

**Writing the Rules to Rank the Candidates: Examining the Impact of Instant-Runoff Voting on
Racial Group Turnout in San Francisco Mayoral Elections**

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Abstract

Instant-Runoff Voting (IRV/RCV) is a relatively new reform to the rules of voting and elections that has been adopted by several cities. The impact of IRV/RCV balloting on racial group voter turnout in urban elections has not been subject to rigorous empirical analysis. In order to evaluate the relationship between IRV/RCV and voter turnout, I analyze precinct-level racial group voter turnout rates in five San Francisco mayoral elections from 1995 to 2011. I find significant declines in turnout under IRV/RCV rules, especially among Black voters. In addition, I find that IRV/RCV exacerbates turnout disparities between older and younger groups in the population and between those with high education compared to those with low education.

Understanding how electoral rules and institutions impact voter turnout in urban elections is one of the most important questions for those who are interested in the quality of democracy in cities. The history of urban reform is replete with political factions who attempt to alter the rules governing voting and elections as a way to advance the interests and goals of their political coalition and allied groups (Bridges and Kronick 1999; Trounstine 2006; Trounstine 2008). Writing and re-writing the rules governing how and when people vote in urban and local elections has a tremendous impact on who turns out to vote in, and, ultimately, influences who wins those elections (Hajnal and Trounstine 2007; Hajnal and Trounstine 2005).

Several cities in the U.S. have recently adopted a particular set of electoral rules that profoundly change the process of voting in urban elections.¹ Instant-Runoff Voting (IRV), also known as Rank-Choice Voting (RCV), asks a voter to rank-order her preferred candidates for each elected office, rather than simply choose one candidate for each office. In an IRV/RCV election, if no candidate receives a majority of first place votes in the initial tally, the candidate with the fewest first place votes is eliminated. Second and third place votes are reallocated from the eliminated candidate to the remaining candidates according to the rank-ordered voter preferences. The process continues until one candidate obtains a majority of the total votes still outstanding. While the use of IRV/RCV rules in municipal elections is still a relatively new phenomenon in the U.S., the IRV/RCV electoral system has received some scholarly attention. Most of the research is concerned with understanding how voters adapt to the complexity of the new ballot system, whether ballot errors become more prevalent, and whether voters are likely to fully use their option to rank multiple candidate preferences (Neely and Cook 2008; Nielson 2011; Collingwood, Donovan, and Barreto 2009; Neely and McDaniel 2013). To date there is no research into how the adoption of IRV/RCV affects voter turnout in urban elections.

In this article, I analyze how the adoption of IRV/RCV affects voter turnout in San Francisco mayoral elections from 1995 to 2011. I argue that the added complexity of the IRV/RCV balloting process will affect voter turnout in two ways. First, IRV/RCV will have a

¹ Among the cities in the United States that have adopted Instant-Runoff Voting for municipal elections are: Berkeley, CA, Burlington, VT, Minneapolis, MN, Oakland, CA, Pierce County, WA, San Francisco, CA, and Takoma Park, MD.

negative effect on turnout of young voters and of those with the low levels of education. Second, the more complicated IRV/RCV voting process obscures the process by which voters translate racial group interests into voting decisions. Therefore, voter turnout will vary according to the racial group interests at stake in the election, as well as the perceived level of racial group competition.

In order to test these arguments, I compare racial group turnout rates in the three mayoral elections conducted prior to the use of Rank-Choice Voting to group turnout rates in the two mayoral elections since the adoption of Rank-Choice Voting. The results show a significant decline in voter turnout among Black and White voters after the adoption of IRV/RCV. Additionally, I find that IRV/RCV has exacerbated participatory inequalities related to education and age, but has reduced the effect of income on voter turnout. Finally, the results show that IRV/RCV has the potential to diminish the effects on voter turnout of perceived racial group competition associated with racially diverse context.

Voter Turnout in Urban Elections

Many of the rules and institutions that shape voter behavior in urban elections originate out of the Progressive Reform era, which was particularly successful in the Western portion of the United States, and in small to medium size cities (Bridges 1999; Hays 1964). One stated goal of Progressive era reforms was to “de-politicize” urban and local elections by severing the connection between local politics and statewide or national partisan conflicts. Based on this goal, reformers advocated for such electoral rules as non-partisan elections for local office and odd-year election timing designed to further decouple the local and national election calendar. The result, in many if not most cases, was a significant decrease in political participation and voter turnout in urban elections, especially among individuals and groups who were least likely to be engaged (Hajnal and Trounstine 2005; Wood 2002).

According to the “civic voluntarism” model of political participation, the decision to vote in elections is largely determined by three factors. First, those who have more individual socioeconomic resources and civic skills related to the electoral process are more likely to vote (Brady, Verba, and Schlozman 1995; Verba, Schlozman, and Brady 1995). Individual resources and civic skills gained with education, age, and experience can decrease the perceived costs of

participation, such as time and information, and increase the perception of potential benefits of participation, such as personal satisfaction related to performing a civic duty (Wolfinger and Rosenstone 1980; Brady, Verba, and Schlozman 1995; Leighley and Nagler 2013). Second, the decision to vote in an election is also determined by individual attitudes such as political interest, partisan attachment, and a sense of political efficacy, all of which may greatly increase an individual's perception of the importance of electoral participation (Gerber, Huber, and Washington 2010; Gerber et al. 2010; Gerber, Green, and Larimer 2008). Additionally, an individual's decision to participate can be strongly influenced by whether she is mobilized through some form of political or social interaction (Huckfeldt 1979; Huckfeldt and Sprague 1995; Rolfe 2012). In this way, campaign mobilization increases turnout by increasing political interest, engaging social network connections, and activating partisan attachment and other group identities (Holbrook and Weinschenk 2013; Nickerson, Friedrichs, and King 2006; Whiteley and Seyd 1994).

In the urban context, research shows that racial group identity is the fundamental factor that shapes political behavior and attitudes, especially in the absence of partisan cues. Urban electoral behavior is best understood as the product of the conflict and competition between racial groups for the limited resources and benefits of urban governance (Kaufmann 2004; Hajnal and Trounstein 2014). Group competition for the limited resources of urban governance provides the underlying structure that links racial identity and group interests (Browning, Marshall, and Tabb 1996; Lublin and Tate 1995; Stone 1989). Given this dynamic, the presence on the ballot of an in-group candidate is an especially strong determinant of racial group voter turnout (Barreto 2007; Barreto, Villarreal, and Woods 2005; Cho, Gimpel, and Dyck 2006; Herron and Sekhon 2005; Matsubayashi and Ueda 2011; McConnaughy et al. 2010). In particular, Black voters have been shown to be particularly likely to increase turnout when a Black incumbent or viable Black challenger are on the ballot (Spence, McClerking, and Brown 2009; Keele et al. 2013; Shah and Marschall 2011).

