Hess 2000, Leal, Martinez-Ebers and Meier 2004, Ross, Rouse and Bratton 2010).

Empirical Approach

Our goal is to estimate the causal effect of minority school board representation on district policy and student outcomes. The challenge in our setting is that many observed changes in the composition of school boards are the result of changing demographics, voter preferences, and political dynamics within districts. The representation of minorities on local school boards is not randomly assigned and is instead the result of which candidates choose to run for school board, interest group mobilization and persuasion efforts, how citizens decide to vote, and the electoral institutions that aggregate vote choice.[7] All of these factors could influence not only who serves on school boards but also our outcomes of interest. As a result, observed correlations between school board representation and policy outcomes might be confounded by these unmeasured factors.

[7]Much of the literature on the representation of racial minorities on school boards focuses on how district as opposed to at-large elections have the potential to increase minority representation (Leal, Martinez-Ebers and Meier 2004, Meier and Rutherford 2014; 2017).

To resolve this identification problem, we exploit quasi-random variation in the electoral performance of minority candidates using a regression discontinuity design. Winner-take-all electoral rules create a sharp cutoff in candidates' vote shares where treatment status changes discontinuously. In our setting, a non-white minority candidate wins a seat on the school board when she receives one more vote than the closest white candidate, but the white candidate prevails when the minority candidate trails by one vote. When elections are sufficiently close, exogenous events that are orthogonal to outcomes of interest can determine election outcomes. Examining the differences in outcomes between jurisdictions where a candidate with a given characteristic barely lost the election and those where such a candidate barely won can be used as the basis for estimating the effect of the candidate characteristic. When potential outcomes are continuous across the cutoff this estimate can be interpreted as a causal treatment effect (Imbens and Lemieux 2008).

Statistical Models

To implement the design, we limit our analytic sample to school board elections in districts where either the first runner-up or the winner with the lowest vote share is white and the other candidate is non-white. Letting i denote districts and t the year, our main estimating equation is:

$$Y_{it+k} = \alpha_M MinWin_{it} + f(MinVS_{it}) + \epsilon_{it} \text{ for } it \in MinCand \tag{1}$$

where Y is the district outcome of interest, $MinWin$ is an indicator for whether a minority candidate won the election, $MinVS$ is the difference in vote share between the minority candidate and the non-minority candidate, f is a polynomial function, ϵ is an idiosyncratic error, and $MinCand$ is the subset of elections where a minority and a white candidate are the first runner-up and the lowest performing winning candidate. To estimate the model, we must specify the order of the polynomial f and make a decision about how to select a

bandwidth that determines whether the election is close enough to include in our estimation sample. In all of our models, we use the Calonico, Cattaneo and Titiunik (2014) method. We report bias-corrected point estimates calculated with one mean squared error optimal bandwidth selector and a triangular kernel to weight the local linear regression function and we employ robust standard errors clustered at the district level.

We separately estimate the treatment effect on the outcome of interest in years 0-8 after the election (denoted by the k subscript in the equation). These specifications allow us to examine the dynamic response of school districts to changes in minority board representation. As Cellini, Ferreira and Rothstein (2010) discuss, these estimates should be interpreted as intent-to-treat effects. Because other school board elections take place during the course of our panel, after the focal election we examine, the racial composition of the school board may change in subsequent years.[8]

An additional complication that affects the interpretation of our estimates is that because these are multi-seat contests, the candidates who emerge as the lowest vote-share winner and first runner-up may have policy preferences that are closer to one another than would be true for two randomly-selected candidates. For example, if community groups or labor unions construct slates of endorsed candidates and a large share of voters choose candidates on the basis of these slates, it is possible that candidates who win about the same numbers of votes run on the same slate and thus have policy positions that are quite similar. In this scenario, our empirical strategy might underestimate the magnitude of policy effects one would see if a randomly-selected non-white candidate defeated another randomly-selected white candidate. Similarly, it is important to emphasize that our regression discontinuity

[8]Figure C.3 in the Supplemental Information (SI) shows that that electing a minority board member increases the estimated share of minority board members by roughly 0.2 in years 1-4 after the election. Electing a majority-minority board in year 0 increases the probability of having a majority-minority board for two years, but then has an effect that is close to zero in year 3.

estimates are local average treatment effects that are specific to district-years where white and non-white candidates earned vote shares that were close to the winning threshold. We provide some descriptive information on how this analytic sample compares to the broader set of California school board elections below.

In most districts in California, typical school board elections are multi-seat contests with two to four seats up for election. A small set of districts have ward-based election systems in which a single seat is contested within a fixed geographic area. In both cases, we restrict attention to elections where either the highest performing non-winning candidate or the lowest performing winning candidate is of minority background and the other candidate is white. As a result, we can have at most two candidates in the election sample in a district-year for a multi-seat contest. In ward-based elections, it is possible to have multiple candidates in a given district-year because we include the first- and second-place candidate in each of the wards.

To test the predictions from each of the three representational theories, we replicate the analysis across three different subsets of elections. To examine whether the effects of increased minority representation are amplified when the election produces a majority-minority board, we use two approaches. The first is heuristic, but has the advantage of increased robustness to errors in our racial and ethnic classification procedure. Specifically, we simply restrict the analytic sample to settings where the estimated proportion of minority representatives (excluding the focal election) on the school board is between 0.4 and 0.6. Our second approach is more closely tied to theory, but comes at the cost of increased sensitivity to misclassifications of school board candidate demographics. To identify the effect of a pivotal minority victory on school board outcomes, we restrict attention to district-years where there is potential for a minority victory to determine whether the board's majority consists of minority school board members. We include only those district-years for which the estimated proportion of minority-held seats is greater than 0.5 if the minority candidate were to win and is less than or equal to 0.5 if the minority candidate were to lose. In these district-years,

a minority candidate victory leads to a majority-minority school board while a minority candidate defeat leads to a majority-white board.

We follow the empirical strategy of Beach and Jones (2017) to estimate the effect of increased school board *diversity* on educational, administrative, and fiscal outcomes. The election of an additional white school board member would increase diversity on a board that is majority-minority under this approach. To identify diversity-increasing elections, we first determine the modal race on a school board in the district-year of the election. In our setting, the modal race on the school board is defined by which group among African Americans, Asians, Latinos, and whites has the highest number of seats on the board.[9] We then restrict attention to elections in which the highest losing candidate or lowest winning candidate is a non-modal race candidate and the other candidate is a modal-race candidate.[10] Because the identifying variation comes from different subsets of election contests, each of the three specifications employ different sample sizes. In the year after the election, the sample size is 720 district-years for elections where a modal race candidate faces a non-modal race candidate, 697 for a white candidate against a non-white candidate, and 156 for a pivotal white candidate against a pivotal non-white candidate.

Validity of RD Design

We conduct two tests of the identifying assumption that potential outcomes are continuous at the vote threshold needed for a candidate to win. We first test for manipulation of the vote-share running variables by examining whether the density of the running variable jumps at this threshold. If some political actors are able to precisely control their vote share, it

[9]In the event that two groups tie for the highest number of seats, both groups are defined as modal.

[10]About 95 percent of the elections in our modal vs. non-modal election subsample also appear in our minority candidate election sample. Note, however, that the white candidate is the non-modal candidate in about 20 percent of these elections.

raises the possibility that there are unobserved features of the school districts that differ across treatment and control groups, potentially biasing the estimates. In Figure B.1 in the Supplemental Appendix (SI), we report the results from the McCrary (2008) density test. We do not find evidence that the density of any of the vote share running variables changes discontinuously at the threshold for victory. We next test for balance of pre-treatment district characteristics in Section B in the SI. As Caughey and Sekhon (2011) discuss, the running variable may be continuous but the distribution of other election characteristics may nonetheless be imbalanced across treatment and control observations.[11] We find that pre-treatment district characteristics are balanced across treatment and control groups.

Estimating School Board Candidate Race

Elliott et al. (2008) develop a Bayesian procedure for estimating an individual's race from the joint distribution of surname and race from the Census Bureau's surname list and the racial and ethnic population distributions in a given geographic area.[12] The key assumption is that, after conditioning on individual race and ethnicity, surname and location are independent of one another. The procedure generates a probability that an individual surname in a given location is African American, Asian, Latino, white, or other. We assign an individual candidate to the group with the largest of the five predicted probabilities and we focus on estimates of candidate race and ethnicity based on the candidate's surname and the

[11]Snyder, Folke and Hirano (2015) recommend employing local linear regression RDDs with vote share running variables to prevent bias. All of the dynamic treatment effects are estimated with local linear regressions.

[12]We use the R statistical package developed by Imai and Khanna (2016) to estimate the probabilities.

composition of the school district's county[13] during the 2000 Census.[14] We employ 2000 Census data because we are concerned that demographic changes during the sample period could affect both the estimated candidate race probabilities and the unobserved political influence of minority groups. To avoid this concern, we use demographic information from early in the sample period.

While Elliott et al.'s (2008) approach requires only candidates' surnames and demographic information about their geography, we need to verify that the method performs well relative to more direct approaches that are not feasible in our setting due to the absence of biographical information on school board candidates. In Section A in the SI, we validate our candidate race estimates. We use the Elliott et al. (2008) procedure to estimate the race and ethnicity of California city council candidates and compare the estimates with those reported in Beach and Jones (2017), who used biographical information and candidate photographs to identify candidate race. Classifying candidates using the maximum probability under our preferred estimation approach that uses candidate surname and county demographics in 2000, approximately 96 percent of candidates are classified accurately for Latinos, 97 percent for Asians, 89 percent for whites, and 94 percent for African Americans.

Separately examining the false negative and false positive rates,[15] we see that there are

[13]In some cases, California school districts cross county lines. In these instances, we use the primary county according to the California Department of Education for the purpose of computing school district demographics.

[14]This approach does not account for estimation error in the racial classification of school board candidates.

[15]In our setting, we define false negatives as instances where Beach and Jones (2017) classify a candidate as a given race and the surname procedure classifies the candidate as not having that race. False positives occur when the surname procedure classifies a candidate as having the given race, but the candidate does not have that race in the Beach and Jones (2017) data.

important performance differences in the procedure across groups. For Latino candidates the false negative rate is 13 percent and the false positive rate is less than 1 percent. For Asians the false negative rate is 21 percent and the false positive rate is 1 percent. For whites, the false negative rate is 3 percent and the false positive rate is 23. For African Americans the false negative rate is 80 percent and the false positive rate is 1 percent. While the procedure appears to perform quite well for Asian American and Latino candidates, it is likely to misclassify the vast majority of African American candidates as white. In an effort to improve the quality of our classifications, we collected and hand-coded additional information on the physical addresses of candidates from campaign filings from Los Angeles County, the largest county in California. We were able to collect over 2,000 candidates' addresses across our sample period. We then mapped these addresses to the Census block and use the demographics of each candidate's Census block to compute the posterior race classification probabilities. For candidates with non-missing address information, we used these Census block-based classifications. This approach increases the number of candidates identified as African American and Asian American by about 13 percent, but it does not significantly change the number of candidates identified as Latinos.

Data

Election Results and School Board Composition

Our election data come from the California Election Data Archive at Sacramento State University. We use elections from 1996-2014 to reconstruct the composition of California school boards over the period beginning with year 2000.[16] The data include the surnames of candidates and the school districts in which they ran, the two inputs we use to estimate

[16]In our main student outcomes analysis, we first observe the dependent variable in 2000 so it is necessary to identify election winners from 1996 in order to estimate school board composition in 2000 in districts with four-year terms.

candidate race and ethnicity. We observe the number of votes that each candidate received and a unique identifier for each electoral contest. This information allows us to identify the lowest vote-share winner and the first runner-up among the set of all candidates running in a particular contest.

Table 3 reports summary statistics for the school districts in our sample based on their composition prior to each election. Each observation is a school district-year and each cell reports the mean and standard deviation. The first column provides information about every district and year for which we observe an election, while the next three columns restrict attention to subsamples relevant to testing each set of theoretical predictions and including only close elections that appear in the analysis. The top half of the table summarizes the school board composition based on the predictions from our classification algorithm. The bottom two rows provide information on the composition of students.

The table highlights several important patterns. First, Latinos are by far the most well-represented of the three minority groups on California school boards, with roughly 10 times as many Latino members as African American members[17] and more than six times as many Latino members as Asian American members. Unsurprisingly, these differences are even more dramatic when looking at the proportion of districts that have school boards with majority representation by each of the different groups. Majority-African American and majority-Asian American boards are exceedingly rare, but approximately 13 percent of the board-years in the sample are majority Latino.

