

## **‘The Quiet Revolution’: Convenience Voting, Vote Centers, and Turnout in Texas Elections**

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### ABSTRACT

In 2005, the Texas Legislature allowed counties to move from precinct level voting to county-wide “vote centers” – locations in a county where all voters will vote, regardless of their address. Vote centers are theoretically less expensive to administer and convenient for many voters, but less is known about the impacts on specific communities. Using Texas’ registered voters’ list from the Secretary of State’s Voting Division the project will use Geographic Information Systems (GIS) to calculate estimated driving distances and times from each registered voter’s residence to the voter’s vote center location. The results show that the displacement of traditional precinct level voting and the increase in distance between polling locations takes a greater toll on voter turnout for voters in rural counties and Latinos.

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Election reforms involving convenience voting have a greater impact on otherwise lower turnout elections such as local elections (Magleby 1987, Karp and Banducci 2000, Kousser and Mullin 2007). Yet, the evidence is mixed on the effectiveness, often due to implementation issues (Biggers and Hamner 2015). One less explored convenience voting process are vote centers (sometimes referred to as countywide polling places) – locations in a county where all voters will vote, regardless of their address. Academic studies of vote centers, although narrow in scope, have found that vote centers increase turnout and boost turnout among those voters who are less likely to vote (Stein and Vonnahme 2008; Stein and Vonnahme 2012; Vonnahme, et al. 2012). Yet, the evidence is mixed, with some scholars finding no significant effect (Juenke and Shepherd 2008; Schelle, et al. 2009). However, despite claims of electoral efficiency, little academic work has explored the larger effects of vote centers beyond one state or across elections. Indeed, electoral reform can have unanticipated consequences (Burden, et al. 2014) if not implemented properly or fairly (Haspel and Gibbs Knotts 2005; Brady and McNulty 2011; Burden, et al. 2017).

However, one key missing factor is the effect of vote centers on the state's growing population of racial and ethnic minorities. The only research on vote centers suggests that vote centers increase voter turnout generally, especially among infrequent voters.<sup>1</sup> Although compelling, this work only examined one county in one state, did not include the polling place distance as a variable in turnout and did not include the race of the individual voter. We have scant evidence about the impact of this arrangement and voter turnout. The findings we do have are at the county level rather than the individual or precinct level, limiting our ability to make claims about the effectiveness of vote centers. Although the administrative costs are reduced, the displacement of traditional precinct level voting and

the challenges of migrating to a new system may take a greater toll on some counties than others and some minority groups than others. Studies to date do not take race, ethnicity or distance from the vote center (or all three) into account; these are all key theoretical factors in estimating the impact of vote centers on voter turnout.

In this paper, we explore the impact of a switch to county-level voting (away from precinct-level voting locations) on voting behavior of racial and ethnic minorities. Specifically, we examine how the switch to a county-wide polling place form of voting (a vote center) impacts the likelihood of turnout on voters in these counties. Questions of turnout among racial and ethnic minorities are important because imbalance in voter turnout by race and class can lead to a reduction in representation (Hajnal and Trounstein 2005). Inclusive efforts to encourage voting assistance can increase turnout and representation (Marschall and Rutherford 2016) while altering voting arrangements may have the opposite effect. This paper gives us perspective on how changes in the administration of voting locations impacts racial and ethnic minorities.

### **Theories of Voter Turnout**

The “cost” of voting is often the focus of voter turnout studies, especially the time and effort it takes to vote (Leighley 1995; Downs 1957). Census data finds being "too busy" tops the list of reasons for voters to not vote (Clement 2015). The structure of the voting process, including the days before Election Day required to register, vote by mail or early voting, has been shown to be important at affecting aggregate level turnout (Squire, Wofinger, and Glass 1987). Dozens of states have attempted to reform the process of voting to make it easier, more cost efficient and more likely. Difficulty getting to the polls is also pointed to as a cause of sporadic vote casting.<sup>2</sup> With so many options for voting, voters

appear to avoid all costs associated with locating and getting to their Election Day polling stations (Gronke and Miller 2012; Amos, Smith, and St. Claire 2019). These efforts may either stimulate new voters or retain existing voters (Berinsky 2005).

Efforts to allow voters to vote early or vote by mail, the “quiet revolution” of convenience voting, often maintain the amount of turnout from current voters who find this method easier than traditional precinct locations (Stein 1998; Berinsky 2005; Gronke and Miller 2012). This “convenience” includes Election Day registration (Nagler 1991; Brians and Gofman 2002) or vote by mail (Richey 2008; Alvarez, et.al. 2011; Gronke and Miller 2012). Election reforms involving convenience voting (especially vote by mail) have a greater impact on otherwise lower turnout elections such as local elections (Magleby 1987, Karp and Banducci 2000, Kousser and Mullin 2007). Election reforms involving convenience voting (especially vote by mail) have a greater impact on otherwise lower turnout elections such as local elections (Magleby 1987, Karp and Banducci 2000, Kousser and Mullin 2007; Burden et al. 2014). Yet, the evidence is mixed on the effectiveness, often due to implementation issues (Biigger and Hamner 2015)

### **Vote Centers and Turnout**

Vote centers (county-wide voting locations) are specific locations in a county where all voters cast their ballots and is an alternative to traditional, neighborhood precinct where local houses, schools, or community centers serve as the voting location for individuals in that precinct alone. The *National Conference of State Legislatures* argues that the possible advantages include voter convenience, financial savings and an increase in turnout. Reducing the total number of polling places necessarily reduces the total number of poll workers needed (Schelle, et. al. 2009; Folz 2014). Vote centers also eliminate the need for

provisional ballots if a voter votes at the wrong precinct since all voters are voting at the predetermined vote centers. Consolidated vote centers also increase the likelihood that the voting locations comply with the Americans with Disabilities Act since there are fewer locations to monitor and maintain.

