Election Day Vote Centers, Voter Participation, and the Spatial Distribution of Voting

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Abstract: This paper analyzes the effect of Election Day vote centers on turnout, voters' choice of polling location, and the spatial distribution of voting in the 2011 election in Travis County, Texas. Travis County is one of the largest counties to adopt Election Day vote centers and the analyses show that the reform increased turnout in the county. We also find that individuals that were initially the least predisposed to vote were the most likely to utilize the vote centers. When given the opportunity to choose their own polling location of all 187 sites throughout the county, there are a few particular sites that attract a high volume of voters. These sites were also spatially proximate to a large cluster of voters suggesting that the geographic location of those vote centers stimulated turnout in the area in the 2011 election.

1 Introduction

The way that elections are administered has garnered increasing attention from those studying election performance, specifically turnout. Though the study of election administration is not a new topic (Gosnell 1927; Merriam and Gosnell 1924; Asher 1982), it has gained more attention as a source of important behaviors and attitudes among the electorate. Ansolabehere and Stewart (2005) find evidence of the importance of "institutions of electoral administration, such as the administration of local polling places (2005:386)" to explain voter undercounts, i.e., when voters fail to register a preference for an office on the ballot. Stein et al (2008) and others (Stein and Vonnahme 2008; Brady and McNulty 2011; Gimpel and Schuknecht 2003; Haspel and Knotts 2005; Dyck and Gimpel 2005; Alvarez and Hall 2006; Atkeson and Saunders 2007; Hall, Monson and Patterson 2007) have demonstrated that the location of voting places, poll workers, and the type of voting system have a significant effects on voter turnout and confidence in the voting experience. Evaluation of the voting experience may also determine future voter participation (Gerber, Green, and Shachar 2003, Fowler 2006).

In this paper we examine the effects of Election Day vote centers (EDVC) on voter turnout and the spatial distribution of voting. Specifically we examine Texas' experience with alternative arrangements for Election Day voting places and its impact in the 2011 state constitutional amendment election. We find that EDVCs increase voter turnout overall and that vote centers are particularly attractive to marginal voters. We build on previous research (Stein and Vonnahme 2008; Juenke and Shepherd 2007) by demonstrating that vote centers continue to have a positive impact on voter turnout. Our paper proceeds with a review of recent research on electoral administration and voter turnout, a discussion of vote centers and their key attributes, a

research design for testing of our hypotheses, and empirical findings. We conclude with a discussion of the main findings and their implications.

A number of recent studies examine the effects of polling locations on electoral participation. One recent area of research is the effect of distance between a voter's residence and their polling location on voter turnout. The expectation is that the distance between a voter's residence and polling place is negatively related to their probability of voting (Brady and McNulty 2011) and may be mediated by factors such as access to transportation (Haspel and Knotts 2005) and travel times (Gimpel and Schuknecht 2003).

Factors related to the convenience of voting have also been studied by researchers, but until recently, the effects of convenience voting on the probability that an individual will vote has not been theoretically well-understood. A central theoretical concern about the costs of voting is how voter's come to form impressions about the costs of voting when weighing the decision to vote or not. There are several potential sources of information about the voting process including campaigns, media, and word-of-mouth, but one of the most promising mechanisms is the voter's own experience. Individuals that have previously voted and had a positive experience might be more likely to vote again in the future (Fowler 2006). If true, then the full effect of convenience voting reforms might unfold over the course of several elections. Since this is the first election in which Travis implemented EDVCs, the effect might be relatively smaller for both frequent and infrequent voters than a jurisdiction which has a longer history of vote centers.

In addition to the effect of reforms changing over time, several studies of convenience voting also find that the effect varies by the type of election. In particular, election reforms such

as vote by mail seem to have a greater impact on otherwise lower turnout elections such as local elections (Magleby 1987, Karp and Banducci 2000, Kousser and Mullin 2007).

Overview of Election Day vote centers

The vote center model was initially adopted in 2003 in Larimer County, Colorado, and subsequently used in Larimer in 2004 and three additional Colorado counties in 2005 (Stein and Vonnahme 2008). In 2006, 19 counties in Colorado had adopted EDVCs and several other states had passed legislation allowing their counties to adopt or pilot vote centers including Texas, New Mexico, Arizona, and Indiana.

