ELECTION LAW JOURNAL
Volume 22, Number 3, 2023

DOI: 10.1089/elj.2022.0023

Original Articles

Open camera or QR reader and scan code to access this article and other resources online.

Does a Switch to By-District Elections Reduce Racial Turnout Disparities in Local Elections? The Impact of the California Voting Rights Act

Zachary L. Hertz

ABSTRACT

The literature finds that an underrepresented group's comparative share of the population may moderate the effects of the California Voting Rights Act of 2001 on descriptive representation. Little attention has been devoted to the potential mechanisms driving these effects. Previous research suggests that electoral influence, conceptualized as an underrepresented group's relative size in a given political unit, can lead to an increase in turnout and subsequent descriptive representation. This article leverages ecological inference with nearest-neighbor matching and difference-in-differences methods to determine whether increased electoral influence following a switch from at-large to by-district elections as a result of the CVRA increased turnout among underrepresented groups. In my analysis, I find initial evidence suggesting that there is indeed a causal link between a CVRA-induced change in electoral institution and a reduction in the turnout gap. I do not find evidence to support my hypothesis that an increase in relative group size leads to a decrease in the turnout gap. I also do not find evidence to support my hypothesis that the effects of a switch to by-district elections on the turnout gap are more pronounced in cities where a minority group is a higher than average share of the total population. Instead, I find evidence that the treatment effects are more pronounced in cities where Hispanics are a lower than average share of the total population. In this work, I evaluate how the CVRA affects local California electorates, explain potential explanations for my findings and discuss potential areas for future research.

Keywords: Election administration, race and ethnic politics, racial and ethnic voting behavior, redistricting, state and local politics, voting behavior

INTRODUCTION

Electoral institutions have placed both formal and informal restrictions on minorities' political participation for much of American history. At the time of its ratification, the United States Constitution only granted voting rights to property-owning White males, just six percent of

Zachary L. Hertz is with the Division of the Social Sciences at the University of Chicago in Chicago, Illinois, USA.
Mr. Hertz thanks Brian Schaffner, Jamil Scott, Josh McCrain, Kyle Monahan, Doug Johnson, and Shiro Kuriwaki for their feedback and data assistance. He also thanks Teddy Knox, who first suggested a difference-in-differences approach. The author benefited from additional conversations with Carina Kimlan Hinton, Martha Fiehn, and Elsa Rohm.

the population.[1] The right to vote was extended to formerly enslaved males with the Fifteenth Amendment in 1870, and to women with the Nineteenth Amendment in 1920.

But voting rights, while extended to racial minorities in theory, were often restricted in practice, particularly in the post-Reconstruction era. Black voters in particular were deliberately disenfranchised through poll taxes, literacy tests, and other methods meant to dilute and diminish their voting power, leading to decades of legal struggles. The most notable reforms and protections for racial minority voting rights were established by the Voting Rights Act of 1965, passed at the height of the civil rights movement. The legislation's provisions established a legal framework to challenge minority disenfranchisement.

Some legal cases under the Voting Rights Act have centered on a particular electoral system: at-large voting. In an at-large election, voters in the entire jurisdiction decide on all of the jurisdiction's legislative seats. Under this system, if voting preferences are split along racial lines, a cohesive majority group will win all the available seats, effectively disenfranchising the minority. In contrast, by-district elections divide the jurisdiction into districts and grant each district a legislative seat. If minorities are sufficiently geographically compact, districts can be drawn to grant them a local majority and consequently improve their representation in the legislative body.

Much like the federal Voting Rights Act, California's Voting Rights Act (CVRA) aims to reduce legal barriers and racial discrimination restricting minority groups from participating in the electoral process (California State Legislature, 2001). The CVRA, passed in 2001, primarily does so through restrictions on at-large elections that "impair the ability of a protected class to **elect candidates of its choice or its ability to influence the outcome of an election**" [emphasis added]. Additionally, the CVRA eliminates the geographic concentration requirement of its federal counterpart. In this way, the CVRA reduces the burden of proof against at-large city elections such that plaintiffs need only to provide evidence of racially polarized voting. The CVRA also orders city governments to pay attorney fees, expert expenses, and other court costs to the plaintiff in cases where the plaintiff wins and in cases where the city government settles before a verdict is reached.

Thus, by design, the CVRA encourages a switch to by-district elections in two ways. The CVRA lowers costs and the threshold for success to plaintiffs, while also incentivizing city governments to preemptively switch to by-district elections to avoid costly legal battles and maintain a degree of control over the redistricting process. Its implementation was delayed by a number of legal challenges, and several cities that faced CVRA lawsuits initially responded with prolonged legal defenses. This led to a number of high-profile legal losses, after which many cities began to voluntarily switch to by-district elections when threatened with a lawsuit.

As a result, more than 80 California cities have begun or completed a switch from at-large to by-district elections as a result of the CVRA since its passage, mostly in the last two years. This shift has not come without controversy; the defense attorney for the city of Modesto argued that the CVRA fails to establish that minority groups will benefit from the switch to by-district elections[2], and others suggest that an adoption of by-district elections has led to fewer minority elected officials than expected.[3]

These criticisms, as well as the magnitude of this institutional reform, raise a simple question: has a switch to by-district elections increased the ability of racial minorities to influence election outcomes? This question has been the focus of a debate in the scholarship that remains inconclusive. Attempts to answer this question often focus on descriptive representation—in which racial minority groups elect a co-ethnic candidate—and many find that by-district elections lead to better Black and Latino representation in legislative bodies (Berry and Dye, 1979; Bledsoe, 1986; Davidson and Grofman, 1994; Davidson and Korbel, 1981; Engstrom and McDonald, 1981; Grofman, Handley, and Lublin, 2001; Grofman, 1992; Karnig and Welch, 1982; Leal, Martinez-Ebers, and Meier, 2004; Lublin, 1997*a*,

[1]The Charters of Freedom. 2008. "Expansion of Rights and Liberties ~ The Right of Suffrage." <https://web.archive.org/web/20160706144856/http://www.archives.gov/exhibits/charters/charters_of_freedom_13.html>.

[2]Egelko, Bob. 2005. "Minority voting rights law declared unconstitutional." SFGate, April 1, 2005. <https://www.sfgate.com/politics/article/MODESTO-Minority-voting-rights-law-declared-2688758.php>.

[3]Whillon, Phil. 2017. "A voting law meant to increase minority representation has generated many more lawsuits than seats for people of color" Los Angeles Times, April 9, 2017. <https://www.latimes.com/politics/la-pol-ca-voting-rights-minorities-california-20170409-story.html>.

1999; Lublin and Voss, 2000; Marschall, Ruhil, and Shah, 2010; Meier et al., 2005; Molina and Meier, 2016; Moncrief and Thompson, 1992; Polinard, 1994; Robinson and England, 1981; Stewart, England, and Meier, 1989).

Some, however, find no effect or mixed effects between by-district elections and minority representation (Bullock and MacManus, 1993; Cole, 1974; Fraga and Elis, 2009; Fraga, 2015; MacManus, 1978; Trounstine and Valdini, 2008; Welch, 1990) and still others find a negative relationship (Meier and Rutherford, 2016; Welch and Karnig, 1978).

The apparent incongruence in the literature is reconciled somewhat by Trounstine and Valdini's findings (2008) that by-district elections increase representative diversity only when a minority group is highly concentrated and is a relatively large share of the population. Additionally, Fraga (2016) argues that much of the research focused on descriptive representation fails to disentangle the effects of candidate race/ethnicity from the effects of a jurisdiction's racial/ethnic composition. Taken together, these findings highlight a shortcoming in the literature examining the benefits of a switch to by-district elections; because observable changes in descriptive representation are mediated by geographic concentration and relative population size, a switch to by-district elections may on occasion fail to produce a measurable improvement in descriptive representation, even if the policy adoption has still led to other desirable outcomes.