Second, districts where we observe close elections featuring candidates of different racial and ethnic backgrounds look quite different from the full sample. Although the student population in the average district is about 56 percent non-white, this increases to about 75 percent non-white for the subsample of close elections that we use in the analysis. Similarly, districts included in our analysis have a greater share of students who qualify for free and

[17]Even if one were to adjust the data for the high false negative rate for African Americans, the gap is still quite substantial.

Table 2: Racial Composition of California School Boards

	Full Sample	Min. Sample	Non-Modal Sample	Pivotal Min. Sample
Prop. African American	0.015	0.015	0.015	0.023
SD	0.076	0.065	0.063	0.089
Prop. Asian American	0.022	0.037	0.045	0.042
SD	0.090	0.109	0.123	0.114
Prop. Latino	0.150	0.276	0.279	0.394
SD	0.248	0.262	0.263	0.161
Prop. Minority	0.187	0.328	0.339	0.459
SD	0.271	0.265	0.272	0.070
Prop. White	0.812	0.672	0.660	0.541
SD	0.271	0.265	0.272	0.070
Maj. African American	0.009	0.004	0.003	0.013
SD	0.092	0.066	0.053	0.113
Maj. Asian American	0.012	0.014	0.022	0.019
SD	0.107	0.119	0.148	0.138
Maj. Latino	0.133	0.260	0.265	0.429
SD	0.340	0.439	0.442	0.497
Maj. Minority	0.173	0.319	0.336	0.513
SD	0.378	0.466	0.473	0.501
Prop. FRL	0.487	0.579	0.578	0.586
SD	0.264	0.245	0.247	0.257
Prop. Non-White	0.560	0.740	0.742	0.774
SD	0.277	0.213	0.212	0.192
N	12669	697	720	156

Sample statistics on racial composition of California school boards and enrolled student characteristics. The first column employs the full sample. The second, third, and fourth columns are for the subsample of elections used to estimate the regression discontinuity models. The first column employs the full sample. The second, third, and fourth columns are for the subsample of elections used to estimate the regression discontinuity designs. Prop. FRL is the proportion of enrolled students who qualify for free or reduced price lunch. Prop. Non-White is the proportion of enrolled students who are non-white.

reduced-priced lunch. Most importantly, among districts for which we observe one white and one minority candidate finishing among the lowest vote-share winner and first runner up, the school board is on average about one-third non-white before the election. Thus, we estimate

the impact of a change in minority representation relative to this baseline. Our results do not imply that the same dynamics would necessarily occur in districts with all-white boards that elect their first minority board members.

District and Student Outcomes

We use data from the California Department of Education to construct our achievement and staffing variables. We aggregate outcomes to the district level by weighting standardized test scores by the number of students who completed each assessment, school-level outcomes by school enrollment, and school employee outcomes by school full-time-equivalent staff. To examine student academic achievement, we average the scores on the mathematics and English language arts California Standards Test assessments. We use test scores from 2003-2013 and standardize them by the grade-test level statewide mean and standard deviation.[18] In technical reports, CDE reports the district-level standard deviation of each test and, for a subset of years, also includes the student-level standard deviations. We combine these two statistics to rescale the scores to have a mean of zero and standard deviation of one for each grade level, subject, and year combination.[19] This allows us to express the achievement effects

[18]The California tests were also conducted during the 1998-2003 period. However, correspondence with the California Department of Education indicated that these tests are not comparable to the 2003-2013 assessments due to changes in the design of the tests. California stopped administering these tests in 2014 due to the implementation of a new accountability system, the California Assessment of Student Performance and Progress. We also exclude 2015-2019 assessments due to comparability concerns. Indeed, including them in the analysis significantly decreases the precision of our estimates. Because power is already low, our preferred estimates focus on estimating outcomes using 2003-2013 test data—a period that coincides with a consistent test-based federal school accountability regime.

[19]Specifically, we regress the individual-level standard deviation normalized test score on the cross-district standard deviation normalized test score and then use the coefficients from

in student-level standard deviations relative to the statewide mean, the most commonly used normalization procedure in education policy research. California also reports test scores separately for each student demographic subgroup, so we can separately measure student achievement for white and non-white students. In order to increase the precision of the estimates and account for cross-district baseline differences in student achievement, we define the dependent variable as the *change* in student achievement outcomes between the focal year and the election year.

To understand how school board composition may affect student performance, we also investigate numerous potential policy mechanisms, although we emphasize that this analysis should be read as exploratory. We use data from EdSource, a website focused on California education policy, to track bond proposals and bond election outcomes. For each district-year, we sum the amount of money requested and approved in real 2000 dollars and then divide by the total number of students enrolled in the district to construct a per-student inflation-adjusted measure of total bond requests and approvals. To examine principal composition, we obtained a complete roster of principals' start and end dates from the California Department of Education. From this roster, we use principals' surnames and county demographics in 2000 (the equivalent procedure that we employ to estimate school board candidate race) to classify each principal's races and ethnicity.[20] We then compute the estimated share of principals who are white and non-white for each district-year. In Section E in the SI, we discuss how the other policy mechanisms we examine were constructed and report results for these outcomes.[21]

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this model to calculate fitted values for years when individual-level summary statistics are not included in the technical reports.

[20]In the SI, we report results on the racial composition of teachers. CDE provides data on the self-reported racial composition of building employees that we use for this analysis, but does not have comparable self-reported race and ethnicity for principals.

[21]We caution the reader that our results do not account for multiple hypothesis testing. Given the number of potential mechanisms that we examine, adjusting the p-values for

Results

Our first set of results examines the dynamic effects of school board composition on overall student academic achievement on English-language arts and mathematics tests. We first display these results in tabular form in Table 3 to report the precise value of the bias-corrected point estimates, 90 percent confidence intervals using robust standard errors clustered at the school district level, and sample size within the optimal bandwidth. The rows indicate the number of years after the election and the columns indicate whether the treatment effect is for a minority candidate win, a non-modal candidate win, or a pivotal minority candidate win.

In the years immediately after the election, we see point estimates that are relatively close to zero and statistically insignificant for all three treatments. Starting in years three and four after the election, the estimated effects begins to increase in magnitude. The largest estimated effect occurs five years after the election, when the estimated effect of a pivotal minority candidate victory is approximately 0.15 standard deviations. This effect declines in magnitude over the subsequent years. Contrary to the prediction that diversity leads to disinvestment in public goods provision and worse policy outcomes, we find evidence that diversity-increasing candidate victories also increase student achievement in years four and five after the election. With the exception of year eight, none of the estimates for the average victory of a minority candidate (regardless of existing board composition) are statistically significant at the 90 percent level.

To conserve space, we report the remainder of our results in graphical form. Each marker corresponds to the effect of the relevant election outcome. The circle depicts the estimated effects of a minority win, the cross corresponds to a non-modal candidate win, and the diamond represents a pivotal minority win. Figure 1 includes the coefficient estimates and

multiple hypothesis testing would result in failure to reject the null for the subset of outcomes where we did find statistically significant effects using conventional p-values.

Table 3: Impact of School Board Elections on Student Achievement

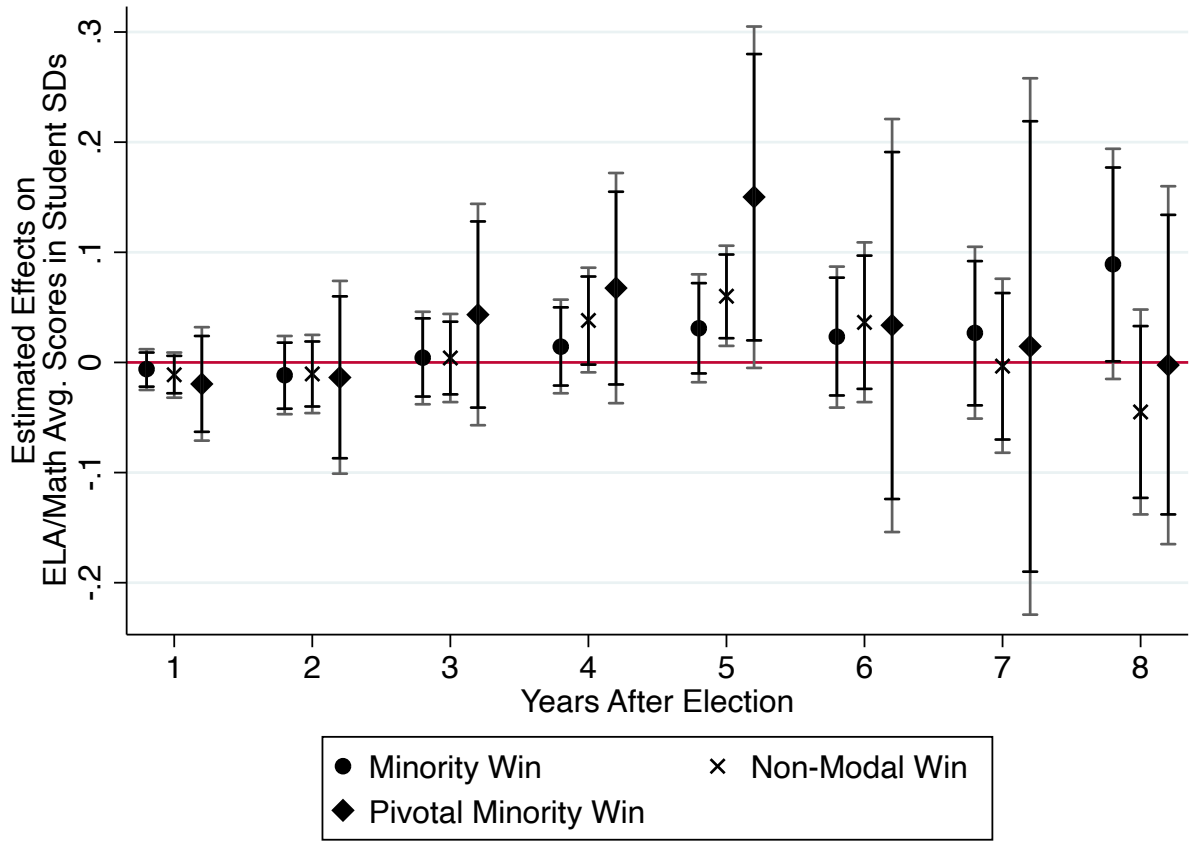
	Minority Candidate Win	Non-Modal Candidate Win	Pivotal Minority Candidate Win
Year 1	-0.0061	-0.0112	-0.0196
CI	[-.022 ; .009]	[-.028 ; .006]	[-.063 ; .024]
N	697	720	156
Year 2	-0.0116	-0.0105	-0.0137
CI	[-.042 ; .018]	[-.04 ; .019]	[-.087 ; .06]
N	604	628	139
Year 3	0.0043	0.0040	0.0433
CI	[-.031 ; .04]	[-.029 ; .037]	[-.041 ; .128]
N	562	590	134
Year 4	0.0143	0.0381	0.0675
CI	[-.021 ; .05]	[-.002 ; .078]	[-.02 ; .155]
N	458	481	110
Year 5	0.0310	0.0601	0.1502
CI	[-.01 ; .072]	[.022 ; .098]	[.02 ; .28]
N	419	381	76
Year 6	0.0233	0.0364	0.0337
CI	[-.03 ; .077]	[-.024 ; .097]	[-.124 ; .191]
N	347	316	65
Year 7	0.0268	-0.0034	0.0145
CI	[-.039 ; .092]	[-.07 ; .063]	[-.19 ; .219]
N	295	265	55
Year 8	0.0891	-0.0450	-0.0024
CI	[.001 ; .177]	[-.123 ; .033]	[-.138 ; .134]
N	206	180	35

Each cell reports the bias-corrected regression discontinuity point estimate of the effects of school board racial composition on student achievement in a given year after the election. The cells also report 90 percent confidence intervals and the number of election observations that are within the optimal bandwidth used to estimate the regression discontinuity models. The coefficients in the first column represent the estimated effect of a minority candidate defeating a white candidate, the coefficients in the second column represent the estimated effect of a candidate of non-modal race defeating a candidate of modal race, and the coefficients in the third column represent the estimated effect of a minority candidate defeating a white candidate when the minority candidate's victory would result in more than 40 but less than 60 percent of school board seats held by non-white school board members.

