Electoral Structure and the Quality of Representation:  
The Policy Consequences of School Board Elections

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Although an extensive literature exists on how political structures affect representation, particularly representation of political minorities, we know little about how structures affect the quality of representation. A lively debate now exists on creating legislative districts designed to concentrate minorities (see Shotts 2003a; Lublin and Voss 2003; Shotts 2003b among others) and how such structures affect the policy interests of constituents. Generally ignored in this debate is a parallel literature at the local level that focuses on macro structural issues (that is, ‘type’ of elections) rather than the micro-issue of exactly how to draw district lines. This paper looks at the quality of representation produced by political structures by focusing on the issue of at-large versus single member districts in regard to school districts.

The analysis proceeds in seven parts. First, we review the literature on structure and representation. Second, we examine the underlying logic of two electoral systems: at-large and ward-based single member districts. The logic suggests that a group’s “minority” status compels it to use electoral structure to the advantage of its minority constituency. Third, we operationalize hypotheses derived from the spacial logic inherent in electoral structures, using a data set for 1000+ Texas school districts. Fourth, we examine the influence structure has on electing Latino school board members, that is, the impact on descriptive representation. Fifth, we extend the argument beyond descriptive representation to the quality of representation, and examine the effectiveness of minority representatives in advancing the interests of the minority community by increasing the number of minority administrators and teachers in the school district. Sixth, we probe whether this array of factors affects the quality of education received by Latino students. Finally, we explore the implications of these findings for the study of minority politics, representation, and political structure.

I. REPRESENTATION AND STRUCTURE
Descriptive representation is a term used to characterize politicians who share distinct physical traits with their constituencies (Pitkin 1967; but see Mansbridge 1999). Early studies of minority representation were concerned predominately with descriptive representation because the initial question of electoral impact centered on the winning candidates’ ethnicity. This research agenda questioned whether electoral structures, primarily the change from at-large elections to single member district (or “ward”) elections, provided added benefits to minority candidates, or whether non-institutional factors were more important to the process.

Early results held that both socio-economic and electoral variables were important to African-American representation (Karnig 1976; Robinson and Dye, 1978), but contrary findings challenged this conclusion, downplaying the role of structure in the representative process (Cole 1974; MacManus 1978). Later research bolstered the former claim, suggesting that not only were at-large arrangements critical to Black failure at the polls (Davidson and Korbel 1981; Karnig and Welch 1982; Engstrom and McDonald 1981, 1986, 1987; Welch 1990) but that these structures were more powerful than socio-economic characteristics (Stewart et al. 1989). The most recent studies using data from national samples affirm that structures in general matter for Blacks (Lublin 1997; Canon 1999); however, they may not hold for other minorities. Taebel (1978), in a study of city council representation found that Hispanics gained only marginal benefits from ward elections, conjecturing that residential segregation was not as prevalent for Hispanics as it was for Blacks. Susan Welch (1990), using a national sample of city councils from large U.S. cities, found that Hispanics gained almost nothing due to structural variation. Brischetto et al. (1994) similarly found that Latinos achieve little relative to Blacks when electoral structures are manipulated; rather their population size has a greater impact on political gains. Polinard et al. (1994), however, found strong positive effects on Mexican American
communities in Texas when city councils and school boards changed from at-large to district elections. More recent national findings support these latter findings, suggesting that Latinos are aided significantly by a change from at-large to district elections (Lublin 1997; Leal, Meier, and Martinez-Ebers 2002).

**Substantive Representation**

The impact of electoral variation (between pure at-large and ward-based single member district structures) on descriptive representation of Blacks appears settled in favor of single member district elections. Many argue, however, that these gains may be offset by losses in substantive representation. Swain (1993: 205-6) contends that majority-minority districts (created by subdividing at-large districts into numerous racially concentrated wards) may dilute overall support for Black policies because white candidates no longer have to contend with minority constituencies in their own majority districts. She notes that Republicans actually helped create many of the Black majority districts in the early 1990s in order to dilute Black political power, which tends to vote Democratic overall. Although Swain’s argument makes intuitive sense, empirical results appear mixed.

Before comparing the evidence for and against substantive representation tradeoffs, it is important to explore why voters might use race as a shortcut in deciding how to vote, and in predicting substantive policy gains from election results. The idea of substantive representation rests on the assumption that voters are polarized by race and use it as a cue to select representatives. Eisinger (1982) explains that Black voters have good reasons to vote for Black candidates. He finds that the presence of a Black mayor has a small impact on the percentage of Black administrators and professionals in the city. Karnig and Welch (1980) also find that mayoral representation increases social spending on “Black” policy issues, although like
Eisinger, they make no such claims about city council representation. Crossover voting by Black voters for white candidates in many circumstances makes little sense, and is generally not the observed pattern in most elections (Bullock 1984). All of the studies cited in this paper make the assumption that voters use race as a primary voting cue, and as we show in a subsequent section, this is important to understanding the formal logic of electoral variation effects.

Two issues arise out of the preceding paragraphs. First, Swain suggests a trade-off between descriptive and substantive representation that may keep minority interests from being served. If this is true, then Black and Latino representatives full of good intentions and supported by a large (ward) constituency will fail deliver on their promises in office, due to their diluted influence in the political arena. Second, manipulating the electoral system may inadvertently create more racial polarization among voters, and in turn create minority candidates who must behave differently (support majority policy preferences) if elected outside of racially gerrymandered wards. We address both issues in this study.

Substantial research examines Swain’s argument at the national level, but overall the evidence is inconsistent. Cameron, Epstein, and O’Halloran (1996) use national level data to look at the effect of Black representative behavior concerning civil rights votes and find that Black political power is reduced as a result of the creation of majority-minority districts. They conclude that the use of this type of electoral solution trades descriptive for substantive gains, leaving Blacks at a disadvantage in important policy battles. In a second study Epstein and O’Halloran (1999) get mixed results after examining South Carolina state senate elections. They find that many majority-minority districts over-represent minorities and hinder policy gains, but that without these districts minorities risk losing descriptive representation. Lublin (1997: 119) uses national data and concludes that single member districts severely hinder Black policy gains.
He warns (like Swain, Cameron, Epstein, and O’Halloran) that the percentage of Blacks in majority-minority districts is too high and should be lowered so that majority controlled (Republican) seats can be contested in future elections.