Instead, voter turnout is a potential measure of minority group influence on election outcomes that is not constrained by these limitations. Drawing on the empowerment theory conceptualized by Bobo and Gilliam (1990), a robust body of work suggests that minority voter turnout is strongly linked to minority empowerment (Barreto, 2010; Fraga, 2016, 2018; Gay, 2001; Leighley, 2001; Tate, 2003).

Previous findings imply that districting under the CVRA, simply by making it possible for minority voters to elect a co-ethnic candidate, should increase participation and that political participation remains malleable by legislation or elites setting electoral boundaries (Barreto, 2010; Fraga, 2015). In an analysis of congressional districts, Fraga (2018) finds that possible increases in minority turnout are strengthened when a given minority group is a substantial portion of the potential electorate, even when controlling for co-ethnic candidates, electoral competition, or other demographic factors. More specifically, Fraga finds a causal relationship between an increase in turnout and assignment to a jurisdiction where a given minority group is a majority of the potential electorate.

Using a conceptualization of empowerment theory, which suggests that voters' perceptions of their electoral environment and electoral influence shape their political behavior, Fraga establishes a causal link between districting and a reduction in the turnout gap as well as the role turnout plays in attempts to reduce disparities in minority representation. By using congressional districts as the electoral jurisdiction of interest, however, Fraga's findings are limited to federal elections. Additionally, work by Hajnal (2009) suggests that the impacts of uneven turnout are particularly pronounced at the city council level. When considering that the CVRA expressly prohibits at-large elections that impair the ability of minority groups to influence election outcomes, this work provides a convincing argument that studying minority turnout provides an additional measure to broaden our understanding of the CVRA's impact on minority electoral influence.

To this point, there has been little investigation as to the effect a switch from at-large to by-district elections has on turnout in local elections. As a result, I hope to investigate the relationship between the CVRA-induced change in electoral institution and minority turnout. Building on previous research, I find that a switch from at-large to by-district elections led to a decrease in the Hispanic-White and Asian-White turnout gaps.

My work improves on previous empirical scholarship in at least four ways. First, I add to the growing literature that operationalizes minority empowerment as dependent on relative group size and uses turnout, rather than candidacy or office-holding as a measure. In doing so I find further evidence to support the findings of previous work, such as Collingwood and Long (2019), that suggest policies like the CVRA can improve descriptive representation, while my novel approach addresses potential oversights in their methodological approaches. Critically, using turnout as a measure of minority group empowerment accounts for cases that previous models may fail to account for, such as elections where a minority group's preferred candidate is not a coethnic one.

Second, much of the literature on by-district elections is limited by model-based methodological

approaches whose findings are potentially confounded by selection effects. By employing a difference-in-differences approach, I address potential concerns about selection effects and endogeneity, and begin to contribute to potential links between CVRA-related redistricting and reductions in the minority turnout gap.

I also extend Fraga (2018)'s theory of electoral influence, a relatively novel theory with deep normative implications, to local elections. My contribution adds an empirical test of the racial gaps in voter turnout that persist in local elections, and suggests that local electoral institutions prove a potent avenue for addressing racial disparities in participation.

Previous work by Hajnal (2009) suggests that differences in minority turnout at the city council level lead to especially striking imbalances in minority representation and uneven distribution of public goods. Ultimately, my findings provide evidence that redistricting as a result of the CVRA can begin to address these inequities and may pave the path toward more responsive and equitable local government.

THEORY AND LITERATURE

Much of the literature on minority representation operationalizes minority representation in terms of descriptive representation, defined as a coethnic candidate of a given minority group. At first blush this seems like a natural choice; coethnic candidates are a quantifiable measure with little ambiguity. Additionally, descriptive representation often improves representation in a myriad of ways: it has been shown to increase minority groups' trust in government, lead to higher quality legislative support for constituent minority groups, and provide other substantitive benefits (Brown and Banks, 2013; Brown, 2014; Dovi, 2002; Hero and Preuhs, 2013; Mansbridge, 1999; Phillips, 1995).

The work investigating a link between a switch to by-district elections and increased descriptive representation fails to reach a definitive conclusion. While some find null, mixed, or negative links between a switch to by-district elections and minority representation, most find that by-district elections systematically increase minority representation (e.g, Berry and Dye, 1979; Bledsoe, 1986; Davidson and Korbel, 1981; Welch, 1990). These studies are limited by their methodological approach; by using model-based analyses they insufficiently consider counfounding variables and potential selection effects that might drive the switch from at-large to by-district elections.

The literature is additionally complicated by Trounstine and Valdini (2008), who find that by-district elections only improve minority representation in cases where a minority group is both geographically concentrated and makes up substantial portions of the population, a critical finding that explains some of the ambiguity in the literature. The implication is that a shift from at-large to by-district elections may not immediately produce the intended result, and any findings would be most pronounced where minority groups are a considerable share of the electorate. As a result, considering population share in the overall jurisdiction and a given district becomes essential for research hoping to establish any causal relationship. Much of the previous scholarship relies on data sets that fail to account for these effects, which intuitively would blunt any findings on the relationship between a switch to by-district elections and minority representation.

Given these complications, there is still a notable dearth of scholarship that attempts to address these concerns while specifically investigating whether a mechanistic link between the switch to by-district elections and increased racial and ethnic representation at the local level exists. One such study, Collingwood and Long (2019), examines whether a switch to by-district elections as a result of the CVRA increased descriptive representation on city councils. Collingwood and Long find that CVRA-induced switches to by-district elections lead to a 10 percent improvement in minority representation, and a 20 percent increase in cities with large Latino populations.

Consequently, Collingwood and Long reinforce previous findings as to the importance of minority population share while higlighting another important limitation of the current literature, which almost exclusively uses descriptive representation as a measure. Because city council seats are all-or-nothing, if a CVRA-induced switch to by-district elections leads to a 10 percent increase, equivalent to half a city council seat on average, using descriptive representation to measure the success of the CVRA will miss potential positive effects. Even absent a minority electoral victory, the CVRA could increase council responsiveness to minority concerns by creating jurisdictions where minority groups are a larger share of the electorate and have increased electoral influence.

Furthermore, the CVRA's definition of "candidates of [a protected class's] choice" as coethnic candidates fails to consider potential VRA violations where racially polarized voting exists, yet there are no coethnic candidates and thus no chance to measure descriptive representation. This consideration is especially important because minority groups remain underrepresented among candidates for office (Hajnal and Trounstine, 2007; Shah, 2014).

There are other limitations to descriptive representation's ability to measure minority groups' political power: the stark ideological difference between minority groups and elected officials only becomes significantly reduced when minority groups compose majorities of a city council (Schaffner, Rhodes and La Raja, 2020) and because turnout shapes local officials' behavior (Hajnal, 2009), noncoethnic candidates could be responsive to an engaged minority group. "Latino voters get to elect a candidate of their choice. That's not always a Latino candidate," noted Thomas Saenz, head of the Mexican American Legal Defense and Educational Fund. Furthermore, activists have noted that a number of CVRA suits have occured in jurisdictions that lack the organization to immediately field a minority candidate following the switch to by-district elections.[4]

Taken together, these considerations suggest that descriptive representation, while certainly an important measure of representation, is an incomplete lens through which to evaluate the California VRA. This is not to downplay the importance of descriptive representation; indeed, its benefits are well documented (Mansbridge, 1999; Brown and Banks, 2013; Brown, 2014; Hero and Preuhs, 2013). Rather, I suggest that descriptive representation provides an incomplete picture of minority representation. I hope to emphasize its role as a first step towards substantive representation that provides a useful but limited measure to evaluate minorities' ability to influence election outcomes and improves minority participation.

The important role of turnout in local democracy

Instead, I suggest that minority turnout, and the turnout gap between minority and White voters, may be a more suitable measure by which to evaluate the consequences of the move from at-large to by-district local elections. Previous research details the importance of turnout, particularly among minority voters and in local elections, and its many beneficial political consequences. When voter turnout is low, certain groups may be disproportionately excluded from the political process, which can result in their interests being ignored or marginalized.