What are Election Day vote centers? Most generally, they are an alternative means of administering Election Day voting using non-precinct based polling locations. With Election Day vote centers there are typically fewer sites which are centrally located to major population centers, rather than distributed among many smaller residential locations and residents can vote at any of the polling places (Stein and Vonnahme 2008). Election Day vote centers typically rely on county-wide voter registration databases accessed electronically at each polling site and voters are provided ballots appropriate to their registration address, similar to the early voting process.

Election Day vote centers mark a different approach to administering Election Day voting. While previous studies of voter turnout have focused on the time it takes to vote as a main obstacle of voting, voting is not necessarily the only thing that individuals have to do on Election Day. In that way, there is an opportunity cost to voting such that voting takes time away from other activities such as work, lunch, shopping, or recreation (Stein and Vonnahme 2008). While voting can be thought of as competing with other activities, voting can also be made more compatible, so that all modes of voting will not be equally costly. Focusing on the

opportunity costs of voting suggests that there might be alternative ways of administering elections that do not eliminate time costs, but rather makes the act of voting more complementary with other demands on voters' time.

As described in previous research, there are two main characteristics of vote centers that allow us to conceptually differentiate vote centers from precinct-based models of election administration. Those two characteristics are openness and centralization (Stein and Vonnahme 2008). Openness refers to the property of vote centers that individuals are allowed to vote at any location throughout the county rather than be assigned to a particular polling location based on their residential address. Openness might increase turnout by lowering transportation and information costs as voters can go to any location that is most familiar and convenient for them, particularly for individuals traveling outside the home (e.g., commuting for work, school, shopping, or recreation) on Election Day (Stein and Vonnahme 2008).

The second characteristic of vote centers is centralization. Centralization refers to polling locations that are fewer in number and located in larger and more visible sites. Centralization also exists to varying degrees in precinct-based polling locations. Centralization may have several positive effects on voter participation (Stein and Vonnahme 2008). Larger and more visible sites can reduce informational costs that voters incur when attempting to find a polling location and offer more available parking at the site. Centralization also allows for better equipped polling locations to efficiently process voters. With more staff at each polling location, poll workers will be able to specialize in certain tasks such as checking in voters or assisting them with their ballots, which should lead to more efficient operations and improved service to voters. Stein and Vonnahme (2008) found that Election Day vote centers in Larimer Colorado had a positive and substantial effect on individual electoral participation. Additionally, the

relationship was substantially greater for infrequent rather than frequent voters. Similar results were obtained for analyses of vote centers in Colorado and Texas in 2008 and 2009 (Stein and Vonnahme 2009, Miller, Stein, and Vonnahme 2011).

Research Design

To examine the effects of EDVCs on turnout and voter's choice of locations, we collected data from Travis County, Texas following the 2011 state constitutional amendment election. This is a unique opportunity to examine the effects of vote centers since it is the first election in which Travis County implemented vote centers. Furthermore, Travis County continued to operate most of the same precinct sites from 2009 as EDVCs, along with six new vote center locations (total of 187 locations). As such, Travis adopted the openness of EDVCs so that anyone in the county could vote at any location, without centralizing the polling places. This allows us to isolate the effects of openness on turnout and voters' choice of polling locations.

Given this unique implementation of EDVCs, did it increase turnout? Turnout was very low in the election, since there were no notable campaigns on any of the 10 constitutional amendments on the ballot. The most competitive amendment was a proposal to limit additional bonds issued by the Texas Water Development Board which passed 51.47% to 48.47%. We obtained the Travis county voter file to analyze who voted and who did not.

To assess the effects of EDVCs on turnout we compared voters in the 2011 constitutional amendment election to turnout in the 2009 constitutional amendment election. The elections were very similar to one another. There were no significant campaigns related to any of the amendments. In 2009 there were 11 amendments and the closest margin was for an amendment that would finance buffer areas around military installations which passed 55.2% to 44.79%.

Statewide, turnout was 8.18% in 2009 and 5.2% in 2011, indicating that the baseline rate of turnout might have been somewhat higher in the 2009 precinct election, and consequently this election context likely provides a conservative test of the effect of EDVCs.

We filtered the voter file to exclude any voter that was not eligible to vote in both the 2009 and 2011 elections. We also controlled for several variables in the voter file, including gender, age, age squared, vote history prior to 2009, and major party identifiers. Since the voter file did not contain party status, the variable reflects whether the person voted in either the Democratic or Republican primaries in 2008. The EDVC variable was coded as a one for the 2011 election and zero for 2009.