The evidence supporting positive electoral effects on substantive representation includes multi-level and multi-ethnic analyses. Karnig (1976: 237) explains why we would expect to see policy losses from minorities elected in at-large districts: “There would likely be a higher incidence of substantively unrepresentative Black councilmen in at-large cities, where Black candidates must appeal to the white electorate in order to gain office. If policy attitudes of Black councilmen are basically the same as white councilmen, major changes in policy outcomes are not likely.” Stewart et al. (1989) test this theory using a national sample of Black school board members and affirm that single member district structures create more opportunity for Black representation, and that this representation translates into more Black administrative and teaching positions. Polinard et al. (1994) and Leal et al. (2002) find a similar relationship for Latino school board members, administrators, and teachers. Canon (1999) examines the U.S. House and finds that single member districts increase the quality of Black candidates over time. He also contends that the electoral structure positively affects how these members represent their constituents, noting that these members “often provide pivotal votes for passing important legislation, they are forceful advocates for Black interests in their speeches and sponsorship of legislation, and the bills they sponsor are more likely to succeed than those with nonblack sponsors” (Canon 1999: 245).

II. POLITICAL STRUCTURE AND THE LOGIC OF REPRESENTATION

Thus far we have presented a large amount of, at times, conflicting evidence concerning substantive minority representation. In an effort to clarify a portion of the debate, we contribute
empirical evidence that speaks to Latino substantive outcomes in four situations: under at-large and ward systems when Latinos are a numerical minority, and under at-large and ward systems when Latinos are a numerical majority. These four environments provide an opportunity to consult the logic of formal theory to provide insight into hypothesis construction. Building on earlier work, we contend that other minority groups use the same electoral mechanisms to their benefit that Latino minorities do. Partly because of this, we expect that the advantage provided by electoral structure disappears when Latinos (or any racial group) make up a majority of the population. This section gives a formal overview pertinent to our analysis and concludes with a specific set of testable hypotheses.

Why might one expect that the quality of representation varies with political structure? That is, why might a Black or Latino elected in an at-large system be less effective at pressing Black or Latino interests than one elected from a single member district? First, let us recap the logic for why fewer minorities get elected from at-large systems. We begin by making three assumptions (albeit assumptions with a great deal of empirical support):

**Assumption 1.** Voters are rational and will vote for candidates most likely to represent their interests.

**Assumption 2.** Candidates are rational and, therefore, will seek to satisfy constituency interests (either because they seek reelection for its own sake or seek reelection to pursue policy goals).

**Assumption 3.** Ethnicity is an important political issue (that is, political preferences differ based on ethnicity), but Latinos do not compose a majority of the electorate.

Figure 1 shows this situation for a jurisdiction that is 80% Anglo and 20% Latino (the logic works for other percentages; the illustrations are just more obvious in this case). We have drawn
figure 1 to show Latinos with relatively extreme views; however, the logic works as long as the median Latino voter $M_L$ is different from the median voter $M_V$. To illustrate, take a five-member school board all elected at-large (see figure 1).\(^1\) In such a situation, candidates will generally position themselves at the median voter $M_V$ so that no challenger can locate a policy position that can attract a majority of the votes. In a traditional at-large system where voters get one vote per position, all candidates face the same general electorate. Because the median is well within the Anglo portion of the electorate, Anglos will capture all five seats and Latinos will get no representation.

Moving the identical set of circumstances to a single member district ward system changes the calculus. If we assume that electoral districts cannot be created to be exact microcosms of the entire jurisdiction, then the median voters in each of the five electoral districts are not the same as the median voter in the overall jurisdiction (see figure 2). If Latinos are gerrymandered into a single district, then the median voter in that district ($M_L$) is the optimal candidate position in that district. In fact, if Latinos compose a majority of the electorate in any one of the districts, then the median voter in that district is Latino, and a Latino is more likely to be elected to the school board.

[Figures 1 and 2 about here]

Thus far, the spatial discussion recapitulates the arguments about the role of structure on

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\(^1\) The presence of many seats and many candidates in our example actually favors the positioning of minority candidates off of the median voter position (Cox 1990; Gerber et al. 1998). We are not, however, comparing two-candidate at-large elections (where straying from the median voter is always a losing strategy) with other multi-candidate at-large elections (where this is generally the case). Instead, we compare at-large elections with the single member district structure for two candidate elections.
the quantity of representation. Our concern, however, is the quality of representation. To illustrate why the nature of representation is likely to change in different systems, assume two jurisdictions, identical in all respects except that jurisdiction A (in figure 1) elects board members at-large and jurisdiction W (figure 2) elects them by ward. A Latino (L₁) seeking election in jurisdiction A, quite rationally positions himself or herself at MV, the median voter for the entire district. A Latino (L₂) seeking election in W, faces a much different electorate and takes the position at ML, the median voter in the Latino community. L₁, the Latino in the at-large system cannot run at the Latino median simply because this leaves a large opening for another candidate to defeat L₁ at the polls by taking a position between L₁ and the median voter. In essence this means that L₁ needs to demonstrate his or her value by taking positions similar to MV while L₂ is free to position at ML. In less abstract terms, the Latino elected in an at-large system must moderate his or her push for Latino benefits to avoid alienating the median voter who is not Latino. L₂, the Latino elected from a single member district, faces no such constraint and can push for policies that reflect ML, the median of the Latino community.