Electoral rules and institutions that provide clear signals about the stakes of electoral participation in relation to racial group interests will have a strong effect on voter participation (Caren 2007; Hajnal and Lewis 2003). For instance, the degree to which urban and local

governing institutions are arranged to fragment or consolidate political authority can vastly alter benefits to participating in electoral politics (Kelleher and Lowery 2008; Kelleher and Lowery 2004; Oliver 2000; Oliver, Ha, and Callen 2012). Changes to the electoral system that make voting more costly tend to lower turnout and increase participatory inequalities. Some changes, such as removing party labels from ballots, make voting more costly by disconnecting important informational signals that voters use to guide their decisions (Schaffner, Streb, and Wright 2001). Other changes, such as the use of at-large versus district-based elections, lower the stakes of electoral participation and exacerbate representational inequalities, especially for racial and ethnic minority groups (Hajnal and Trounstine 2005; Trounstine and Valdini 2008). Turnout tends to be higher when elections are competitive, while elections that feature popular incumbents tend to produce lower levels of voter turnout (Caren 2007).

The salience of racial group interests as a voting cue varies with perceived group competition (Kaufmann 2004). Racial context, the relative diversity of an individual's contextual environment, is a particularly important determinant of the perception of group conflict and competition. According to theories of racial threat and competition, as an individual's racial context environment becomes more diverse, perceptions of group competition increase, which tends to increase the perceived stakes of electoral participation (Cho, Gimpel, and Wu 2006; Hajnal and Trounstine 2014). A competing perspective indicates that racially diverse contexts encourage positive social interaction, leading to lower levels of racial hostility and lower levels of perceived racial group competition (Baybeck 2006; Oliver and Wong 2003; Oliver 2010).

Importantly, an individual's experience and response to racial diversity will depend on the relative status of the in-group within a city's racial hierarchy, as well as the group's position within a city's political coalition (Bishin, Kaufmann, and Stevens 2011; Bobo and Hutchings 1996; Hajnal and Trounstine 2014; Liu 2001). The dominant or least marginalized groups tend to respond to racial diversity with greater perception of racial threat and group competition, thus leading to higher levels of voter turnout. Conversely, members of racial groups that are more marginalized are more likely to feel alienated from the political process, and will be less likely to place great importance on the benefits to electoral participation. Those groups are more likely to disengage or de-mobilize as their surrounding contextual environment becomes

more racially diverse.

Information Costs of Instant-Runoff Voting

The first question to ask with respect to how IRCV/RCV can be expected to impact voter turnout is whether the IRV/RCV process increases the information costs and constraints associated with the voting decision, compared to traditional primary-runoff elections? The fundamental difference is that IRV/RCV ballots ask a voter to rank-order multiple candidate preferences from the list of declared candidates, compared to choosing one preferred candidate from the list in the traditional primary stage. And of course, in a runoff stage of an election, voters are presented with the even simpler task of making a choice between two candidates. Based on this comparison, the potential exists for information costs to be increased in two ways. First, the more complicated ballots required by the IRV/RCV process pose the potential problem of causing voter confusion and ballot error (B. Sinclair, McConnell, and Green 2012; D. E. B. Sinclair and Alvarez 2004). Second, the process of candidate evaluation required in order to rank-order multiple candidates may impose higher information costs on voters, and may be fundamentally more challenging than choosing one preferred candidate (Lau and Redlawsk 2001; Lau and Redlawsk 2006).

Research into how the transition to Instant-Runoff Voting affects voting behavior in U.S. urban elections has largely focused on whether the new IRV/RCV ballots are associated with higher rates of ballot errors that can disqualify otherwise legitimate votes. Several studies have examined whether alternate voting systems such as IRV/RCV produce more uncounted ballots due to incompletely marked ballots (undervotes), incorrectly marked ballots, called overvotes, or ballots that are not included in the final tally, called ballot exhaustion (Collingwood, Donovan, and Barreto 2009; Burnett and Kogan 2012). Burnett and Kogan (2012) examine ballot exhaustion and undervoting in four municipal RCV elections, and find that majority-minority precincts had lower rates of undervotes, but also lower rates of exhausted ballots. Neely and Cook (2008) examine the prevalence of voter errors and uncounted votes during the first few years of the use of RCV ballots in San Francisco. They find that IRV/RCV ballots tended to increase overvoting, but decrease undervoting. The resulting error rate was more consistent with punch-card ballot systems, which are associated with high error rates compared to

alternative systems. The increase in overvotes in San Francisco occurred despite the use of optical ballot scanning technology designed to catch and correct ballot errors. Neely and Cook (2008) find that African-American and Latino voters were particularly likely to produce an overvote error using the IRV/RCV ballots. Additionally, they find positive association between overvotes and percent foreign-born population and those with language difficulties. Additional research extending the analysis to include more recent elections confirms the relatively high prevalence of ballot errors, particularly among African-American and Latino voters (Neely and McDaniel 2013; Cook and Latterman 2012). The findings of increased ballot errors by voters using IRV/RCV style ballots are consistent with previous research showing that more complex ballot structures tend to increase the informational complexity of the voting task, producing more ballot errors, and making the act of voting more costly for many voters (Miller and Krosnick 1998; Tomz and Houweling 2003; D. E. B. Sinclair and Alvarez 2004).

In addition to presenting voters with a more complicated ballot, IRV/RCV increases the information costs for voters by asking them to engage in a more complicated process of candidate evaluation. Lau and Redlawsk (2006) demonstrate that the process of ranking candidates is a more cognitively demanding task compared to the act of choosing one preferred candidate. Lau and Redlawsk argue that cognitively demanding voting tasks advantage sophisticated voters, those with higher levels of political knowledge and interest, who are able to more efficiently process available information in order to make a correct voting decision that is line with their interests and political preferences. This is especially the case when there are fewer partisan and ideological voting cues to guide the process of choosing and/or ranking, as is the case with most municipal elections (Oliver, Ha, and Callen 2012).

Political scientist Rich DeLeon disputes the argument that the IRV/RCV style ballots increase the informational costs of voting (DeLeon 2005; DeLeon 2012). DeLeon's analysis is based on an exit poll survey conducted in November, 2004, after IRV/RCV was used for the first time in a San Francisco Board of Supervisors election (Neely, Cook, and Blash 2006). Asked to describe how well they understood the RCV process, 88% of survey respondents expressed that they understood the RCV ballots fairly well or perfectly well, and 46% of respondents indicated that the task of ranking was either "easy" or "very easy" compared to 16% who indicated that it

was either “difficult” or “very difficult” (DeLeon 2005). DeLeon notes that some voters did spend more time and effort to gather information about the candidates because of IRV/RCV. “About 31 percent of sample voters said they gathered more information than in the past, about 7 percent said less, and the rest reported no difference” (DeLeon 2012). According to DeLeon’s analysis, those who did seek out more information were more likely to express approval of IRV/RCV. “An estimated 71 percent of voters who gathered ‘more’ information on the candidates said they preferred RCV” (DeLeon 2012).

