Who Votes: City Election Timing and the Composition of Voters*

DRAFT

Zoltan Hajnal
University of California,
San Diego
zhajnal@ucsd.edu

Vladimir Kogan
Department of Political Science
Ohio State University
kogan.18@osu.edu

July 8, 2019

*We thank Robert Lawson and the Yankelovich Center for Social Science Research for their generous support of this project.

Abstract

Low and uneven election turnout has contributed to widespread concern about bias in American democracy as well as wide-ranging efforts at reform. Unfortunately, few reforms have proven to be both effective and politically viable. In this paper, we investigate the effect of local election timing as one such possible reform. Moving to on-cycle city elections that are held on the same day as statewide contests is viable because support for such a change is high public and the reform is relatively easy to implement. But is it effective? We combine data on the timing of all municipal elections in California between 2008 and 2016 and detailed micro-targeting data with demographic information appended to the voter file data to document the substantial impact of election timing on who votes in urban democracy. Leveraging variation in election times within cities over time, we show that moving to on-cycle elections lead to an electorate that is much more representative in terms of race, class, age, and partisanship — especially when these local elections coincide with a presidential election race.

The vote is the building block of democracy. Elections determine who controls the levers of power and what they do once in office. That is why the low and uneven participation of the American electorate raises such deep concerns (APSA 2004, Verba et al 1995, Piven and Cloward 1988, Schattschneider 1970). Despite the centrality of the vote for the functioning of democracy, relatively few Americans turn out in the typical contest. Even more alarming is that people who do don't look like those who stay home. Across the nation, voters are much more likely than nonvoters to be white, well-off, well-educated, older and generally advantaged (Fraga 2018, Leighley and Nagler 2013, Schlozman et al 2012). One implication is that those who by many measures are the most in need of government support may have the least say in what government does. As V.O. Key proclaimed decades ago, "The blunt truth is that politicians and officials are under no compulsion to pay much heed to classes and groups of citizens that do not vote" (1949:99).

Much of the attention on voter turnout is focused on the national level but the reality is that the problem is most severe in local elections. Many complain about disappointing participation in national elections, but turnout in local contests is often half as low (Hajnal 2010, Verba et al 1995). In contests for down-ballot local offices like school boards, turnout can and often does fall below ten percent of the adult population (Kogan et al 2018, Anzia 2014). Moreover, the historical evidence suggests that participation has declined over time (Karnig and Walter 1993, 1983). What's more, the skew in turnout is even more severe in local elections than it is in national contests (Hajnal 2010). Research suggests that whites are almost twice as likely as Latinos and Asian Americans to turn out in local contests (Hajnal 2010). The imbalance by education, income, and age is almost as severe (Hajnal 2010).

That is particularly troubling given how much is at stake at the local level. Every year local governments spend almost two trillion dollars (Urban Institute 2019). Local governments also provide many of the core functions like education, police and fire protection,

and transportation that are critical for individual well-being. And for every national contest, there are literally thousands of local elections. In fact, over 95 percent of all elected offices are at the local level (Census 1992). All told, local elections determine who wins for over half a million offices nationwide (Census 1992).

Scholars and advocates have identified any number of policy reforms that could increase turnout in American elections and narrow gaps between voters and those who stay home. Everything from compulsory voting on one extreme to convenience voting on the other has been proposed to try to rectify low and uneven turnout in American elections (Chapman 2019, Gronke 2008). But for any reform to actually make a difference in the real world, it ultimately needs to be both effective in increasing participation and politically viable. While many of these reforms clearly have the potential to increase turnout, it is less clear how many of them can claim to be political feasible.

In light of the twin requirements of feasibility and efficacy, we turn our attention to local election timing. The underling idea is simple. Should jurisdictions hold local elections for mayor, city council, school board and the like on the same day as statewide contests or should these offices be filled through stand-alone elections on some other day of the year? There is a clear intuitive logic to the reform. Moving to on-cycle local elections that coincide with statewide or national contests makes voting in local contests less costly. When local elections are not held on the first Tuesday in November with other statewide and national contests, local voters need to learn the date of their local election, find their local election polling place, and make a specific trip to the polls just to vote on local contests. If, however, local elections occur on the same day as presidential or midterm contests, local voting is almost costless. Citizens who are already casting ballots for higher level offices need only have to check off a few more boxes further down the ballot.

Research shows that that small change in timing makes a huge difference in turnout. Every study that has looked at election timing has found substantial effects, with turnout increasing most when city elections are aligned with presidential contests and increasing the least when local elections coincide with statewide primaries (Marschall and Lappie 2018,

Kogan et al 2018, Anzia 2014, Holbrook and Weinschenk 2013, Berry and Gersen 2010, Hajnal 2010, Caren 2007, Wood 2002). These results suggest that the single most important change that municipalities can undertake to increase turnout is moving local elections to November of even years.

Critically, timing reform is not only effective at increasing turnout, it appears to be feasible. Fully 73 percent of Americans favor voting for local and national contests on the same day at the same time (Anzia 2014). Moreover, there is little division over the issue. Almost equal numbers of Democrats and Republicans support on-cycle elections (Anzia 2014). Historically, both Democrats and Republicans have at times implemented reforms that led to on-cycle elections (Anzia 2014). Still today, leaders from both parties have pushed for election consolidation.

Consolidating elections is also relatively easy. Cities can often switch to on-cycle elections with a simple piece of legislation, rather than a charter amendment. Voters themselves can drive the process through the use of direct democracy at the state or local level in many areas. Finally, state legislatures can mandate election timing statewide.

Cost savings help to add to the feasibility of reform. Indeed, one of the motivations for this move has usually been for cities to save money. In most states, municipalities pay the entire administrative costs of stand-alone elections but only a fraction of the costs of on-cycle elections.

All of this is reflected in the fact that substantial reform is already occurring. Dozens of cities across the country have recently shifted to on-cycle elections and two states, one Democratic (California) and one Republican (Arizona) have recently passed laws that mandate on-cycle elections when turnout passes below a certain threshold. Most cities around the country still hold off-cycle elections but change is already underway.

But should that change continue? Does increasing aggregate turnout impact *who* votes — and, ultimately, what local governments do? A lack of data on individual voter demographics has made an assessment of timing and voter composition difficult. One study that looked at the impact of local election timing on voter composition (Kogan et al 2018)

found relatively small differences along most dimensions but that study focused on school tax referenda, which differ from municipal elections along any number of different dimensions.[1] In particular, for school tax referenda are no candidates on the ballot, turnout is often much lower than in other types of municipal elections, and turnout is likely to be particularly selective with special interests groups like teacher's unions especially active (Kogan et al 2018, Anzia 2014).[1] Further, studies that have looked at the downstream impact of election timing have reached mixed conclusions, with some finding that on-cycle contests tend to lead to more liberal outcomes (Kogan et al 2018, Hajnal 2010) and others pointing to more conservative consequences (Anzia 2013, Berry and Gerson 2010).[2]

Given the potential of this reform and the relative lack of study of voter composition at the municipal level, we think it is important to directly examine the compositional consequences of election timing in city elections. We draw on two original datasets to assess the effects of timing. The first covers all decisive city elections in California between 2008 and 2016. The expansive temporal coverage of the data allows us to examine how election composition differs *within* the same city, depending on when votes are cast. The second draws from the Catalist national voter file and includes a variety of commercial and proprietary micro-targeting data about voters who participate in these elections, allowing us to characterize how the composition of the electorate varies depending on the timing of the election. By providing information on the demographics voters who turn out in each election, the Catalist data allow us to directly assess the hypothesized relationships between when an election is held and who casts their ballots. We, thus provide the first systematic examination of voter composition in city election using a convincing empirical strategy.

The analysis confirms that election timing has significant consequences for aggregate voter turnout. It also reveals substantial differences in the racial makeup, the age and class

[1] Others examining school elections include Berry and Gersen (2010) and Meredith (2009). Like Kogan et al (2018), Meredith (2009) finds that older voters are overrepresented in off-cycle elections.
[2] However, the logic in both cases is largely the same. When on-cycle elections increase and expand turnout, they reduce the power of special interests and making democracy more representative of the entire public. Sometime this leads to more conservative policy making and at other times it leads to more liberal outcomes.