By defining the match between Latino constituents and Latino representatives as the quality of representation, the argument suggests the hypothesis that the quality of minority representation will be greater in ward-based single member district systems than will the quality of representation in at-large systems. This hypothesis could be tested in a variety of ways, but we will focus simply on the distribution of employment opportunities, thus, generating the following testable hypotheses:

\[ H₁ \] Minority representatives in ward-based single member district systems will be more effective in hiring more minority administrators than will minority representatives in at-large systems, all other things being equal.
$H_2$: Minority representatives in ward-based single member district systems will be more effective in hiring more minority teachers than will minority representatives in at-large systems, all other things being equal.

To this point, Latino majority districts have been ignored. It is important to reiterate that the formal logic used to generate hypotheses for this study extends to other groups when they are a racial minority, as long as race is used as a cue for political interests. Meier et al. (2003) demonstrate that both Blacks and Latinos experience very similar descriptive and substantive gains from electoral structural variation; this is clearly not just a Latino phenomenon. The theory suggests that it is the “minority status” of a group coupled with the incentive structure that drives this behavior. Thus, there are two reasons to expect that the same institutions that advantage Latinos when they are a minority should preclude any (structural) benefits when they comprise a majority of the district population. The first reason is a simple extension of the logic presented thus far, and hinges on constituency size and heterogeneity. The second is a little less intuitive, and slightly provocative view of the process; perhaps other minority groups use ward structures to thwart Latino majority dominance, even to the detriment of substantive Latino outcomes.

It is fairly easy to understand how structural impacts on descriptive and substantive outcomes might disappear when Latinos are no longer a minority. In majority Latino school systems, the median district voter is no longer different from the median Latino voter. Whether elected at-large or by ward, representatives must attend to the policy wishes of the median voter. This means there should be no difference between the quantity of Latino members elected to school boards in majority Latino at-large and ward systems due to structural variance.
Similarly, there should be no difference in the quality of representation based on electoral variation.

Another change happens, however, in the move from minority to majority status. Majority populations are vulnerable to similar strategic behavior by other minority groups (e.g. Blacks, Asians, Anglos) when ward structures are in place. This is provocative, because it suggests that not only will electoral variation not benefit Latino majority populations in terms of representation and policy, but that they will actually hinder Latino policy (relatively speaking), as other groups use wards to achieve quantitative and qualitative representation for their minority constituencies. Black, Asian, and Anglo minority populations should behave similarly under similar incentive structures. On its face, this is not an incendiary perspective, but in the context of race and ethnicity studies it is at the very least, counter-intuitive. To be clear, this understanding does not discount the cultural and social differences between these diverse groups. It simply suggests that individuals behave the same when given a set of institutional opportunities, and to the extent that race is used as a voting cue, it allows each of these groups to take similar advantage of ward structures.

The empirical tests in this paper address the first of these theoretical suggestions. In Latino majority school districts, we expect the representation and policy effects due to structure to disappear (to be insignificant). Unfortunately, the data do not allow us to fully examine the second extension of the theory (although the analyses do provide very suggestive evidence). We

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2In figures 1 and 2, simply reverse the “Anglo” and “Latino” labels to see why this is so.  
3To think of it differently, we can say that at-large (majoritarian) structures bias electoral results in favor of the majority (whether the majority is Anglo, Black, Asian, etc.), and this should be no different for Latinos. The alternative to this hypothesis is that individuals from particular groups will act differently given the same set of circumstances, because of their historical experience with the political process and because their policy preferences may not be as concentrated along racial lines as other groups. It is the plausibility of the formally derived hypothesis, versus the reality of the alternative that forces us to leave this question to more appropriate tests. We lean towards the former, but in this article we expect to find no effect from structure in majority Latino districts.
know from prior research that Blacks in minority districts take advantage of structure in a very similar fashion (Meier et al. 2003), but we do not know if this is to the detriment of the majority population’s policy preferences. Strict tests of the second type of hypotheses are left to future work, but the evidence below suggests that empirical analysis in this area may provide confirmatory results. Thus, the third and fourth hypotheses tested in this paper are:

\( H_3 \) In Latino majority districts, Latino school board representation in at-large systems will be no different than Latino representation in ward-based single member district systems, all other things being equal.

\( H_4 \) In Latino majority districts, Latino representatives in at-large systems will be just as effective in hiring minority administrators and teachers as will minority representatives in ward-based single member district systems, all other things being equal.

**Data**

This study examines all Texas school districts in 1999 that used at-large or ward elections to select their school board. Texas contains one dependent school district, a handful of others with appointed board members, and several that use a cumulative voting system (Engstrom and Barrilleaux 1990; Brischetto and Engstrom 1997); fewer than 3% of the districts were eliminated with this criterion (26 of 1041; 875 districts use at-large elections, the remainder (140) use single member district ward-based elections. Missing data on other variables, primarily policy variables, left a maximum of 1013 districts for analysis. These numbers decline in the policy
Data on school board representation were obtained by a request to the Texas Association of School Boards (TASB). TASB data had several missing data points so we contacted 300 of the districts by phone to fill in the gaps. The school board data are for 1999; the census data used population figures for 1990 (districts were apportioned based on the 1990 Census), and all remaining data are from the Texas Education Agency for the year 1999.

Findings

Step one in determining the representational bias of electoral structures is to see if structure itself has a quantitative impact on representation. To do so, we need to interact political structure with Latino population and whether or not Latinos have a majority of the district’s population. Two dummy variables are created, one for ward-based elections and one for Latinos as a population majority (the default case is at-large elections when Latinos are a minority). The percentage of Latino school board seats is then regressed on Latino population, ward elections, whether Latinos are a majority, the interaction of Latino population by ward elections, the interaction of Latino population by majority status, and the three way interaction of majority status, ward elections and Latino population. This equation, a modification of the one popularized by Engstrom and McDonald (1981) and used by most analyses of minority representation since then (Austin 1998; Meier, Stewart and England 1989; Meier and England 1991), can be decomposed into separate parts for at-large and ward-based systems in both Latino

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The state of Texas only reports data if five or more students fall into the category. So if a district had fewer than five Latino students take AP classes, for example, that case would be reported as missing data.
majority and Latino minority school districts. The results are in Table 1.