In a separate analysis of exit poll survey data from San Francisco, Neely et al (2006) provide evidence that the informational costs of IRV/RCV ballots are not distributed equally in the electorate, and that voter’s opinions of IRV/RCV varied systematically with individual race and education level. Respondents with low educational attainment (high school education or less) were much more likely to report difficulty with understanding the IRV/RCV process. African-American and Latino respondents were less likely to express support for RCV compared to White or Asian respondents. Finally, Neely et al (2006) find that 31% of those who did not fully rank candidate preferences (using all three available ranking options) indicated it was because they did not have enough information about the candidates. Putting aside the civic benefits of encouraging more deliberative and informed voting, this is clear evidence that, for some voters, IRV/RCV increases the informational costs of the voting task. Moreover, it does so in ways that are to the advantage of those sophisticated voters who are particularly interested in politics, and who are more likely to possess the civic resources and skills to adapt to the complicated voting process.

Racial Group Interests and Instant-Runoff Voting

The second question to address with respect to how IRV/RCV may affect voter turnout is whether voting in IRV/RCV elections alters the perceived benefits associated with electoral participation? From one perspective, IRV/RCV expands the range of possible choices available and offers a certain degree of protection against “wasting” a vote on a candidate who may be otherwise less viable. In this way, IRV/RCV gives voters the ability to express a more complete and “sincere” set of preferences, thereby stimulating interest in urban and local politics, especially among those who have low levels of political efficacy and are less likely to be

connected to the electoral process (DeLeon, Jerdonek, and Hill 2006a; DeLeon, Jerdonek, and Hill 2006b; Jerdonek 2006; S. Hill 2010; S. Hill and Richie 2010; Robert Richie, Bouricius, and Macklin 2001; Rob Richie, Kleppner, and Bouricius 2000; Robert Richie 2004). Additionally, IRV/RCV style elections will reduce incentives for candidates to engage in negative and racially divisive campaigning, which should also stimulate increased levels of political interest and civic engagement (DeLeon 2012; S. Hill 2010). According to this perspective, while rank-ordering three candidates may be a more cognitively demanding task, IRV/RCV style elections should compensate for the cognitive effort by stimulating greater interest in politics, as well as reducing political cynicism and the accompanying voter alienation that many associate with the electoral process. The bottom line is that IRV/RCV would be expected to stimulate voter turnout by increasing the perceived benefits of electoral participation.

This argument makes several assumptions about voting in urban elections that are not consistent with the literature on urban voting behavior. First, the expanded choice perspective of IRV/RCV mistakenly assumes that campaigning is essentially a worthless process, and also that negative campaigns cause voter disengagement. However, this perspective is not consistent with findings in the campaign effects literature about the important role campaigns can play in informing voters about important issues, and clarifying for them the stakes of electoral participation. By removing the run-off portion of an electoral campaign, IRV/RCV removes a crucial source of information that can help voters connect their interests and preferences to a voting decision (Matson and Fine 2006; Arceneaux and Kolodny 2009).

Second, it does not recognize the fundamental importance of racial group identity and perceived racial group interests to participation and voter turnout in urban elections. The literature of urban voting and elections makes it clear that institutional arrangements are most likely to succeed in increasing civic engagement and voter turnout when those arrangements clarify the stakes of electoral participation. Nor does the argument of expanded choice adequately engage with the troubled history of urban reform, especially the detrimental effects of reform on the level of voter turnout among racial and ethnic minority groups. Adding to concerns about the relationship between IRV/RCV style elections and the perceived benefits of participation, Neilson (2011) finds that the use of IRV/RCV significantly increases the perception

among voters that their vote would not be counted accurately; an effect particularly prominent among racial minority voters.

Third, by suggesting that IRV/RCV will help to alleviate racial tensions and diminish racially divisive elections, this argument fails to engage with findings that show increased perception of racial competition can actually help to propel people towards civic engagement and political participation.² Reducing racial tension and resolving conflict through the processes of urban politics and governance are certainly praiseworthy goals. However, attempting to do so by making the voting process more costly and obscuring the benefits of participation will serve to suppress voter turnout and civic engagement. The result may give the appearance of diminishing group competition and conflict, but will, in reality, make it less likely that legitimate group competition will be expressed and resolved through the electoral process.

Expectations: IRV/RCV Increases Information Costs and Obscures Group Benefits

I argue that IRV/RCV increases the information costs of voting by asking voters to engage in a more cognitively demanding task of rank-ordering candidates, and by removing some of the potential information cues provided by a run-off campaign. If IRV/RCV makes voting more costly, then turnout should decrease among those with lower levels of socioeconomic resources and civic skills, such as the young, and those with low levels of education and income.

By making the voting decision more complicated and costly, Instant-Runoff Voting obscures rather than clarifies the benefits of electoral participation, making it more difficult for voters to express racial group interests through the voting decision. If so, voter turnout should vary according to the racial group interests at stake in the election. Turnout should be expected

² There is disagreement in the research literature about whether IRV/RCV voting rules (often referred to as the Alternative Vote) contribute to the alleviation of ethnic conflict and the production of ideological moderation (Fraenkel and Grofman 2004; Fraenkel and Grofman 2006; Fraenkel and Grofman 2007; Horowitz 2004; Horowitz 2007; Ben Reilly 1997). However, even those scholars who argue that IRV/RCV can alleviate ethnic conflict emphasize that that effect crucially depends on the presence and ability of political parties to guide supporters towards appropriate strategic voting scenarios (Horowitz 2007). Additionally, there is reason to doubt the applicability of these findings, largely based on national multi-party style elections, to the case of the adoption of IRV/RCV in non-partisan urban elections in the U.S.

to decline among those groups without clearly defined benefits of electoral participation. For instance, the IRV/RCV process would be more likely to affect those racial groups that lack the option to support a viable in-group candidate. Turnout would be lower among those groups, compared to those groups with the option to support a viable in-group candidate.

Finally, by obscuring the connection between racial group interests and voting behavior, I argue that IRV/RCV reduces the ability of voters to express perceived racial group competition through voting behavior. Given that voter turnout tends to increase with perception of racial group competition, and that perception of competition tends to increase with the racial diversity of a voter's contextual environment, then IRV/RCV should reduce the positive relationship between voter turnout and racial diversity.

San Francisco Mayoral Elections, 1995 – 2011

In order to evaluate my expectations about the effects of IRV/RCV, I examine racial group voter turnout during the past five San Francisco mayoral elections, 1995 – 2011. San Francisco provides an interesting and probative test case for several reasons. The high levels of racial diversity of the electorate and the variation in candidate race over time provide excellent material for the consideration of racial group competitive behavior. In San Francisco, politics is generally dominated by competition between two coalitions that are characterized by racial group competition and ideological divisions, with neither coalition capable of establishing a stable governing consensus (DeLeon 1992; DeLeon 2004). The progressive faction largely consists of ideologically progressive White voters and the large majority of Latino voters. Historically, ideological divisions in San Francisco politics have been rooted in post-materialist issues and concerns, such as environmental conservation, historical preservation, and an identity politics associated with advocating for egalitarian policies to reverse discrimination. The competing faction spans the liberal to moderate portion of the ideological spectrum, and is a multiracial/multiethnic assemblage of Asian-American, Black, and White voters who tend to be more supportive of business and police, and for government policies that protect homeowners compared to renters. Starting with Willie Brown's successful challenge of incumbent Frank Jordan in 1995, each mayoral election has been won by the liberal to moderate faction whose electoral success depended on assembling a multiracial coalition of voters, including

large majorities of Asian and Black voters, plus a plurality of White voters. The candidates from the competing progressive faction made strong showings in 1999, 2003, and 2011, but ultimately lost each of those elections to the candidate supported by the liberal to moderate coalition of voters.