Possible negatives to county-wide vote centers as the primary voting system include a loss of tradition in neighborhood connectedness to voting, shown to be a significant factor in turnout, and voter confusion about the process, at least in the early stages.<sup>3</sup> Because vote centers disrupt the standard neighborhood precinct voting arrangement and move polling locations to new and unfamiliar locations, there may be a negative effect of this process on voter turnout in a low turnout election. Voting is habit-forming, and any changes may disrupt that habit (Gerber, Green, Shachar 2003). Concerns over cost and organization also generate up front barriers to moving to vote centers. The League of Women Voters Texas Education Fund also suggests that such centers “may disenfranchise poor, disabled, or elderly voters, and any person with transportation issues, as the consolidated polling places, may be farther away.”<sup>4</sup> Longer lines at voting locations may also discourage voters from waiting in line to cast a ballot. Vote centers also present an informational obstacle to voters (Brady and McNulty 2011).

In the past decade, vote centers have become more popular, but states have varied in their adoption of vote centers. States are split (as of 2018) on the use of vote centers: most states do not have a provision for a vote center and 13 states allow vote centers for early and Election Day voting. The experience of the effectiveness of vote centers nationally has been mixed. Larimer County, Colorado conducted successful pilot program elections using vote centers in 2003 and 2004 (consolidating the polling place locations from 143 to 22 vote

centers), resulting in an efficient election staffed by better-trained personnel. The City of Denver, however, had a more difficult experience in 2004, leading to long lines at many of the polling locations (Stein and Vonnahme 2005). Theoretically vote centers may aid turnout, but the field lacks a comprehensive study of the effect across different counties, distinct election types, and cumulative over several cycles.

### **Vote Centers in Texas**

In 2005, the Texas Legislature approved a program (through House Bill 758) for county-level decision making to move from precinct level voting to “vote centers” for the November 2006 elections.<sup>5</sup> Lubbock County was the first participant the program in 2006, replacing the county’s 69 precincts with 35 vote centers (but kept 8 precincts in rural areas). The Secretary of State’s post-election report discovered that “there were no significant problems on election day.” However, the Secretary of State’s report found that voter turnout fell 2% from the past midterm election.<sup>6</sup> The interim report of the Texas House of Representatives Committee on Elections in the 82<sup>nd</sup> Legislature was tasked with reviewing the progress on the additional counties who signed up to use vote centers in the 2009 and 2010 elections. More voters waited in line in Collin County than neighboring Denton County who used the precinct-based method of voting in 2009. Voter confusion was the biggest point of contention and recommendations were made to use more social media to update voting information. Even so, voter turnout in 2010 was slightly higher in Collin County than in the past midterm election. Other counties reported similar trends.<sup>7</sup> Overall, then, the effect of vote centers on voter turnout presents conflicting findings across counties and elections in Texas.

By 2016, 52 Texas counties used vote centers to conduct constitutional amendment, midterm year, or presidential year elections. Several of the state's largest counties are contemplating a switch as well, including Dallas County (including the city of Dallas), Harris County (Houston), and Bexar County (San Antonio). As the legislature expanded the number of counties who could utilize vote center elections, more counties signed on. The overall impact has been mixed in Texas – at the county level from 2009 to 2018; some counties see an increase in turnout while others see no increase or a decrease in turnout. These effects are contingent on the type of election where vote centers have a larger impact on lower turnout elections to ratify constitutional amendments than on midterm or presidential elections (Cortina and Rottinghaus forthcoming 2019). No study has explored individual-level change, especially among populations that might be more sensitive to changes in the location of polling places.

### **Expectations**

Geographic accessibility to a polling location plays a significant role in voter turnout. Neighborhood context “does have a socializing influence on voters” (Tam Cho, Gimpel and Dyck 2005). Politically active neighborhoods produce (and reproduce) politically active citizens (Huckfeldt and Sprague 1995; Krassa 1988; Straits 1990). Gimpel and Schuknecht (2003) find that, even after controlling for variables that account for other voter motivations, the location of the precinct makes a significant difference on turnout – they argue distance is a burden in suburban precincts for distances between 2-5 miles, although in rural areas direct and unimpeded distance of 6-10 miles turnout rates are higher (Brady and McNulty 2011). Physical turnout is also more likely when a voter is closer to their polling location. Otherwise, a regular voter is more likely to mail in an absentee ballot (Dyck and Gimpel

2005). Other scholars find that small differences in the location of a polling place make a big difference in the turnout rate (Hasptel and Knotts 2005). Convenience is a key factor (Kousser and Mullin, 2007). Proper distribution of polling places may reduce the cost of voting by reducing the potential of a queue to vote (Stein and Vonhamme 2008). In theory, then, a series of centralized voting locations could have a positive effect on turnout since voters can choose among the closest (and therefore most convenient) place to cast a ballot.