When Latinos are a minority in a district with at-large elections, the last five variables are all reduced to constants (0) producing the following equation:

\[ \%\text{Seats} = -0.973 + 0.305 \times \text{Latino Population} \]

The intercept is not significant so the slope can be treated as a representation ratio. In school districts with at-large elections and a Latino minority, a one percentage point increase in Latino population is associated with a 0.305 percentage point increase in school board seats held by Latinos. Continuing the decomposition, when ward elections are used but Latinos are a minority, the last three coefficients reduce to zero, and the remaining coefficients combine to predict Latino representation:

\[ \%\text{Seats} = -0.973 + (-0.483) + (0.305 + 0.233) \times \text{Population} \text{ or} \]
\[ \%\text{Seats} = -1.456 + 0.538 \times \text{Population} \]

In Table 1, the insignificant ward coefficient means that the intercept for ward systems is not different from the intercept for at-large systems. The significant ward times Latino population coefficient means that the ward *slope* is statistically different from the at-large slope (that is, it is larger). The reduced equation confirms this relationship; in ward systems where Latinos are a minority, a one percentage point increase in Latino population is associated with a 0.538 percentage point increase in Latino representation, approximately a 75% improvement over the at-large system. These differences can be seen more clearly in figure 3.\(^5\)

In Latino majority jurisdictions that elect school board members at-large, all the ward
variables are turned into constants. The representation equation for these districts is as follows:

\[
\%\text{Seats} = -0.972 + (-23.117) + (0.305 + 0.647) \times \text{Population} \\
\%\text{Seats} = -24.089 + 0.952 (\text{Population})
\]

The intercept is, of course, well outside the range of the data since population by definition has to equal at least +50% Latino. In Latino majority jurisdictions with at-large elections, a one percentage point increase in Latino population is associated with a 0.952 percentage point increase in Latino representation. This does not mean representational parity, however, since the predicted representation levels range from 23.5% at 50% Latino population to 71.0 percent at 100% of Latino population.\(^6\)

Determining the representation relationship in Latino majority jurisdictions that use ward elections, requires using all the coefficients in Table 1 as follows:

\[
\%\text{Seats} = [-0.972 + (-23.117) + (-0.483)] + (0.304 + 0.223 + 0.647 - 0.396) \times \text{Population} \\
\%\text{Seats} = -24.572 + 0.778 \times \text{Population}
\]

Note first that the Latino representation ratio for ward districts is significantly less than that for at-large systems in the case of a Latino majority. As shown in figure 4, not only do ward structures not help Latino representatives (as they do in Latino minority districts), they slightly hinder them. In ward systems, a one percentage point increase in Latino population is associated with a 0.778 percentage point increase in Latino school board seats. In actual terms, the predicted levels of representation range from 14.3 percent at 50% of population to 53.2% at 100% of population.

\(^{5}\)All of the remaining figures were produced with the assistance of Rodolfo Espino III using CLARIFY (King et al. 2000; Tomz et al. 2003).

\(^{6}\)There are variety of reasons why Latinos might not win all the seats in a majoritarian system such as this one. Winning elections is a function of mobilization and to the extent that Latinos have lower levels of turnout, either as a result of citizenship or other factors, or to the extent that good Latino candidates are not running, representation levels will fall. Residual incumbency advantages of sitting Anglo board members might also slow the acquisition of Latino seats.
population. These predicted levels have a substantial range, however, and the discontinuity created by using a dummy variable for a population majority means that predictions around 50% of population are probably subject to even greater variation. Additional research is needed to determine if nonlinear curves can be fit to the data that can capture both the minority status effects and the majority status effects.

Recapping Table 1 shows that our hypotheses about electoral structure and minority status are confirmed, while our hypotheses concerning Latino majority status are not. When Latinos are a minority, they do significantly better in electoral systems based on ward elections. When Latinos are a majority, they receive the same benefits of at-large bias that other majorities do, but we do not know if this is because other minority groups are using wards to thwart Latino policy preferences, or because of other unobserved processes. No matter what the system, however, Latino representation is never predicted to exceed the Latino population percentage.

**Influence on the Bureaucracy**

Elections are only the first step in determining the policy bias of structure, how the representatives act and their ability to gain policy benefits remain to be studied. The theoretical sections of this paper argued that at-large elections and minority status would reduce the effectiveness of Latino representatives elected in such circumstances. A long literature has linked the election of minorities to governing boards to the subsequent recruitment of minorities to the bureaucracy (Mladenka 1989; Kerr and Mladenka 1994; Eisinger 1982; Polinard et al. 1994). Although some condemn such practices as patronage and detrimental to the performance of school systems (Rich 1996), an extensive literature suggests that access to administrative and teaching positions results in policy outcomes that are likely to benefit minority students (Meier
and Stewart 1989; Meier, Stewart and England 1991; Polinard et al. 1994; Meier, Wrinkle and Polinard 1999; Meier et al. 2001; and see below). In Latino majority systems, we argued that the median voter structure equalizes the opposition to Latino interests relative to a ward system, so that Latino representatives elected at-large in a Latino majority district would be just as effective as their counterparts elected by ward systems ($H_4$).

To determine the efficacy of representatives elected under various structures, we used the same interaction strategy as in table 1. Past research has shown that the major determinants of Latino school administrators are the size of the local Latino population and Latino representation on school boards (Leal, Meier and Martinez-Ebers 2002; Meier and Stewart 1991). At times labor pool characteristics such as Latino education levels or income levels matter statistically, but they rarely make much substantive difference. To keep the presentation as parsimonious as possible, therefore, only representation and population will be used as explanatory factors in combination with how the representatives were selected and the majority or minority status of Latinos.7

Table 2 presents the results for the determinants of administrative positions. The initial point about the table should be the comparison of the two population coefficients. When Latinos are a minority, translation of population numbers into administrative positions is sluggish. A one percentage point increase in Latino population is associated with only a .157 percentage point increase in Latino administrators. In Latino majority jurisdictions, this coefficient jumps to 1.056. This difference likely reflects the political pressure that the Latino community can put on a school system to hire Latino administrators when they constitute a population majority.