Table 1 summarizes the variation across the five elections in candidate race, incumbency status, and the use of IRV/RCV. The three elections from 1995 to 2003 took place under the traditional primary and run-off system. Rank-Choice Voting was adopted for use in San Francisco municipal elections starting in 2004, and was first used for a mayoral election in 2007. However, the 2007 election was relatively uncompetitive because it featured a popular incumbent, Gavin Newsom, who easily won re-election. The 2011 election was closely contested by a large number of candidates, many who were considered to be viable contenders. During the 2011 election, the viable contenders included four Asian-American candidates, and two Latino candidates. There were at least three White candidates who were initially considered to be credible contenders, but, in the end, no White candidate finished higher than seventh place. The top two candidates in 2011 were John Avalos, a progressive Latino who surprised many observers by finishing a strong second place, and Ed Lee, whose victory made him the first Chinese-American elected mayor in San Francisco history.

The Data: Voter Turnout in San Francisco Mayoral Elections, 1995 – 2011

Preferably, an analysis of voter turnout variation over five mayoral elections would utilize exit poll survey data to estimate accurate measures of individual turnout behavior and group turnout rates over time. Unfortunately, such surveys are rarely conducted for mayoral elections in San Francisco, and thus do not provide consistent measurement over the five elections. An additional problem is that individual survey data from municipal election exit polls may provide biased estimates of quantities of interest that involve racial and ethnic minority groups (Barreto et al. 2006).

In the absence of adequate individual-level survey data, ecological inference methods can be used to estimate racial group turnout at the precinct-level (G. King 2000; G. King 1997). Despite many advances in the use of ecological inference to produce accurate estimates of voting behavior, one problem that is relevant for the current analysis is that ecological

inference procedures can produce biased estimates in the presence of spatially auto-correlated data (Cho and Manski 2006; Anselin and Cho 2002). Spatial autocorrelation occurs when, for instance, group population and associated vote totals are clustered together in geographic space. Geographic clustering can be a common occurrence in racially diverse urban areas, such as San Francisco, that exhibit residential segregation and social stratification. Fortunately, there are methods to account for such spatial autocorrelation in order to provide unbiased estimates of racial group voter turnout that are suitable for further analysis (Adolph et al. 2003). One such method is the use of a Geographically-Weighted Ecological Inference model (GWR-Ei), which involves incorporating a spatial covariate during the estimation process to adjust for spatial autocorrelation in the data (Calvo and Escolar 2003). I use the GWR-Ei approach developed by Calvo and Escolar (2003) and apply it to the development of R x C Multinomial-Dirichlet ecological inference models of racial group turnout using the eiPack package in R (King 2010; Lau and Moore 2006; Lau, Moore, and Kellermann 2007). A brief description of the procedure follows.

First, U.S. Census Block-level measures of Citizen Voting Age Population (CVAP) by Race and Hispanic/Latino identity were aggregated to and geographically merged with San Francisco voting precincts.³ Next, the Citizen Voting Age Population measures are joined to precinct-level vote totals for each of the five mayoral elections from 1995 – 2011. Finally, GWR-Ei models are used to estimate precinct-level voter turnout as a proportion of Citizen Voting Age Population for Asian, Black, Hispanic /Latino, and non-Hispanic White racial groups.⁴

³ As demonstrated by McDonald and Popkin (2001) and Holbrook and Heidbreder (2010), there are systematic differences between the Voting Age Population (VAP) and the Voting Eligible Population (VEP). Measures of turnout based on VAP rather than VEP tend to underestimate overall and group turnout rates, especially among those groups whose population may potentially include larger numbers of non-citizens and/or felons. Both studies suggest that measuring turnout as a proportion of CVAP, as I do here, can be used as appropriate partial corrective. For a detailed discussion of the methodology for the estimation of CVAP measures, see McCue (2011) and Chapa, et al (2011).

⁴ Data Sources: 1990 U.S. Census (SF1 and PL94-171), 2000 U.S. Census (SF1 and PL94-171), and 2010 U.S. Census (SF1) obtained via the California Statewide Database (<http://statewidedatabase.org/>). Data source for voting precincts: San Francisco Department of Elections.

Figure 1 illustrates the mean estimated precinct-level voter turnout for each racial group across the five elections. On average over the past five elections, 34% of the Citizen Voting Age Population turned out to vote. The overall turnout average of 34% is exactly in line with previous estimates of average voter turnout in urban elections provided by Wood (2002), but higher than the 27% average urban election turnout estimated by Schaffner, et al (2001). The overall mean turnout for 1995 – 2011 is heavily skewed by White voter turnout, which at 52% is consistently the highest group turnout rate, and also the only group that consistently turns out at a rate above the overall average of 34%. Asian turnout averages 30% over the period from 1995 to 2011, but Asian voter turnout has increased quite dramatically for the two most recent elections, reaching 46% in 2011. Asians are the only group who turned out to vote at a higher rate in the 2011 election compared to the previous four elections. Latino voter turnout was 28% in the 2011 election, which represents a steady increase since the low of 21% in 1999. Black voters turned out at a 14% rate during the 2011 election, a sharp decrease from the peak rate of 42% turnout in the 1999 election. Perhaps even more troubling than the sharp decline is the range of variation across precincts for Black voter turnout in 2011, with turnout of less than 20% in the overwhelming majority of all precincts.⁵ Finally, White voter turnout dropped to 41.6% in 2007, but rebounded to 48% for the competitive, open election of 2011. Putting aside the relatively uncompetitive election of 2007, the 48% turnout rate amongst White voters in 2011 is substantially lower than the rates seen in the previous elections, with 53% turnout in 1995, increasing to 56% in 1999, and finally reaching 61% in 2003.