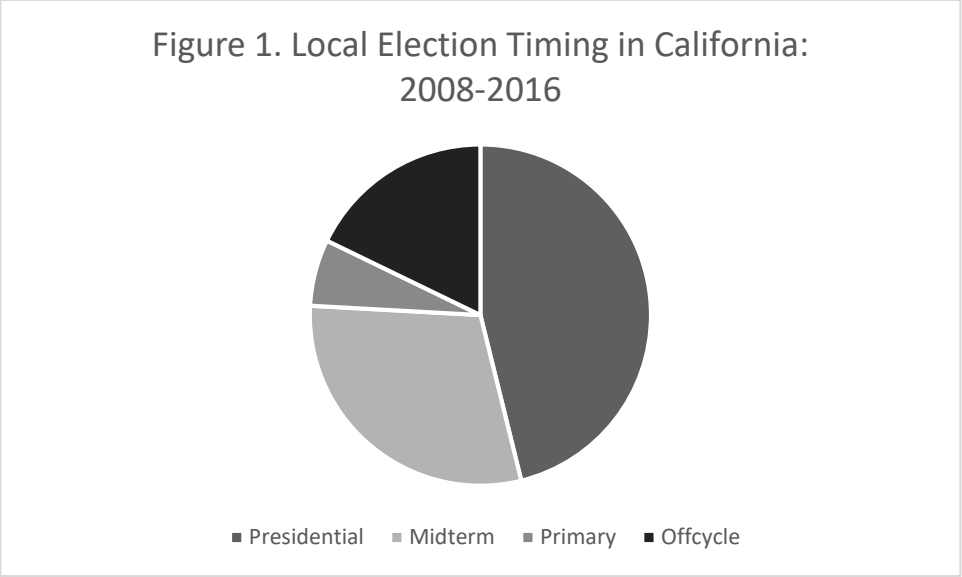
distribution, and the partisanship and ideology of voters across election dates. When local elections are held at the same time as Presidential and Midterm elections, the shares of white, wealthier, and older voters all declines while the shares of voters who are Hispanic, Asian American, Black, lower income, younger, liberal, and Democratic all increase substantially. Our results suggest that moving to on-cycle elections has the potential to make local voters much more representative across all of these dimensions.

Data

Our empirical analysis utilizes two primary data sources. The first includes all decisive city elections in California between 2008 and 2016.[3] It includes about 2,000 city-by-election date observations, or about four unique local election dates for each of California's roughly 500 cities. We identified the election dates for every decisive local election using data from the California Elections Data Archive maintained by Sacramento State University's Institute of Social Research in partnership with the California Secretary of State. Using the dates of each election, we classify every local election as taking place on the same day as a presidential general election, a midterm general election, or a statewide primary election. All elections that do not occur on one of these statewide election days are coded as being held off-cycle. In addition, our panel also includes information about the voting population in these cities for every statewide primary and general election, bringing the total sample to approximately 5,600 city-by-election observations.[4] Figure 1 reports the distribution of local election dates in California.

[3] Both to limit data collection and to focus on more consequential elections, we do not include elections that did not determine the winner(s) of at least one contest. However, the dataset includes all city council and mayoral elections. If a winner for at least one office was declared during a primary election, we would include that election date in our sample, as well as the subsequent run-off election to fill the remaining offices.

[4] We have an observation for each city for every statewide election, regardless of whether local candidates appeared on the ballot during each election.



For each observation, we have appended detailed information about the demographic composition of voters who actually turned out, culled from Catalist Llc., a national microtargeting vendor. In the Catalist records, a variety of Census, commercial, and proprietary individual-level data are appended to each state's and county's official voter file. When examining voter composition, some of the variables (e.g., age) are taken directly from the official voter file. Others are merged in by Catalist form other sources, and some — such as partisanship and ideology — are predicted using the firm's proprietary models.

There are two possible sources of measurement error in the compositional measures that serve as the dependent variables for our primary analyses. First, characteristics of individual voters may be estimated with some error. For our main variables of interest, existing studies suggest that the Catalist estimates are sufficient precise. For example, Fraga (2016) compares voters' predicted race against self-reported race for respondents in the 2010 Cooperative Congressional Election Study. Overall, he finds that the Catalist predictions correctly identified 99% of white respondents, 97% of black respondents, 80% of Latinos, for an overall accuracy of 90%. This is similar to the numbers in a validation study conducted by Catalist itself using official records from southern states that ask voters to identify their race on the voter registration forms.

Second, our compositional measures are based on the current snapshot of the Catalist voter file. Unlike official voters file, the Catalist records are not "purged" as individuals become inactive or die, so the records should be complete for all elections held since 2008. However, the firm does update voter addresses as individuals change residences. Thus, a voter we might observe today living in one city may have lived in a different city at the time of an earlier election. Since we have access only to current addresses, we match voters to their current jurisdictions.

To examine the consequences of both sources of measurement error, we conducted a validation exercise for one compositional measure — voter partisanship — for which the "ground truth" is known. Specifically, we used Catalist partisanship estimates to calculate the share of Democrats among individuals who are recorded as having voted in each city during the 2008, 2012, and 2016 presidential elections. We then compared these estimates to the official city-level election results reported in the Supplemental Statement of the Vote by the California Secretary of State. As can be seen in the appendix, the Catalist partisanship estimates track the official election returns almost perfectly, with the correlation ranging from 0.96 to 0.99. Strikingly, the relationship is just as strong in 2008 as in 2016, suggesting that voter migration does not pose a serious problem to our analysis.

Of course, this type of validation is available only for one of the compositional variables we examine, so we have no way of knowing if the other measures follow similar patterns. We should stress, however, that any measurement error in our compositional dependent variables should attenuate our estimates, making it more difficult for us to find significant differences across election dates. Such measurement error cannot explain the significant and substantively large effects we report below.

While our primary focus is on the composition of the electorate, we also examine turnout, partly to show that we can replicate the timing effects documented in previous research. This portion of the analysis uses three separate measures of turnout. First, we count the total number of voters recorded as having participated in each election in each city using the historical turnout histories in Catalist voter file. The advantage of this measure is that it is available for every election-city observation, but the main limitation is that it is subject to the

same measurement error as the compositional measures. For example, if a San Diego resident voted in an election there in 2008 and then moved to Los Angeles several years later, our method would count them as a Los Angeles voter for the 2008 election. However, this type of measurement error turns out to be a minor issue —using the same approach as ours, Cook et al. (Forthcoming) show that the Catalist vote counts correlate with official turnout figures at 0.98. For a subsample of election dates in our sample for which official turnout statistics are available at the municipal level, the correlation between these official figures and the Catalist count is 0.999. To calculate turnout, we divide the Catalist voter count by the voting-age population in each city as measured in 2010. Note that the Catalist records indicate only whether a voter cast a ballot in each election and do not reveal whether the individual marked a vote in any given race, so the compositional measures do not account for potential ballot roll off. We return to this point below and examine roll off directly in the appendix. Although the aggregate nature of our compositional measures necessarily limit the conclusions we can draw, the evidence suggests that roll off actually causes us to *underestimate* the impact of timing on voter composition.

As an alternative measure of turnout, we also use the CEDA data and examine the total number of votes recorded for each individual race. For each city-election date combination, we then record the total votes cast in the local race with the highest aggregate vote count ("maximum" turnout)[5] as well as the local race with the lowest aggregate vote count ("minimum" turnout). For each of these measures, we then calculate turnout by dividing by the voting-age population. To construct these measures, we limit the sample only to citywide races, since we do not observe the voting-age population broken down by city council wards. As a result, the analyses that examine these "maximum" and "minimum" turnout outcomes drop city-election date observations during which only ward-based council elections took place but no citywide candidate appeared on the ballot. Subtracting these "maximum" and "minimum" turnout measures derived from the CEDA data from our Catalist-based turnout measure allows us to directly quantify the extent of ballot roll off

For midterm and presidential elections, we also observe the top-of-the-ticket votes cast in each city, as reported in the Supplemental Statement of the Vote. We use these data to examine potential "up-ballot" effects — whether having a local election on the ballot affects overall turnout or election outcomes in even-year midterm and presidential elections — as well as to

[55] For multimember elections with multiple winners, we calculate turnout by dividing the total number of votes cast by the total number of votes in the race allotted for each voter.

construct a second measure ballot roll off. The Secretary of State's data also provide an additional validity check for our Catalist-based counts. In cases where we observe both the Catalist voter count and the official top-of-the-ticket vote totals, the correlation between the two is reassuringly 0.999. The Catalist counts are somewhat higher than the official vote tallies, recording 1.05 voters for every vote cast, [6] on average. Some of this is attributable to ballot spoilage or voting machine malfunction and other causes of what is described as "residual votes" in the election administration literature. Based on estimates provided by Alvarez, Beckett, and Stewart (2013), up to half of the gap between the Catalist vote counts and the official tallies are likely due to "residual votes," with the remaining gap likely produced by double-counting and other potential measurement or merging issues in the Catalist voter file.