7Adding education and income variables to Table 2 increases the explained variation by 0.0017 or less than one fifth of one percent. Substantively the coefficients are very small and do little to change the predicted value of administrative representation.
Representation on the school board also matters in some cases, and the relative impact is consistent with our hypotheses. In jurisdictions where Latinos are in the minority, at-large representation has no impact on Latino administrative representation at all ($\beta = .036, \text{ ns}$), but representatives elected by ward are significantly related to more Latino bureaucratic representation. Figure 5 displays the predicted values of each system in minority districts. This picture in conjunction with figure 3 shows that even small descriptive gains can translate into very large substantive returns. In ward systems, a one percentage point increase in Latino school board representation is associated with a $0.221 (0.185 + 0.036)$ percentage point increase in Latino administrators. Latino representation, in fact, has a larger impact than Latino population. In Latino majority school districts however, the school board representation coefficients are $0.238 (0.036 + 0.202)$ for at-large elected representatives and $0.161$ for ward-elected representatives. These predictions are displayed in figure 6, and show a different picture than the one portrayed in the minority context of figure 5. While the majority-ward coefficient is less than the minority-ward coefficient, the differences between the coefficients are not statistically significant. The basic conclusion is that ward representation is equally effective whether Latinos are a minority or a majority (this condition relates to population figures not majority or minority status on the board). At-large representation in contrast is effective only in Latino majority jurisdictions and its level of effectiveness is slightly greater than that of ward representation. This last finding is slightly surprising because it contradicts H$_4$ in a direction we did not expect to observe given the data. Put simply, Latinos do better with at-large structures in Latino majority districts.$^8$
Turning now to the ethnic composition of teachers, we should expect that school board influence is likely to be far less, regardless of selection process or majority status. School boards directly hire the chief administrator and are likely to have some say in hiring top level administrators. Teachers, however, are hired by administrators, by the superintendent in small districts or by a specialized personnel department in larger districts. The influence of school board members is likely to be via adopting policies or advocating affirmative action rather that direct hiring. To investigate the question of teacher representation, we use the same equation as in Table 2, but add the percentage of Latino administrators to the equation. Our expectation is that the administrator variable will dominate the equation. Influences of the political forces are likely to relatively small if there are any direct influences at all.

Table 3 shows that representation on the school board has only a modest impact, but that impact is mostly consistent with our hypotheses. For Latino minority districts, at-large representatives are significantly related to more teachers, all other things being equal, but the coefficient is small. A one percentage point increase in Latino representation is associated with a .061 percentage point increase in Latino teachers. For ward systems in Latino minority jurisdictions, the size of this impact increases to .106. Although the t-score for this coefficient does not meet traditional levels of significance, that is because including the Latino majority districts in the regression inflates the standard errors. When only the Latino minority districts are used in a regression, the t-score (2.36) exceeds the .05 level of significance. In Latino majority systems, neither representation coefficient is statistically significant which means they are not different from the respective Latino minority coefficients. In short, there is a fairly

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8We expected no difference due to structure in these majority districts. By “better” we do not refer to the absolute advantages seen in figure 6 (due to a larger intercept), rather we simply note the steeper slope.
9The actual coefficient is .059 for at-large Latino majority systems and .136 for ward Latino majority systems but
consistent but small representational impact of school boards directly on Latino teacher hires. The impact is somewhat larger in ward systems but remains small.

[Table 3 About Here]

Although our concern is the influence of political representation, the remainder of Table 3 provides a wealth of useful information, some of it relevant to political representation. The process in Latino minority systems is dramatically different from that in Latino majority systems even though the same factors matter. Latino population and Latino administrators are the major influences on Latino teachers in both systems, but the size of influence changes a great deal. For population, a one percentage point increase in Latino population is associated with a .156 percentage point increase in Latino teachers in minority districts; this coefficient quadruples in size to .723 in Latino majority districts. The change in the administrators’ coefficients are not quite as large but show a similar pattern. In minority districts, a one percentage point increase in Latino administrators is associated with a .144 percentage point increase in Latino teachers, and in Latino majority districts the influence triples to .437. The size of the regression coefficients also factors into our assessment of the representation question. Because administrators are a major influence on teacher hiring and because representational structures of school board members matter in terms of hiring administrators, there is also a substantial indirect influence of representation and electoral structure on the composition of the teaching faculty.

**Policy Influence**

The question of representational quality has more to it than a concern with patronage, with who gets jobs. The composition of the teaching faculty is directly related to the educational opportunities afforded students. Dee (2001) in a randomized experiment from the Tennessee

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the difference is not statistically significant.
class size project found that minority students performed better in class if the teacher was also a minority. Meier, Wrinkle and Polinard (1999) and Meier et al. (2001) take this argument one step further and contend that both minority students and majority students perform better when taught by diverse teaching faculties. Hess and Leal (1997) in a study of large urban districts similarly show that minority faculty are associated with more students going on to college regardless of the race of the student.

Although the exact process by which minority teachers improve the educational circumstances of minority students is in doubt, the literature suggests four different possibilities. First, minority teachers may be more effective at teaching minority students (Dee 2001; Moore and Johnson 1983, 472; Aaron and Powell 1982, 55). Second, minority teachers serve as role models for minority students (Cole 1986, 332). Third, minority teachers mitigate the negative consequences of grouping, tracking, and discipline either by making individual decisions or by influencing overall policy (Meier and Stewart 1991). Fourth, minority teachers influence the behavior of majority teachers who in turn rely on teaching methods less likely to disadvantage minority students. Only the first of these methods actually requires a given minority student to come into contact with a specific minority teacher. The others can work indirectly and will be missed if studies are done at the individual level. The appropriate unit of analysis to investigate such influences is the organizational level. The key independent variable in the analysis will be the percentage of Latino teachers. The influence of school board members is unlikely to work directly on the fortunes of students but indirectly through the composition of administrative and teaching personnel.10

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10Including Latino board members in the following equations only produces significant direct impacts on the percentage of students taking college boards (but not their scores) and the percentage of students taking AP classes (but not passing the exam).
Dependent Variables

Because schools have multiple goals, this study will examine the influence of Latino teachers on Latino students using ten different policy indicators. Even if one ignores the broader educational objectives of creating democratic citizens and focuses solely on student performance, school systems provide numerous programs aimed at a wide variety of goals—ensuring attendance, preventing dropouts, mastering basic skills, preparing students for college, etc. Even though some goals might be held in higher regard than others, Latino politicians and bureaucrats are likely concerned with Latino student performance relative to all these goals. To provide as complete a view as possible, this study uses ten different performance indicators for Latino students.