Plan of Analysis

What factors influence the patterns of racial group voter turnout illustrated in Figure 1? To begin, I conduct a mean comparison analysis of turnout according to four factors that vary over the course of the five elections: the adoption of Instant-Runoff Voting, whether or not the election features an incumbent mayor, candidate race, and the adoption of an expanded program of public financing campaigns. According to the mean comparison results, contained in Table 2, turnout for Asian and Latino voters was significantly higher in the two IRV/RCV

⁵ Table A1 contains descriptive statistics for racial group turnout variables in each of the five elections.

elections of 2007 and 2011 compared to the previous three elections. On average, Asian turnout increased by almost 16 percentage points and Latino turnout increased by 2 points. However, turnout among Black and White voters is significantly lower in the two IRV/RCV elections. On average, Black voter turnout declined 21.2 percentage points under IRV/RCV, while White voter turnout was about 13 points lower in the two elections that featured IRV/RCV. The only factor that is associated with higher voter turnout for all four racial groups is the presence of a viable in-group candidate on the ballot. There is an almost 19 percentage point increase in Asian voter turnout associated with the ability to vote for a viable Asian candidate in 2011. Black voter turnout was about 17 percentage points higher for the two elections that featured an African-American candidate compared to the three elections that did not. White voter turnout is 5 points higher in the four elections that featured a White candidate, compared to the 2011 election that did not feature a viable White contender. Latino turnout is only one half point higher in the presence of a viable Latino candidate.

The mean comparison analysis indicates that the adoption of IRV/RCV starting with the 2007 mayoral election had a variable impact on voter turnout across racial groups in San Francisco. The mean comparison analysis also makes it clear that to understand the impact of RCV/IRV, it will be necessary to understand the impact of other confounding factors at both the election-level, in particular candidate race, and also precinct-level factors such as population age, education, income, and racial diversity.

To that end, I utilize multilevel mixed-effects linear regression to model precinct-level racial group turnout with explanatory variables at the precinct-level (level 1) and at the election-level (level 2). The choice to use a multilevel model specification is dictated by several factors. First, because I hypothesize that the effects of SES and racial diversity on turnout will differ in an IRV/RCV election, compared to a non-IRV/RCV election, I am therefore assessing the effects of the cross-level interaction between predictors that occur at both the precinct-level and at the election-level, most importantly with the IRV/RCV indicator. Second, because of the limited number of elections relative to the large number of precincts, the multilevel model with randomly varying intercept for election year provides the best estimate of the effects of an election-level variable such as RCV/IRV (Gelman and Hill 2007). A single-level model that

includes dummy variable indicators for election year will underestimate the standard errors associated with the election-level variables because of the assumption that each precinct is an independent unit, rather than clustered or grouped together by election year. The multilevel model specification adjusts for the election-year clustering in precinct-level turnout, which provides a correct estimate of standard errors (Steele 2008). Third, the multilevel models estimate election-level variance parameters that allow for the calculation of proportion of the unexplained variance that is related to both the differences between elections and the differences within elections.

The precinct-level dependent variables for racial group turnout from each of the five elections were spatially joined to precinct-level data, including measures of population age, educational attainment, income, and racial diversity.⁶ The resulting data was then partially pooled and grouped by election year to create a multilevel structure of voting precincts (level 1) nested within elections (level 2). Each model contains dummy indicator variables for the following election-level predictors: IRV/RCV, Incumbency, and whether the election featured a viable In-Group Candidate. The In-Group Candidate variable is defined as finishing in first or second place in an IRV election, or making the run-off in a non-IRV election. To estimate the effects of socioeconomic status and civic resources on turnout, the models contain the following precinct-level predictors: median household income (divided by \$10,000), population proportion 18 – 24 years of age, population proportion 65 years of age or older, population proportion with less than a high school education, and population proportion with a graduate or professional degree. To estimate the effects of racial diversity on turnout, the following precinct-level racial context measures are included: proportion of the population that is Asian, Black (not Hispanic/Latino), Hispanic/Latino, and White (not Hispanic/Latino). For precinct-level racial diversity, each model contains only the three out-group racial context population variables. So, for instance, the Asian turnout model contains separate racial context variables

⁶ Data sources: 1990 U.S. Census (SF1 and SF3), 1990 Census Redistricting (PL94-171), 2000 U.S. Census (SF1 and SF3), 2001 Census Redistricting (PL94-171), and 2010 U.S. Census (SF1), and U.S. Census American Community Survey: 2005 (3-year estimates), 2007 (3-year estimates), 2010 (ACS 5-year estimates), and 2011 (3-year estimates) obtained via U.S. Census American Fact Finder. Census Block Group and Tract level measures were apportioned to Census Blocks before being spatially joined to SF voting precincts.

for Black, Latino, and White population, but not the measure of Asian population. Finally, in order to separate out the effects of each predictor in an IRV/RCV election compared to a non-IRV/RCV election, cross-level interaction terms were created for each variable in the model.

Findings: Racial Group Interests and Socioeconomic Resources

The estimates from the multilevel linear regression models of the four racial group turnout variables are contained in Table 3.⁷ Instant-Runoff Voting is associated with a significant decline in Black voter turnout and White voter turnout, controlling for incumbency, candidate race, precinct socioeconomic status, education, population age, and racial diversity. On average, Black voter turnout decreases by 18 points and White voter turnout decreases by 16 points in an IRV/RCV election compared to a non-IRV/RCV election. There is no statistically significant difference in Asian or Latino turnout associated with IRV/RCV. The increase in Asian voter turnout in 2007 and 2011 is related to factors other than IRV/RCV. Asian voter turnout increases by about 28 points when there is at least one viable Asian candidate on the ballot. These results are consistent with the expectation that the effects of IRV/RCV would vary according to the different level of racial group interests at stake. The presence on the 2011 ballot of several viable Asian candidates, including the eventual winner, presented clear and strong signals to Asian voters about the racial group interests at stake in the election.

Figure 2 illustrates the population averaged marginal effect of population age and education on racial group turnout in an IRV/RCV election compared to a non-IRV/RCV election. In an IRV/RCV election, an increase in the population with less than a high school education is associated with a significant decrease in voter turnout among all four racial groups. A 10% increase in the population with less than a high school education produces a decrease in voter turnout of just under 1 point for Asian, Black, and Latino voters, and around a 2 point decrease in White voter turnout. For Black and Latino turnout, there is a negative relationship between turnout and low levels of education in the population regardless of whether the election is held

⁷ The precinct-level variables are continuous measures of precinct population proportion. Each has been mean-centered so that the constant term can be interpreted as the predicted racial group turnout for an average precinct in an election without IRV/RCV, without an incumbent candidate, and without an in-group candidate.

under IRV/RCV rules or not. However, among Asian and White voters in a non-IRV/RCV election, there is no statistically significant effect on turnout associated with the less than high school education variable. Among all four racial groups there is a positive relationship between graduate education and turnout. The effect is strongest among White voters with a 10% increase in the population with a graduate education producing, on average, an increase in White voter turnout of over 1 percentage point. Yet, in non-IRV/RCV elections, there is a strong negative effect on voter turnout as the population becomes increasingly educated. Among White voters, turnout decreases by almost 3 points for a 10% increase in the population with a graduate or professional education. The results suggest that the information costs associated with the IRV/RCV process have a significant impact on the least educated. On the other hand, the information costs of voting in an IRV/RCV election work to the advantage of the most highly educated members of the population.