Identification Strategy

Clearly, local election timing is a political choice and could be at least partially endogenous to the expected voter composition during on-cycle vs. off-cycle elections. Such endogeneity makes simple cross-sectional comparisons of voter composition between cities holding local elections on-cycle during even years and those using off-cycle elections highly suspect.

Recognizing the potential endogeneity of timing, our primary empirical strategy thus leverages *within-city* variation in voter composition. Intuitively, for cities using off-cycle elections, we can compare the demographic characteristics of voters who participated in the local election to the composition of voters within the same city who turned out during statewide primary, midterm,[7] and presidential elections. Thus, our primary specification includes city fixed effects and allows us to identify differences in voter composition between different elections dates in a given city.

In addition, some of our models also leverage a subsample of cities that change the timing of their local elections over time.[8] For these cities, we can limit the sample to only local elections

[6] In other words, five out of every 105 people recorded as having voted based on the Catalist voter file did not have a vote recorded in a gubernatorial or presidential race in California.
[7] Gubernatorial elections in California are held during even-year midterm elections.
[8] In the vast majority of cases, switching cities move their local elections from off-cycle to on-cycle in our data.

and examine how the composition of the electorate changes over time depending on whether the local elections were held concurrently with statewide or federal races.

Results

The first important pattern to note about local elections is that there is a severe skew to turnout. A comparison of the Catalist data on local voters and overall city demographics reveals a sharp contrast.[9]

The skew by race is considerable. On average, non-Hispanic Whites make up 68.3 percent of the voters across all of the local elections. Yet, across the same cities, non-Hispanic Whites make up only 46.5 percent of the population. Put another way, Whites make up more than two-thirds of the voters even though they represent less than half of the population. Hispanics are the clear losers in this process. Catalist reports that on average only 19.7 of voters were Hispanic. Yet, across these cities, the average Hispanic share of the population is 34.2 percent. Asian Americans are also underrepresented among voters. Although Asian Americans represent just over 10 percent of the average city population, they account for only about half their share of voters (5.7 percent). Blacks make up a smaller share of the population in California cities but they too are underrepresented among voters. Blacks make up 4.1 percent of the average city population but only 3.2 percent of the voters in those same cities.

Table 1. The Skew in Local Turnout: Residents and Voters

	City Population	Voters
RACE		
White	46.5%	68.3%
Hispanic	34.2%	19.7%
Black	4.1%	3.2%
Asian	10.1%	5.7%
AGE		
Over 55	23.5%	40.3%
INCOME		
Per Capita Income	$30,531	
Earn Under $40K		31.0%
PARTISANSHIP		
Democratic	61.4%[1]	58.1%

[1] Figure is for share of registered voters

[9] The Catalist data for Table 1 include both off-cycle and on-cycle local elections; and weighs cities for which we observe more local elections more heavily.

We don't have perfectly comparable data on income, age, or partisanship for both voters and city residents but the measures that we do have suggest that there is a sharp imbalance to the electorate by both class and age and a smaller but still significant imbalance by partisanship.

The contrast between voters and residents is probably the most pronounced in terms of age. The Catalist data reveal that on average fully 40.3 percent of voters in local elections were over the age of 55. By contrast, Census data show that on average only 23.5 percent of residents of these cities were over 55. In other words, older Americans have a grossly disproportionate voice in local contests.

The average per capita income of all residents across these cities is just over $30,000.[10] Given that the mean income figure is undoubtedly inflated by a small number very high-income earners, it is safe to say that more than half of city residents live on less than $30,000 in per capita income. Among voters, the opposite appears to be true. The Catalist data indicate that only 31.0 percent of voters have a family income of less than $40,000 per year. Well-off Americans have much more of say in local elections than poorer Americans.

Finally, there appears to be a meaningful skew by partisanship as well. We don't have data on the partisan ties of all city residents so we can't know for sure how much city residents differ from voters on partisanship. But the data we do have – Catalist estimates for all registered voters – reveal a potentially politically consequential skew. The average Democratic share of all registered voters across these cities is 61.4 percent. For local voters that figure drops to 58.1 percent.

All of this suggests that local democracy is problematic. But can election timing do anything to change that?

Election Timing and Turnout

Moving on to the regression results, we begin by examining voter turnout. Table 2 presents our estimates of the effects of election timing on overall voter turnout using the Catalist vote counts. Model (1) limits the sample to election dates on which at least one local contest appeared on the ballot and exploits variation in local election timing within cities over time. Model (2) includes all election dates — including primary, midterm, and presidential elections — regardless of whether any local contests took place at the same time. This allows us to also leverage data from all cities that have off-cycle elections, including those that don't

[10] $30, 531 to be exact.

change the timing over the course of the panel, since we can still compare voter composition from these local elections to the electorate observed in the same cities during statewide elections even if no local races appeared on the ballot then. In the latter specification, we also add calendar year fixed effects to account for any secular trends in turnout over time.[11]

Our results replicate the results documented in the existing literature, including the relative effect sizes (Marschall and Lappie 2018, Kogan et al 2018, Anzia 2014, Holbrook and Weinschenk 2013, Berry and Gersen 2010, Hajnal 2010, Caren 2007, Wood 2002). During the average off-cycle local election in our sample, about 13 percent of the voting-age population turned out to vote. This figure roughly doubles if the local election takes place at the same time as a statewide primary. Turnout increases even further during midterms, to between 35 percent and 40 percent of the voting-age population (depending on the specification), and peaks at about 55 percent of the voting-age population during presidential general elections.

Table 2. The Effect of Election Timing on Turnout

	Model (1)	Model (2)
Presidential	40.82***	39.07***
	(1.344)	(1.771)
Midterm	23.03***	27.72***
	(1.313)	(1.759)
Primary	12.57***	11.62***
	(1.550)	(1.726)
Constant	14.11***	16.74***
	(1.137)	(1.722)
Observations	1,898	5,533
R-squared	0.791	0.830
Number of Cities	463	480
Sample	Local Election Dates Only	All Election Dates
City FE	Yes	Yes
Year FE	No	Yes

Robust standard errors clustered by city in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Recall that our Catalist-based turnout measure doesn't account for ballot roll off. However, if we compare the Catalist voter counts from midterm and presidential elections to

[11] Adding city specific time trends does little to impact the results in most cases (see appendix Table A.8).

the total votes recorded in citywide local races that took place at the same time, it is clear that roll off is substantial during on-cycle elections. Indeed, we estimate average roll off of 30 percent to 35 percent during both presidential and midterm elections using the Catalist data when we focus on the local contests. If we instead use the official top-of-the-ticket vote tallies as the denominator, which subtracts out residual votes, roll off is somewhere between 20 and 30 percent.[12] This should lead us to substantially overestimate the impact of election timing on actual turnout in local elections.

Table 3 replicates the analysis using the alternative turnout measures, constructed using the total number of votes actually cast in local races. By construction, this limits our sample to city-election dates during which at least one citywide race appeared on the ballot.[13] Model (1) uses our "maximum" turnout measure based on the local race with the highest total number of votes cast, while Model (2) uses our "minimum" turnout measure based on the local race with the lowest total number of votes cast. The effect sizes are considerably attenuated. Table 3 indicates that once we take into account voter roll off, the effects of election timing are roughly half of what we saw earlier. We'll return to the consequences of this potentially high roll off for our compositional analysis below.

Table 3. The Effect of Election Timing on Turnout: After Considering Roll Off

	Model (1)	Model (2)
Presidential	23.19***	20.75***
	(1.237)	(1.337)
Midterm	11.71***	10.65***
	(1.248)	(1.336)
Primary	4.030**	3.514*
	(2.017)	(2.013)
Constant	15.73***	15.14***
	(1.140)	(1.244)
Observations	1,626	1,626
R-squared	0.598	0.578

[12] We report a range, rather than a single number, because we use both our "maximum" and "minimum" local race counts, which are based on the local race with the highest total and lowest total recorded votes, respectively.

[13] This explains why the total number of observations in Table Turnout Local is about 250 lower than in Model (1) in Table Turnout. The missing observations are for local elections featuring only ward-level council races.