90 and 95 percent confidence intervals we presented in Table 3. Figure 2 presents separately the estimated effects of school board composition on the achievement of white and non-white students, respectively. For non-white students, the most consistent pattern we see is that the election of a minority school board member produces an increase in student achievement starting about four years after the election.[22]

[22]The observed differences in estimated treatment effects across the average and non-white student achievement outcomes are partially due to differences in the district-years for which

Figure 1: Dynamic Effects of School Board Elections on Overall Academic Achievement

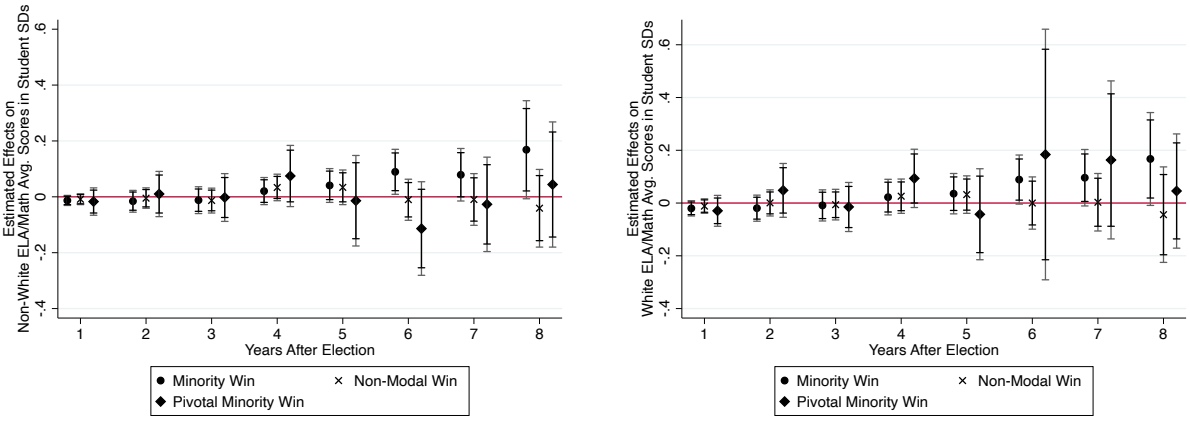


Note: Each marker reports the effect of a change in school board composition on average English and math test scores with associated 90 percent and 95 percent confidence intervals. The dependent variable is change in average test scores relative to the election year. The circle marker corresponds to the estimated effect of a minority candidate defeating a white candidate, the cross corresponds to the effect of a candidate of non-modal race defeating a candidate of modal race, and the diamond corresponds to a minority candidate defeating a white candidate when the minority candidate's victory would result in more than 40 but less than 60 percent of school board seats held by non-white school board members.

This effect grows over time and reaches standard levels of significance (or comes close)

data are available for each dependent variable. We have re-estimated the average student achievement outcome on the subsample of district-years where we have non-missing values for the non-white student achievement outcomes. We find that additional minority wins have a significant positive effect on student achievement, but that the pivotal minority wins treatment is smaller in magnitude and insignificant.

Figure 2: Dynamic Effects of School Board Composition on Academic Achievement by Student Race



Note: Each marker reports the effect of a change in school board composition on average English and math test scores with associated 90 percent and 95 percent confidence intervals. The dependent variable is change in average test scores relative to the election year. The left panel reports results for the average non-white student achievement and the right panel illustrates results for the average white student achievement. The circle marker corresponds to the estimated effect of a minority candidate defeating a white candidate, the cross corresponds to the effect of a candidate of non-modal race defeating a candidate of modal race, and the diamond corresponds to a minority candidate defeating a white candidate when the minority candidate's victory would result in more than 40 but less than 60 percent of school board seats held by non-white school board members.

starting in year six after the election. Overall, the effect size is about 0.1 standard deviations. To put these results in context, Kraft (Forthcoming) argues that effects of 0.05 to 0.2 student-level standard deviations should be classified as medium-sized on the basis of his meta analysis of randomized experiments of educational interventions. Hill et al. (2008) find that students in grades 3–8 increase their achievement in math and reading by an average of about 0.37 standard deviations per year, so if one assumes a 180-day school year, the achievement gains we find are the equivalent of approximately 46 additional "days of learning" per year. There are some known limitations with this type of back-of-the-envelope conversion (Baird and Pane 2019), but it provides some intuition.

These results are robust to alternative specifications, including controls for baseline achievement and student composition, year fixed effects, and limiting the sample to districts

with at least 250 tested students per year (see Section D of the SI).[23]

Recall that the average district in our sample has roughly three times more non-white students than white students, so our estimates for the achievement of the latter are necessarily less precise, particularly for pivotal-minority elections. While we cannot reach a definitive conclusion on whether increased minority school board representation improves white student achievement, the estimates are inconsistent with the hypothesis that white student achievement suffers as a result of greater minority school board representation.

The effects for non-modal candidate wins are generally very close to zero, although we observe some positive point estimates in some years. Overall, we find no evidence that greater diversity on school boards causes student achievement to suffer. The results for pivotal minority wins are generally less consistent and often very imprecisely estimated due to the smaller sample sizes we have for these specifications. We do not find consistent estimates that an election producing a majority-minority board has a bigger impact on student learning, but we may simply lack the power to detect such effects. It is nonetheless noteworthy that the effect of electing majority-minority boards on white student achievement is generally positive and especially so in the later years.

The effects that we document could be driven by electoral victories of Latino candidates, as opposed to all minority candidates. In Section D of the SI, we replicate the analysis with Latino candidate victories as opposed to any minority candidate victory as the treatment effect of interest. We also estimate the effect of pivotal Latino victories, which we define as occurring when a Latino candidate victory makes the school board majority Latino. Although these results are generally consistent with those reported here, the point estimates are in some cases modestly smaller, suggesting that the effects we document are not driven exclusively by Latino candidates.

We focus on 2003-2013 test outcomes because during California administered consistent

[23]The results are also similar if we use the identical bandwidth to estimate the student achievement effects for all, white, and non-white students.

exams and the period featured a focus on test-based accountability. The estimates are less precise if we include in the analysis outcomes of the new exams administered 2015-2019 (see Section D of the SI). Besides the change in the tests themselves, this imprecision may be due in part to California's deemphasizing test-based accountability in this period and changes in state funding that potentially affects one of our main mechanisms (see Rauscher 2020).

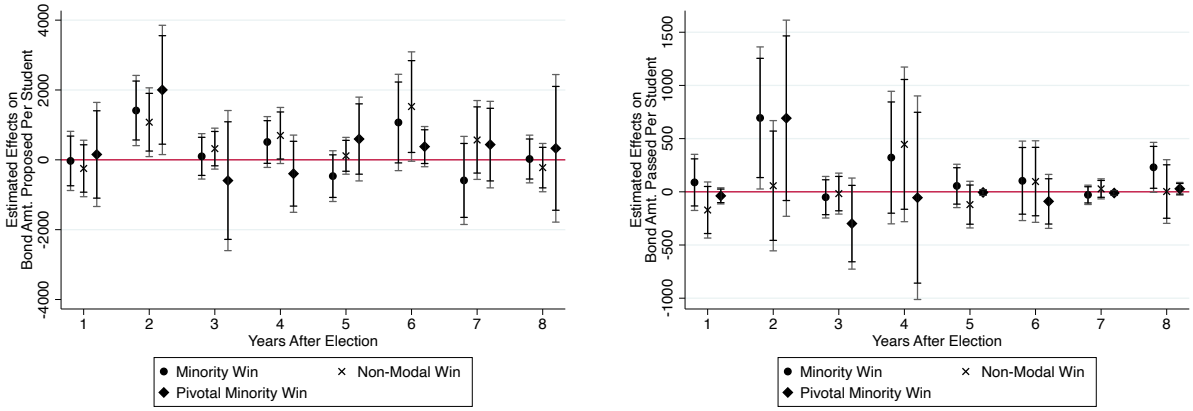
Mechanisms

School boards can affect student achievement in a number of ways. In this section, we explore several of the possible policy mechanisms that may explain the downstream improvements in student performance. Specifically, we investigate policies that the academic literature has identified as having substantively important effects on student achievement, particularly for minority students, and issues on which we expect important demographic differences in preferences. We examine the racial and ethnic composition of teaching staff (Dee 2004), school-level segregation (Angrist and Lang 2004, Hanushek, Kain and Rivkin 2004), English-language learner reclassification (Carlson and Knowles 2016, Shin 2018), and capital expenditures (Cellini, Ferreira and Rothstein 2010, Rauscher 2020). As we discuss in Section E of the SI, there are theoretical reasons to believe that each of these policies has the potential to increase student achievement. Unfortunately, we lack data to examine other potentially important mechanisms, such as student disciplinary policies.

There are some statistically significant effects in some years in these analyses, but one should not put too much weight on them due to the large number of models we estimate. We report all of the results in Section E of the SI and focus here on the two mechanisms—the proposal and passage of bond measures and the racial composition of principals—for which we have the strongest theoretical priors.

As we note above, minority voters have indicated a preference for higher education spending than white voters. There is also evidence from prior literature that increased capital ex-

Figure 3: Dynamic Effects of School Board Composition on Bond Measure Proposal and Passage Amounts



Note: Each marker reports the effect of a change in school board composition on the per-pupil amount of bonds proposed and the per-pupil amount of bond issuance approved by the voters (both adjusted for inflation) with their associated 90 percent and 95 percent confidence intervals. The circle marker corresponds to the estimated effect of a minority candidate defeating a white candidate, the cross corresponds to the effect of a candidate of non-modal race defeating a candidate of modal race, and the diamond corresponds to a minority candidate defeating a white candidate when the minority candidate's victory would result in more than 40 but less than 60 percent of school board seats held by non-white school board members.

penditures have a positive effect on student achievement. For example, Rauscher (2020) finds that the passage of local school bonds in California improves the achievement of economically disadvantaged students during the same time period as our analysis. This is a particularly plausible mechanism because of the timing of achievement effects we observe. For example, it takes several years for capital expenditures to come online and Rauscher (2020) finds that it takes up to six years after the bond elections for the statistically significant positive effects on achievement to be realized.

Figure 3 presents the results of the bond analysis. We find evidence that the election of additional minorities to school boards increases the magnitude of funds requested and approved two years after the school board election.[24] A victory of a minority candidate, re-

[24]In the SI, we provide several case studies that examine some of the mechanisms through which minority representation can affect school board decision-making and illustrate how the passage of school bonds can affect student learning. Specifically, the cases illustrate the

gardless of whether it produces a majority-minority board or not, increases the bond proposal amount by approximately $2,000 per student and the point estimate is statistically significant at conventional levels. We also observe similar effects for bonds that voters ultimately approve.[25] Although California school boards have the discretion to influence only capital revenues because Proposition 13 does not permit increases in *ad valorem* property taxes, we also see some evidence of increases in operational spending. It appears bond passage may free up per-pupil revenue that districts had used to cover capital expenses.[26]

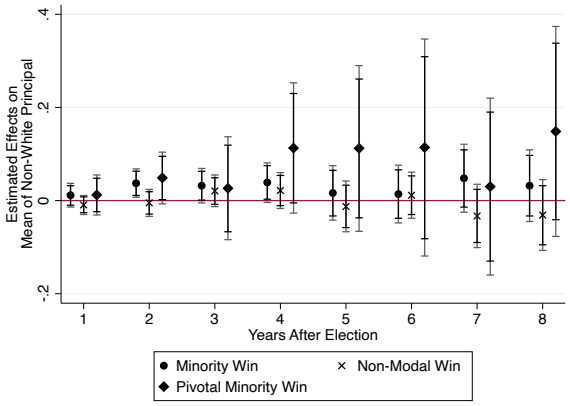
While we do not find evidence that the number or composition of teachers changes in response to an increase in minority school board representation, we do see that school districts begin to employ more non-white principals. Figure 4 reveals that these principal staffing effects occur almost immediately following the election and that they persist. We also find some evidence that the impact is larger when the election produces a majority-minority board, although these estimates are much less precise due to smaller sample sizes. One

importance of investment in facilities, as well as a greater concern and effort among minority school board members to increase facility investments through bond passage. While there is variation across and within districts in whether a multi-racial coalition on the school board is likely to emerge (Rocha 2007), the case studies also illustrate the circumstances under which multi-racial coalitions to improve student achievement form.

[25]It appears that greater minority school board representation increases willingness to place a bond measure on the ballot and the magnitude of funding requests as opposed to increasing skill or expertise in campaigning for the bond.

[26]This analysis relies on federal Common Core of Data and is generally noisier than our analysis of capital bonds. Nevertheless, we do see some evidence of increases in overall operational spending as well as expenditures on instruction and student services. We also see significant increases in state revenue following minority elections, which likely reflects the fact that California matches local bond spending with state dollars. These results are available from the authors upon request.