With regards to population age, in an IRV/RCV election, turnout decreases among all groups as the precinct population that is 18 to 24 years of age increases. According to the results for all four racial groups in Figure 2, a 10% increase in the precinct 18-24 year old population produces a decrease in turnout in the range of 1 to 2 percentage points. In comparison, for a non-IRV/RCV election, there is no significant decrease in turnout among Black, Latino, and White voters associated with increases in the 18 to 24 year old population. The decrease in Asian voter turnout associated with an increase in the 18-24 year old population is significantly greater in IRV/RCV elections, compared to non-IRV/RCV elections. For all groups, in IRV/RCV elections there is a significant increase in turnout as the population 65 years of age or older increases. White voter turnout increases by almost 3 percentage points with a 10 point increase in the population 65 years and older. But, that relationship either disappears or reverses in non-IRV/RCV elections, with the exception of Asian voter turnout. For Latino voters, a 10 point increase in the population 65 years of age or older is associated with a 1 point increase in turnout in IRV/RCV elections, but a 1 point decrease in turnout in non-IRV/RCV elections. These results suggest that the information costs associated with IRV/RCV are more likely to have a significantly negative impact on turnout among the young, in comparison to older members of the electorate whose experience with the act of voting may allow them to

better navigate the increased demands of voting in an IRV/RCV election.

According to the regression coefficients contained in Table 3, turnout among all four groups increases with median household income. The effect of income is largest for Black and White voters. On average, a \$10,000 increase in precinct median household income produces a 3-point increase in turnout for those groups. However, the results indicate that in an IRV/RCV election, the positive relationship between voter turnout and income is diminished, if not entirely eliminated. In an IRV/RCV election, higher levels of income are not associated with higher levels of voter turnout, as they are in a non-IRV/RCV election. This result is not consistent with expectations regarding the relationship between socioeconomic resources and turnout in IRV/RCV elections, and indicates that the IRV/RCV process may in fact reduce participatory inequalities associated with differences in income.

Findings: Racial Context

Turning now to a consideration of the relationship between voter turnout and racially diverse contextual environments, the results indicate a more complex pattern. Figure 3 depicts the average marginal effects on turnout associated with each of the four measures of racial diversity, comparing IRV/RCV and non-IRV/RCV elections. For Latino voters, examining the effects of Asian, Black, and White racial population context, the results indicate that the relationship between racial diversity and turnout switches from positive in non-IRV/RCV elections, to negative in IRV/RCV elections. Under non-IRV/RCV electoral rules, an increase of 10% in the non-Latino population is associated with approximately an increase of 1 point in Latino voter turnout. In contrast, under IRV/RCV rules, Latino turnout decreases as the non-Latino population increases.

Examining Asian voter turnout, there is one result in which there is a significant difference in the effect of non-Asian population between IRV/RCV and non-IRV/RCV elections. In an IRV/RCV election, a 10% increase in the White population is associated with a 1-point decrease in Asian turnout; in a non-IRV/RCV election, there is no statistically significant relationship between Asian turnout and White population. There is no significant difference in the effect of Black and Latino population increases on Asian turnout. In both cases, Asian turnout increases with increases in the Black and Latino population.

With regards to the relationship between Black voter turnout and increases in the non-Black population, the results in Figure 3 indicate no significant difference in the effect on turnout of increasing racial diversity between IRV/RCV and non-IRV/RCV. Black voter turnout significant decreases with the White population, but increases with the Latino population. There appears to be no significant relationship between Black voter turnout and increases in the Asian population.

Finally, the effects depicted in Figure 3 indicate that White voter turnout consistently increases as the non-White population of a precinct increases. On average, a 10% increase in the non-White population produces around a 1-point to 2-point increase in White voter turnout. Latino population is the only measure for which there is a statistically significant difference between an IRV/RCV election compared to a non-IRV/RCV election. In an IRV/RCV election, White voter turnout increases over 3 points with a 10% increase in Latino population, whereas in a non-IRV/RCV election, turnout increases by around 1.

Above I hypothesized that the IRV/RCV process should obscure the positive relationship between voter turnout and perceptions of racial competition produced by increasingly diverse racial context environments. The results of the analysis are only partially consistent with the expected relationship. For Latino voters, there is a clear decrease in turnout associated with increased racial diversity in IRV/RCV elections compared to an increase in turnout in non-IRV/RCV elections. Similarly, for Asian voters, increasing White diversity in a precinct is associated with a decline in turnout in IRV/RCV elections, compared to an increase in turnout in non-IRV/RCV elections. However, the results for Black and White voter turnout are not consistent with the expectation that IRV/RCV will reduce the increases in voter turnout associated with increased racial diversity. For White voters in particular, the observed relationship is the opposite of what was expected; turnout increases with racial diversity more in IRV/RCV elections compared to non-IRV/RCV elections.

Conclusion

My findings suggest that the high information costs associated with voting in an IRV/RCV election fall most heavily on the youngest and the least educated. On the other hand, sophisticated voters, those who are most experienced and have the highest levels of education,

appear to be better able to navigate the higher information costs, and are less likely to be negatively affected. Instant-Runoff Voting may indeed work to the advantage of sophisticated voters in San Francisco. On the whole, although the relationship between higher income and turnout is diminished, IRV/RCV appears to exacerbate turnout disparities related to age and education.

The negative effects of IRV/RCV on voter turnout vary with perceived racial group interests at stake in elections. The increased mobilization of Asian-American voters over the past few election cycles in San Francisco is related to the opportunity to cast votes for viable Asian candidates. These and other unobserved mobilization effects appear to have offset any negative effects associated with IRV/RCV. However, Black and White voter turnout decreased significantly, even controlling for candidate race. If IRV/RCV obscures connection between racial group interests and voting behavior, and encourages voters to express preferences for more than one candidate, it could be that overall it lowers the perceived benefits related to each choice. For Latino voters, while IRV/RCV has not coincided with a significant decrease in turnout, the more complicated electoral process does appear to have diminished the relationship between perceptions of racial group competition related to increased racial diversity. The reduction in the competition effects of racial diversity associated with IRV/RCV may come with a substantial price: reduced turnout overall.

Advocates for the adoption of Instant-Runoff Voting make many claims about its potential benefits, including the possibility of fairer election results, decreased negative political campaigning, and increased political interest, especially among those who are least likely to be connected to existing electoral systems. The results of my analysis of voter turnout in San Francisco mayoral elections suggest reason for caution with respect to the effects of Instant-Runoff Voting on voter turnout and civic engagement. Activist groups and other advocates of electoral reform often seek to portray their favored change to election rules as a solution to many problems of urban governance and as a salve to improve the health of urban democracy. However, even the most well-intentioned reformers often fail to anticipate the deleterious effects that changes to the rules of voting and elections can have on political participation, especially when it comes to laws intended to increase political participation, civic engagement,

and democratic representation (Burden et al. 2014). The result of over a century of reform efforts at the municipal level in the United States has been the creation of a system of urban elections that is riddled with participatory inequalities, and that systematically rewards some groups over others. Variation in racial group participation in urban and local politics is systematically connected to the underrepresentation of Latinos and Asian Americans (Hajnal and Trounstein 2007; Hajnal 2009). According to my analysis, proponents of IRV/RCV attend to the lessons demonstrated by Bridges and Kronick (1999) and Trounstein (2008) that electoral reforms are most often motivated by a desire to write the rules in order to win the game, rather than enhance democratic representation and decrease racial group conflict and competition. Further research, extending the analysis of voter turnout to other cities as well as examining variation in vote choice, is required in order to more fully ascertain the effects of IRV/RCV on the quality of democratic representation in urban America.