Estimates from a logit model of turnout are shown in Table 1. Across the range of model specifications, we can see that EDVCs have a consistent positive and significant effect on turnout. We also interacted EDVCs with prior vote history to determine if the effect varied for habitual and non-habitual voters. These results are shown in the third and fourth columns of Table 1 and vote centers continue to have a positive effective.

These results raise a number of questions. The positive main effect suggests that EDVCs increase turnout overall but the interaction term is more difficult to interpret since the two constituent effects are positive but the interaction is negative. The county is also quite large raising the possibility that the significant coefficients could be artifact of the sample size. We thus calculated first differences for EDVCs across the range of the vote history variable. The results are shown in Figure 2. As illustrated by this figure, the effect of EDVCs on turnout increases for more habitual voters. The overall effect of EDVCs is to increase turnout by 1.41%.

In order for vote centers to cause an increase in voter turnout it should also change the spatial distribution of voting. If every voter continued to attend their local precinct and no one

took advantage of the open polling sites, then we could conclude that the apparent relationship between EDVCs and turnout was spurious. How often did voters cast ballots away from their local precinct? The post-election voter file included information on where the individual voted. Using this information, we were able to determine that of the 29,131 Election Day voters, 11,386 voted at a location other than their designated precinct (39.1 percent). Given a choice of polling locations we can see that a significant proportion of voters opted for an alternative location.

Not only did a significant number of voters attend polling locations outside of their precinct, but voters with the lowest *a priori* probability of voting were the most likely to take advantage of the openness of polling locations. This is somewhat surprising as vote centers present an informational obstacle to voters (Brady and McNulty 2011). In order to utilize the open polling locations voters need to be aware of the change. We expect that the most likely voters would also be the most knowledgeable about the reform but we observe greater use of EDVCs by those least likely to vote. For this analysis we randomly selected a sample of 25,000 voters. Using this sample, we estimated a logit model of turnout including predictors for vote history, gender, age, age squared, and major party registrants which we used to obtain predicted probabilities for the other observations in the data. This gives us a measure of individuals' *a priori* likelihood of voting.

We also created two new indicator variables; the first was for precinct voters which took a value of 1 in the event that the person voted on Election Day at their precinct site and 0 otherwise. The other was a variable for non-precinct voters which similarly took a value of 1 in the event that the person voted on Election Day somewhere other than their precinct site and 0 otherwise. We estimated two logit models of precinct and non-precinct voting on individuals' *a priori* likelihood of voting. We then compared the predicted probabilities for precinct and non-

precinct voting over the range of the vote propensity variable. If open polling locations are more important for low-propensity voters than the results should show that infrequent voters have a relatively higher probability of non-precinct voting. Among voters that were least predisposed to vote (bottom 5%), the probabilities of precinct and non-precinct voting were roughly equal suggesting that just under half of the marginal voters will attend a polling place other than their precinct. Among voters with highest predisposition to vote (top 5%), the probability of voting at one's precinct was nearly double the probability of voting at some other location (i.e. only about one-third of frequent voters will vote outside of their precinct). These results suggest that marginal voters are relatively more likely to utilize open locations than frequent voters.

Prior studies of polling locations have established a link between turnout and residential distance in traditional precinct elections. These studies show that voters that live farther from their precinct site are less likely to vote. Initially we might anticipate a similar relationship in EDVC elections but we add one important caveat. Since voters are no longer restricted to a single Election Day site, the distance between a voter's residence and the precinct site might not be the relevant measure of distance as voters can attend any of the 187 polling locations in the county (e.g. a location close to one's school, workplace, stores, etc.). This should weaken the relationship between residential distance and turnout in the vote center election.

To analyze this possibility, we geocoded voters' residential address. We also geocoded the polling locations and matched these to the voters' designated precinct number. We then calculated the distance between the voter's residence and her precinct and included this in a logit model of turnout in 2011 along with the variables discussed above. The results are shown in Table 2. The bivariate model shows a negative association between distance and turnout. The models that include the control variables, however, suggest that residential distance was

positively associated with voter turnout. While we anticipated that the effect of residential distance would not be as detrimental to turnout in the vote center election, there is not a compelling rationale for distance to increase turnout in either precinct or vote center elections.