Furthermore, turnout disparities can erode perceptions of democratic legitimacy (Johnson, 2015) and eliminating them has the potential to affect electoral results, political representation, and public policy (Anzia, 2011; Fowler, 2011, 2015; Hajnal and Trounstine, 2007). Given that the CVRA explicitly sets out to improve the ability of racial minorities and protected classes to influence election outcomes and elect their preferred candidates, turnout seems like a particularly apt measure through which to evaluate its success.

Hajnal and Trounstine (2007) identify voter turnout as a notable barrier to minority representation in local politics, and argue that a move to district elections would substantially decrease minority underrepresentation and boost minority participation. Schaffner, Rhodes, and La Raja (2020) find that Black and Latino voters receive much better ideological representation when they make up a very significant share of the electorate. These findings are supported by Fraga's theory (2018) of electoral influence, which suggests that minority voters turn out to vote at higher rates in places where they form a substantial share of the potential electorate and can therefore control election outcomes. Fraga's model provides additional compelling evidence to use minority turnout as a measure of minority electoral influence. To support this model, Fraga's main measure of interest is the turnout gap between a given minority group and the White population in a jurisdiction.

Why use the turnout gap, rather than raw turnout rates, as a measure of political participation? There is of course the normative concern that disparities in political participation ought to be reduced, a concern that is reinforced by scholarship that finds disparities in turnout impact both minority representation and the distribution of public goods. This effect is magnified at the local level (Hajnal, 2009).

There are also several advantages to using the turnout gap. As a measure, it accounts for trends

[4]Whillon, Phil. 2017. "A voting law meant to increase minority representation has generated many more lawsuits than seats for people of color" Los Angeles Times, April 9, 2017. <https://www.latimes.com/politics/la-pol-ca-voting-rights-minorities-california-20170409-story.html>.

that apply across racial/ethnic groups, reducing the influence of non-racial factors. Second, because the data is drawn from several different sources, the turnout gap as a relative rate minimizes the impacts of these potential differences. And finally, the complex context of race and voting in American history and politics necessitates turnout to be considered as a comparison across racial/ethnic groups at a given moment in time.

Why might the CVRA reduce racial turnout disparities?

Previous studies of local electoral institutions have detailed their influence on turnout rates (e.g. Anzia, 2013; Hajnal and Lewis, 2003). While these and other studies examining the effects of by-district elections on turnout rates establish an association between a switch from at-large to by-district elections and increased minority turnout and even acknowledge that electoral institutions may engender higher voter turnout in some communities and not others, they also lack a robust investigation into the potential causal mechanisms driving this change.

One possibility is that the implementation of by-district elections, by decreasing the size of the electorate, increases voter information, focuses candidates on the neighborhoods of their districts, brings candidates closer to their constituencies and lowers the costs for them to mobilize constituents (Welch, 1990; Welch and Bledsoe, 1990; Karlan, 1989). These consequences in the aggregate lower the costs of voting, which should increase turnout (Filer and Kenny, 1980; Aldrich, 1993).

At the same time, Dunne, Reed and Wilbanks (1997) provide a model that suggests the increase in voter turnout resulting from the change in electoral institutions may disproportionately improve turnout among some communities and not others. Their model demonstrates that increases in turnout may not be uniformly distributed among voters, and as the costs of voting decrease, low-propensity voters increase as a share of the electorate at higher rates in comparison to high-propensity voters. Empirical findings from multiple voter mobilization field experiments have provided results in line with these theoretical expectations (Arceneaux and Nickerson, 2009).

Because high-propensity voters are more likely to be White and low-propensity voters are more likely to be racial minorities (Hajnal, Kogan, and Markarian, 2022), adopting by-district elections may disproportionately shift the calculus of voting among racial subgroups such that turnout rates among racial minorities increase at faster rates than among White voters, and decrease the turnout gap. Fraga's 2018 theory of electoral influence identifies three additional mechanisms that might drive further decreases in the minority turnout gap.

The first is drawn from the Downsian calculus of voting (Downs, 1957). The Downsian calculus of voting expresses the probability of voting as a consideration of the probability of an individual's vote being decisive, balanced against the benefits and costs of voting. Scholars have suggested that group dynamics and the consideration of collective benefits can shift the individual cost-benefit calculation toward participation when the individual's group is determinative in election outcomes (Uhlaner, 1989a,b). Morton (1991) and Fraga (2018) extend this logic to race/ethnicity, stating that groups' influence on the individual voting calculus is tied to the size of the group in question being large enough to impact outcomes.

The second is Empowerment Theory, first posited by Bobo and Gilliam (1990), which suggests that voters in a racial/ethnic group react to their political context and are more likely to turn out when they have "achieved significant representation and influence in political decision making." Some scholars have conceived of empowerment as minority officeholding or candidacy (Griffin and Keane, 2006; Tate, 2003; Henderson, Sekhon, and Titiunik, 2016). But others have operationalized empowerment as the relative size of a minority in a given jurisdiction to relative further success (Lublin, 1997*b,a*; Spence and McClerking, 2010; Fraga, 2016).

Finally, Fraga points to scholarship that suggests elite mobilization plays an important part in leading to racial differences in who votes. In particular, Leighley (2001) establishes that elite mobilization is crucial to supporting turnout concurrently with her evidence that relative group size is an important factor in determining who is targeted. Thus, we would expect a redistricting process that deliberately increases a minority group's relative share of the electorate to increase elite mobilization of that minority group and boost its relative turnout rates.

While these mechanisms are endogenous and their effects may seem difficult to differentiate, among all theoretical perspectives group size serves as a key predictor. Given the theories above, in a

jurisdiction where a given racial/ethnic group size is a larger share of the population, the group will be seen as more relevant to political outcomes, group members will feel more empowered, and there will be a greater incentive for elites to mobilize the racial/ethnic group. Thus, I expect the adoption of by-district elections under the CVRA to decrease turnout disparities by increasing elite mobilization, lowering the costs of voting, empowering minority groups, and raising their perceived importance in political outcomes. These theories, when applied across groups to relative rates of participation, create a strong argument to conceive of individual turnout behavior as a product of electoral context and a group's electoral influence.

HYPOTHESIS

Following the potential for asymmetric mobilization outlined above in the Dunne et al. model, I expect that a minority group's percent share of the electorate will be negatively correlated with the minority turnout gap, defined as the difference between the turnout rate for a given minority group and the turnout rate for non-Hispanic Whites. I predict these trends will play out in cities that undergo a switch from at-large to by-district elections as a result of the CVRA. I state this hypothesis, H1, as follows.

> **H1:** The turnout gap between minority groups and non-Hispanic Whites **will be smaller** in California cities that switched from at-large to by-district elections than in demographically similar cities.

Additionally, I believe the turnout gap will decrease for minority groups whose share of the potential electorate increases as a result of a switch to by-district elections. Intuitively, by-district elections most effectively yield benefits to minority populations that are sufficiently geographically compact so as to form significant blocs within districts, and a sufficiently diffuse minority population could struggle to benefit from by-district elections even if the minority group was a notable proportion of the city-wide population (Sass, 2000; Vedlitz and Johnson, 1982; Trounstine and Valdini, 2008). Drawing on these expectations, I operationalize H2 as the following hypothesis:

> **H2:** If a minority group is a relatively larger share of the electorate and sufficiently geographically compact following the switch from at-large to by-district elections, **their relative rate of participation will increase** in comparison to non-Hispanic Whites and **the turnout gap will decrease** compared to jurisdictions where minority groups did not increase as a relative share of the electorate.

Evidence from Trounstine and Valdini (2008) and Collingwood and Long (2019) suggests that the effects of group size may be most pronounced in cities with high-density minority populations, and particularly so for Latinos. In cities where Whites are a commanding majority of the population, the White population will be perceived as most relevant for political outcomes and have greater electoral influence. Furthermore, when the White population is an especially large majority I expect the creation of district maps to be subject to majoritarian manipulation of electoral rules (Trebbi, Aghion, and Alesina, 2008).