At the low end of the performance scale, students need to attend school and remain in the system until graduation. Two measures are used—the percentage of Latino students attending class and the percentage of Latino students who drop out of school. Of these measures, attendance is measured with more accuracy than the dropout measure. Attendance counts are the basis for state aid, and an elaborate auditing system is used to verify the data. Dropout data in general are problematic; student populations are highly mobile, and schools may not know if a student has dropped out of school rather than moved. Because verifying a student is a dropout reflects negatively on a school system, schools have little incentive to find out if a missing student has actually dropped out.

Basic skills test achievement are a moderate-level goal for school districts. Texas during this time administered the Texas Assessment of Academic Skills (TAAS) to students in grades 3 through 8 and as an exit exam. Our performance measure is the percentage of Latino students
who pass all of the various TAAS tests (e.g., math, reading, writing, etc.) at all grade levels.

Within a school system, the quality of education will vary from school to school and classroom to classroom. To tap some of this variation in educational quality, we use three indicators: the percentage of Latino students who gain access to advanced classes, the percentage who take advanced placement (AP) classes, and the percentage who pass advanced placement exams. AP classes are designed to be college-level classes; students who take these classes and pass the national exam with a grade of 3 or higher can get college credit.

For top-end indicators, we include four measures of college preparation. These include the percentage of Latino students who take either the ACT or SAT exam, the average Latino SAT score, the average Latino ACT score, and the percentage of Latino students who score above 1110 on the SAT or its ACT equivalent (The 1110 score has been defined by the state of Texas as indicating likely success in college.). Students who do not take either exam are unlikely to attend college. Texas has large percentages of students take both the SAT and the ACT so that results are generally not affected by the performance of a small number of students.

The ten performance indicators for Latino students are clearly distinct from each other. Of the 45 intercorrelations between the indicators, only 23 are statistically significant — that is, different from zero. A factor analysis of the ten indicators revealed three significant factors with no single factor accounting for more than 30% of the variance.\textsuperscript{11}

\textbf{Control Variables}

Two distinct types of control variables are included in the analysis. The first represents general school district performance, and the second includes the standard education production

\textsuperscript{11}\textit{The factor scores are not useful for analysis given the list-wise deletion of missing values. The factor analysis as a result is based on less than 20\% of the total school districts (those with reportable data on every indicator).}
function controls (Hanushek 1996; Hedges and Greenwald 1996). Because Latinos, especially recent immigrants, face a segmented labor market that discourages them from pursuing many professions, the literature suggests the possibility that the pool of Latino teachers could be more talented than the pool of Anglo or black teachers (Meier, Wrinkle and Polinard 1999). Other studies argue that nondiscriminatory bureaucracies are more likely to be effective simply because they do not consider nonproductive factors such as race, gender or ethnicity (Becker 1993). Both arguments indicate that a control for non-Latino student performance might be appropriate, because Latino teachers could be associated with better performance for all students, not just performance by Latino students. For each indicator, therefore, we control for Anglo student performance on the same indicator (that is, for Latino SAT scores we include Anglo SAT scores in the model). This control requires that Latino teachers or school board members affect Latino students over and above the impact that they might have on Anglo students.

Additional controls can be clustered into two groups: resources and constraints. Bureaucracies cannot influence outcomes without resources. Five resource indicators, all commonly used in education production functions, are included in all models: average teacher salary, per student instructional spending, class size, average years of teacher experience, and percentage of teachers who are not certified (see Burtless 1996). Three measures of constraints include the percentage of African American, Latino and poor students; the last-mentioned is measured by students eligible for free or reduced price school lunches.

Although the production function literature specifies directional hypotheses for each control variable, the actual direction of relationships in this study is not obvious. Because each equation controls for Anglo student performance, these control variables must affect Latino
performance over and above their impact on Anglo performance. For teachers’ salaries to matter, therefore, better paid teachers would need to benefit Latino students more than they benefit Anglo students. While there is a modest literature on differential impacts (Jencks and Phillips 1998), it indicates little consistency in regard to expectations. The controls should be viewed merely as an effort to make sure key factors are not left out of the model rather than to estimate precise impacts for each control variable.\(^\text{12}\)

Table 4 shows the influence of Latino teachers on the TAAS test scores of Latino teachers. While Latino teachers are not among the stronger influences on Latino test scores (that distinction goes to school quality and the racial composition of the schools), Latino teachers are positively associated with higher test scores. Although the size of the coefficient appears small, a one percentage point increase in Latino teachers is associated with an increase in the Latino pass rate by .114 percentage points; in reality the impact is substantial. The equation controls for Anglo test scores so the appropriate substantive comparison is to the Latino-Anglo test score gap, approximately 12.2 percentage points on average. A one standard deviation change in Latino teachers (about 18.9\%) is associated with 2.2 percentage point gain in Latino test scores or approximately 17\% of the existing gap. A movement of this size in Latino test scores relative to Anglo test scores would be considered a major substantive change.\(^\text{13}\)

Although TAAS scores are the most salient educational performance indicator in Texas, a variety of other measures exist. Table 5 shows the regression coefficients for nine other measures of Latino educational performance. The table only reports the coefficients for the

\(^{12}\)Similarly, we are not concerned with collinearity among the control variables.