Figure 4: Dynamic Effects of School Board Composition on Principal Race



Note: Each marker reports the effect of a change in school board composition on the proportion of principals who are non-white and the associated 90 percent and 95 percent confidence intervals. The circle marker corresponds to the estimated effect of a minority candidate defeating a white candidate, the cross corresponds to the effect of a candidate of non-modal race defeating a candidate of modal race, and the diamond corresponds to a minority candidate defeating a white candidate when the minority candidate's victory would result in more than 40 but less than 60 percent of school board seats held by non-white school board members.

possible explanation for why we find changes in principal but not teacher composition is that teacher staffing may be more difficult for a school board to influence due to collective bargaining and teacher tenure protections. Superintendents can replace principals more easily.[27]

To summarize, we find evidence that the election of minority school board members leads to substantively meaningful increases in minority student achievement (and perhaps also in the achievement of white students). We also see that greater minority school board representation increases the amount of bond funds proposed and subsequently approved by voters and the diversity of the principals who oversee individual schools. Strikingly, we find these effects regardless of whether the election produces a majority-minority board, although we see some evidence that the policy effects may be more pronounced under a majority-minority board.

[27]We also examined superintendent retention but did not find consistent effects.

Discussion

The impact of minority representation on government outcomes is a central concern of research in American politics, election law, public administration, and education. Unlike previous studies that focus on cross-sectional and potentially endogenous differences in representation, our regression discontinuity design allows us to exploit exogenous variation in election outcomes to examine multiple representational theories. We find that greater minority representation on school boards can increase student educational achievement, even when a minority electoral victory does not lead to a majority-minority board. In contrast to canonical political economy models and some empirical evidence in other contexts, elections that increase school board diversity do not adversely affect public goods provision or education outcomes. Indeed, our results are consistent with Meier, Wrinkle and Polinard (1999), who find that increased minority representation improves student performance for both white and minority students.

That we find a positive impact of minority representation on achievement is noteworthy given our focus on California school boards. California's school finance system is particularly centralized, leaving very limited discretion for school boards to meaningfully affect local revenues. Moreover, California state law typically requires a super-majority school board vote to place a school bond on the ballot. In states where a simple-majority is sufficient and where school boards can raise local revenue more easily, it is plausible that we might see even larger impacts from gains in minority representation.

Finally, finding few differences between minority victories that leave white members in the majority and elections that produce majority-minority boards suggests that these small legislative bodies may operate under stronger norms of unanimity and consensus than we see in state and federal legislatures. Our results indicate that even a single member can have a meaningful impact on decision-making and may explain why even small gains in minority representation can move the needle on student outcomes.

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Supporting Information for "How Does Minority Political Representation Affect School District Administration and Student Outcomes?"

Contents

A Validating Bayesian Estimation of Race From Surnames

We undertake a validation exercise to examine the quality of the surname estimation procedures. We use the Imai and Khanna (2016) procedure with candidate surnames and county demographics to estimate the race of California city council candidates in the Beach and Jones (2017) dataset. Beach and Jones (2017) use biographical information and photographs of California city council candidates combined with a crowd-sourcing approach on Amazon's Mechanical Turk platform to identify candidate race. When Beach and Jones lacked biographical information on a candidate's race, they paid workers on Mechanical Turk to classify candidate race using the photographs. Each candidate's photo was classified by 10 workers and, in order to encourage worker effort and accuracy, workers were only compensated when a majority of their candidate classifications concurred with the modal response for the candidate. In the following tables, we regress the Beach and Jones indicator for the candidates' race on the modal race from the surname-based estimation procedure. In Table A.1, we report the results with candidate race estimated using county demographics in 2000 respectively. Results using 2010 county demographics are quite similar.

Table A.1: Validating Candidate Race Estimation

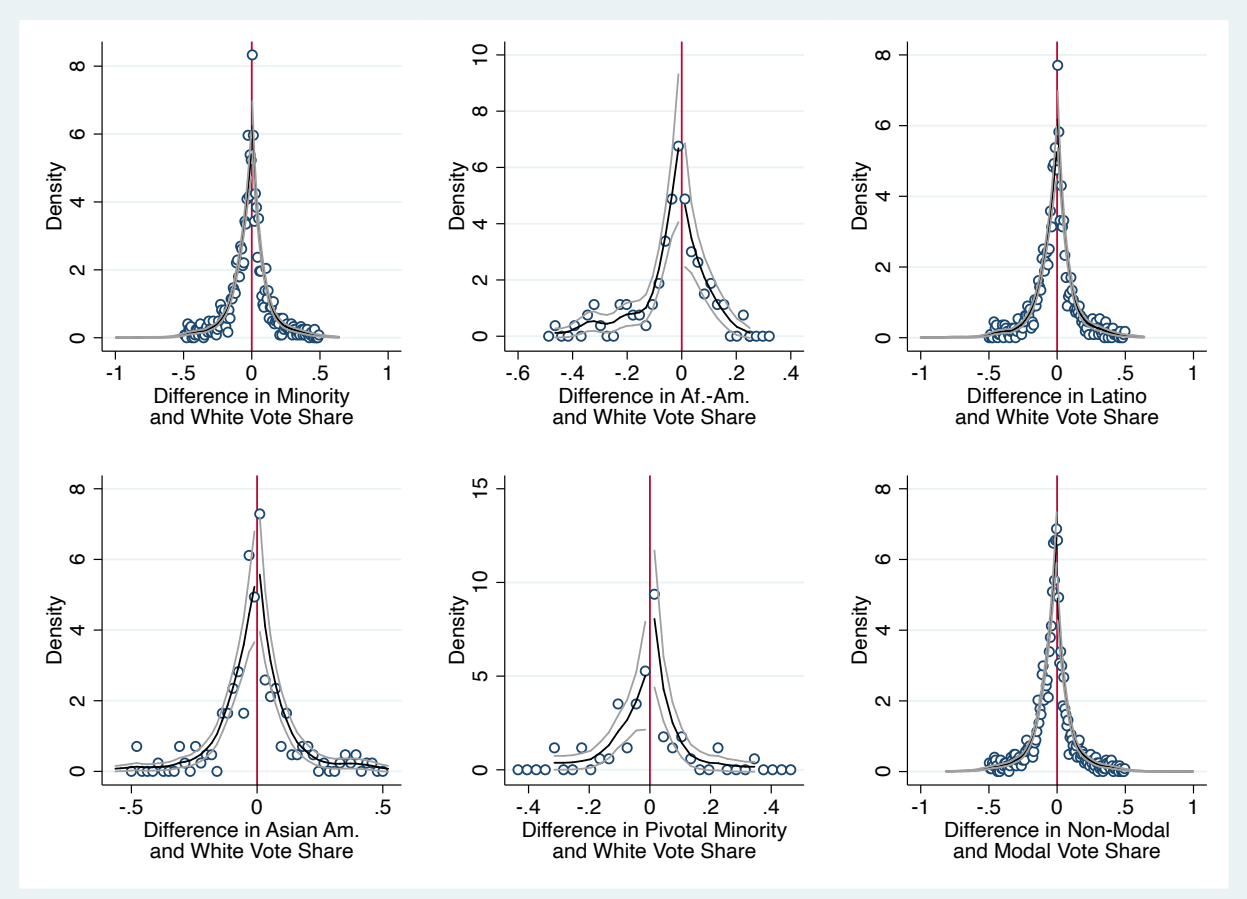
	(1) Af.-Am.	(2) Asian-Am.	(3) Latino	(4) White
Mode Af.-Am. (Surname + Co in 2000)	0.455**			
	(0.136)			
Mode Asian-Am. (Surname + Co in 2000)		0.817***		
		(0.0663)		
Mode Latino (Surname + Co in 2000)			0.945***	
			(0.0134)	
Mode White (Surname + Co in 2000)				0.812***
				(0.0274)
Constant	0.0452***	0.0164***	0.0401***	0.0649***
	(0.00886)	(0.00480)	(0.00901)	(0.0178)
R^2	0.087	0.633	0.822	0.601
Observations	1245	1245	1245	1245

Heteroskedasticity robust standard errors clustered by municipality in parentheses.
$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

B Validating the Regression Discontinuity Design

In this subsection, we present validation analyses to determine if the assumptions of the regression discontinuity design hold in our setting. We present the McCrary (2008) density test to examine manipulation of the running variable. The test flexibly estimates the density of the running variable to the left and the right of the cutoff. We separately perform this test for the six running variables defined by any minority candidate running against a white candidate, an African American running against a white candidate, an Asian American running against a white candidate, a Latino running against a white candidate, a minority candidate running against a white candidate where the minority candidate's election would be pivotal for securing a majority minority school board, and a candidate of non-modal race running against a candidate of modal race. The density plots of the running variable and 95 percent confidence intervals are reported in Figure B.1. In all six cases there is no significant discontinuity in the density of the running variable at the cutoff.

Figure B.1: McCrary Density Test for Manipulation of the Running Variable



We also present balance tests to determine if the dependent variables vary significantly across treatment and control groups in the election year. In Tables B.1-?? we report the balance tests for each of the three treatment variables. We also investigate whether the racial composition of the school districts' students and voting-age population exhibit balance. We report balance test results for the proportion of district students who are non-white, the proportion of voting-age population school district residents who are non-white, the proportion of district students who are Latino, the proportion of voting-age population school district residents who are Latino, and the proportion of students who qualify for free or reduced price lunch. Of the 20 variables, the only one that exhibits a statistically significant jump is the share of non-white principals. The absence of a statistically significant jump in the average of these variables at the three treatment thresholds is consistent with covariate balance across treatment and control.

Table B.1: Balance tests

	Minority Candidate Win	Non-Modal Candidate Win	Pivotal Minority Candidate Win
Avg. Achievement	0.0293	-0.0090	0.0358
CI	[-.078 ; .136]	[-.107 ; .089]	[-.078 ; .15]
N	740	663	618
Non-White Achievement	-0.0245	-0.1425	-0.0101
CI	[-.174 ; .124]	[-.301 ; .016]	[-.162 ; .142]
N	593	541	497
White Achievement	0.0003	-0.0972	0.0118
CI	[-.11 ; .111]	[-.205 ; .011]	[-.109 ; .133]
N	610	554	513
Bond Amt. Proposed	0.1841	0.9054	0.2230
CI	[-.596 ; .964]	[.083 ; 1.728]	[-.707 ; 1.153]
N	1563	1296	1326
Bond Amt. Passed	-0.4476	0.2599	-0.4633
CI	[-.935 ; .04]	[-.404 ; .924]	[-1.061 ; .134]
N	1563	1296	1326
Mean Non-White Principal	-0.1253	-0.0484	-0.1039
CI	[-.193 ; -.058]	[-.115 ; .018]	[-.172 ; -.036]
N	1371	1178	1153
Total FTEs	-0.0798	0.0917	0.1456
CI	[-.378 ; .219]	[-.164 ; .347]	[-.151 ; .442]
N	1429	1294	1192
Af.-Am. FTE Ratio	-0.0159	-0.0106	-0.0137
CI	[-.035 ; .003]	[-.03 ; .009]	[-.028 ; .001]
N	1429	1294	1192
Latino FTE Ratio	-0.0173	0.0109	-0.0213
CI	[-.052 ; .018]	[-.025 ; .047]	[-.06 ; .017]
N	1429	1294	1192
Asian-Am. FTE Ratio	-0.0010	0.0102	-0.0059
CI	[-.013 ; .011]	[-.001 ; .021]	[-.016 ; .005]
N	1429	1294	1192

Each cell reports the bias-corrected regression discontinuity point estimate of the effects of school board racial composition on an outcome in the election year. The cells also report 90 percent confidence intervals and the number of election observations that are within the optimal bandwidth used to estimate the regression discontinuity. The coefficients in the first column represent the estimated effect of a minority candidate defeating a white candidate, the coefficients in the second column represent the estimated effect of a candidate of non-modal race defeating a candidate of modal race, and the coefficients in the third column represent the estimated effect of a minority candidate defeating a white candidate when the minority candidate's victory would result in a more than 40 and less than 60 percent of school board seats held by non-white school board members.