Therefore, I expect to observe a decrease in the turnout gap in city council districts where a minority group composes a larger share of the population, since elite mobilization as well as individual empowerment will increase when population share increases and the minority group will be perceived as more politically relevant. I hypothesize that the turnout gap will shrink the most in cities where a minority group composes a higher than average share of the population in comparison to cities where a minority group composes an average or lower than average share of the population. I structure this hypothesis as H3.

> **H3:** In California cities that switched from at-large to by-district elections where a minority group is a higher than average share of the total population, the turnout gap between minority groups and non-Hispanic Whites will be **smaller on average** than in demographically similar cities.

DATA AND METHODS

To investigate the effects on the turnout gap of a CVRA-induced switch from at-large to by-district city council elections, I need to define my treatment universe. I use the word 'city' to refer to any incorporated municipality in the state of California. I first identified which California cities underwent the transition from at-large to by-district elections after 2001, following the passage of the CVRA. I then used media coverage and other public records

to verify that cities transitioned to by-district city council elections as a direct result of potential or actual CVRA lawsuits. This list was then refined to only include cities that had fully completed a switch to by-district elections. A city is considered to have completed the transition from at-large to by-district elections if each city council seat has a member elected through a by-district election. Applying these criteria leads to a list of 30 cities that have undergone a CVRA-related switch to by-district elections.

To prepare a causal inference matching design and perform a successful difference-in-differences (DiD) analysis, I defined a politically and demographically similar control group of cities that use at-large elections to pair to the cities in my treatment group. Here, I benefit from previous work by Collingwood and Long (2019) as our treatment universes are the same 30 cities.

Collingwood and Long created a list of every city in California using data from the California Secretary of State's office. They defined city-level demographics, including percentage Black, percentage Asian, percentage Hispanic, percentage change in Latino population from 2000 to 2010, percentage 4-year college education or higher, median household income, median age, and city population, using data from the 2010 Census. They also included party registration using data from the California Secretary of State. Finally, they performed a nearest neighbor match fitting these demographic data between the treatment cities and all other cities in California.

This produces a control group of 30 cities that use at-large voting in city council elections and are comparable to the treatment group along political and demographic factors. I used this control group as the basis of my analysis. I have included a matched list of the control and treatment groups in the appendix.

I then calculated city and district level turnout data for the treatment and control groups. To do so, recalling that voter turnout of group g within any jurisdiction can be defined using the fraction $\frac{Number of Voters_g}{Citizen Voting Age Population (CVAP)_g}$, I needed to construct vote totals by race and collect the Citizen Voting Age Population (CVAP) of each racial group at the city and district levels in order to calculate turnout rates.

First, having defined the denominator as the citizen voting-age population (CVAP) in a given jurisdiction, I turned to collecting demographic data at the city and district level. The American Community Survey (ACS) is perhaps the most complete data source for CVAP counts (U.S. Census Bureau 2018). The ACS is a continuing monthly survey that produces period demographic estimates and uses estimates of the adult population to weight the sample and produce high-quality data. The ACS provided CVAP totals at the city level and by race for every city in the data set, but procuring CVAP data by race at the district-level was more difficult.

Fortunately, I was able to obtain district-level CVAP estimates and other demographic data constructed from ACS data from the National Demographics Corporation, an organization that worked directly with most cities to leverage ACS data into district-level demographic data. As a result, my treatment and control groups were limited to 23 pairs of cities, and this non-random attrition may introduce bias in the estimates if availability of NDC data is associated with larger decreases in the turnout gap among the cities with available data, compared to their matched pairs. Of the seven dropped cases, however, NDC had worked with some cities but data were simply not available due to poor record-keeping rather than arising from systematic differences with the other 23 cities, limiting the magnitude of any potential bias. Additionally, the use of the NDC demographic data allows for greater confidence in the demographic measures used.

To collect the turnout data at the city level, I used city-wide vote totals and district-level returns when relevant from the California Elections Data Archive (CEDA), a joint project of the Center for California Studies and the Institute for Social Research (ISR) at the California State University, Sacramento, and the office of the California Secretary of State. This dataset is an archive of vote totals at the city and district level for California elections dating back to 1995, which provided the numerator for aggregated turnout data across the electoral jurisdiction in question. Having obtained both vote totals and CVAP estimates, I was able to calculate turnout rates at the city and district level for the 23 pairs of cities in my sample.

To calculate turnout gaps between minority groups and White voters, I needed to measure city and district-level turnout by racial group. I used ecological inference to leverage the vote totals from CEDA with the CVAP totals and

demographic data from NDC to estimate city-level turnout estimates by race and district-level estimates by race. I create these estimates using the ei package in R, following the procedures outlined in King and Roberts (2012). This procedure uses the inputted racial and turnout data to compute a maximum likelihood distribution and estimate the city or district-level turnout estimates for each city/district in question.

Of course, these estimates are subject to inherent uncertainty—known as the ecological fallacy—arising from the lack of racial-level turnout data (Piantadosi, Byar, and Green, 1988). Addressing concerns that the ecological fallacy may lead to skewed turnout estimates and in turn bias secondary analyses, Grofman and Barreto (2009) find that ecological regression estimates remain highly accurate even if the independent variable is misspecified.

And while no estimation method provides an infallible solution to the problem of ecological inference, the method outlined by King (1997) which I implement here improves on other methods by providing clear diagnostics and visualizations of uncertainty estimates for the inferred turnout levels. To visualize these uncertainty estimates, I include a tomography plot of the 80% confidence intervals around the point estimates of turnout for each racial group. I also include density plots for the simulated racial turnout estimates by racial group overlaid on a rug plot of the actual point estimates, in order to visualize the distribution and uncertainty of the point estimates.

Finally, I was able to use these racial turnout estimates generated through ecological inference to calculate the minority turnout gaps for any given group and district. The turnout gaps, per Fraga (2018), are defined as the difference between the turnout rate for a given minority group and the turnout rate for non-Hispanic Whites. To aid in the interpretation of results, I subtract the minority turnout rate from the White turnout rate. Consequently, the turnout gap is 0 if a minority group and non-Hispanic Whites turn out at the same rates, negative if the minority group turns out at a higher rate than non-Hispanic Whites in the jurisdiction, and positive if the minority group turns out at lower rates than non-Hispanic Whites. Because the turnout gap is generally positive, a negative increase in the measured value of the turnout gap will generally lower the distance between minority and White turnout rates.

I employ a difference-in-differences fixed effects regression to estimate the average treatment effect of a shift from at-large to by-district elections has on the turnout gap. I stack the data into a panel where there is a pre-treatment and post-treatment observation for the treatment and control groups. Following the model outlined in Bertrand, Duflo, and Mullainathan (2004), I then estimate the following equation for the Hispanic-White, Black-White, and Asian-White turnout gaps, clustering standard errors by city and controlling for election year and city effects:

$$\mathbf{Y} = \mathbf{A_s} + \mathbf{B_t} + \mathbf{C_i} + \mathbf{dX_{ist}} + \beta \times \mathbf{I_{st}} + \epsilon_{\mathbf{ist}}$$

In this equation, Y = the quantity of interest: the turnout gap between a given minority group and non-Hispanic Whites given as a percentage difference. A_s represents the fixed effects for a city, B_t represents fixed effects for election years, C_i represents district fixed effects, X_{ist} are relevant individual controls and ϵ_{ist} is an error term. I_{st} is a dummy variable indicating whether districting has occured at time t. I use this equation to create three fixed effect linear regression models and test H_i.