\(^{13}\)Whether this estimate for Latino teachers is an overestimate or an underestimate is an open question. There is some evidence that minority teachers improve the test scores of Anglo students in Texas. If so, then Latino scores
Latino teachers variable rather than including those for the control variables. Because our expectation is that Latino teachers improve the performance of Latino students, we have a directional hypothesis and a one-tailed test of significance is appropriate. By that standard (t > 1.65), Latino teachers are significantly associated with higher levels of Latino student attendance, more Latinos in advanced classes, more Latinos taking college boards, higher Latino SAT scores, more Latinos scoring above 1110 on the SAT or its ACT equivalent, and more Latino students in AP classes. There is no relationship for Latino dropouts, ACT scores, and whether or not Latinos pass AP courses. The findings in Tables 4 and 5 are strong evidence that an increase in Latino teachers is associated with an improvement in Latino student educational opportunities.

[Table 5 About Here]

These policy findings underscore the importance of the findings on political structure and bias. A relatively simple choice, whether to hold school board elections at-large or by wards influences not only the ethnic composition of the school board but also the quality of the Latino representatives on that board. That representational quality influences the number of Latino administrators employed by the school district and also the number of Latino teachers in the classroom. Latino teachers, in turn, affect the quality of education provided to Latino students. Biases generated by political structures, therefore, reverberate through the system.

Our examination of policy impacts has followed only a single line of inquiry, that of student performance on various educational outputs. We have not examined a set of other processes that are equally likely to affect the quality of education afforded to Latino students. Ability grouping and tracking is a long standing process of sorting students by perceived ability, are likely to rise more than the slope indicates because Anglo scores will rise a corresponding amount.
and the quality of education varies across sorted groups. Inconsistent applications of
disciplinary policy from minor punishments to expulsions can also be used to deny students
equal access to educational opportunities. Both of these processes show significant differences
in how Latino and Anglo students are treated, with Latino students more likely to be over-
represented in groups and situations with negative connotations and under-represented in the
positive circumstances. Both have been linked to the representativeness of the teaching faculty
(Meier and Stewart 1991). Other processes have not been systematically studied, but the
potential for bias is clearly possible in counseling provided to students, teacher interactions with
students in classrooms, and access to transportation for extracurricular activities. The total
influence of structural bias, therefore, might well be much larger than the evidence reveals.
III. CONCLUSION

This study examines the potential double bias of electoral structures. The bias that at-large elections have in terms of electing minority candidates, although well studied, is still a matter of controversy. The bias in the type of representatives that various electoral systems produce is relatively uncharted territory. In the paper, at-large and ward election structures are compared in Latino minority and majority environments, producing four different demographic and institutional conditions. In Latino minority districts, we expected ward structures to provide significant representational leverage over at-large arrangements. In Latino majority districts however, we expected these structural influences to disappear, although the formal logic strictly suggests a significant reversal of fortune due to structure. For clarity, we treat the minority and majority environments separately below.

Using Texas school districts, this study found that at-large elections were associated with fewer school board members for Latinos in districts where they make up a minority of the population. The quantity of Latino representatives is significantly influenced by the type of election used (figure 3). Perhaps more important than the descriptive electoral bias, the representatives produced under at-large systems are less effective at pushing the minority group’s agenda in one key area: hiring (figure 5). They are associated with fewer minority administrators being hired and fewer minority teachers in the classroom. An extensive literature shows that Latino teachers positively influence the educational experience of minority students. Minority students are less likely to be tracked into low status classes, more likely to be assigned to advanced and gifted classes, less likely to be disproportionately disciplined, more likely to pass standardized tests, more likely to not drop out and to graduate from high school, and more
likely to score highly on college board exams when they are exposed to minority teachers (see Meier and Stewart 1991; Meier, Stewart and England 1989; Polinard et al, 1994; Meier, Wrinkle and Polinard 1999; Meier et al., 2001).

In Latino majority districts, contrary to our hypotheses (H$_3$ and H$_4$), we found that the structure of elections still matter, but that Latinos use the at-large system to their advantage. While the formal logic informs us of this outcome, we expected that the differences between racial groups’ political experiences (mobilization, residential segregation, and the use of race as a cue), would interact to suppress any purely structural effects in the Latino majority environment. This is not the case here. Other minority groups may be using the ward structures in Latino majority districts to thwart Latino policy. The tests do not explicitly speak to this, but they consistently provide evidence of the effect.

In sum, structure matters; and it matters a great deal more than we expected. In Latino minority districts, descriptive and substantive gains are made under ward conditions. In Latino majority districts, at-large structures bias outcomes in favor of the majority, and ward structures slightly restrain both the quantity and quality of representation. Finally, using multiple measures we show that bureaucratic representation is associated with positive educational outcomes. The biases of election structure, therefore, reverberate throughout the entire education system and create additional biases.
References


Cox, Gary. 1984. “Strategic Electoral Choice in Multi-Member Districts: Approval Voting in


Multimember Districts.” *American Political Science Review* 92: 127-144.


Taebel, Delbert. 1978. “Minority Representation on City Councils.” *Social Science Quarterly*,


### Table 1. The Impact of Ward Elections and Majority Status on School Board Seats

Dependent Variable = % Latino Seats on School Board

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Slope</th>
<th>t-score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-.973</td>
<td>1.55</td>
</tr>
<tr>
<td>Latino Population</td>
<td>.305</td>
<td>6.66</td>
</tr>
<tr>
<td>Ward Elections</td>
<td>-.438</td>
<td>.21</td>
</tr>
<tr>
<td>Ward x Latino Population</td>
<td>.233</td>
<td>2.57</td>
</tr>
<tr>
<td>Latino Majority</td>
<td>-23.117</td>
<td>3.91</td>
</tr>
<tr>
<td>Latino Majority times</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latino Population</td>
<td>.647</td>
<td>7.36</td>
</tr>
<tr>
<td>Wards x Latino Population</td>
<td>-.396</td>
<td>4.98</td>
</tr>
</tbody>
</table>

| R Squared | .61 |
| F         | 266.66 |
| N         | 1012 |
| Standard Error | 12.35 |
Table 2. The Effectiveness of Representatives Elected By Different Systems - Administrators