Table B.2: Balance tests

	Minority Candidate Win	Non-Modal Candidate Win	Pivotal Minority Candidate Win
White FTE Ratio	0.0270	-0.0020	0.0200
CI	[-.016 ; .07]	[-.049 ; .045]	[-.026 ; .066]
N	1429	1294	1192
Mutual Information Index	-0.0030	0.0016	-0.0047
CI	[-.02 ; .014]	[-.015 ; .019]	[-.024 ; .014]
N	1563	1296	1326
White Dissimilarity Index	0.0016	0.0204	-0.0050
CI	[-.03 ; .034]	[-.015 ; .056]	[-.041 ; .031]
N	1563	1296	1326
ELL Reclassification	-0.0173	0.0489	-0.0304
CI	[-.122 ; .088]	[-.019 ; .116]	[-.157 ; .096]
N	715	658	602
Bilingual Certification	-0.0358	0.0025	-0.0438
CI	[-.084 ; .012]	[-.032 ; .037]	[-.101 ; .014]
N	699	639	589
Non-White Enroll. Share	-0.0056	0.0079	-0.0008
CI	[-.056 ; .045]	[-.05 ; .066]	[-.056 ; .055]
N	1563	1296	1326
Non-White Pop. Share	-0.0025	0.0327	-0.0071
CI	[-.056 ; .051]	[-.026 ; .091]	[-.06 ; .045]
N	1684	1391	1424
Latino Enroll. Share	-0.0164	-0.0076	-0.0022
CI	[-.078 ; .045]	[-.073 ; .057]	[-.061 ; .057]
N	1563	1296	1326
Latino Pop. Share	-0.0163	0.0031	-0.0214
CI	[-.072 ; .039]	[-.055 ; .062]	[-.076 ; .033]
N	1684	1391	1424
Free/Reduced Lunch Share	-0.0032	0.0143	-0.0051
CI	[-.069 ; .063]	[-.055 ; .084]	[-.073 ; .063]
N	1270	1157	1062
Asian-Am. Enroll. Share	0.0220	0.0194	0.0249
CI	[-.008 ; .053]	[-.008 ; .047]	[-.005 ; .055]
N	1563	1296	1326
Af- Am. Enroll. Share	-0.0120	-0.0164	-0.0104
CI	[-.03 ; .006]	[-.036 ; .003]	[-.027 ; .007]
N	1563	1296	1326
Δ Af-Am. Enroll. Share	-0.0009	-0.0001	-0.0010
CI	[-.003 ; .001]	[-.002 ; .001]	[-.003 ; .001]
N	1560	1294	1323
Δ Asian-Am. Enroll. Share	-0.0010	-0.0026	-0.0010
CI	[-.005 ; .003]	[-.007 ; .001]	[-.005 ; .003]
N	1560	1294	1323
Δ Latino Enroll. Share	0.0015	-0.0035	0.0024
CI	[-.005 ; .008]	[-.01 ; .003]	[-.005 ; .01]
N	1560	1294	1323

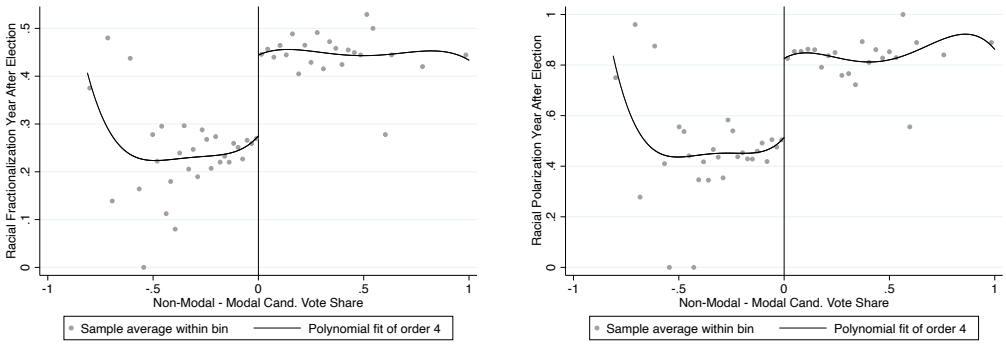
Each cell reports the bias-corrected regression discontinuity point estimate of the effects of school board racial composition on an outcome in the election year. The cells also report 90 percent confidence intervals and the number of election observations that are within the optimal bandwidth used to estimate the regression discontinuity. The coefficients in the first column represent the estimated effect of a minority candidate defeating a white candidate, the coefficients in the second column represent the estimated effect of a candidate of non-modal race defeating a candidate of modal race, and the coefficients in the third column represent the estimated effect of a minority candidate defeating a white candidate when the minority candidate's victory would result in a more than 40 and less than 60 percent of school board seats held by non-white school board members.

C Validating Effects of Candidate Wins on School Board Composition

In this subsection, we examine how the different candidate victory variables we use in our study affect the subsequent composition of the board. We first consider how non-modal candidate victories affect two measures of school board diversity: fractionalization and polarization. Fractionalization measures the probability that two randomly-selected individuals on the school board will be members of different racial groups. This measure is maximized at 1 when each school board member belongs to a different racial group and is minimized at 0 when each school board member belongs to a the same racial group. In contrast, polarization is maximized when there are two ethnic groups on the school board and each holds 0.5 of the seats.

In Figure C.1, we plot the fitted regression discontinuity estimate of the effect of a non-modal candidate win on racial fractionalization and polarization in the year following the election. In both cases, the estimated effects are substantively large and statistically significant. These results are similar to the findings of Beach and Jones (2017) in the context of California city councils. Like Beach and Jones (2017) we find that the estimated effect on the polarization index are larger than the effect on the fractionalization index.

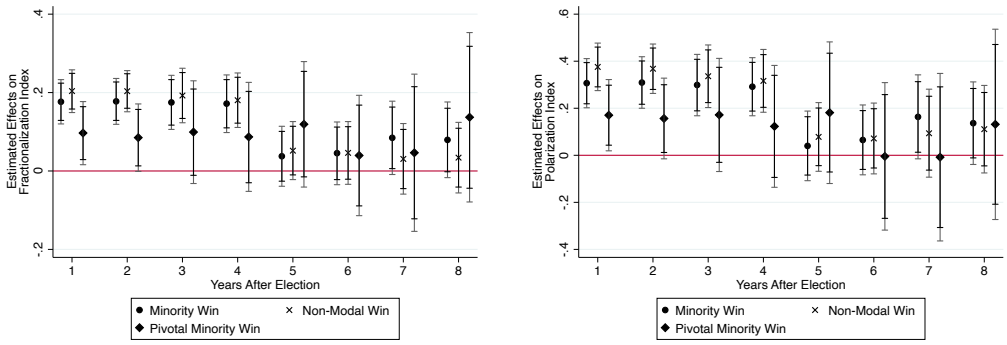
Figure C.1: Validating Non-Modal Candidate Victory's Effect on Diversity Indices



We next examine how each of the three election outcomes affects school board diversity over the subsequent eight years. In Figure C.2, we plot the dynamic intent to treat effects and confidence intervals. In the years immediately after the election, fractionalization and polarization both increase when a non-modal candidate wins. In the first three years after the election, the effect of a non-modal candidate win on both diversity indices is larger than the effect of either a minority win or a pivotal minority win. By five years after the election, the estimated effects decrease in magnitude as the composition of the board changes with the election of new candidates.

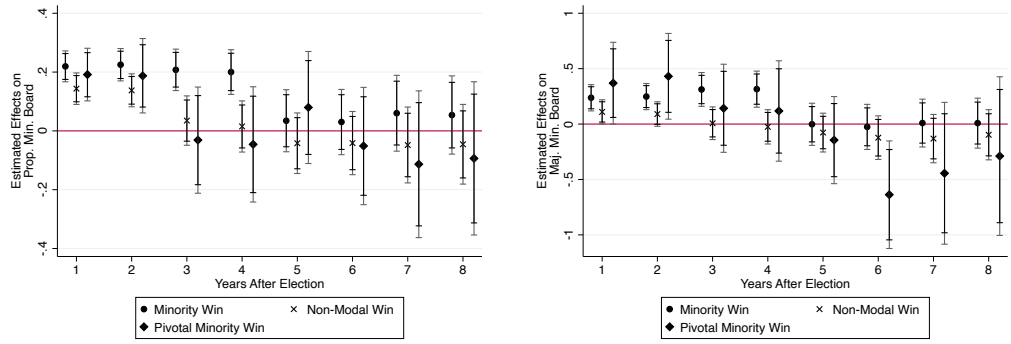
We next examine how the three election outcomes affect both the proportion of minorities on the school

Figure C.2: Dynamic Effect of Elections Outcomes on Diversity Indices



board and the probability that the school board is majority-minority. Figure C.3 reports the dynamic treatment effect estimates and confidence intervals. Minority candidate victories significantly increase the proportion of minorities on the board for the first four years after the election. The estimated effects for non-modal and pivotal minority candidate victories are smaller and statistically insignificant after three years. Pivotal minority candidate have the largest effects on the probability of a majority-minority board for the first four years after the election. These results provide additional validation that the variation induced by the performance of the individual candidates' electoral performance has the assumed effects on California school boards' racial composition.

Figure C.3: Dynamic Effect of Elections Outcomes on Board Racial Composition



We also document the importance of resident race in electing non-white school board members by estimating four separate regressions of the proportion of school district voting-age residents who are non-white, African American, Asian American, and Latino on an indicator for whether a non-white school board candidate was elected. The regression results in Table C.1 show that districts that elect non-white candidates have dramatically higher non-white, Latino, African American, and Asian American shares of voting-age res-

idents than districts where white candidates are victorious. In districts where a non-white candidate wins, the voting-age population is 23.7 percentage paints more non-white, 20.5 percentage points more Latino, 3.15 percentage points more Asian American, and 0.84 percentage points more African American.

Table C.1: Racial Composition of Voting Age Residents

	(1) Proportion Non-White	(2) Proportion African-American	(3) Proportion Asian	(4) Proportion Latino
Minority Cand. Win	0.237***	0.00840***	0.0315***	0.205***
	(0.00680)	(0.00196)	(0.00319)	(0.00713)
Constant	0.364***	0.0375***	0.0600***	0.228***
	(0.00306)	(0.000881)	(0.00115)	(0.00253)
Observations	6495	6495	6495	6495
R^2	0.165	0.003	0.021	0.155

Heteroskedasticity robust standard errors clustered at the district level in parentheses

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

D Additional RDD Results

We first consider whether our results change with a more restrictive definition of whether a candidate is pivotal than in the main text. In the main text, we defined pivotality using the heuristic definition of whether the other seats on the board had a 0.4 to 0.6 minority proportion. We now repeat all of our analyses on the sample of district-years where the estimated proportion of minority-held seats is greater than 0.5 under the counterfactual that the candidate wins and is less than or equal to 0.5 under the counterfactual that the candidate loses. In these district-years, a minority candidate victory leads to a majority-minority school board while a minority candidate defeat leads to a minority-minority board. We report these results in Figures D.1 and find that they corroborate our findings from the broader set of elections.

Figure D.1: Dynamic Effects of Election Results on on Academic Achievement

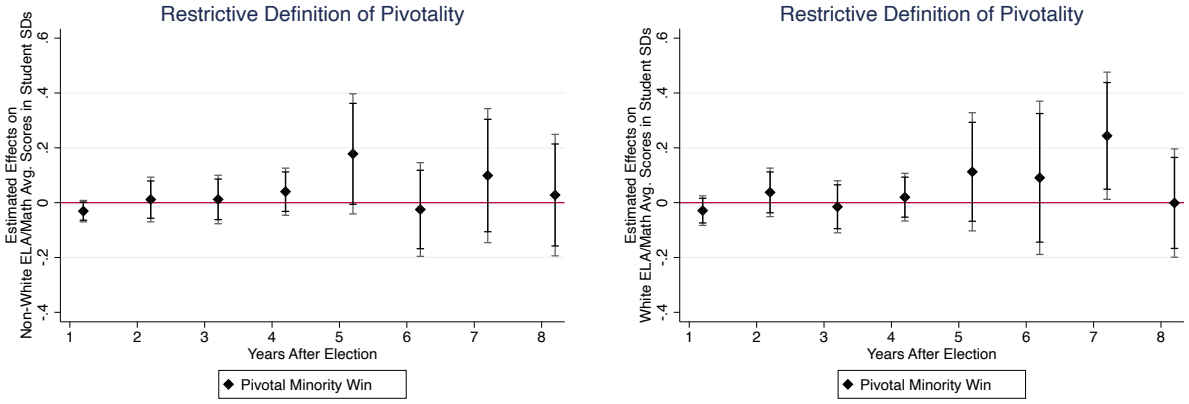


Table D.1 demonstrates the robustness of our results for the effect of electing an additional minority school board member on non-white student achievement. With each column, we add additional covariates and controls. The final column limits the sample to district-years in which at least 250 non-white students took state assessments.