I use another equation and the stacked panel data to test H_{ii}. Once again, I estimate the following equation for the Hispanic-White, Black-White, and Asian-White turnout gaps, clustering standard errors by city and district, and controlling for election year, district, and city effects:

$$\mathbf{Y} = \mathbf{A_s} + \mathbf{B_t} + \mathbf{C_i} + \mathbf{dX_{ist}} + \beta_0 \times \mathbf{I_{st}} + \beta_1 \times \mathbf{G} + \epsilon_{\mathbf{ist}}$$

This equation is similar to the first, but includes the variable G to encapsulate the extent to which the minority group of interest increased in relative population share as a result of the switch to by-district elections. This is constructed as the percentage point change of the minority group's share of the district's total CVAP.

Finally, I calculate the mean population share for Hispanics, Blacks, and Asians in the panel data. Because Hispanics are the only minority group that compose a meaningfully large mean share of the electorate, I limit a test of H3 to Hispanics. I create two subsets of each observation in the treatment group and its equivalent city from the control group, divided by whether the treated city has a CVAP percentage above or below the mean value of 38.2 percent. Thus cities (and their paired control) with a Hispanic CVAP population greater than 38.2 percent are considered "High Hispanic population" and cities (and their paired control) with a Hispanic

CVAP population less than 38.2 percent are considered "Low Hispanic population." I then repeat the DiD analysis above on the two subsets.

RESULTS

Table 1 presents the results of my post-match OLS DiD regression test of H_i. I analyze my panel data with the equation specified above, adjusting for robust clustered standard errors by city. I find evidence that a switch to by-district elections as a result of the CVRA reduces turnout disparities between Hispanics and Asians in comparison to Whites, though I cannot conclude that a switch to district elections under the CVRA reduces the Black-White turnout gap.

In my analysis, I estimate the average effect of a CVRA-induced switch from at-large to by-district elections on the Hispanic-White turnout gap to be a shift of 5.6 percentage points in the turnout difference. This finding is statistically significant at the 5 percent confidence level ($p = 0.0375$). Table 1 also shows that a switch to by-district elections has an average effect of a nearly 26 percentage point decrease in the difference between Asian and White turnout. This finding was statistically significant at the 1 percent confidence level ($p < 0.001$).

Finally, my results suggested that a switch to by-district elections actually led to an increase of 0.7 percentage points in the difference between Black and White turnout, though this finding was not statistically significant ($p = 0.70$). The mean Black percentage of a jurisdiction's CVAP was only 5.6 percent, and there are no jurisdictions in the sample where Blacks exceed 25 percent of the potential electorate. Because I expect the effects of a switch to by-district elections to be most pronounced when a minority group comprises a large share of the population, I am not surprised by the small coefficient and statistically insignificant findings when examining the Black-White turnout gap.

Table 2 presents the results of my DiD regression, when including a dummy variable for a minority group's relative share of the population increasing as a result of CVRA-induced redistricting. I use these models to test H2.

These models produce several notable findings. The treatment effect on the Hispanic turnout gap decreases slightly, with an average treatment effect of a 5.5 percentage point decrease in the magnitude of the Hispanic-White turnout gap ($p = 0.002$). But an increase in relative group size as a result of CVRA-induced redistricting leads to a 11.3 percentage point increase in the distance between Hispanic and White turnout rates, though this effect is not statistically significant ($p = 0.29$).

The treatment effect on the Asian-White turnout gap remains similar, with an average treatment effect of 25.8 percentage points ($p < 0.001$). While the data also suggests that an increase in relative group size as a result of redistricting under the CVRA slightly decreases the distance between Asian and White turnout rates, the magnitude of the effect is smaller, just 0.2 percentage points ($p = 0.03$).

Finally, controlling for relative group size leads to similar findings when examining the Black-White turnout gap. The magnitude of the average treatment effect decreases slightly, to an expected 0.8 percentage point increase in the difference between Black and White turnout ($p = 0.35$). An increase in relative group size finds an additional 2.2 percentage point increase in the difference between Black and White turnout rates, though this, too, is statistically insignificant ($p = 0.26$).

Table 1. Difference-in-Differences Regression Estimating Causal Relationship Between Cities Switching to By-District Elections Under the CVRA (Treatment) and the Turnout Gap by Race

	Hispanic turnout gap (1)	*Black turnout gap* (2)	*Asian turnout gap* (3)
Treatment	−0.056**	0.007	−0.257***
	(0.011)	(0.007)	(0.027)
N	190	179	186
R^2	0.715	0.773	0.835
Adjusted R^2	0.591	0.674	0.765
Residual std. error	0.067 (df = 132)	0.042 (df = 124)	0.103 (df = 130)

*$p < .05$; **$p < .01$; ***$p < .001$.
Note: Robust clustered standard errors.
Differences in n due to jurisdictions with extremely low minority group populations.

Table 2. Difference-in-Differences Regression Estimating Causal Relationship Between Cities Switching to By-District Elections Under the CVRA (Treatment) and the Turnout Gap by Race, Controlling for an Increase in Relative Group Size

	Hispanic turnout gap (1)	*Black turnout gap* (2)	*Asian turnout gap* (3)
Treatment	–0.055**	0.008	–0.258***
	(0.011)	(0.008)	(0.027)
Increased relative group size	0.113		
	(0.097)		
Increased relative group size		0.021	
		(0.018)	
Increased relative group size			–0.020*
			(0.007)
N	190	179	186
R^2	0.725	0.773	0.835
Adjusted R^2	0.603	0.672	0.764
Residual Std. Error	0.066 (df = 131)	0.042 (df = 123)	0.104 (df = 129)

*$p < .05$; **$p < .01$; ***$p < .001$.
Note: Robust clustered standard errors.
Differences in n due to jurisdictions with near-zero minority group populations.

The extent to which an election is contested has been shown to shape turnout in local elections. While scholarship shows that election timing remains the primary influence on voter turnout, Marschall and Lappie (2018) find that turnout is markedly increased in contested mayoral elections, compared to uncontested mayoral elections. I control for the number of candidates to investigate whether the galvanizing effects of contestation on turnout biases my estimated treatment effects, and present the results of this analysis in Appendix B.

The results show that the previously estimated effects of switching to by-district elections on the Hispanic-White and Asian-White turnout gaps are robust and still statistically significant when controlling for the number of candidates running. There is mixed evidence, however, about how the number of candidates running shapes minority turnout gaps. This likely arises due to the complicated link between the number of candidates and electoral competition, and future research into the effects of competition should investigate alternative measures such as campaign finance and spending, voter contact intensity, or margin of victory.

Table 3 displays the results of my test of H3 on the data after it has been subsetted into a group of cities (and their paired control) where Hispanics compose a higher share of the CVAP than the mean and cities (and their paired control) where Hispanics compose an even or lower share of the CVAP than the mean. For cities where Hispanics compose a higher share of the city's CVAP, I estimate the average treatment effect of a shift to by-district elections to be quite small: a decrease of about 0.1 percentage points in the turnout gap. This finding is statistically insignificant ($p = 0.90$). I find a larger and statistically significant average treatment effect ($p = 0.04$) of a CVRA-induced switch to district elections on the turnout gap among cities where Hispanics are a lower than average share of the CVAP. For these cities, the average treatment effect is a 9.2 percentage point decrease in the magnitude of the Hispanic-White turnout gap.

I complete my analysis of the subsetted data by controlling for cities where Hispanic share of the population increased as a result of the switch to by-district elections. The results of these models is displayed in Table 4. As in Table 3, the effects in cities with higher than average Hispanic shares of the CVAP are muted. I find an average effect of a 0.2 percentage point decrease in the difference between Hispanic and White turnout, though this effect is not statistically significant ($p = 0.89$). My model suggests that among cities with higher than average Hispanic CVAP, an increase in relative group size as a result of CVRA-induced redistricting leads to a 3.4 percentage point increase in the distance between Hispanic and White turnout rates for every percent increase in the Hispanic CVAP share following the redistricting process, a finding which is statistically significant ($p < 0.001$).