To determine if this finding is unique to the vote center election, we estimated the same models for the 2009 precinct election. The logit estimates are shown in Table 3 and the results are nearly identical. The sample size is extremely large raising the possibility that the effect is substantively miniscule. When we estimate first differences we find that increasing residential distance from the mean to one standard deviation above the mean the probability of voting increased by 0.16% in 2011 and 0.3% in 2009. While the margins are fairly small, the positive association between distance and turnout is unexpected. We are cautious about drawing any strong conclusions from these results, but this result might suggest that there is a mitigating factor such as convenience that attracts voters to polling locations despite the longer residential distances.

Polling locations and the spatial distribution of turnout

Since a substantial proportion of voters attended a polling location other than their designated precinct and could opt to vote at any of the 187 polling places in the county, we sought to determine if a large share of voters flocked to a few specific polling places. We found that three particular sites stood out, each attracting over 300 out-of-precinct voters. Two of these three were also geographically proximate to a region of exceptionally high turnout. Using the voter file data, we calculated the relative risk of voting in different regions of the county. We selected a random sample of 10,000 active registered voters and used a kernel smoothing procedure to estimate the relative risk of voting in each region of the county (Bivand, Pebesma,

and Gomez-Rubio 2008). This procedure estimates the frequency of voting in a particular location while controlling for the number of active registered voters in the area. We obtained relative risk estimates for both the 2009 and 2011 elections, shown in Figures 2 and 3 respectively. Darker shading indicates higher probabilities of voting and ranges from a minimum regional voting rate of 0.0002 to a maximum of 0.353 with a median value of 0.089.

As shown in the figure, the rates were fairly uniform in 2009. In contrast, there is a large regional cluster of voters in 2011 in the west-central portion of the county. To directly compare these values we calculated the difference in regional vote probability from 2009 to 2011 to determine where the largest changes occurred. Figure 4 shows points that had a 5% or larger decline in turnout, which are located in two fairly small and isolated groups in the extreme southern and northern parts of the county. Figure 5 shows the points that had a 5% or larger increase in turnout. We also overlaid the three polling locations that attracted the most out-of-precinct voters. As shown on the map, two of the three locations are very near the largest cluster of voters. These two locations correspond to a super-market and a municipal activity center. The third location in the middle of the county is also a super-market but somewhat more distant from the regions that showed the greatest increase in turnout.

Conclusion

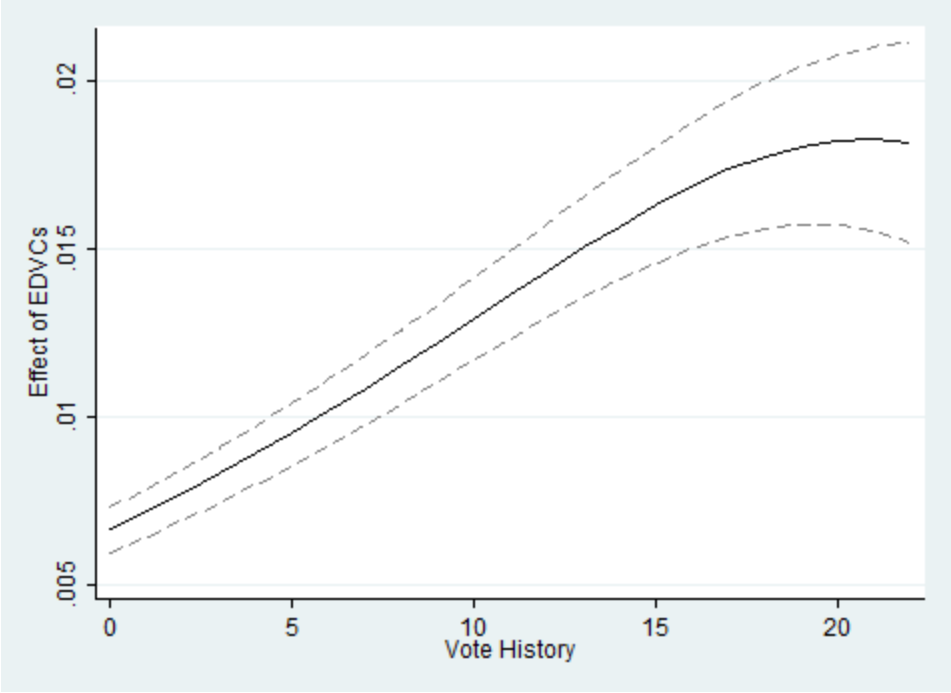
This study examines the effect of Election Day vote centers on voter turnout, voters' choice of polling locations, and the spatial distribution of voting in the 2011 state constitutional amendment election in Travis County, Texas. This is the first election in which Travis County used EDVCs. The county uniquely implemented EDVCs in a way that maintained most of its precinct sites from the previous election but operated them as vote centers such that voters could attend any of the 181 existing locations or six new places throughout the county. Vote centers