We next examine whether our results are entirely driven by Latino candidate victories. In Figure D.2 we report the results from the regression discontinuity specifications for a Latino candidate victory over a non-Latino candidate. We also report results for a Latino pivotal victory. The Latino candidate victory point estimates are typically smaller than our main results.

Figure D.3 extends our test score panel to include the newer assessments that began in 2015. As we note, this change also coincided with a shift in the state accountability system that made test scores a much smaller and less salient part of the overall school and district ratings issued by the state.

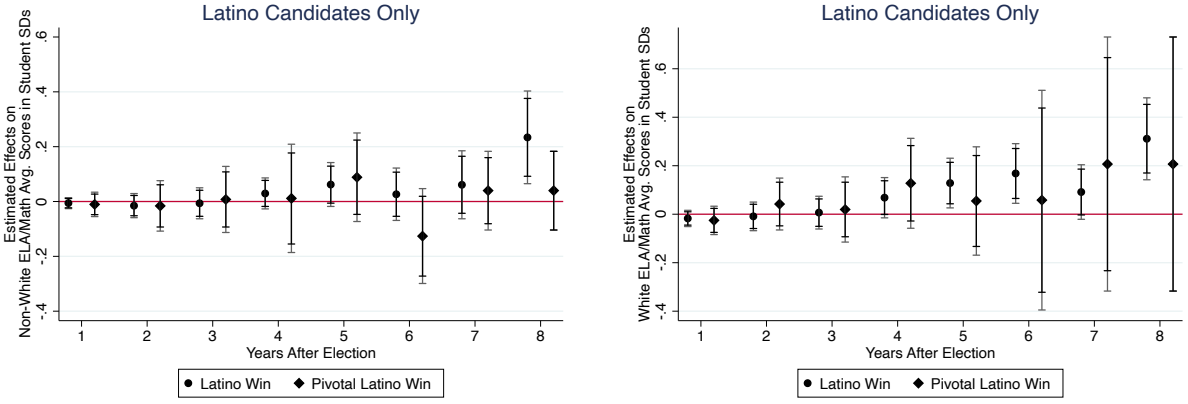
We also re-estimate all of the models in Table 3 on the subset of observations that are used to estimate

Table D.1: Impact of Electing Additional Minority School Board Member on Non-White Student Achievement (Student Level SDs)

Year 1	-0.0132	-0.0126	-0.0117	-0.0129
CI	[-.028 ; .002]	[-.027 ; .002]	[-.026 ; .003]	[-.029 ; .003]
N	546	546	546	527
Year 2	-0.0157	-0.0165	-0.0140	-0.0107
CI	[-.048 ; .017]	[-.049 ; .016]	[-.044 ; .016]	[-.037 ; .016]
N	475	475	475	462
Year 3	-0.0121	-0.0149	-0.0141	-0.0101
CI	[-.052 ; .028]	[-.054 ; .024]	[-.053 ; .025]	[-.05 ; .03]
N	429	429	429	416
Year 4	0.0204	0.0090	0.0119	0.0166
CI	[-.02 ; .061]	[-.026 ; .044]	[-.027 ; .05]	[-.022 ; .055]
N	349	349	349	339
Year 5	0.0407	0.0451	0.0426	0.0461
CI	[-.01 ; .092]	[-.002 ; .092]	[-.006 ; .091]	[0 ; .092]
N	312	312	312	305
Year 6	0.0894	0.0799	0.0780	0.0861
CI	[.022 ; .157]	[.022 ; .137]	[.022 ; .134]	[.033 ; .14]
N	253	253	253	247
Year 7	0.0788	0.0731	0.0716	0.0640
CI	[0 ; .158]	[-.002 ; .148]	[-.002 ; .145]	[-.002 ; .13]
N	219	219	219	213
Year 8	0.1685	0.1441	0.1416	0.1085
CI	[.021 ; .316]	[.012 ; .277]	[.019 ; .265]	[-.013 ; .23]
N	148	148	148	143
Covariates	No	Yes	Yes	Yes
Year FEs	No	No	Yes	Yes
> 250 students	No	No	No	Yes

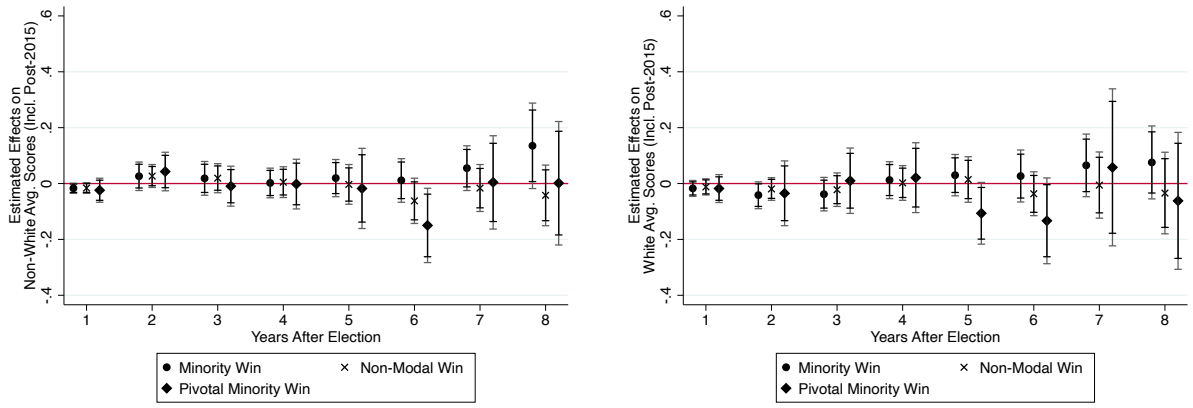
Election year student achievement is included in the models with covariates.

Figure D.2: Dynamic Effects of Latino Electoral Victories Results on Academic Achievement



the year 5 treatment effects and also the subset of observations that are used to estimate the year 6 treatment effects. The year 4 point estimates are all slightly larger when we restrict the sample to observations that are available in year 5 after the election. Both the year 5 non-modal candidate win and pivotal minority candidate win are positive and statistically significant when restricting the sample to observations that are

Figure D.3: Dynamic Effects of School Board Composition on Academic Achievement by Student Race, Including Newer Assessments



available in year 6.

Table D.2: Impact of School Board Elections on Student Achievement (Sample Restricted to Observations Available Five Years After Election)

	Minority Candidate Win	Non-Modal Candidate Win	Pivotal Minority Candidate Win
Year 1	-0.0024	-0.0025	-0.0208
CI	[-.023 ; .018]	[-.024 ; .019]	[-.09 ; .048]
N	393	407	90
Year 2	-0.0166	-0.0152	-0.0211
CI	[-.049 ; .016]	[-.049 ; .019]	[-.144 ; .102]
N	394	411	93
Year 3	-0.0125	-0.0109	0.0047
CI	[-.05 ; .025]	[-.047 ; .025]	[-.064 ; .074]
N	416	440	105
Year 4	0.0284	0.0390	0.0834
CI	[-.018 ; .074]	[-.002 ; .079]	[-.019 ; .186]
N	387	408	93

Each cell reports the bias-corrected regression discontinuity point estimate of the effects of school board racial composition on student achievement in a given year after the election. The cells also report 90 percent confidence intervals and the number of election observations that are within the optimal bandwidth used to estimate the regression discontinuity. The coefficients in the first column represent the estimated effect of a minority candidate defeating a white candidate, the coefficients in the second column represent the estimated effect of a candidate of non-modal race defeating a candidate of modal race, and the coefficients in the third column represent the estimated effect of a minority candidate defeating a white candidate when the minority candidate's victory would result in a more than 40 and less than 60 percent of school board seats held by non-white school board members.

For completeness, we also include tabular versions of the white and non-white student achievement results.

Table D.3: Impact of School Board Elections on Student Achievement (Sample Restricted to Observations Available Six Years After Election)

	Minority Candidate Win	Non-Modal Candidate Win	Pivotal Minority Candidate Win
Year 1	-0.0045	-0.0082	-0.0267
CI	[-.029 ; .02]	[-.036 ; .02]	[-.099 ; .045]
N	343	357	80
Year 2	-0.0080	-0.0101	0.0018
CI	[-.048 ; .032]	[-.053 ; .033]	[-.141 ; .145]
N	303	318	74
Year 3	-0.0085	-0.0081	-0.0072
CI	[-.049 ; .032]	[-.047 ; .031]	[-.103 ; .088]
N	352	370	88
Year 4	-0.0018	0.0234	0.0539
CI	[-.048 ; .044]	[-.024 ; .07]	[-.046 ; .154]
N	312	330	78
Year 5	0.0435	0.0658	0.1469
CI	[-.004 ; .091]	[.021 ; .11]	[.016 ; .278]
N	348	319	64

Each cell reports the bias-corrected regression discontinuity point estimate of the effects of school board racial composition on student achievement in a given year after the election. The cells also report 90 percent confidence intervals and the number of election observations that are within the optimal bandwidth used to estimate the regression discontinuity. The coefficients in the first column represent the estimated effect of a minority candidate defeating a white candidate, the coefficients in the second column represent the estimated effect of a candidate of non-modal race defeating a candidate of modal race, and the coefficients in the third column represent the estimated effect of a minority candidate defeating a white candidate when the minority candidate's victory would result in a more than 40 and less than 60 percent of school board seats held by non-white school board members.

Table D.4: Impact of School Board Elections on White Student Achievement

	Minority Candidate Win	Non-Modal Candidate Win	Pivotal Minority Candidate Win
Year 1	-0.0201	-0.0117	-0.0295
CI	[-.044 ; .004]	[-.035 ; .012]	[-.078 ; .019]
N	564	584	128
Year 2	-0.0194	0.0006	0.0481
CI	[-.061 ; .022]	[-.041 ; .042]	[-.038 ; .134]
N	491	512	114
Year 3	-0.0090	-0.0063	-0.0148
CI	[-.059 ; .041]	[-.055 ; .042]	[-.093 ; .063]
N	444	466	114
Year 4	0.0222	0.0259	0.0934
CI	[-.034 ; .079]	[-.029 ; .08]	[0 ; .186]
N	359	378	92
Year 5	0.0354	0.0321	-0.0428
CI	[-.028 ; .099]	[-.027 ; .091]	[-.188 ; .102]
N	324	293	62
Year 6	0.0888	0.0001	0.1839
CI	[.011 ; .167]	[-.083 ; .083]	[-.215 ; .583]
N	262	236	52
Year 7	0.0959	0.0030	0.1631
CI	[.006 ; .186]	[-.088 ; .094]	[-.088 ; .414]
N	227	204	53
Year 8	0.1672	-0.0441	0.0456
CI	[.019 ; .315]	[-.196 ; .108]	[-.136 ; .228]
N	155	134	33

Each cell reports the bias-corrected regression discontinuity point estimate of the effects of school board racial composition on student achievement in a given year after the election. The cells also report 90 percent confidence intervals and the number of election observations that are within the optimal bandwidth used to estimate the regression discontinuity. The coefficients in the first column represent the estimated effect of a minority candidate defeating a white candidate, the coefficients in the second column represent the estimated effect of a candidate of non-modal race defeating a candidate of modal race, and the coefficients in the third column represent the estimated effect of a minority candidate defeating a white candidate when the minority candidate's victory would result in a more than 40 and less than 60 percent of school board seats held by non-white school board members.

Table D.5: Impact of School Board Elections on Non-White Student Achievement

	Minority Candidate Win	Non-Modal Candidate Win	Pivotal Minority Candidate Win
Year 1	-0.0132	-0.0086	-0.0170
CI	[-.028 ; .002]	[-.025 ; .008]	[-.058 ; .024]
N	546	566	126
Year 2	-0.0157	-0.0048	0.0102
CI	[-.048 ; .017]	[-.036 ; .026]	[-.058 ; .078]
N	475	496	112
Year 3	-0.0121	-0.0131	-0.0023
CI	[-.052 ; .028]	[-.05 ; .024]	[-.074 ; .069]
N	429	451	110
Year 4	0.0204	0.0334	0.0746
CI	[-.02 ; .061]	[-.006 ; .073]	[-.018 ; .167]
N	349	368	88
Year 5	0.0407	0.0338	-0.0141
CI	[-.01 ; .092]	[-.018 ; .086]	[-.15 ; .122]
N	312	286	61
Year 6	0.0894	-0.0102	-0.1139
CI	[.022 ; .157]	[-.072 ; .051]	[-.254 ; .027]
N	253	230	51
Year 7	0.0788	-0.0097	-0.0269
CI	[0 ; .158]	[-.087 ; .068]	[-.169 ; .115]
N	219	199	52
Year 8	0.1685	-0.0408	0.0440
CI	[.021 ; .316]	[-.157 ; .076]	[-.144 ; .232]
N	148	131	33

Each cell reports the bias-corrected regression discontinuity point estimate of the effects of school board racial composition on student achievement in a given year after the election. The cells also report 90 percent confidence intervals and the number of election observations that are within the optimal bandwidth used to estimate the regression discontinuity. The coefficients in the first column represent the estimated effect of a minority candidate defeating a white candidate, the coefficients in the second column represent the estimated effect of a candidate of non-modal race defeating a candidate of modal race, and the coefficients in the third column represent the estimated effect of a minority candidate defeating a white candidate when the minority candidate's victory would result in a more than 40 and less than 60 percent of school board seats held by non-white school board members.