Table 3. Difference-in-Differences Regression Estimating Causal Relationship Between Cities Switching to By-District Elections Under the CVRA (Treatment) and the Hispanic-White Turnout Gap for Cities with Above and Below Mean Hispanic Populations

	Hispanic turnout gap	
	High percent Hispanic (1)	*Low percent Hispanic* (2)
Treatment	−0.001	−0.092**
	(0.011)	(0.020)
N	63	127
R^2	0.606	0.731
Adjusted R^2	0.373	0.601
Residual Std. Error	0.061 (df = 39)	0.070 (df = 85)

*$p < .05$; **$p < .01$; ***$p < .001$.
Note: Robust clustered standard errors.

The results of a stronger treatment effect of a CVRA-induced switch to district elections among cities with lower Hispanic CVAP shares play out in this model as well. I observe an average treatment effect of an 8.9 percentage point decrease in the magnitude of the Hispanic-White turnout gap among these cities, a trend that is significant at the .01 significance level ($p = 0.004$). For these cities, an increase in relative group size leads to a 13 percentage point increase in the distance between Hispanic and White turnout rates, though this is not statistically significant ($p = 0.35$).

Table 4. Difference-in-Differences Regression Estimating Causal Relationship Between Cities Switching to By-District Elections Under the CVRA (Treatment) and the Hispanic-White Turnout Gap for Cities with Above and Below Mean Hispanic Populations, Controlling for an Increase in Relative Group Size

	Hispanic turnout gap	
	High percent Hispanic (1)	*Low percent Hispanic* (2)
Treatment	−0.002	−0.089**
	(0.012)	(0.019)
Increased share of CVAP	0.034***	0.130
	(0.001)	(0.129)
N	63	127
R^2	0.607	0.744
Adjusted R^2	0.358	0.617
Residual Std. Error	0.062 (df = 38)	0.069 (df = 84)

*$p < .05$; **$p < .01$; ***$p < .001$.
Note: Robust clustered standard errors.

Ultimately, I find evidence to suggest that adopting by-district elections has an average effect of decreasing the minority-White turnout gap. Examining the results when controlling for group size, however, reveals a more complex story. The switch from at-large to by-district elections does decrease the minority-White turnout gap in cities where Hispanics are a lower-than-average share of the city population. In the cities where Hispanics were already a higher-than-average share of the city voting-age population, however, CVRA-induced redistricting has no statistically significant effect on the Hispanic-White turnout gap. Furthermore, in these cities with a higher-than-average Hispanic population, I find that there is a statistically significant reduction in the turnout gap when Hispanics increase in their share of the population following the districting process.

These findings provide important empirical evidence in line with theoretical expectations. In electoral contexts where racial minorities already compose a considerable share of the electorate, however, they are more likely to be relatively more organized and engaged by campaigns. In these contexts, racial minorities are less likely to be drawn into districts where they compose an even greater share of the electorate than they had prior to the districting process, and therefore less likely to experience the improved political capital and subsequent increased mobilization expected to result from redistricting. In cases where Hispanic voters in high-Hispanic cities were incorporated into a district where Hispanics were more predominant at the district than city level, however, the Hispanic-White turnout gap did decrease as expected.

CONCLUSION

Does a switch to by-district elections under the CVRA increase minority turnout? I find initial evidence suggesting that there is indeed a causal link between a CVRA-induced change in electoral institution and a reduction in the turnout gap. I do not find evidence to support my hypothesis that an increase in relative group size leads to a decrease in the turnout gap. I also do not find evidence to support my hypothesis that the effects of a switch to by-district elections on the turnout gap are more pronounced in cities where a minority group is a higher than average share of the total population.

Instead, I find evidence that the treatment effects are more pronounced in cities where Hispanics are a lower than average share of the total population.

These findings add important evidence to the literature on the relationship between local electoral institutions and voter turnout while underscoring the need for future research into the mechanisms driving the decrease in the turnout gap. While previous scholarship suggests that descriptive representation can increase minority turnout and reduce the turnout gap (Rocha et al., 2010), the dataset, which does not include candidate race or ethnicity, limits an empirical test on the effects of candidate race. As districting under the CVRA continues in additional cities and more thorough data is collected on candidates' race, future research may illuminate the specific mechanisms through which the policy leads to a reduction in the turnout gap and under what conditions these effects occur.

My analyses provide scant evidence of a relationship between minority group size and the effects of districting on the minority turnout gap, counter to my hypotheses. These counterintuitive findings may arise from further limitations of the dataset. Primarily, as Trounstine and Valdini (2008) note, group size *in combination with geographic concentration* moderates the effect of district elections. They find that district elections only impact Hispanic representation when Hispanics are extremely geographically concentrated. It is possible that cities with smaller Hispanic populations more easily create districts with geographically compact Hispanic populations. Because the data do not include a measure of geographic concentration, I cannot account for geographic concentration as a possible mediating variable. In future work, I hope to incorporate geographic concentration and candidate ethnicity into my dataset to create a more robust analysis.

Dozens of cities are currently in the process of completing a switch to by-district elections under the CVRA. The resulting increase in the treatment universe may produce stronger and more conclusive findings in further studies. By taking advantage of the expanded dataset in future years, research may be able to address concerns about potential nonrandom selection causing an overestimation of the average treatment effect.

Finally, while analyses are currently limited by the relatively short period during which CVRA-induced switches to by-district elections have been implemented, the recent proliferation ultimately sets the ground for work investigating whether the reform has led to a measurable improvement of representation at the policy level. These future analyses will clarify the CVRA's role in improving racial representation and inform states considering similar policies.

REFERENCES

Aldrich, John H. 1993. "Rational Choice and Turnout." *American Journal of Political Science* 37(1):246–278.

Anzia, Sarah F. 2011. "Election Timing and the Electoral Influence of Interest Groups." *The Journal of Politics* 73(2):412–427.

Anzia, Sarah F. 2013. *Timing and Turnout: How Off-Cycle Elections Favor Organized Groups*. Chicago, IL: University of Chicago Press.

Arceneaux, Kevin and David W. Nickerson. 2009. "Who Is Mobilized to Vote? A Re-Analysis of 11 Field Experiments." *American Journal of Political Science* 53(1): 1–16.

Barreto, Matt. 2010. *Ethnic Cues: The Role of Shared Ethnicity in Latino Political Participation.* The Politics of Race and Ethnicity Ann Arbor: University of Michigan Press.

Berry, Barbara L. and Thomas R. Dye. 1979. "The Discriminatory Effects of At-Large Elections." *Florida State University Law Review* 7(1):85–122.

Bertrand, Marian, Esther Duflo, and Sendhil Mullainathan. 2004. "How Much Should We Trust Differences-In-Differences Estimates?" *The Quarterly Journal of Economics* 119(1):249–275.

Bhatti, Yosef and Kasper M. Hansen. 2016. "The Effect of Residential Concentration on Voter Turnout among Ethnic Minorities." *International Migration Review* 50(4):977–1004.

Bledsoe, Timothy. 1986. "A Research Note on the Impact of District/at-Large Elections on Black Political Efficacy." *Urban Affairs Quarterly* 22(1):166–174.

Bobo, Lawrence and Franklin D. Gilliam. 1990. "Race, Sociopolitical Participation, and Black Empowerment." *American Political Science Review* 84(2):377–393.

Brown, Nadia E. 2014. *Sisters in the Statehouse: Black Women and Legislative Decision Making*. Oxford ; New York: Oxford University Press.

Brown, Nadia and Kira Hudson Banks. 2013. "Black Women's Agenda Setting in the Maryland State Legislature." *Journal of African American Studies (New Brunswick, N.J.)* 18(2):164–180.

Bullock, Charles S. and Susan A. MacManus. 1993. "Testing Assumptions of the Totality-of-the-Circumstances Test: An Analysis of the Impact of Structures on Black Descriptive Representation." *American Politics Quarterly* 21(3):290–306.