typically entail both openness and centralization, but this setting allows us to isolate the effects of openness in the absence of centralization. We analyzed data from the county voter file and compared turnout in the 2009 precinct-election to turnout in the 2011 vote center election. The results show that the open polling locations increased turnout by 1.41% in Travis County.

Allowing individuals to choose their own location also provides an opportunity to examine how many voters stayed with their local precinct. The voterfile contained information on where individuals voted, and showed that over one-third of voters, and nearly one-half of the least likely voters, attended an Election Day polling place other than their precinct location. We found that three locations in particular attracted a large number of out-of-precinct voters. Two of these vote centers were located in the west-central region of the county which also showed a very high cluster of turnout in the immediate vicinity of the sites. It is possible that this clustering was due to location-specific factors, but when we obtained similar regional turnout estimates from 2009 we found no evidence of clustering in that area. This suggests that these vote centers not only attracted voters that otherwise would have voted in a different locale, but also might have stimulated voter turnout in the area. Taken together, these findings advance our understanding of the consequences of election administration. Open polling locations in particular seem to produce higher turnout, and marginal voters are especially likely to respond to open polling locations. We also found little evidence that residential distance negatively affected turnout in the 2011 vote center election.

VARIABLES	(1)	(2)	(3)	(4)
EDVC	0.117***	0.155***	0.279***	0.290***
	(0.007)	(0.008)	(0.014)	(0.015)
Vote history		0.119***	0.123***	0.113***
		(0.000)	(0.001)	(0.001)
Female				-0.234***
				(0.008)
Major Party ID				0.396***
				(0.011)
Age				0.063***
				(0.002)
Age^2				-0.001***
				(0.000)
EDVC x History			-0.008***	-0.008***
			(0.001)	(0.001)
Constant	-2.271***	-3.794***	-3.860***	-5.482***
	(0.005)	(0.008)	(0.010)	(0.047)
Observations	894,854	894,854	894,854	805,508

Table 1: Logit estimates of turnout from the 2009 and 2011 constitutional amendment election. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1


Effect of EDVCs
.005
.01
.015
.02
0
5
10
15
20
Vote History

VARIABLES	(1)	(2)	(3)
Ln(Distance)	-0.086***	0.169***	0.167***
	(0.018)	(0.020)	(0.021)
Vote History		0.091***	0.088***
		(0.001)	(0.001)
Vote 2009		1.486***	1.423***
		(0.017)	(0.018)
Female			-0.111***
			(0.014)
Major Party ID			0.364***
			(0.018)
Age			0.084***
			(0.003)
Age^2			-0.001***
			(0.000)
Constant	-2.847***	-4.193***	-6.082***
	(0.010)	(0.014)	(0.069)
Observations	550547	550547	497450

Table 2: Logit estimates of the relationship between distance and turnout from the 2011 constitutional amendment election. Standard errors are in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

VARIABLES	(1)	(2)	(3)
Ln(Distance)	-0.568***	0.298***	0.266***
	(0.040)	(0.017)	(0.018)
Vote History		0.137***	0.124***
		(0.001)	(0.001)
Female			-0.293***
			(0.013)
Major Party ID			0.384***
			(0.016)
Age			0.066***
			(0.002)
Age^2			-0.001***
			(0.000)
Constant	0.241***	-4.362***	-6.014***
	(0.024)	(0.014)	(0.066)
Observations	20468	571015	516492

Table 3: Logit estimates of the relationship between distance and turnout from the 2009 constitutional amendment election. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