Number of Cities	420	420
Sample	Local Election Dates Only	Local Election Dates Only
City FE	Yes	Yes
Year FE	No	No
Turnout Measure	Race w/ Most Votes	Race w/ Fewest Votes

Robust standard errors clustered by city in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Nevertheless, even after taking into account roll off, the effects of election timing are still considerable. These estimates suggest that turnout in local elections is roughly 20 percentage points higher when they coincide with presidential elections, about 10 percentage points higher when coupled with midterm elections, and around 4 points higher when consolidated with statewide primary contests. In other words, moving to on-cycle elections can more than double the number of ballots cast.

Timing and Voter Composition

So far we have largely corroborated existing research. We now turn to what we think is the first systematic test of the effect of election timing on the composition of voters in city elections. In the analysis that follow, we limit the sample to election dates on which at least one local contest appeared on the ballot and exploit changes in local election timing within cities over time. As a robustness check, we also analyze alternate models that include all election dates — including primary, midterm, and presidential elections — regardless of whether any local contests took place at the same time. In this latter specification, we also add calendar year fixed effects as we did in Table 2 above. Results from this alternative specification are included in the appendix.

We begin by looking at the impact of election timing on the racial composition of the electorate. Typically, racial and ethnic minorities are greatly underrepresented among voters. We want to know if moving to on-cycle elections reduces this gap.

The results displayed in Table 4 indicate that election timing does lead to a more representative electorate. When cities shift to on-cycle elections, the non-Hispanic White share of voters declines, while shares of racial and ethnic minorities increase substantially. Whites typically make up the bulk of voters in off-cycle elections but the regression in the first column shows that the white share of voters decreases by 10.8 percentage points when local elections are held on the same day as presidential contests, by 6.6 points when they are

coupled with midterm elections, and by 3.5 points when they are held on the same day as statewide primaries. Hispanics and Asian Americans – the two largest racial and ethnic minority populations in California and the two racial and ethnic groups least likely to turnout in the typical local contest – are the two groups most likely to gain from a move to on-cycle elections. The Hispanic share of the vote grows from about 15 percent in off-cycle elections to almost 23 percent in local elections that are consolidated with presidential contests — a gain of 7.7 percentage points. Likewise, the Hispanic share of voters increases by 3.6 points in contests that are on the same day as midterm elections. For Asian Americans, the only statistically significant gain occurs when cities move to the same date as presidential elections — a 1.8 percentage point increase. That 1.8 point increase in the Asian American share of the vote might seem small at first glance but when one considers that Asian Americans start out with only 4.5 percent of the vote in off-cycle elections, that gain represents a major improvement in Asian American representation in local democracy.

Table 4. Election Timing and the Racial Composition of Voters

	White Share of Voters	Black Share of Voters	Hispanic Share of Voters	Asian Share of Voters
Presidential	-10.78***	0.671	7.713***	1.783**
	(1.823)	(0.490)	(1.486)	(0.859)
Midterm	-6.527***	0.487	3.580**	0.951
	(1.800)	(0.490)	(1.460)	(0.859)
Primary	-3.525*	-0.540	2.029	1.095
	(1.995)	(0.557)	(1.497)	(1.289)
Constant	75.42***	2.833***	14.94***	4.497***
	(1.489)	(0.402)	(1.203)	(0.729)
Observations	2,016	2,016	2,016	2,016
R-squared	0.175	0.005	0.163	0.016
Number of Cities	471	471	471	471
Sample	Local Election Dates Only	Local Election Dates Only	Local Election Dates Only	Local Election Dates Only
Year FE	No	No	No	No

Robust standard errors clustered by city in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Using our preferred specification, we find that the Black share of voters is unaffected by timing. However, as the appendix table A.4 demonstrates, when we include all elections and

run a city and year fixed effects model, the results show that the Black share of the electorate also increases during presidential or midterm elections. Specifically, the Black share of the vote increases by 0.6 percentage points during presidential elections and by 0.7 percentage points during the midterms. Both figures represent a real increase for a group that makes up only 2.4 percent of off-cycle voters.

In Table 5 we examine the effects of local election timing on the economic makeup of the local electorate. The results here are not as consistent or robust but there are, nevertheless, signs that moving to on-cycle elections can increase the relative participation of less advantaged Americans. In particular, local contests that coincide with presidential elections bring out a significantly larger share of residents with little family wealth (under $30,000 total family wealth) and a significantly smaller share of residents with substantial wealth (over $100,000 in family wealth) as well as a significantly small share of homeowners. In other words, the imbalance in the class makeup of the electorate is at least somewhat reduced through on-cycle elections. It is, however, worth noting that the pattern of results is less robust when we include all elections and incorporate both city and year fixed effects (see appendix table A.5).

Table 5. Election Timing and the Economic Composition of Voters

	Under $40K Income Share	Over $100K Income Share	Under $30K Wealth share	Over $100K Wealth Share	Homeowner Share
Presidential	1.063	-0.191	3.107**	-1.994**	-3.314*
	(1.303)	(0.887)	(1.465)	(0.825)	(1.881)
Midterm	0.500	0.291	-0.0650	-1.773**	-0.106
	(1.282)	(0.881)	(1.429)	(0.842)	(1.838)
Primary	0.737	0.158	-1.518	-0.359	1.781
	(1.306)	(1.054)	(1.349)	(0.821)	(1.863)
Constant	30.31***	32.17***	20.76***	10.27***	77.03***
	(1.063)	(0.734)	(1.182)	(0.677)	(1.529)
Observations	2,011	2,011	2,011	2,011	2,011
R-squared	0.003	0.001	0.072	0.007	0.057
Number of Cities	470	470	470	470	470
Sample	Local Election Dates Only	Local Election Dates Only	Local Election Dates Only	Local Election Dates Only	Local Election Dates Only
Year FE	No	No	No	No	No

Robust standard errors clustered by city in parentheses
*** p<0.01, ** p<0.05, * p<0.1

There are also major consequences to timing when it comes to the age of the electorate. As Table 6 demonstrates, younger Americans are substantially better represented in on-cycle contests and older Americans' share of the electorate is greatly reduced during these contests. The effects are massive. Older Americans are greatly overrepresented in off-cycle election — our estimates suggest that 56 percent of off-cycle voters are at least 55. But that overrepresentation greatly declines in on-cycle contests. As Table 6 shows, the share of older voters drops almost 24 points in local elections that coincide with presidential elections, 14 points in local contests that occur simultaneously with midterm elections, and 5 points when they are coupled with statewide primaries. At the other end of the age spectrum, the share of younger Americans in local politics — the age group least likely to participate in politics — increases by approximately 15 points, 6 points, and 2 points in elections held at the same time as presidential, midterm, and primary contests, respectively. We note that these results are largely robust to including all elections, local or otherwise, and adding both year and state fixed effects (see appendix table A.6).

Table 6. Election Timing and the Age Composition of Voters

	Share of Voters Over Age 65	**Share of Voters Under Age 40**
Presidential	-23.78***	15.10***
	(1.467)	(1.159)
Midterm	-14.37***	6.715***
	(1.461)	(1.117)
Primary	-4.964***	2.297**
	(1.503)	(1.132)
Constant	55.88***	8.434***
	(1.194)	(0.928)
Observations	2,016	2,016
R-squared	0.408	0.308
Number of Cities	471	471
Sample	Local Election Dates Only	Local Election Dates Only
Year FE	No	No

Robust standard errors clustered by city in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Not surprisingly, all of this has real consequences for the political makeup of the local electorate. As Table 7 indicates, we find significant timing effects both for the share of voters who are Democrats and the share of voters who are liberal. Specifically, the share of voters predicted to identify with the Democratic Party grows by 4.1 points during presidential elections and by 1.4 points during the midterms. Likewise, the share of voters with liberal leanings increases by 3.8 points during on-cycle presidential elections and by 1.8 points in on-cycle midterm elections. In neither case, does consolidating a local election with a statewide primary significant alter the political composition of the electorate. It is once again important to note that these particular results are not especially robust to our alternative specification of the model (see appendix Table A.7).