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Table 1. Changing Electoral Rules and Candidate Characteristics in San Francisco Mayoral Elections, 1995 - 2011

	1995	1999	2003	2007	2011
Rank-Choice Voting				●	●
Incumbent	●	●		●	
Asian Candidate					●
Black Candidate	●	●			
Latino Candidate			●		●
White Candidate	●	●	●	●	
Public Finance					●

Table 2. Mean Comparison of Difference in Voter Turnout Associated with Electoral Rules and Candidate Characteristics, 1995 – 2011

	Asian	Black	Latino	White
Rank Choice Voting	40.1 (1004)	14.4 (1004)	27.4 (1004)	44.4 (1004)
No Rank Choice Voting	24.3 (1717)	35.6 (1717)	25.4 (1717)	57.0 (1717)
Turnout Difference	15.9*	-21.2*	2.0*	-12.6*
Incumbent	30.9 (1752)	30.0 (1752)	26.0 (1752)	50.5 (1752)
No Incumbent	28.7 (969)	23.7 (969)	26.5 (969)	55.6 (969)
Turnout Difference	2.3*	6.3*	-.05*	-5.1*
In-Group Candidate	45.9 (426)	37.6 (1174)	26.5 (969)	53.1 (426)
No In-Group Candidate	27.2 (2295)	20.3 (1547)	26.0 (1752)	48.1 (2295)
Turnout Difference	18.7*	17.3*	0.5*	5.0*
Public Finance	45.9 (426)	14.2 (426)	27.6 (426)	48.1 (2295)
No Public Finance	27.2 (2295)	30.3 (2295)	25.9 (2295)	53.1 (2295)
Turnout Difference	18.7*	-16.2*	1.7*	-5.0*

Precinct-level racial group turnout estimated using Geographically-Weighted Ecological Inference. Precinct turnout estimates for the five elections were pooled together. Parentheses represent number of precincts in each categorical grouping. Statistical significance calculated with a one-tailed difference of means t-test for samples with unequal variance. * $p < 0.05$

Table 3. Influences on Voter Turnout, 1995-2011

	Asian Turnout	Black Turnout	Latino Turnout	White Turnout
IRV/RCV Election	.03 (.11)	-.18* (.04)	.003 (.02)	-.16* (.01)
Incumbent Candidate	.15 (.11)	-.01 (.042)		-.07* (.01)
In-Group Candidate	.28† (.16)	.07 (.06)	.01 (.02)	.01 (.02)
Median Income (\$10,000)	.01* (.001)	.03* (.001)	.01* (.001)	.03* (.002)
Age 18-24	-.07* (.03)	.04 (.03)	-.02 (.02)	.06 (.04)
Age 65 plus	.09* (.03)	-.05† (.03)	-.09* (.02)	-.08† (.04)
Education Less than HS	-.05 (.03)	-.12* (.03)	-.06* (.02)	-.07 (.04)
Education Graduate Degree	-.17* (.05)	-.23* (.05)	-.21* (.04)	-.29* (.07)
Asian Population		-.003 (.02)	.11* (.01)	.11* (.03)
Black Population	.07* (.02)		.12* (.02)	.08* (.03)
Latino Population	.05* (.02)	.04* (.02)		.12* (.03)
White Population	.03 (.02)	-.11* (.02)	.09* (.02)	
IRV/RCV*Median Income	-.01* (.002)	-.02* (.002)	-.01* (.001)	-.03* (.002)
IRV/RCV*Age 18-24	-.13* (.05)	-.21* (.05)	-.12* (.04)	-.21* (.06)
IRV/RCV*Age 65 plus	.08† (.04)	.18* (.05)	.18* (.03)	.33* (.06)
IRV/RCV*Less HS School	-.02 (.04)	.05 (.04)	-.03 (.03)	-.08 (.06)
IRV/RCV*Graduate Degree	.24* (.06)	.30* (.07)	.26* (.05)	.43* (.09)
IRV/RCV*Asian Population		-.03 (.03)	-.19* (.02)	.05 (.04)
IRV/RCV*Black Population	-.03 (.03)		-.18* (.03)	.09* (.04)
IRV/RCV*Latino Population	.05 (.03)	.007 (.04)		.19* (.05)
IRV/RCV*White Population	-.11* (.03)	.02 (.03)	-.26* (.03)	
Constant	.16† (.09)	.32* (.03)	.26* (.01)	.61* (.02)
Log-Likelihood	3156	3077	3819	2389
χ^2	254*	636*	336*	792*
ICC	.609	.138	.106	.009
Precincts	2558	2558	2558	2558

Note: Cell entries are multilevel mixed-effects linear regression coefficients with precinct-level observations grouped by election year. Standard errors in parentheses. Dependent variables are GWR-Ei estimated precinct-level racial group turnout calculated as proportion of citizen voting age population.

† $p < .10$, * $p < .05$ (two-tailed)

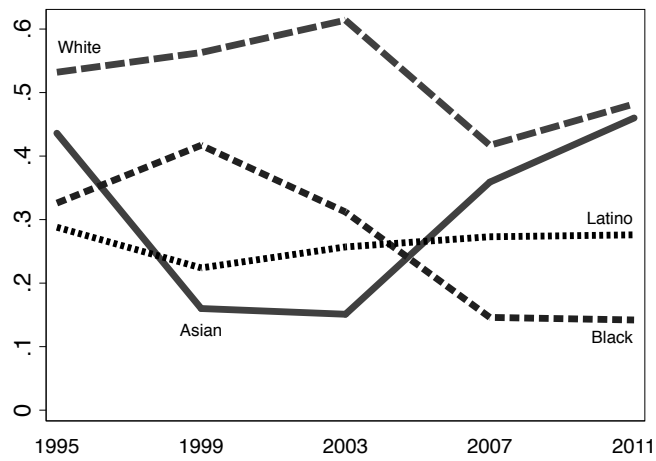


Figure 1. Average voter turnout by racial group for the five San Francisco mayoral elections from 1995 - 2011. Turnout as proportion of group citizen voting age population estimated at the precinct-level with a geographically-weighted ecological inference model.