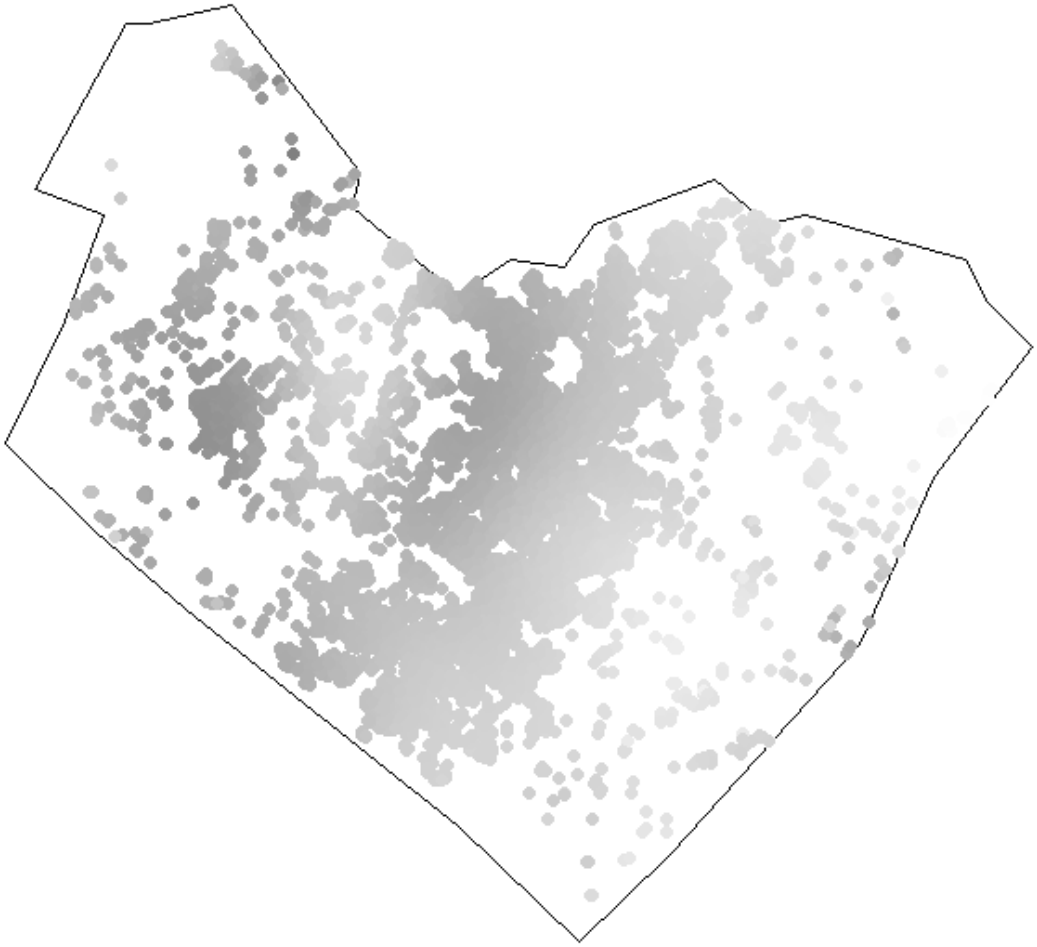


Figure 2: Spatial distribution of registered voters and regional vote probabilities in the 2009 precinct election (darker shades indicate a higher voting probability).