Table 7. Election Timing and the Political Composition of Voters

	Share of Democratic Voters	**Share of Liberal Voters**
Presidential	4.069***	3.752***
	(0.750)	(0.641)
Midterm	1.354*	1.776***
	(0.740)	(0.630)
Primary	0.563	1.231
	(0.840)	(0.786)
Constant	55.83***	54.18***
	(0.611)	(0.524)
Observations	2,016	2,014
R-squared	0.093	0.097
Number of Cities	471	471
Sample	Local Election Dates Only	Local Election Dates Only
Year FE	No	No

Robust standard errors clustered by city in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Timing,City Spending, and the Racial Composition of City Leadership

We have begun analyzing the effects of election timing on city spending patterns and the racial composition of city councils and other elected offices. Specifically, we are looking at how election timing impacts the degree to which cities spend on redistribution vs development and the rate at which White, Black, Hispanic, and Asian American candidates succeed in local elections in California. We hope to have enough of the analysis sufficiently

completed to present at least some of those new results during the conference.

Concerns

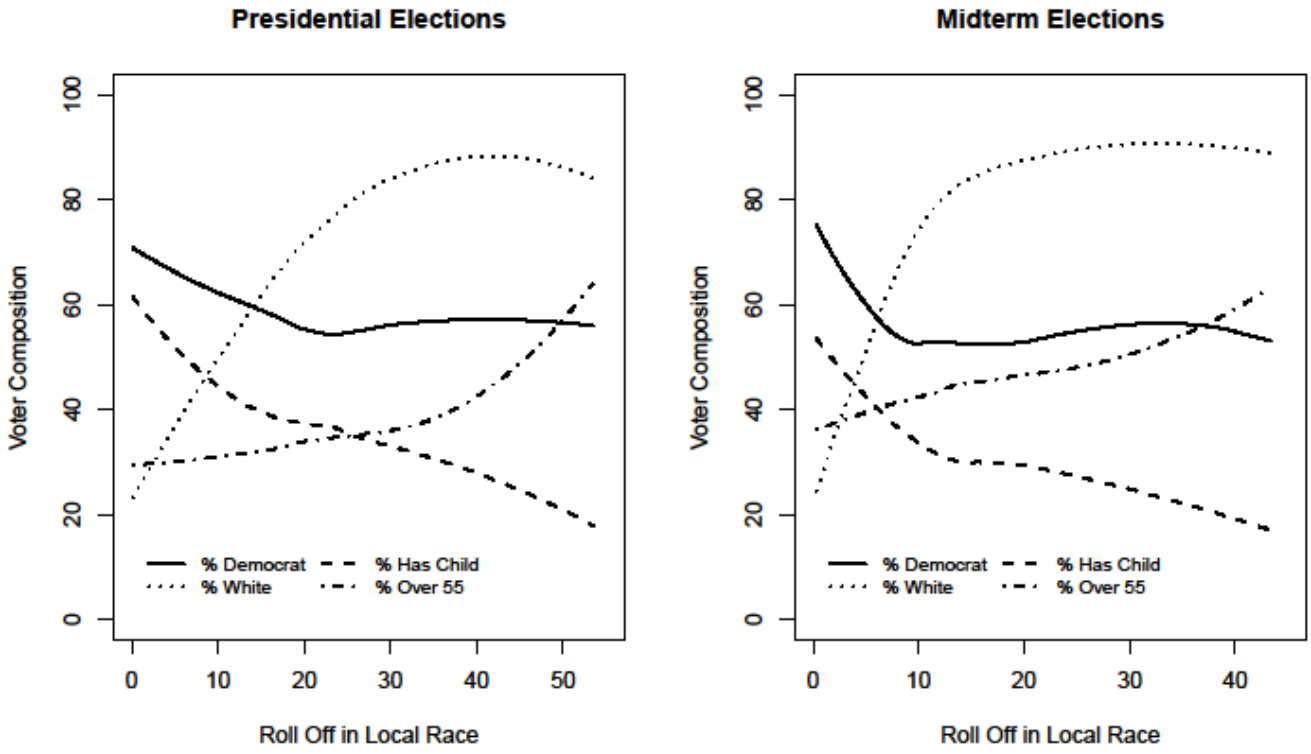
The results presented thus far provide compelling evidence that changing local election timing to coincide with statewide contests and particularly with November even-year elections can produce substantial changes in the electorate — shifting the median voter to be more Democratic, liberal, poorer, and younger. A major limitation of the proceeding analysis, however, is that relies on the demographic information of all voters — including the roughly 30 percent we know didn't actually cast a ballot in the local races during midterm and presidential elections. If the voters who turn out on these dates but skip the local races are disproportionately Democratic, liberal, poorer and younger, roll off could cancel out much of the demographic shift we documented above.

While we cannot directly identify which voters roll off during high-turnout elections, we can examine cross-sectional variation in the amount of roll off across cities to see if it is correlated with aggregate voter demographics. Despite being limited to aggregate-level data, we nevertheless find this analysis helpful.

Figure 2 examines this cross-sectional variation, plotting the level of roll off observed in each election against our Catalist compositional measures.[14] We use a loess smoother to flexibly trace the average relationship between the amount of roll off and each compositional measure. The panel on the left examines roll off during presidential elections, while the panel on the right looks at midterm elections.

Figure 2. Roll Off and City Demographics

[14] We use our "minimum" local turnout measure to calculate the roll off in the figure.



The figure suggests that the magnitude of roll off in local elections does appear to be significantly correlated with voter demographics. It tends to rise as the electorate becomes more conservative, whiter, older, and wealthier. Critically, these relationships work in the *opposite direction* of the compositional effects of timing we presented above, suggesting that the effect sizes we reported actually be underestimated. Put another way, accounting for roll off likely makes the difference in the local electorate between off-cycle and on-cycle elections even larger, with the change to even-year local elections producing bigger shifts in terms of partisanship, age, race, and the other demographics we examined than the Catalist measures alone would suggest.

Discussion

Overall these results suggest that election timing has real potential to alter who votes in local democracy. We find that moving local elections to the same date as statewide and national contests greatly reduces the over-representation of whites, the well-off, and older Americans. By making local voting easier, cities can draw in more and more Hispanics, Asian

Americans, and African Americans, they can hear more from the most economically disadvantaged segments of the electorate, and they can spur younger Americans to participate. These are precisely the groups that research shows have less of a voice in American democracy (Gilens 2012, Bartels 2008, Griffin and Newman 2008, Kogan et al 2018). On-cycle elections are unlikely to totally correct for existing imbalances in local democracy but they may move us much closer to a fair and even vote. If we want a more equitable democracy, then the path is clear.

Of course, getting there may not be easy. Entrenched interests often resist reforms that are likely to shift power. Anecdotally, newspaper reports in cities considering on-cycle elections often report incumbent opposition to the shift in timing. That makes sense given that those incumbents won in a system that limited participation. They could lose in a system that encourages broader and more representative participation.

One objection that incumbent interests often appear to raise relates to the knowledge base of the voters who participate in local elections. The concern here is that by making it easier to participate in local elections, on-cycle elections may lead to participation by less informed voters. No study that we know of has been able to directly measure local knowledge.[15] But Payson (2017) finds that that voters hold elected officials accountable for government performance during high-turnout, on-cycle elections and not during lower-turnout off-cycle elections. That pattern suggests that higher turnout may, if anything, improve democratic accountability. On the other hand, de Benedictis-Kessner (2018) finds higher incumbent reelection rates in on-cycle elections, a pattern that could imply less knowledge in local contests.

Another objection that has often been raised when cities consider on-cycle elections is that moving to on-cycle elections will create an unduly long ballot and a range of administrative headaches. This objection seems dubious given that hundreds, if not thousands, of cities already conduct on-cycle elections largely without incident.[16]

Despite these objections, moving to on-cycle elections may actually be easier than one might expect. The biggest factor likely to move on-cycle elections forward is the widespread

---

[15] Oliver and Ha (2007) do find small but not statistically significant differences in self-assessed knowledge between voters in on-cycle and off-cycle elections.

[16] In Los Angeles, in particular, there were also concerns about the costs of advertising -- which may be higher when local candidates have to compete with state and national campaigns. Critics argued this would amplify the importance of money in local elections.

support for reform among the public. The one nationally representative poll that asked about on-cycle elections found that "nearly 70 percent [of Americans] said they favored holding local elections at the same time as national elections" (Anzia 2014:88).

On-cycle elections have proven to be just as popular when they have been brought before the public through direct democracy. A cursory look at cities in California and Arizona that recently put on-cycle elections on the ballot indicates that in every case or almost every case more than 70 percent of voters supported the reform. [17] Voters have made it clear that they prefer voting for many offices on a single day over voting for the same number of offices on different days.