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Slope</th>
<th>t-score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-.367</td>
<td>.66</td>
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<td>Latino Population</td>
<td>.157</td>
<td>3.83</td>
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<tr>
<td>Latino Board Representation</td>
<td>.036</td>
<td>.53</td>
</tr>
<tr>
<td>Latino Board Members x Ward System</td>
<td>.185</td>
<td>2.18</td>
</tr>
<tr>
<td>Latino Majority</td>
<td>-34.872</td>
<td>6.15</td>
</tr>
<tr>
<td>Latino Majority times</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latino Population</td>
<td>.899</td>
<td>9.98</td>
</tr>
<tr>
<td>Latino Representation</td>
<td>.202</td>
<td>2.66</td>
</tr>
<tr>
<td>Latino Ward Representation</td>
<td>-.262</td>
<td>2.48</td>
</tr>
</tbody>
</table>

R Squared  .72
F 377.11
N 1010
Standard Error 11.59
### Table 3 The Effectiveness of Representatives Elected By Different Systems - Teachers

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Slope</th>
<th>t-score</th>
<th>t-score*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>.416</td>
<td>1.72</td>
<td>3.31</td>
</tr>
<tr>
<td>Population</td>
<td>.156</td>
<td>8.71</td>
<td>16.72</td>
</tr>
<tr>
<td>Board Representation</td>
<td>.061</td>
<td>2.13</td>
<td>4.09</td>
</tr>
<tr>
<td>Ward Representation</td>
<td>.045</td>
<td>1.23</td>
<td>2.36</td>
</tr>
<tr>
<td>Latino Administrators</td>
<td>.144</td>
<td>6.86</td>
<td>13.16</td>
</tr>
<tr>
<td>Latino Population Majority</td>
<td>-30.599</td>
<td>12.15</td>
<td>4.65</td>
</tr>
<tr>
<td>Latino Population</td>
<td>.567</td>
<td>13.11</td>
<td>7.09</td>
</tr>
<tr>
<td>Latino Representation</td>
<td>-.002</td>
<td>.07</td>
<td>1.44</td>
</tr>
<tr>
<td>Latino Ward Representation</td>
<td>.032</td>
<td>.70</td>
<td>1.11</td>
</tr>
<tr>
<td>Latino Administrators</td>
<td>.293</td>
<td>10.63</td>
<td>9.51</td>
</tr>
</tbody>
</table>

R Squared: .93

F: 1464.35

N: 1010

Standard Error: 4.99

* t-scores from split regression
Table 4. Latino Teacher Influence on Latino Students:

**Test Scores**

<table>
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<tr>
<th>Independent Variables</th>
<th>Slope</th>
<th>t-score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latino Teachers</td>
<td>.114</td>
<td>3.56</td>
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<tr>
<td>Anglo Test Scores</td>
<td>.771</td>
<td>15.69</td>
</tr>
<tr>
<td><strong>Resources</strong></td>
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<td></td>
</tr>
<tr>
<td>Teacher Salaries (000s)</td>
<td>.554</td>
<td>2.37</td>
</tr>
<tr>
<td>Per Student Expenditures (000s)</td>
<td>.670</td>
<td>.84</td>
</tr>
<tr>
<td>Class Size</td>
<td>-.126</td>
<td>.45</td>
</tr>
<tr>
<td>Teacher Experience</td>
<td>-.066</td>
<td>.32</td>
</tr>
<tr>
<td>Noncertified Teachers</td>
<td>.029</td>
<td>.36</td>
</tr>
<tr>
<td><strong>Constraints</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent Black Students</td>
<td>-.126</td>
<td>3.67</td>
</tr>
<tr>
<td>Percent Latino Students</td>
<td>-.198</td>
<td>6.79</td>
</tr>
<tr>
<td>Percent Low Income Students</td>
<td>.043</td>
<td>1.31</td>
</tr>
</tbody>
</table>

R Squared                              .30
F                                      39.44
N                                      935
Standard Error                          10.08
Table 5. Influence of Latino Teachers on Other Policy Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Slope</th>
<th>t-score</th>
<th>R-square</th>
<th>N</th>
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</thead>
<tbody>
<tr>
<td>Latino Attendance</td>
<td>.022</td>
<td>6.93</td>
<td>.31</td>
<td>989</td>
</tr>
<tr>
<td>Latino Dropouts</td>
<td>-.005</td>
<td>.82</td>
<td>.11</td>
<td>930</td>
</tr>
<tr>
<td>Latino Advanced Classes</td>
<td>.088</td>
<td>3.55</td>
<td>.33</td>
<td>852</td>
</tr>
<tr>
<td>Latinos Taking College Boards</td>
<td>.388</td>
<td>4.99</td>
<td>.23</td>
<td>490</td>
</tr>
<tr>
<td>Latino SAT Scores</td>
<td>.644</td>
<td>1.83</td>
<td>.46</td>
<td>248</td>
</tr>
<tr>
<td>Latino ACT Scores</td>
<td>-.001</td>
<td>.14</td>
<td>.42</td>
<td>284</td>
</tr>
<tr>
<td>Latinos Above 1110 SAT</td>
<td>.084</td>
<td>1.95</td>
<td>.32</td>
<td>360</td>
</tr>
<tr>
<td>Latinos in AP Classes</td>
<td>.050</td>
<td>2.50</td>
<td>.44</td>
<td>682</td>
</tr>
<tr>
<td>Latinos Passing AP</td>
<td>.048</td>
<td>.39</td>
<td>.55</td>
<td>158</td>
</tr>
</tbody>
</table>

All equations control for Anglo performance on the same indicator, teachers salaries, instructional funds, class size, teacher experience, noncertified teachers, and percent Latino, Black and poor students.
Figure 1. The Pure At-Large System

Figure 2. The Ward System