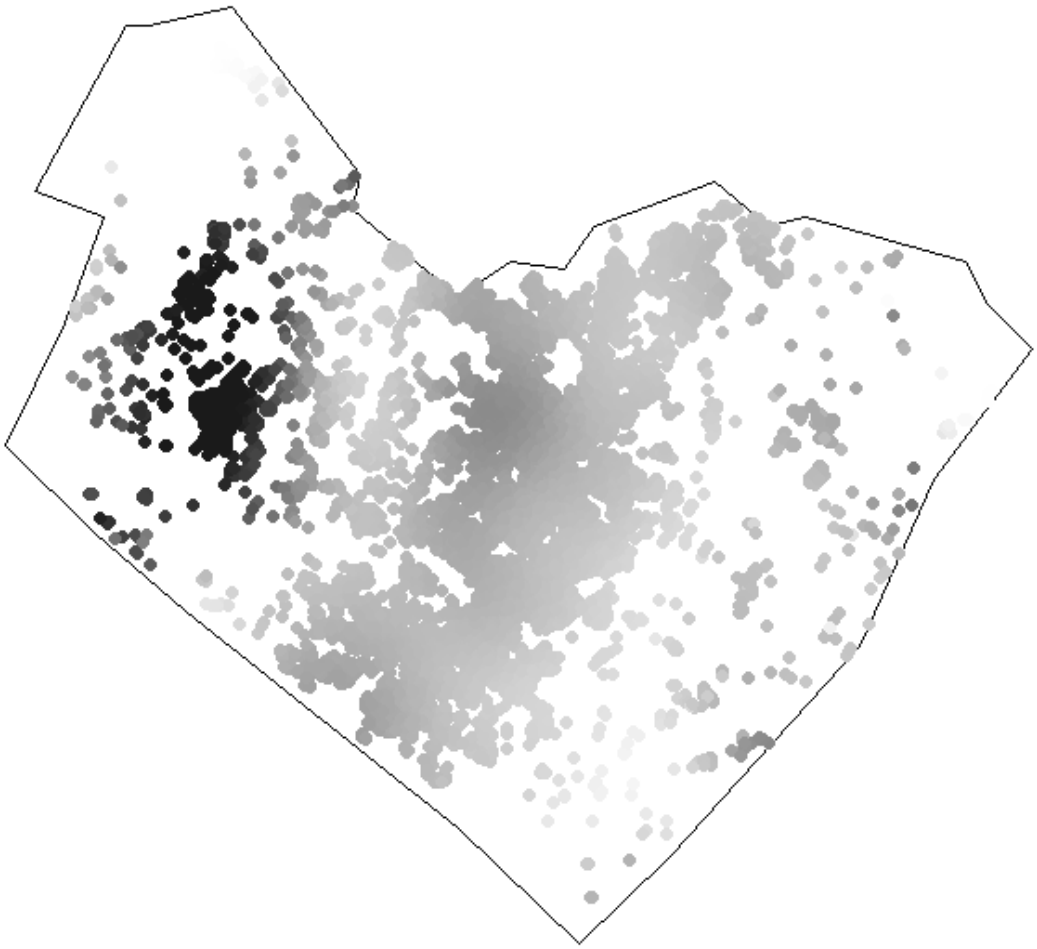


Figure 3: Spatial distribution of registered voters and regional vote probabilities in the 2011 vote center election (darker shades indicate a higher voting probability).