Moreover, that support is largely non-partisan in nature. The same national poll indicates that clear majorities of Americans of all partisan stripes (Democrat, independent, or Republican) prefer on-cycle elections (Anzia 2014). Historically, leaders of both major parties have at times pushed for on-cycle elections (Anzia 2014). And still today, this reform is being moved forward by both Democratic and Republican legislatures.[18]

Despite progress in states like California and Arizona, there remains considerable room for much more reform. Across the country, the vast majority of cities still hold off-cycle elections. Change is underway but there is still a long way to go.

[17] Specifically, the figures are in California are: Los Angeles (72 percent), Glendale (83 percent), Pasadena (83 percent), Burbank (81 percent), Inglewood (75 percent), and Temple City (77 percent), San Mateo (81 percent) Source: Ballotpedia.com.

[18] Both California's Democratic majority legislature and Arizona's Republican majority legislature recently enacted on-cycle legislation.

Bibliography

Alvarez, R. Michael, Dustin Beckett, and Charles Stewart, III, 2013, "Voting Technology, Vote-by-Mail, and Residual Votes in California, 1990-2010," *Political Research Quarterly* 66(3): pp. 658-670.

American, Political Science Association. 2004. "American Democracy in an Age of Rising Inequality."

Anzia, Sarah. 2014. *Timing and Turnout: How Off-Cycle Elections Favor Organized Groups*. New York: Cambridge.

Bartels, Larry M. 2008. *Unequal Democracy: The Political Economy of the New Gilded Age*. Princeton: Princeton University Press.

Berry, Christopher, and Jacob E. Gersen. 2010. "The Timing of Elections." *University of Chicago Law Review* 77: 37-64.

Caren, Neal. 2007. "Big City, Big Turnout? Electoral Participation in American Cities." *Journal of Urban Affairs* 29: 31-46.

Census. 1992. "Popularly Elected Officials."

Chapman, Emilee Booth. 2019. "The Distinctive Value of Elections and the Case for Compulsory Voting." *American Journal of Political Science* 63: 101-12.

Cook, Jason. B., Vladimir Kogan, Stéphane Lavertu, and Zachary Peskowitz, Forthcoming, "Government Privatization and Political Participation: The Case of Charter Schools," *Journal of Politics*.

de Benedictis-Kessner, Justin. 2017. "Off-Cycle and out of Office: Election Timing and the Incumbency Advantage." *The Journal of Politics* 80: 119-32.

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

Gilens, Martin. 2012. *Affluence & Influence: Economic Inequality and Political Power in America* Princeton: Princeton University Press.

Griffin, John D., and Brian Newman. 2008. *Minority Report: Evaluating Political Equality in America*. Chicago: University of Chicago Press.

Gronke, Paul. 2008. "Convenience Voting." *Annual Review of Political Science* 11: 437-55.
Hajnal, Zoltan L. 2010. *America's Uneven Democracy: Turnout, Race, and Representation in City Politics*. Cambridge: Cambridge University Press.

Hernandez, Jose. 2013. *Odd-Year vs Even-Year Consolidated Elections in California*. Greenling Institute

Holbrook, Thomas, and Aaron Weinschenk. 2014. "Campaigns, Mobilization, and Turnout in Mayoral Elections." *Political Research Quarterly* 67: 42-55.

Karnig, Albert K., and B. Oliver Walter. 1983. "Decline in Municipal Voter Turnout: A Function of Changing Structure." *American Politics Quarterly* 11: 491-505.

Karnig, Albert K, and B. Oliver Walter. 1993. "Municipal Voter Turnout During the 1980s: The Case of Continued Decline." In *State and Local Government and Politics: Essential Reading*, eds. Harry A. Bailey and Jay M Shafritz. Itasca, IL: F.E. Peacock Publishers.

Key, V. O. 1966. *The Responsible Electorate: Rationality in Presidential Voting 1936-1960*. Cambridge: Harvard University Press.

Kogan, Vladimir, Stéphane Lavertu, and Zachary Peskowitz. 2018. "Election Timing, Electorate Composition, and Policy Outcomes: Evidence from School Districts." *American Journal of Political Science* 62: 637-51.

Leighley, Jan, and Jonathan Nagler. 2013. *Who Votes Now?: Demographics, Issues, Inequality, and Turnout in the United States*. Princeton: Princeton University Press.

Marschall, Melissa, and John Lappie. 2018. "Turnout in Local Elections: Is Timing Really Everything? By Melissa Marschall and John Lappie in the Election Law Journal: Rules, Politics, and Policy Vol. 17, No. 3." *Election Law Journal* 17.

Oliver, J. Eric, and Shang E. Ha. 2007. "Vote Choice in Suburban Elections." *American Political Science Review* 101: 393-408.

Piven, Frances Fox, and Richard A. Cloward. 1988. *Why Americans Don't Vote*. New York: Pantheon Books.

Schattschneider, E. E. 1970. *The Semisovereign People: A Realist's View of Democracy in America*. New York: Harcourt Brace Jovanovich College Publishers.

Schlozman, Kay L., Sidney Verba, and Henry E. Brady. 2012. "The Unheavenly Chorus: Unequal Political Voice and the Broken Promise of American Democracy."

Verba, Sidney, Kay Lehman Schlozman, and Henry E. Brady. 1995. *Voice and Equality: Civic Voluntarism in American Politics*. Cambridge, MA: Harvard University Press.

Wood, Curtis. 2002. "Voter Turnout in City Elections." *Urban Affairs Review* 38: 209-31.

APPENDIX

A. Modeling Voter Partisanship and Ideology

The measure of partisanship we use is based on the proprietary Catalist Partisanship Model, which provides voters in the firms database with a score indicating his or her probability of identifying as a Democrat rather than a Republican. These predicted probabilities come from a two-layer model that uses machine-learning algorithms trained on a large national sample — five million people from 31 states — of registered voters, using their declared partisanship in the voter file, as well as self-reported partisanship from public opinion polls. As inputs, the model relies on more than 150 separate variables, including gender, race, ethnicity, income, housing and family structure, past electoral returns, occupation, religious adherence, and economic conditions. One advantage of these predicted probabilities is that they are comparable across states.

The Catalist Ideology Model is constructed similarly, using thermometer ratings from questions that appeared in national polls fielded by the AFL-CIO polling consortium as the basis for the training set. The issues included same-sex marriage, immigration, attitudes toward the NRA and Tea Party, as well as other standard policy questions. Answers to these questions were aggregated into a single index of "progressivism" that provided the dependent variable for the model. Both models were revalidated against new polling data in 2015, several years after their initial development.

Using these predicted probabilities, we created city-level cross-tabs for each election date. A hypothetical example for one city is presented in Table A.1. Each cross-tab contains the the number of voters (N) in each 5 percentage point probability bin, which is listed in the first column in the table. The hypothetical city depicted in the table contains a total of 2,000 voters, who are uniformly distributed across all probability bins. As a first step, we took the midpoint of each probability range, presented in the column labeled

p. To calculate the expected number of Democrats in each city, we then multiplied each cell count in the N column by the midpoint of the probability range ($p * N$) and took the sum. In this case, our measure would indicate that 1,000 of the 2,000 voters are predicted to be Democrats, for an expected share of 50 percent.

Pr(Democrat)		Probability Range	Democrats
	N	Midpoint (p)	($p * N$)
0-0.05	100	2.50	2.5
0.05-0.10	100	0.075	7.5
0.10-0.15	100	0.125	12.5
0.15-0.20	100	0.175	17.5
0.20-0.25	100	0.225	22.5
0.25-0.30	100	0.275	27.5
0.30-0.35	100	0.325	32.5
0.35-0.40	100	0.375	37.5
0.40-0.45	100	0.425	42.5
0.45-0.50	100	0.475	47.5
0.50-0.55	100	0.525	52.5
0.55-0.60	100	0.575	57.5
0.60-0.65	100	0.625	62.5
0.65-0.70	100	0.675	67.5
0.70-0.75	100	0.725	72.5
0.75-0.80	100	0.775	77.5
0.80-0.85	100	0.825	82.5
0.85-0.90	100	0.875	87.5
0.90-0.95	100	0.925	92.5
0.95-1	100	0.975	97.5
Total	**2000**		**1000**

Table A.2: Catalist Partisanship Calculation Example.