E Policy Mechanism Results

In this section, we consider a number of policy mechanisms beyond school bonds and principal race and ethnicity that could explain the student academic performance results. We examine district employment, school-level segregation, and English-language learner reclassification rates.

We compute the total number of full-time-equivalent (FTE) employees in each school district and the number of FTEs by race. We then calculate an FTE ratio for each of the four racial groups.[1] We base these calculations on CDE staff data that consist of individual records for each teacher, administrator, and pupil services staff member employed in the district.

In Figure E.1, we report the dynamic effects of the three treatments on the number of full-time-equivalent staff in the district.[2] As discussed above, our measure of district staff includes teachers, administrators, and pupil service staff. The results are largely inconsistent with the interpretation that minority school board members affect district staffing levels. In Figure E.2, we report the dynamic effect of the three treatments on the ratio of employees (expressed as full-time equivalents) in the four racial groups. With a few exceptions the estimated effects are statistically indistinguishable from zero. By and large the analysis shows that in the context of California school districts, we find little evidence that increased minority representation or school board diversity increases the number of racial minorities in the ranks of district employees. In particular, the results are inconsistent with the interpretation that pivotal minority electoral victories increase the ratio of Latino teachers.

Changes in school-level segregation may affect student performance through peer effects (Angrist and Lang 2004, Hanushek, Kain and Rivkin 2004, Billings, Deming and Rockoff 2014) and increased political pressure to allocate district resources equitably across schools. Macartney and Singleton (2018) find that electing Democratic school board members decreases school-level segregation in North Carolina school districts. Given the high correlation between minority status and Democratic partisan affiliation in national public opinion surveys, we might expect a similar effect for minority school board representation. We use school-level enrollments by race to calculate two measures of segregation. We first employ the dissimilarity index (Duncan and Duncan 1955), which is a measure of segregation that captures segregation of students of one race relative to all students who do not share that race. The dissimilarity index has an intuitive interpretation as the proportion of students of a given race who would need to change schools in order to equalize the proportion of students of that race across schools. Because California has significant numbers

[1] There are some individuals who choose to identify with multiple races and these responses are placed in the two or more race category in the CDE administrative data. Because the races that the individual respondent identifies with are not reported in the individual data we exclude these individuals from our race-specific calculations.

[2] We could also estimate this relationship using FTEs per enrolled student. As district total enrollment is not significantly affected by our racial composition variables, these results are very similar.

Figure E.1: Dynamic Effects of Election Results on Total Full-Time Equivalents in 1,000s

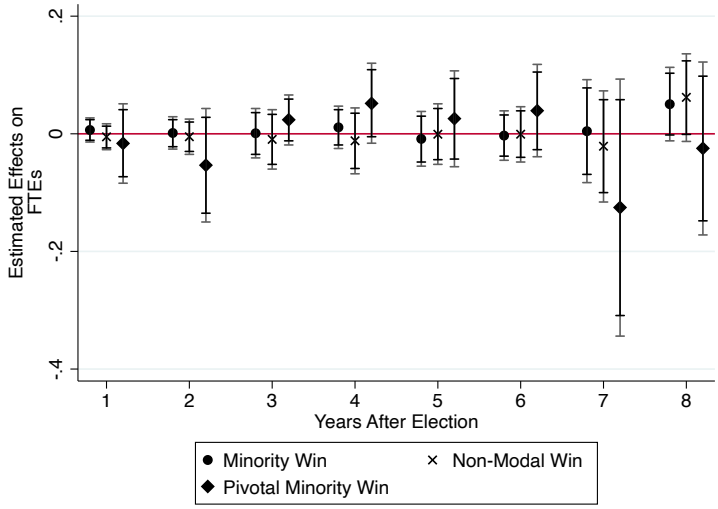
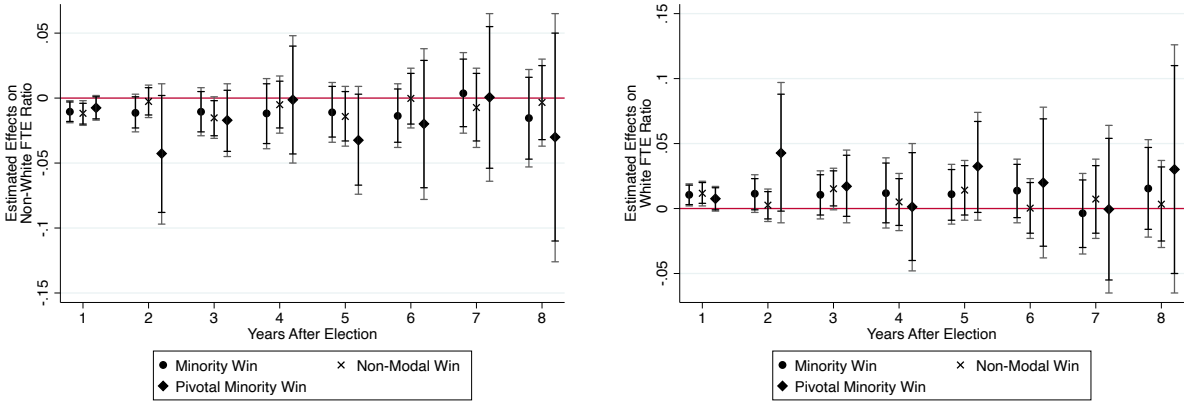


Figure E.2: Dynamic Effects of Election Results on Racial Composition of District Employees

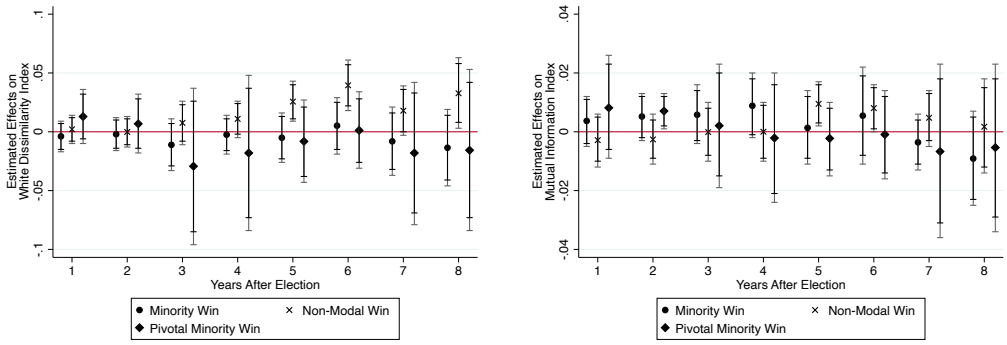


of racial and ethnic student subpopulations, we also use a multigroup measure of segregation: the Mutual Information index.

Figure E.3 reports the results for these two segregation indices. We find no evidence that minority representation affects either of these measures of segregation, although it does appear that school segregation increases when elections produce a more diverse school board.

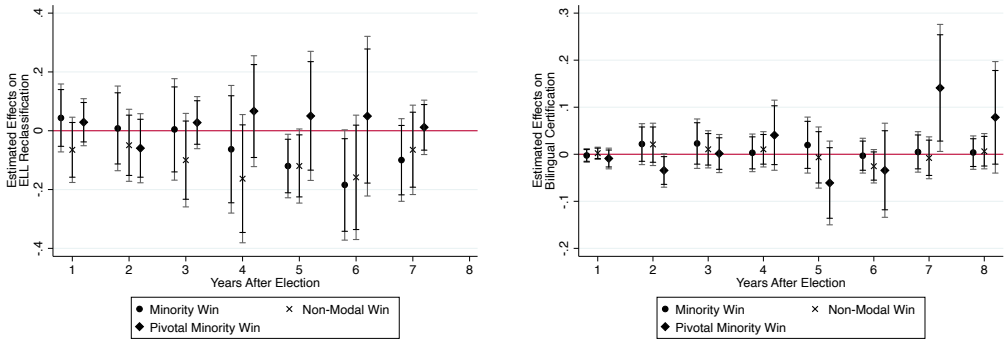
Finally, we use data on the total number of English language learners in each district-year and the number of these students who are reclassified as English proficient in order to calculate the proportion of students who are reclassified in each district-year. Given individual-level evidence that classifying English-language learning students as proficient improves subsequent student performance (Carlson and Knowles 2016, Shin 2018), policy changes that encourage reclassification may result in improved academic performance.

Figure E.3: Dynamic Effects of Election Results on School-Level Segregation



The left panel of Figure E.4 examines whether the election of majority-minority school boards has an effect on subsequent reclassification outcomes. Although there are no meaningful changes initially, we do see some evidence that greater minority representation reduces the reclassification rates starting in year five after the election. The right panel examines how election outcomes affect districts' share of teachers who are certified for bilingual education. We do not find positive effects in the years immediately after the election or in years when we see significant achievement gains, suggesting that this policy mechanism is unlikely to explain the achievement effects we document.

Figure E.4: Dynamic Effects of Election Results on English Reclassification and Bilingual Certified Teachers



F Case Studies

We have shown that the election of minority representatives to local school boards can improve student educational outcomes for students. Our analysis also suggests that an increase in the probability of proposing (and passing) school bonds is one key mechanism through which minority representation could positively affect student learning. In this section, we provide two brief case studies that illustrate these dynamics in specific school districts. Although we do not argue these cases are representative, we believe they are helpful in illustrating more concretely the causal chain suggested by our large-N analysis.[3]

The first case study, which focuses on the Oxnard Union High School District, documents the importance of minority school board representation in protecting the interests of co-ethnic students. The proposal and subsequent passage of a bond referendum by the school board is a key part of this story. We also offer a second case study, of the Los Angeles Unified School District, in part because research has linked its aggressive school construction program to improved student outcomes.

Oxnard Union High School District

The Oxnard Union High School District serves about 15,000 students in grades 9 through 12 on the southwestern edge of Ventura County, a coastal region between Santa Barbara and Los Angeles. The boundaries of this high school district span seven independent elementary districts that serve K-8 students in the same area (Figure F.1). Although the majority of students Oxnard Union educates are Latino and live in households with incomes low enough to qualify for free or reduced-price lunch, there is considerable variation in the demographic characteristics of students across the independent elementary districts in its service area (see Table F.1). For decades, these differences fueled a controversial effort among some residents of Camarillo—a conservative, wealthy, and majority-white city—to break away by adding high school grades to their elementary school district, Pleasant Valley. This process is known as "unification" under California law.[4] By the late 1990s, the Pleasant Valley district had elected a pro-unification majority to its school board and was taking active steps to pursue it.[5]

[3] In the California context we examine, Latino candidates represent more than 80 percent of all minorities elected to school boards, however. We are mindful of the fact that previous research in political science has shown that different minority groups do not always form successful "rainbow coalitions" (Browning, Marshall and Tabb 1988) and indeed, may compete with each other for representation and government resources (Meier and Stewart 1991, McClain et al. 2006). Although our statistical power to examine potentially distinct effects of African American, Latino, and Asian American representation is limited, the evidence does suggests that the minority achievement gains we observe are not driven exclusively by the election of Latino school board members. In addition, we do not find evidence that learning gains among Latino students come at the expense of other minority subgroups. Thus, our results are not consistent with the zero-sum account of minority political empowerment (Vaca 2003).

[4] The term refers to switching from a high school or elementary district, serving certain grades, into a K-12 "unified" district. The unification proposal for the Pleasant Valley district would have also included another majority-white elementary district, Somis. See Table F.1.

[5] Kate Folmar, "Camarillo School Unification Drive Heats Up," *Los Angeles Times*, Dec. 1, 1998.