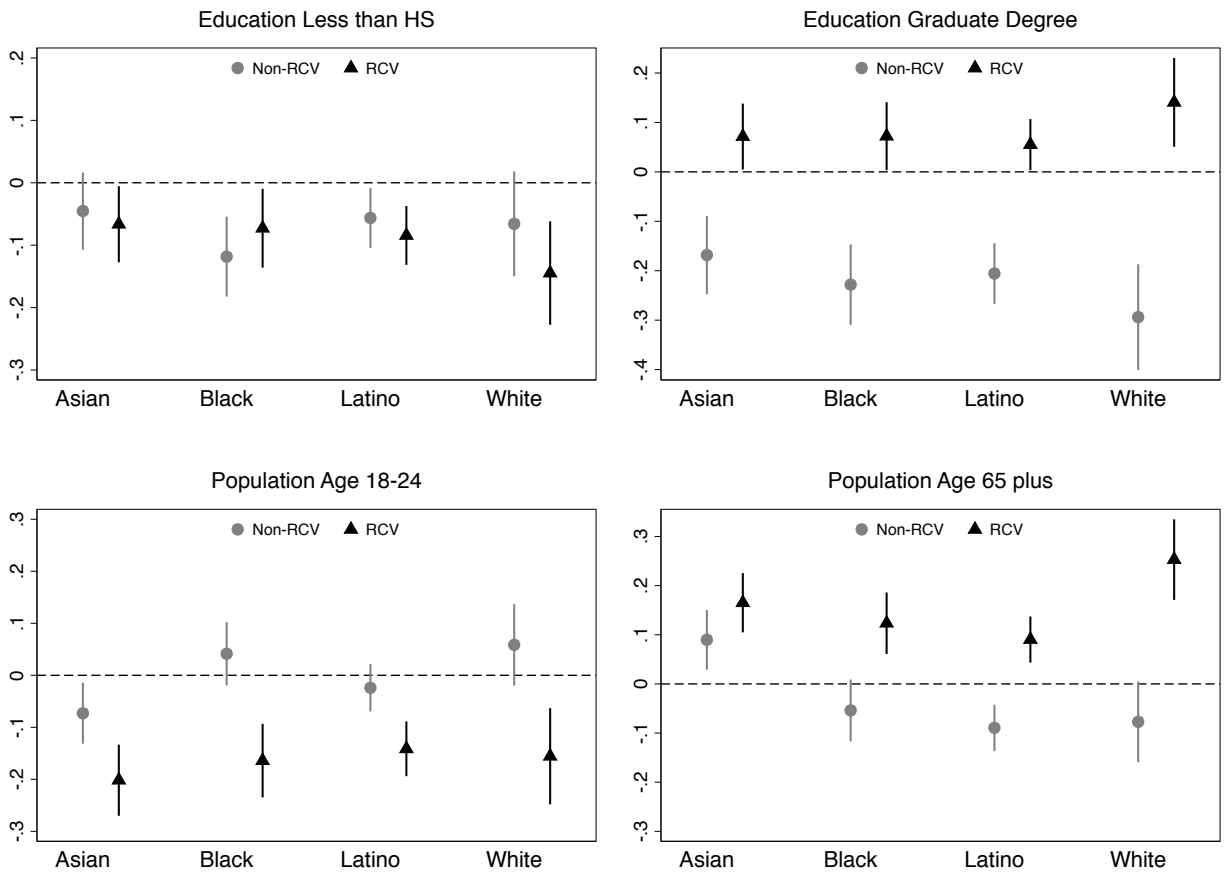


Figure 2. Average marginal effect with 95% confidence interval of population educational attainment and age on racial group turnout in IRV/RCV elections compared to elections without IRV/RCV ballots. The estimated marginal effects show that the use of IRV/RCV ballots exacerbates turnout disparities between the least educated and the most educated, as well as between the youngest and oldest.

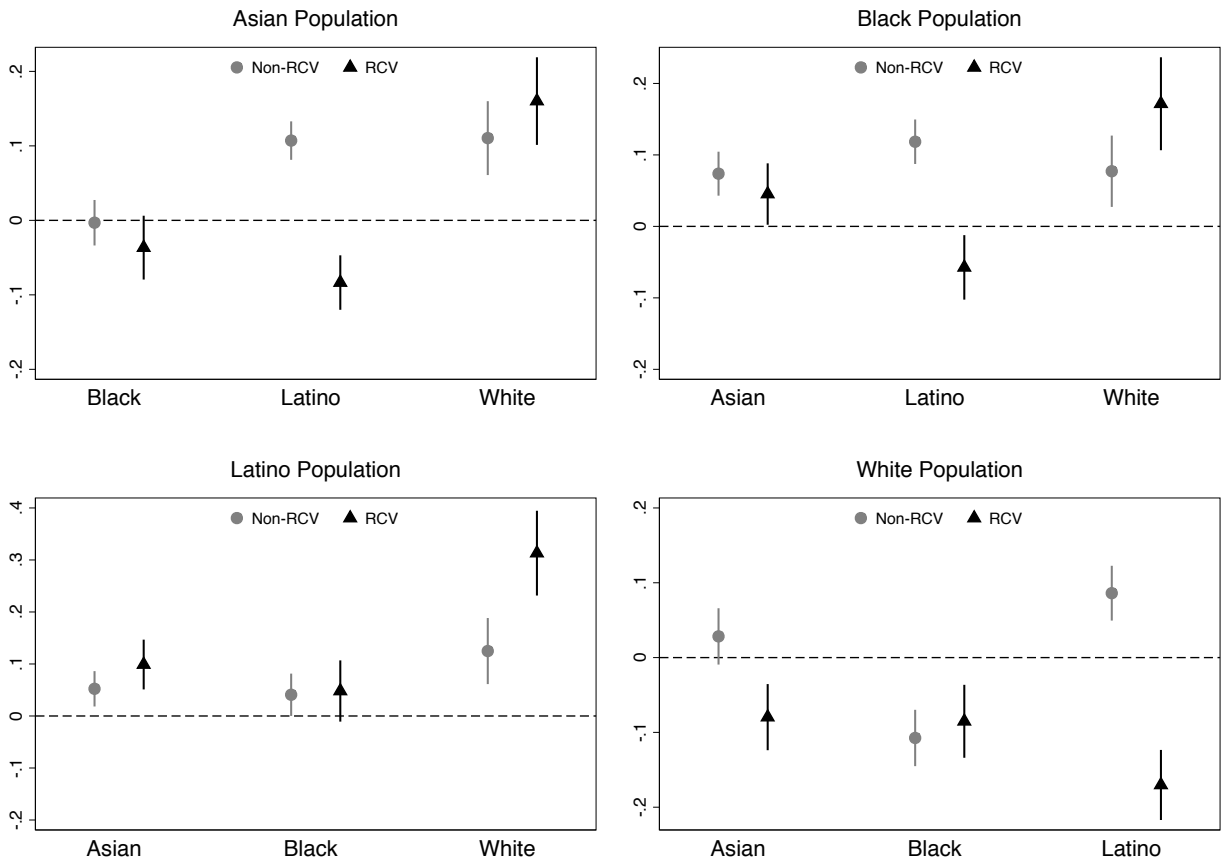


Figure 3. Average marginal effects of racial diversity on racial group turnout in IRV/RCV elections compared to elections non-IRV/RCV elections. The estimates indicate that for some groups, there is a significant difference in the effects of racial diversity on turnout in an IRV/RCV election compared to a non-IRV/RCV election.