B. The Effect of Election Timing on Voter Composition: Including All Elections and Incorporating Both City and Year Fixed Effects

The regression tables in the body of the text presents estimates of the effects of election timing while limiting the sample to election dates on which at least one local contest appeared on the ballot. That specification exploits variation in local election timing within cities over time. Here, we employ an alternate specification that includes all election dates — including primary, midterm, and presidential elections — regardless of whether any local contests took place at the same time. This allows us to also leverage data from all cities that have off-cycle elections, including those that don't vary the timing during the course of panel, since we can still compare voter composition from these local elections to the electorate observed in the same cities during statewide elections even if no local races appeared on the ballot then. In this alternative specification, we also add calendar year fixed effects to account for any secular trends in turnout over time.

Table A4. Election Timing and the Racial Composition of Voters

	White Share of Voters	Black Share of Voters	Hispanic Share of Voters	Asian Share of Voters
Presidential	-7.729***	0.618***	6.274***	0.698
	(1.479)	(0.163)	(1.195)	(0.558)
Midterm	-6.713***	0.657***	5.603***	-0.143
	(1.472)	(0.166)	(1.188)	(0.560)
Primary	-2.727*	0.250	2.522**	-0.441
	(1.466)	(0.162)	(1.171)	(0.574)
Constant	73.33***	2.429***	16.63***	6.118***
	(1.473)	(0.169)	(1.179)	(0.573)
Observations	5,545	5,545	5,545	5,545
R-squared	0.473	0.050	0.339	0.066
Number of Cities	481	481	481	481
Sample	All Election Dates	All Election Dates	All Election Dates	All Election Dates
Year FE	Yes	Yes	Yes	Yes

Robust standard errors clustered by city in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A.5. Election Timing and the Economic Composition of Voters

	Under $40K Income Share	Over $100K Income Share	Under $30K Wealth share	Over $100K Wealth Share	Homeowner Share
Presidential	-0.678	-0.909	3.403**	-2.503***	-5.517**
	(1.186)	(1.463)	(1.556)	(0.830)	(2.195)
Midterm	-0.740	-0.873	2.472	-2.636***	-4.329**
	(1.177)	(1.444)	(1.539)	(0.832)	(2.175)
Primary	-0.253	-1.191	0.600	-1.946**	-2.342
	(1.189)	(1.458)	(1.553)	(0.825)	(2.192)
Constant	31.31***	34.28***	19.47***	13.28***	79.06***
	(1.168)	(1.444)	(1.539)	(0.827)	(2.194)
Observations	5,543	5,543	5,543	5,543	5,543
R-squared	0.030	0.038	0.189	0.051	0.279
Number of Cities	481	481	481	481	481
Sample	All Election Dates	All Election Dates	All Election Dates	All Election Dates	All Election Dates
Year FE	Yes	Yes	Yes	Yes	Yes

Robust standard errors clustered by city in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A6. Election Timing and the Age Composition of Voters

	Share of Voters over Age 55	Share of Voters under Age 40
Presidential	-15.61***	5.075*
	(2.055)	(2.617)
Midterm	-12.88***	1.453
	(2.072)	(2.650)
Primary	-0.991	-3.840
	(2.064)	(2.630)
Constant	53.03***	12.89***
	(2.049)	(2.624)
Observations	5,664	5,664
R-squared	0.685	0.615
Number of Cities	481	481
Sample	All Election Dates	All Election Dates
Year FE	Yes	Yes

Robust standard errors clustered by city in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.7. Election Timing and the Political Composition of Voters

	Share of Democratic Voters	Share of Liberal Voters
Presidential	1.303	2.235
	(1.932)	(1.438)
Midterm	2.121	2.984**
	(1.949)	(1.465)
Primary	-0.0199	1.178
	(1.943)	(1.450)
Constant	58.87***	56.45***
	(1.923)	(1.429)
Observations	5,664	5,662
R-squared	0.235	0.237
Number of FIPS	481	481
Sample	All Election Dates	All Election Dates
Year FE	Yes	Yes

Robust standard errors clustered by city in parentheses
*** p<0.01, ** p<0.05, * p<0.1

C. Adding City-Specific Time Trends

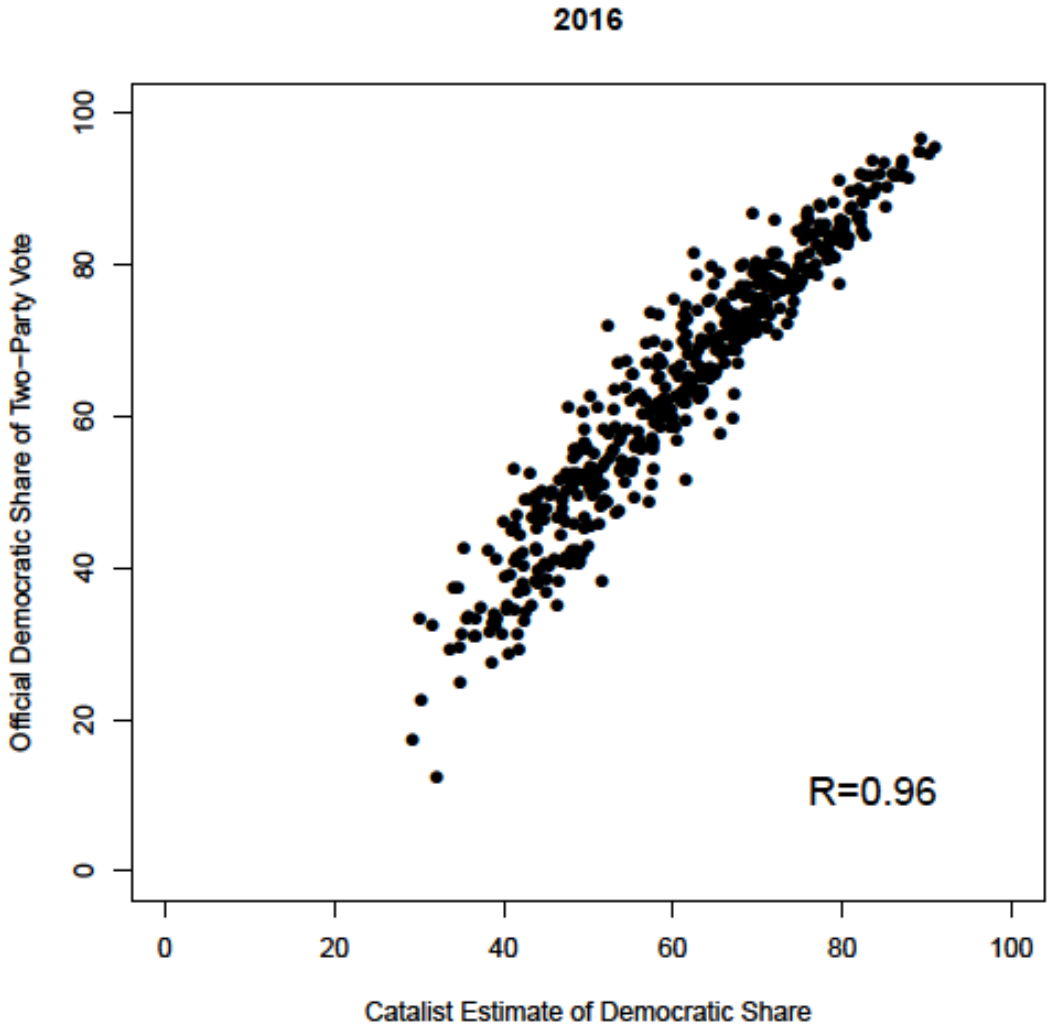
Table A.8. The Effects of Election Timing on Voter Composition: Adding City-Specific Time Trends