Figure F.1: Boundaries of the Oxnard Union High School District

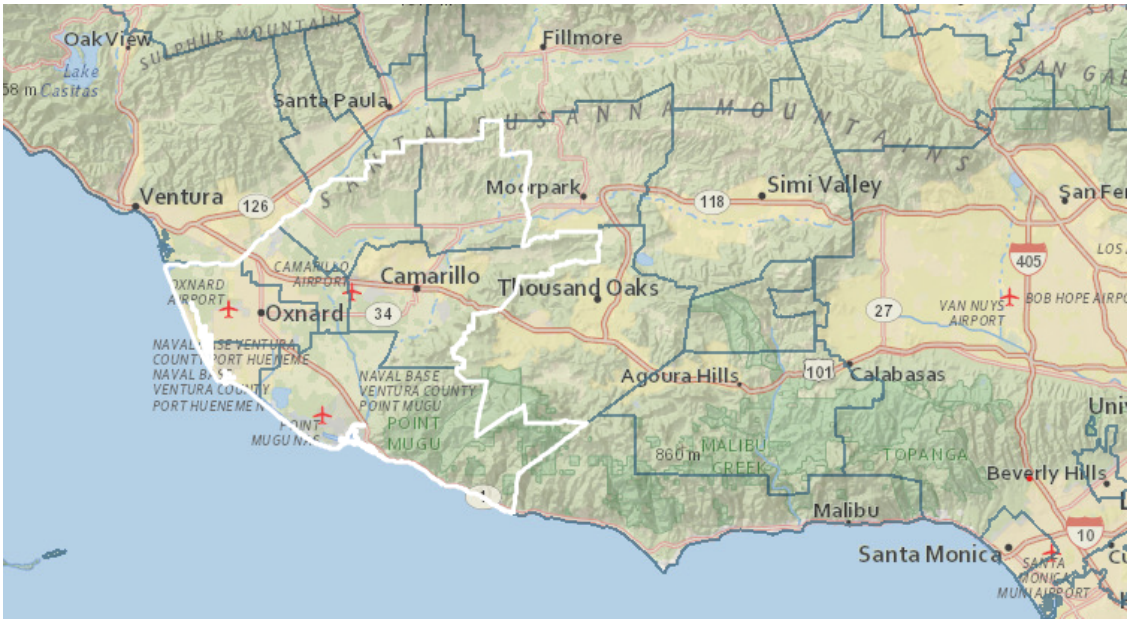


Table F.1: Composition of Oxnard Union High and Its Constituent Elementary School Districts

District	Free/Reduced-Price Lunch	White	Latino	Assessed Values (Millions)
Oxnard Union High SD	*38%*	*25%*	*60%*	*$3,335*
Hueneme Elementary SD	72%	15%	71%	$520
Mesa Union Elementary SD	25%	53%	42%	$326
Ocean View Elementary SD	72%	17%	63%	$409
Oxnard Elementary SD	71%	11%	81%	$159
Pleasant Valley Elementary SD	15%	66%	23%	$1,170
Rio Elementary SD	60%	12%	80%	$309
Somis Union Elementary SD	28%	57%	39%	$431

Sources: California Department of Education, Ventura County Assessor

Although proponents argued that unification would bring more "local control" for Camarillo voters and improvements in curriculum, critics noted that race appeared to be a central consideration. "They're not addressing it, but race is the major undercurrent here. I guess they don't want their children with our diversity," said one such unification critic, Robert Valles, a Latino Oxnard Union school board member.[6] Despite the Oxnard district's Latino student majority, Valles was only one of two non-white trustees on the five-member Oxnard Union board going into the late 1990s. The other chose not to run for re-election when his term ended in 1998.

Studies evaluating the impact of a possible unification highlighted the stakes involved, particularly for the Latino students of the Oxnard high school district. The loss of Camarillo students to a unified Pleasant Valley district was projected to decrease the white share of enrollment in the Oxnard Union High School

[6]Ibid.

District by between 10 and 15 percentage points, increasing the Latino share to between 80 and 90 percent. Although unification proponents sought to gain control of only one district high school located in Camarillo, a second high school also served students from Camarillo. Unifying the Pleasant Valley district would lead this second high school to lose Camarillo students, making the school more than three-fourths Latino after unification. Research in other contexts has found that such racial isolation can have a significant negative impact on academic achievement, especially for minority students (see Bergman 2020; Johnson 2019).

Perhaps equally important, the loss of Camarillo students also would have cost Oxnard Union a significant share of its tax base. Although its students represented fewer than one in five students attending Oxnard Union high schools, Camarillo accounted for over 35 percent of the assessed property value in the high school district. Under California's centralized school funding system, the loss of Camarillo taxpayers would not affect the district's operational expenditures but it would make it considerably harder to finance school bonds that fund capital projects, which are paid for on an ad valorem basis.

Perhaps partly in response to the growing unification movement, the fall 1998 election saw the emergence of new efforts to increase minority political representation in the region, including a new political action committee formed to recruit Latino candidates and support the candidacy of others responsive to the needs of Latino constituents.[7] Among those backed by the pro-Latino PAC was Irene Pickard, an African American elected to the Oxnard Union board that year. Two years later, the election of another Latino gave the board its first non-white majority, and in 2002, voters added another Latino member, Socorro Lopez Hanson.

Although a resident of Camarillo, Lopez Hanson opposed the breakup of the high school district and instead advocated for a school bond that would fund the construction of a second high school in Camarillo.[8] She argued that building a second high school could alleviate the overcrowding at the existing Camarillo high school and that this would address the main concerns of many Camarillo parents, making the unification push less popular. The board supported Lopez Hanson's idea, placing on the November 2004 ballot a bond measure to build a second Camarillo school that voters ultimately approved. In addition to paying for a second Camarillo campus, the bond also financed another high school within the Oxnard area, where students faced their own crowding issues.

Although administrators and board members of the Oxnard Union High School District took no formal position on unification, the district made little secret of its opposition, highlighting the importance of having strong minority representation on its school board. In 2006, for example, the Oxnard Union board members

[7]Kathleen Wilson, "Group Backing Candidates Who Care for Latinos," *Ventura County Star*, Oct. 20, 1998.

[8]One might worry that opening a second Camarillo campus would lead to increased racial segregation in the other Oxnard Union High School buildings by causing them to lose their white enrollment. In fact, racial isolation district wide actually decreased when the school was opened in 2015, because more spots opened up at both the new building and the existing Camarillo campus, increasing the number of Latino students from other parts of the district attending schools there. These calculations are available from the authors.

co-signed an editorial in the local paper criticizing unification and explicitly pointing to the 2004 bond measure. "The proponents of unification for Camarillo should ask themselves whether they are willing to pay the entire cost of a second high school," they wrote, noting that the recent bond measure was enacted only thanks to support from voters outside the Pleasant Valley district.[9]

Most critically, Oxnard Union High School District leaders played an active role in shaping the rules for the unification election. When a local commission ruled that only voters living in the attendance boundaries of the affected high schools would be allowed to vote, Oxnard Union appealed the decision to state officials.[10] The appeal not only delayed the vote, originally scheduled for an off-cycle special election where turnout would likely be less diverse (Kogan, Lavertu and Peskowitz 2018), but also resulted in a favorable decision from the state, which ruled that all Oxnard Union residents would participate. This decision would prove to be decisive. When the unification ballot finally appeared on the ballot in November 2008, it lost by fewer than 2 percentage points thanks to opposition from outside of Camarillo; among Camarillo precincts, the measure won by 25 percentage points and would have likely prevailed had the election been held within the original boundaries defined by the local commission.[11] The electoral defeat appeared to bring the unification campaign to end, with little organized efforts since then.

Although we cannot know if the dynamics in Oxnard would have played out differently under a counterfactual in which the Oxnard Union board remained majority-white, it seems likely that minority political representation shaped the district's response to the unification efforts. The case also illustrates how school bonds can play a pivotal role in building and maintaining diverse coalitions by providing resources targeting benefits to key stakeholders and overcoming collective action problems faced by diverse jurisdiction. Rugh and Trounstine (2011) provide additional evidence of this mechanism.

Los Angeles Unified School District

Our second case focuses on another majority Latino district (by enrollment), Los Angeles Unified. Although Los Angeles Unified had long had racial and ethnic minority representatives on its board, these members were internally divided, with Latino elites generally opposed to forced integration via busing. In the early 1990s, however, electoral redistricting created the district's second majority-Latino ward and the spring 1993 election produced the first minority-majority board in district history, composed of two Latina members, an African American, and an Asian American representative.[12] This majority proved to be short-lived, however. One Latina incumbent announced she would not run for reelection in 1995, and one of the closest elections

[9] "Does Camarillo Want to Pay for Its Own School?" *Ventura County Star*, March 12, 2006.
[10] "Oxnard Union District Files Appeal Notice on Unification," *Ventura County Star*, Jan. 20, 2007.
[11] Ventura County Registrar of Voters, "County of Ventura Statement of Vote," November 4, 2008.
[12] Stephanie Chavez, "Minorities to Be Majority on Governing Panel for First Time," *Los Angeles Times*, April 22, 1993.

in district history resulted in a white candidate winning her seat by fewer than 100 votes, in part due to low turnout among Latino voters.[13]

Although the district had last passed a school bond in the early 1970s——before the adoption of Proposition 13 in 1978, which raised the passage threshold to two-thirds—capital funding became an increasingly important concern in Los Angeles by the mid-1990s. When California voters passed a $3 billion statewide school bond in 1996, Los Angeles received only a small share of the money because the district could not raise local matching funds.[14] In addition, Los Angeles Unified faced a growing shortage of classroom space—partly due to the largest enrollment spike in district history and partly because of Gov. Pete Wilson's K-3 class-size reduction program, which required the district to find instructional space for new teachers to achieve the smaller student-teacher ratios.

In spring 1996, a divided school board voted to hire consultants to assess voter support for a local school bond, over the opposition or skepticism of several of the board's white members.[15] To the surprise of many local observers, however, the polling showed high support for a bond measure, suggesting that reaching the high two-thirds passage threshold was possible. Persuaded by the public opinion numbers, even the initially skeptical members came around, joining their colleagues in a unanimous vote to place a $2.4 billion measure on the November 1996 ballot.

Although the measure ultimately lost, school board members themselves seemed surprised by how close the measure came to passing, earning support from 65.7 percent of voters. "This is really pretty amazing, we are probably the most hated institution in this city," the school board president told an interviewer shortly after the election. Writing one day after the election, one reporter noted: "Discussion in Los Angeles on Wednesday centered less on what went wrong—because results eclipsed what many had expected—and more on how to build on the enthusiasm. Consensus was growing to try again as early as this spring [of 1997]. . . ."[16]

As the district prepared for a repeat effort the following April, its leaders sought to expand their base of support. Their strategy focused on sustaining turnout among Latino and black voters, who had voted in favor of the November measure by large margins, and also winning new votes in the San Fernando Valley.[17] Although the valley was traditionally the most conservative part of the district, its geography resulted in temperatures that were on average 10 degrees warmer than other areas. The spring campaign emphasized that the bonds would finance significant investments in air conditioning, an idea district officials thought would prove popular in the area.[18] Their strategy proved effective, with the April bond measure passing by

[13] Amy Pyle, "Tokofsky Apparently Beats Rivera by 72 Votes," *Los Angeles Times*, June 19, 1995.
[14] Amy Pyle, "L.A. Schools to Get a Fraction of State Bonds," *Los Angeles Times*, May 7, 1996.
[15] Opposition also came from other corners, including the president of the teachers' union, who called the move "the most irresponsible thing they've ever done." Amy Pyle, "L.A. Schools to Poll Public on Bond," *Los Angeles Times*, March 5, 1996.
[16] Amy Pyle, "L.A. School Bond Stalls Oh-So-Close to Victory," *Los Angeles Times*, Nov. 7, 1996.
[17] Lucille Renwick, "Backers of School Bond Learn Lesson, Alter Tactics," *Los Angeles Times*, April 1, 1997.
[18] Lucille Renwick, "School Safety Focus of L.A. Bond Drive," *Los Angeles Times*, March 9, 1997.

a five point margin.

In a recent working paper, Lafortune and Schönholzer (2019) leverage the plausibly exogenous variation in the timing of new school construction to evaluate the consequences of the Los Angeles school renovations efforts that began with the 1997 bond (and were expanded through additional levies in subsequent years). The authors find that opening new schools increased math and English-language arts test scores for students zoned to attend these campuses. They also found that these new schools improved the achievement of students at existing facilities due to reductions in overcrowding. Although limited to a single school district, the analysis provides additional evidence linking bond passage to improved student outcomes.

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