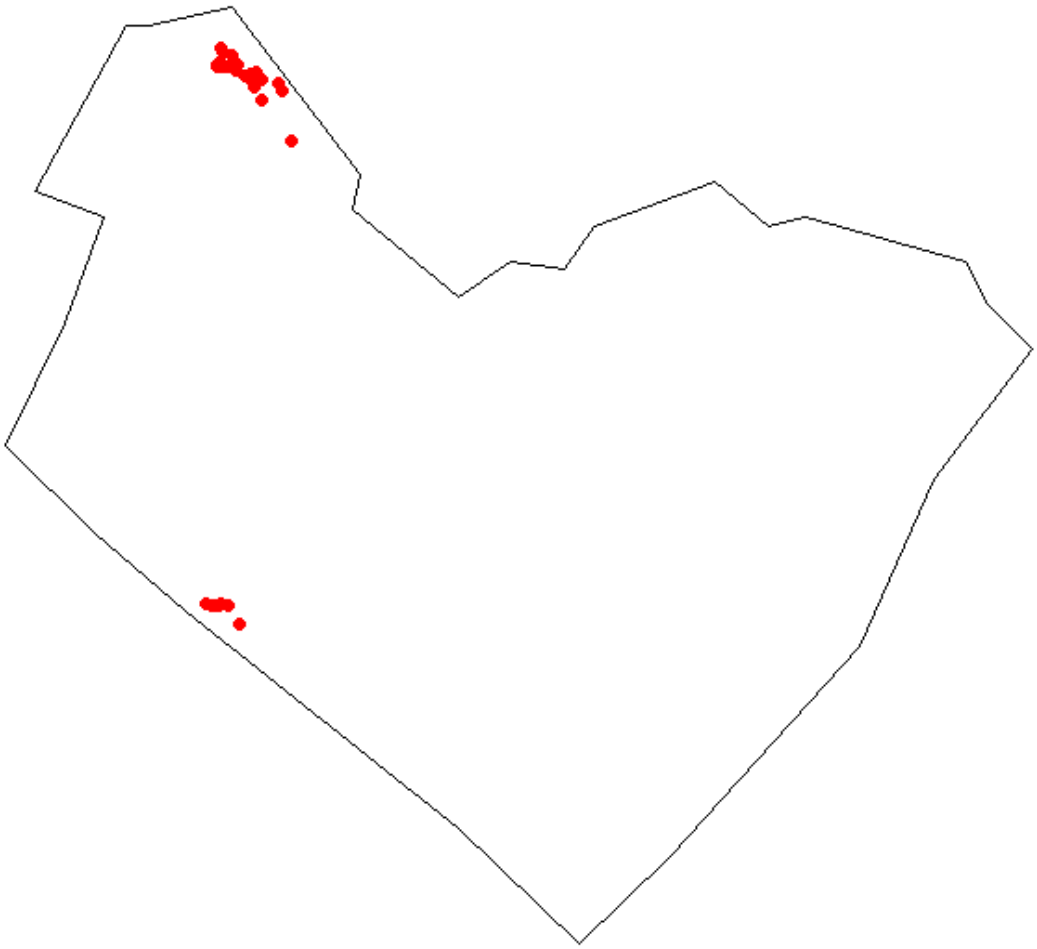


Figure 4: Regions that experienced at least a 5% decline in turnout from the 2009 precinct election to the 2011 vote center election.

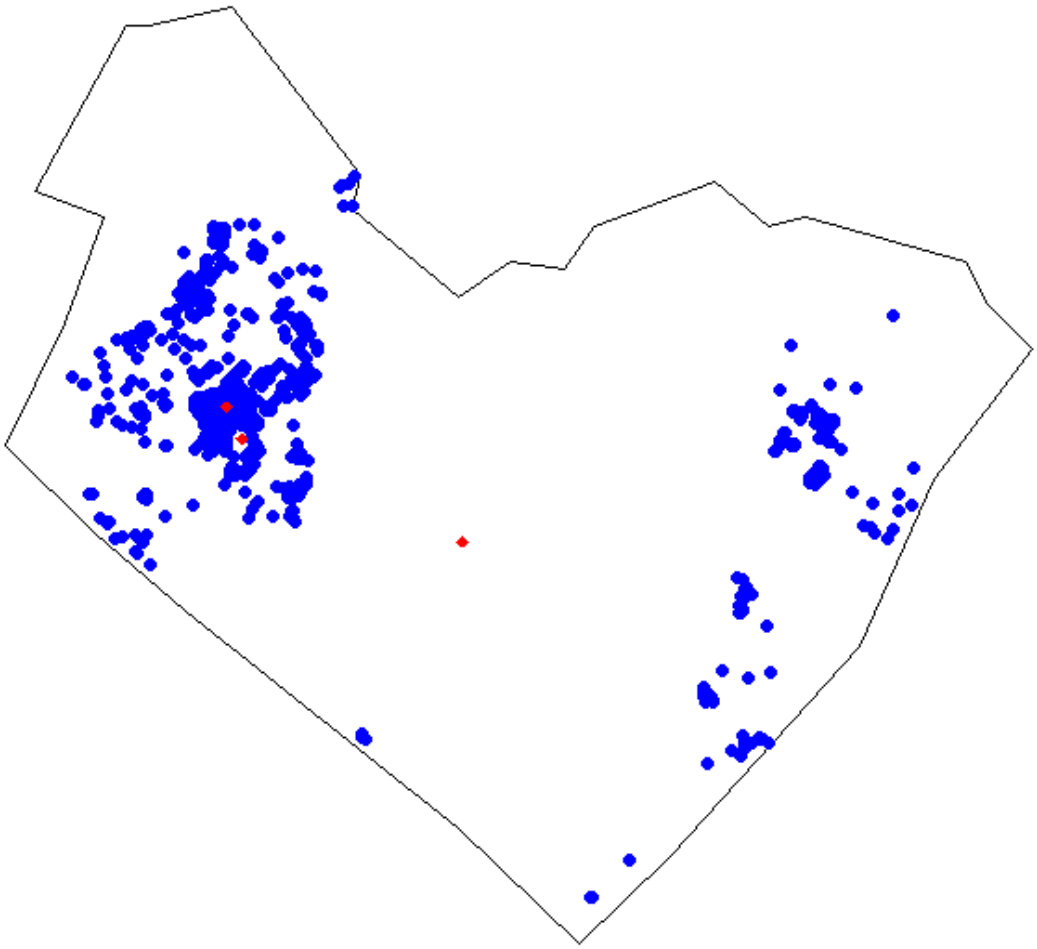


Figure 5: Regions that experienced at least a 5% increase in turnout from the 2009 precinct election to the 2011 vote center election. The three red points are the vote centers that received the largest number of out-of-precinct voters.

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