California State Legislature. 2001. AB-182 California Voting Rights Act of 2001. <https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160AB182>

Cole, Leonard A. 1974. "Electing Blacks To Municipal Office: Structural and Social Determinants." *Urban Affairs Quarterly* 10(1):17–39.

Collingwood, Loren and Sean Long. 2019. "Can States Promote Minority Representation? Assessing the Effects of the California Voting Rights Act." *Urban Affairs Review* 57(1):731–762.

Davidson, Chandler and Bernard Grofman. 1994. *Quiet Revolution in the South: The Impact of the Voting Rights Act, 1965-1990*. Princeton, N.J.: Princeton University Press.

Davidson, Chandler and George Korbel. 1981. "At-Large Elections and Minority-Group Representation: A Re-Examination of Historical and Contemporary Evidence." *The Journal of Politics* 43(4):982–1005.

Dovi, Suzanne. 2002. "Preferable Descriptive Representatives: Will Just Any Woman, Black, or Latino Do?" *The American Political Science Review* 96(4):729–743.

Downs, Anthony. 1957. "An Economic Theory of Political Action in a Democracy." *Journal of Political Economy* 65(2):135–150.

Dunne, Stephanie, W. Robert Reed, and James Wilbanks. 1997. "Endogenizing the Median Voter: Public Choice Goes to School." *Public Choice* 93(1/2):99–118.

Engstrom, Richard L. and Michael D. McDonald. 1981. "The Election of Blacks to City Councils: Clarifying the Impact of Electoral Arrangements on the Seats/Population Relationship." *The American Political Science Review* 75(2):344–354.

Filer, John E. and Lawrence W. Kenny. 1980. "Voter Turnout and the Benefits of Voting." *Public Choice* 35(5):575–585.

Fowler, Anthony. 2011. "Electoral and Policy Consequences of Voter Turnout: Evidence from Compulsory Voting in Australia."

Fowler, Anthony. 2015. "Regular Voters, Marginal Voters and the Electoral Effects of Turnout." *Political Science Research and Methods* 3(2):205–219.

Fraga, Bernard L. 2015. "Redistricting and the Causal Impact of Race on Voter Turnout." *The Journal of Politics* 78(1):19–34.

Fraga, Bernard L. 2016. "Candidates or Districts? Reevaluating the Role of Race in Voter Turnout." *American Journal of Political Science* 60(1):97–122.

Fraga, Bernard L. 2018. *The Turnout Gap: Race, Ethnicity, and Political Inequality in a Diversifying America*. Cambridge University Press.

Fraga, Luis and Roy Elis. 2009. "Interests and Representation: Ethnic Advocacy on California School Boards." *Teachers College record (1970)* 111(3):659–682.

Gay, Claudine. 2001. "The Effect of Black Congressional Representation on Political Participation." *The American Political Science Review* 95(3):589–602.

Griffin, John D. and Michael Keane. 2006. "Descriptive Representation and the Composition of African American Turnout." *American Journal of Political Science* 50(4): 998–1012.

Grofman, Bernard Grofman. 1992. *Minority Representation and the Quest for Voting Equality*. Cambridge [England] ; New York, NY, USA: Cambridge University Press.

Grofman, Bernard, Lisa Handley, and David Lublin. 2001. "Drawing Effective Minority Districts: A Conceptual Framework and Some Empirical Evidence." *North Carolina Law Review* 79(5):1383–.

Grofman, Bernard and Matt A. Barreto. 2009. "A Reply to Zax's (2002) Critique of Grofman and Migalski (1988): Double-Equation Approaches to Ecological Inference When the Independent Variable Is Misspecified." *Sociological Methods & Research* 37(4):599–617.

Hajnal, Zoltan and Jessica Trounstine. 2007. "Transforming Votes into Victories: Turnout, Institutional Context, and Minority Representation in Local Politics.".

Hajnal, Zoltan L. 2009. *America's Uneven Democracy: Race, Turnout, and Representation in City Politics*. New York: Cambridge University Press.

Hajnal, Zoltan L. and Paul G. Lewis. 2003. "Municipal Institutions and Voter Turnout in Local Elections." *Urban Affairs Review* 38(5):645–668.

Hajnal, Zoltan L., Vladimir Kogan and G. Agustin Markarian. 2022. "Who Votes: City Election Timing and Voter Composition." *American Political Science Review* 116(1):374–383.

Henderson, John A., Jasjeet S. Sekhon and Rocío Titiunik. 2016. "Cause or Effect? Turnout in Hispanic Majority-Minority Districts." *Political Analysis* 24(3):404–412.

Hero, Rodney E. and Robert R. Preuhs. 2013. "Black-Latino Relations in US National Politics: Evidence and the Role of Institutions." *Politics, Groups & Identities* 1(2):251–259.

Johnson, Carolina. 2015. "Local Civic Participation and Democratic Legitimacy: Evidence from England and Wales." *Political Studies* 63(4):765–792.

Karlan, Pamela S. 1989. "Maps and Misreadings: The Role of Geographic Compactness in Racial Vote Dilution Litigation." *Harvard Civil Rights-Civil Liberties Law Review* 24:173.

Karnig, Albert K. and Susan Welch. 1982. "Electoral Structure and Black Representation on City Councils." *Social Science Quarterly* 63(1):99–114.

King, Gary. 1997. *A Solution to the Ecological Inference Problem: Reconstructing Individual Behavior from Aggregate Data*. Princeton: Princeton University Press.

King, Gary and Margaret Roberts. 2012. "EI: A(n R) Program for Ecological Inference." February 6, 2012. <https://cran.r-project.org/web/packages/ei/vignettes/ei.pdf>

Leal, David L., Valerie Martinez-Ebers, and Kenneth J. Meier. 2004. "The Politics of Latino Education: The Biases of At-Large Elections." *The Journal of politics* 66(4): 1224–1244.

Leighley, Jan E. 2001. *Strength in Numbers?: The Political Mobilization of Racial and Ethnic Minorities*. Princeton University Press.

Lublin, David. 1997*a*. "The Election of African Americans and Latinos To the U.S. House of Representatives, 1972-1994." *American Politics Quarterly* 25(3):269–286.

Lublin, David. 1997*b*. *The Paradox of Representation: Racial Gerrymandering and Minority Interests in Congress*. Princeton, N.J.: Princeton University Press.

Lublin, David. 1999. "Racial Redistricting and African-American Representation: A Critique of 'Do Majority-Minority Districts Maximize Substantive Black Representation in Congress?'." *The American Political Science Review* 93(1):183–186.

Lublin, David and D. Stephen Voss. 2000. "Racial Redistricting and Realignment in Southern State Legislatures." *American Journal of Political Science* 44(4):792–810.

MacManus, Susan A. 1978. "City Council Election Procedures and Minority Representation: Are They Related?" *Social Science Quarterly* 59(1):153–161.

Mansbridge, Jane. 1999. "Should Blacks Represent Blacks and Women Represent Women? A Contingent 'Yes'." *The Journal of Politics* 61(3):628–657.

Marschall, Melissa J., Anirudh V. S. Ruhil, and Paru R. Shah. 2010. "The New Racial Calculus: Electoral Institutions and Black Representation in Local Legislatures." *American Journal of Political Science* 54(1):107–124.

Marschall, Melissa and John Lappie. 2018. "Turnout in Local Elections: Is Timing Really Everything?" *Election Law Journal: Rules, Politics, and Policy* 17(3):221–233.

Meier, Kenneth J. and Amanda Rutherford. 2016. *The Politics of African-American Education: Representation, Partisanship, and Educational Equity*.

Meier, Kenneth J., Eric Gonzalez Juenke, Robert D. Wrinkle ,and J. L. Polinard. 2005. "Structural Choices and Representational Biases: The Post-Election Color of Representation." *American Journal of Political Science* 49(4):758–768.

Molina, Angel Luis and Kenneth J. Meier. 2016. "Demographic Dreams, Institutional Realities: Election Design and Latino Representation in American Education." *Politics, Groups & Identities* 6(1):77–94.