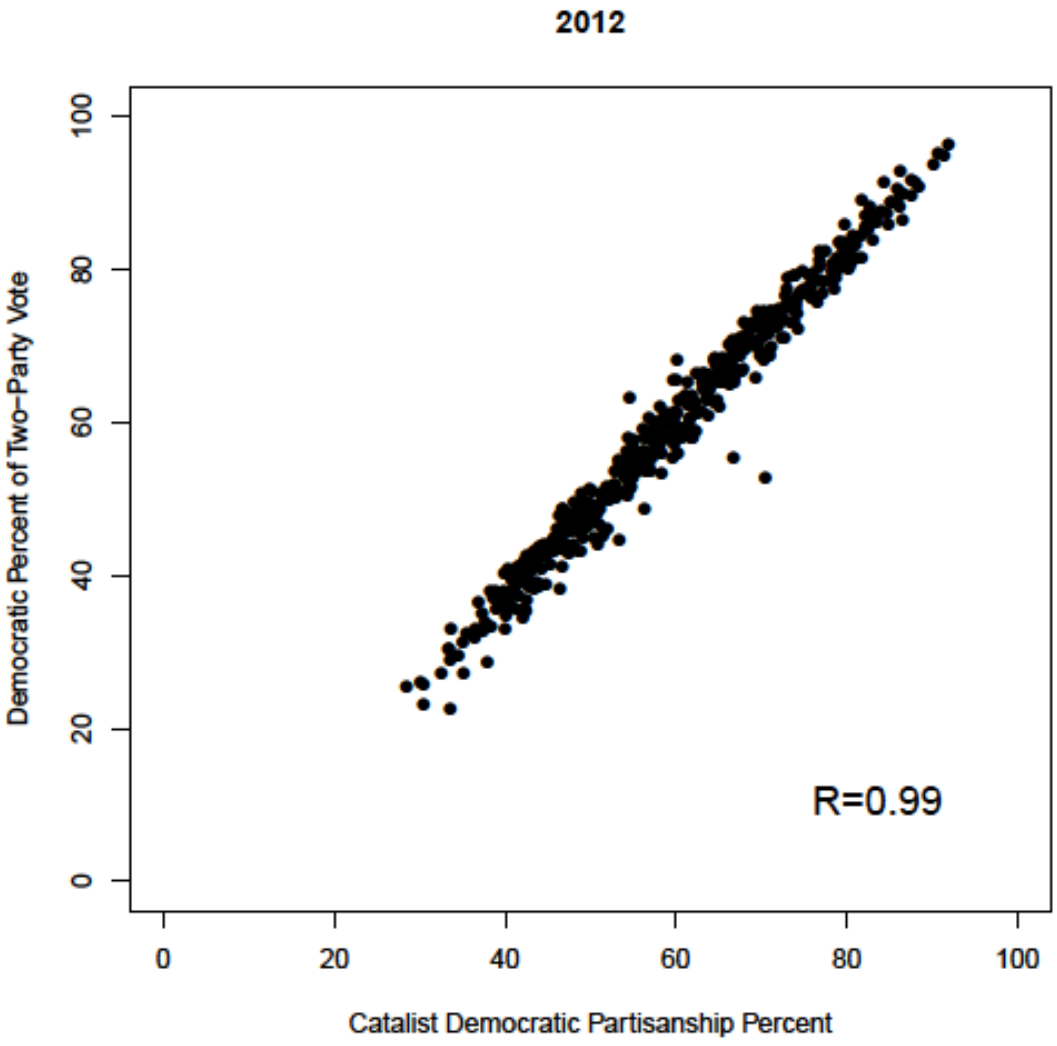
	White Share of Voters	Wealth Under $30k Share of Voters	Under Age 40 Share of Voters	Democrats Share of Voters
Presidential	-9.732***	4.501***	-21.04***	4.607***
	(2.375)	(1.481)	(2.105)	(1.214)
Midterm	-5.552**	1.313	-11.74***	1.893
	(2.333)	(1.446)	(2.086)	(1.191)
Primary	-2.257	-0.376	-2.918	0.653
	(2.377)	(1.404)	(2.229)	(1.335)
Constant	1,247***	227.6***	1,720***	85.24***
	(34.76)	(22.05)	(30.51)	(17.35)
Observations	2,016	2,011	2,016	2,016
R-squared	0.555	0.460	0.681	0.609
Number of Cities	471	470	471	471
Sample	Local Election Dates	Local Election Dates	Local Election Dates	Local Election Dates
City Specific Time Trends	Yes	Yes	Yes	Yes

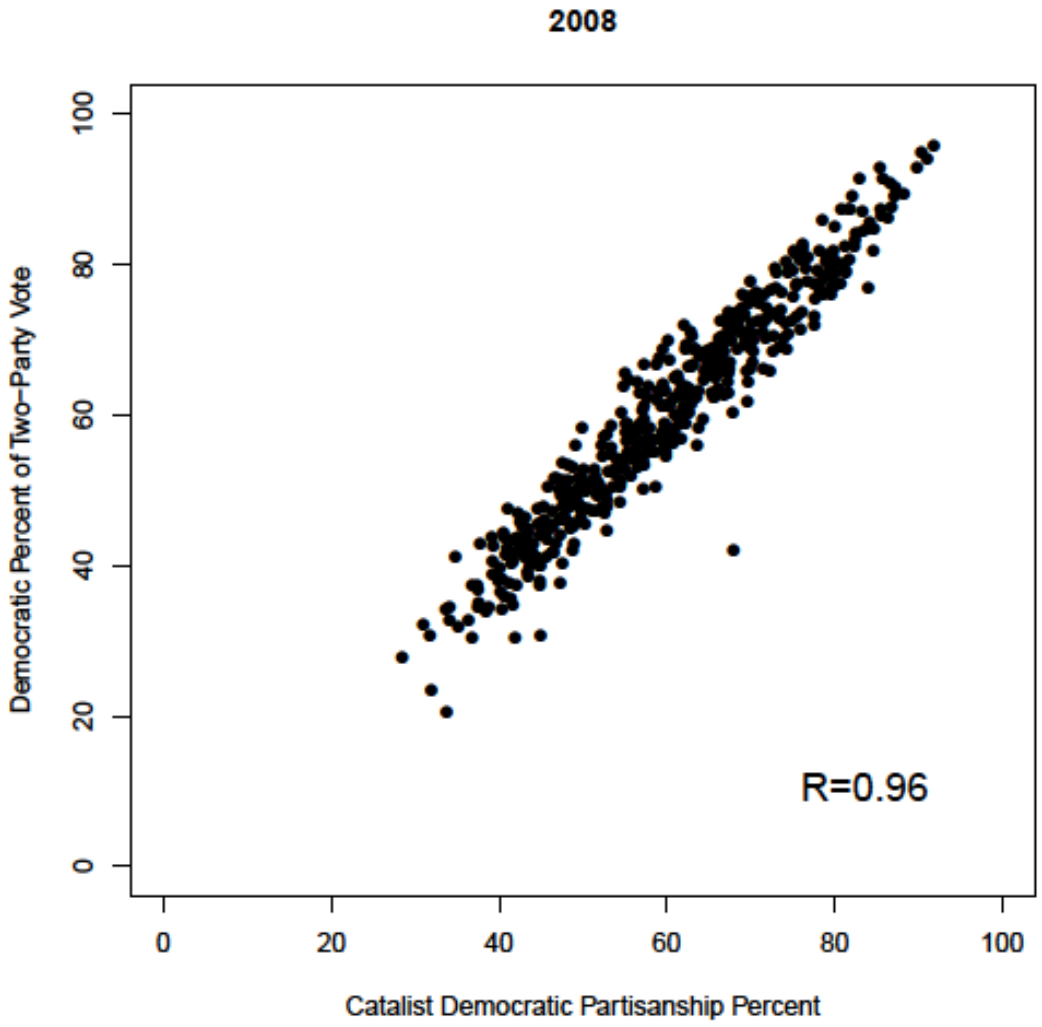
Robust standard errors clustered by city in parentheses
*** p<0.01, ** p<0.05, * p<0.1

D. Validating the Catalist Turnout Data

To examine the consequences of both sources of measurement error, we conducted a validation exercise for one compositional measure — voter partisanship — for which the "ground truth" is known. Specifically, we used Catalist partisanship estimates to calculate the share of Democrats among individuals who are recorded as having voted in each city during the 2008, 2012, and 2016 presidential elections. We then compared these estimates to the official city-level election results reported in the Supplemental Statement of the Vote by the California Secretary of State. As can be seen in the appendix, the Catalist partisanship estimates track the official election returns almost perfectly, with the correlation ranging from 0.96 to 0.99. Strikingly, the relationship is just as strong in 2008 as in 2016, suggesting that voter migration does not pose a serious problem to our analysis.


2016
Official Democratic Share of Two−Party Vote
Catalist Estimate of Democratic Share
0
20
40
60
80
100
R=0.96


2012
Democratic Percent of Two-Party Vote
0
20
40
60
80
100
Catalist Democratic Partisanship Percent
0
20
40
60
80
100
R=0.99


2008
Democratic Percent of Two−Party Vote
0
20
40
60
80
100
Catalist Democratic Partisanship Percent
0
20
40
60
80
100
R=0.96