Moncrief, Gary F. and Joel A. Thompson. 1992. "Electoral Structure and State Legislative Representation: A Research Note." *The Journal of Politics* 54(1):246–256.

Morton, Rebecca B. 1991. "Groups in Rational Turnout Models." *American Journal of Political Science* 35(3):758–776.

Phillips, Anne. 1995. *The Politics of Presence*. Oxford Political Theory Oxford : New York: Clarendon Press ; Oxford University Press.

Piantadosi, Steven, David P. Byar and Sylvan B. Green. 1988. "Printed in U.S.A. The Ecological Fallacy."

Polinard, Jerry L. 1994. *Electoral Structure and Urban Policy: The Impact on Mexican American Communities*. Bureaucracies, Public Administration, and Public Policy Armonk, NY: MESharpe.

Robinson, Ted and Robert E. England. 1981. "Black Representation on Central City School Boards Revisited." *Social Science Quarterly* 62(3):495–502.

Rocha, Rene R., Caroline J. Tolbert, Daniel C. Bowen, and Christopher J. Clark. 2010. "Race and Turnout: Does Descriptive Representation in State Legislatures Increase Minority Voting?" *Political Research Quarterly* 63(4):890–907.

Sass, Tim R. 2000. "The Determinants of Hispanic Representation in Municipal Government." *Southern Economic Journal* 66(3):609–630.

Schaffner, Brian F., Jesse H. Rhodes, and Raymond J. La Raja. 2020. *Hometown Inequality: Race, Class, and Representation in American Local Politics*. Cambridge: Cambridge University Press.

Shah, Paru. 2014. "It Takes a Black Candidate: A Supply-Side Theory of Minority Representation." *Political Research Quarterly* 67(2):266–279.

Spence, Lester K. and Harwood McClerking. 2010. "Context, Black Empowerment, and African American Political Participation." *American Politics Research* 38(5):909–930.

Stewart, Joseph, Robert E. England, and Kenneth J. Meier. 1989. "Black Representation in Urban School Districts: From School Board to Office to Classroom." *The Western political quarterly* 42(2):287–305.

Tate, Katherine. 2003. "Black Opinion on the Legitimacy of Racial Redistricting and Minority- Majority Districts." *The American Political Science Review* 97(1):45–56.

Trebbi, Francesco, Philippe Aghion, and Alberto Alesina. 2008. "Electoral Rules and Minority Representation in U.S. Cities." *The Quarterly Journal of Economics* 123(1):325–357.

Trounstine, Jessica and Melody E. Valdini. 2008. "The Context Matters: The Effects of Single- Member versus At-Large Districts on City Council Diversity." *American Journal of Political Science* 52(3):554–569.

Uhlaner, Carole J. 1989a. "Rational Turnout: The Neglected Role of Groups." *American Journal of Political Science* 33(2):390–422.

Uhlaner, Carole Jean. 1989b. "'Relational Goods' and Participation: Incorporating Sociability into a Theory of Rational Action." *Public Choice* 62(3):253–285.

U.S. Census Bureau. 2018. American Community Survey Public Use Microdata Samples [CSV Data file]. <https://www2.census.gov/programs-surveys/acs/data/pums/>

Vedlitz, Arnold and Charles A. Johnson. 1982. "Community Racial Segregation, Electoral Structure, and Minority Representation." *Social Science Quarterly* 63(4):729–736.

Welch, Susan. 1990. "The Impact of At-Large Elections on the Representation of Blacks and Hispanics." *The Journal of Politics* 52(4):1050–1076.

Welch, Susan and Albert K. Karnig. 1978. "Representation of Blacks on Big City School Boards." *Social Science Quarterly* 59(1):162–172.

Welch, Susan and Timothy Bledsoe. 1990. *Urban Reform and Its Consequences: A Study in Representation*. Chicago, IL: University of Chicago Press.

Address correspondence to:
Zachary L. Hertz
University of Chicago
Division of the Social Sciences
1155 E. 60th Street
Chicago, Illinois
60637-1580
USA

E-mail: zlhertz@uchicago.edu

Received for publication April 22, 2022; received in revised form March 6, 2023; accepted March 7, 2023; published online June 29, 2023.

(*Appendix follows* →)

APPENDIX A

List of treated and Control Cities

Table A1. Paired List of Control and Treatment Groups

City	*Complete Switch to Districts*	*Paired City*
Anaheim	2018	Ontario
Banning	2018	Moorpark
Buena Park	2018	Blythe
Chino	2018	Tulelake
Eastvale	2018	Clovis
Hemet	2018	Roseville
Highland	2016	Fowler
King City	2018	Delano
Los Banos	2018	Folsom
Madera	2014	Apple Valley
Menifee	2014	Redding
Merced	2018	La Habra
Modesto	2011	Shafter
Palmdale	2016	Norwalk
Patterson	2018	Grand Terrace
Riverbank	2018	Orange Cove
Sanger	2014	McFarland
Santa Barbara	2017	Brentwood
Tulare	2016	Lancaster
Turlock	2016	Victorville
Visalia	2018	Orange
Wildomar	2018	Fountain Valley
Yucaipa	2018	Yorba Linda

Table A2. Difference-in-Differences Regression Estimating Causal Relationship Between Cities Switching to By-District Elections Under the CVRA (Treatment) and the Turnout Gap by Race, Controlling for Contestation

	Hispanic turnout gap (1)	*Black turnout gap* (2)	*Asian turnout gap* (3)
Treatment	–0.037*	–0.005	–0.160***
	(0.013)	(0.007)	(0.026)
Number of candidates	0.006	–0.003*	0.027***
	(0.003)	(0.001)	(0.003)
N	190	179	186
R^2	0.721	0.777	0.868
Adjusted R^2	0.597	0.677	0.811
Residual Std. Error	0.066 (df = 131)	0.041 (df = 123)	0.093 (df = 129)

*$p < .05$; **$p < .01$; ***$p < .001$.
Note: Robust clustered standard errors.
Differences in n due to jurisdictions with near-zero minority group populations.

APPENDIX B

Controlling for competition

The literature on municipal politics and voter turnout provides strong theoretical evidence to expect that the competitiveness of a given election may moderate the ways in which adopting by-district elections affect the minority turnout gap (Bhatti and Hansen, 2016; Leighley, 2001; Marschall and Lappie, 2018; Hajnal, Kogan, and Markarian, 2022). As a result, I investigate whether increasing competition via a greater number of candidates running biases the estimated effects of switching to by-district elections.

Controlling for the number of candidates decreases the estimated treatment effects of districting on the Hispanic-White and Asian-White turnout gap. I estimate an average treatment effect of a 3.7 percentage point decrease in the Hispanic-White turnout gap ($p = 0.033$). I also find that the Hispanic-White turnout gap actually increases very slightly, by 0.6 percentage points, with every additional candidate in the race, though this is not significant at the $p = 0.05$ significance level ($p = 0.083$).

While as before I do not find a statistically significant effect of a switch to by-district elections on the Black-White turnout gap when controlling for the number of candidates in the race, I do estimate that an additional candidate leads to a slight expected decrease of 0.3 percentage points in the Black-White turnout gap ($p = 0.017$).

Finally, controlling for the number of candidates running also decreases the magnitude of my estimated treatment effect of by-district elections on the Asian-White turnout gap. I find that when controlling for contestation, switching to district elections decreases the Asian-White turnout gap by 16 percentage points ($p < 0.001$), though the Asian-White turnout gap is expected to increase by 2.7 percentage points for every additional candidate in the race ($p = 0.002$).

Ultimately, these results corroborate my previous findings; the estimated effect of switching to by-district elections on the minority turnout gaps are robust when controlling for the number of candidates running. While the relationship between the number of candidates running and the minority turnout gap is unclear from these results, this might result from issues with using the number of candidates in a race as a measure of electoral competition. Future research investigating this link might collect data on campaign finance, advertising and outreach efforts, and electoral margin to clarify these results.