Changes to polling locations may generate a loss of “civic day” feelings, leading to reduced turnout, as some have found for early voting which dilutes the importance of traditional behavior at polling locations (Fortier 2006). Stability of a local population facilitates participatory behavior (Gimpel, Lay, and Schuknecht 2003; Johnston 1992). Potential voters are affected by their local environments in terms of knowledge and resources (Gimpel, Dyck, and Shaw 2004). Geographic clustering and sorting of voters into communities, especially by similar political beliefs, may make targeted disruptions of Election Day polling places continuity a possibility (Bishop 2008; Levendusky 2009, Amos, Smith, and St. Claire 2019). Altering a polling location may affect voter turnout. Brady and McNulty (2011) and Amos, Smith, and St. Claire (2019) find that reassigning a polling location has a negative effect on voter turnout – consolidation of polling locations reduced turnout by almost 2%, offset by a slight increase in absentee voting. Haspel and Gibbs Knotts (2005), on the other hand, find voters whose polling location moved were more likely to vote but this was contingent on the increase in the total polling locations (as well as postcard reminders reducing information costs).

*Expectation 1: Increasing the distance between a polling place and a voter’s residence will decrease the probability of voting.*

Voters who are members of a racial or ethnic minority may be more sensitive to changes in polling locations generally and increasing distances between home and voting location specifically. Scholarship has shown broadly that lowering the cost of voting may increase turnout for racial and ethnic minorities. Wolfinger, Highton, and Mullin (2005) argue that “because African American and Latino<sup>8</sup> registrants are disproportionately younger and less educated, they would benefit disproportionately from universal adoption of such post registration laws.” Yet, as racial and ethnic minorities are forced to vote in locations that are more removed from their communities, they may be less likely to turn out to vote. For instance, Fraga (2016) finds that Black and Latino citizens are more likely to vote in both primary and general elections as their share of the population increases regardless of candidate race. Perceptions of dislocation may create a false perspective on the amount and density of voting power of these groups.

Similarly, because vote centers disrupt the standard neighborhood precinct voting arrangement and move polling centers to new and unfamiliar locations, there may be a negative effect of this process on voter turnout. Voting is a habit, reinforced by a “consistent performance” setting (Green & Gerber 2003; Fowler 2006; Aldrich, Montgomery, and Wood 2011; Coppock and Green 2016) even in registration (Vonnahme 2012). Residential mobility has a negative effect on registration and turnout – put differently, when a voter confronts a new polling place, they may be less likely to turn out to vote (Squire, Wolfinger, and Glass 1987). Amos, Smith, and St. Claire (2019) argue those registered voters who are reassigned to a different Election Day polling place prior to an election are less likely to turn out to vote than those assigned to vote at the same precinct location,” and Hispanics were

significantly less likely than other racial groups to abstain if reassigned. The cause is in part because the discovery of a new precinct location incurs both search and transportation costs for those reassigned voters, although these costs are larger for some groups than for others (Haspel and Gibbs Knotts 2005, Brady and McNulty 2011).

The effect of voting location alteration may be significantly higher for racial and ethnic minorities. If neighborhoods are isolated, especially for certain ethnic or racial minorities, turnout may decline (Huckfeldt 1979; 1986; Tam Cho, Gimpel, and Dyck 2006). Changes in voter areas, such as through redistricting, has stronger effects on African Americans than other votes (Haynes and McKee 2012). Racial density is a factor in turnout, primarily as local issues affect communities or when candidates on the ballot share the same race as the voters in an area (Kohfeld and Sprague 2010). Institutional barriers, especially registration requirements, have disproportionately reduced turnout among Asian Americans and Latinos (Xu 2005). Voters in a predominately minority precincts experience waiting times that are on average twice as long as a voter in a predominately white precinct (Pettigrew 2017). Longer wait times are associated with a lower likelihood of voting (Stewart 2013).

*Expectation 2: Latino voters will be less likely to turn out if the distance between their residence and the closest voting location increases.*

### **Empirical Strategy: Data and Models**

The data for the models below comes from the Texas voter file obtained from the Office of the Texas Secretary of State. We focus on seven counties from which we obtained precinct-level voting locations and vote center locations: McLennan, Montague, Navarro,

Rusk, Taylor, Tom Green, and Wharton. These counties all made the transition from precinct-level voting locations to vote centers in 2014, so to ascertain the impact that geographic distance between a voter's residence and the nearest polling location (and a change from that location) has on turnout we geocoded each voter based on her or his permanent residence and estimated the driving distance to each precinct level voting location and the nearest vote center. In order to control for county-level externalities and to control for comparable elections before and after the transition (i.e., midterm vs. midterm), we selected two election cycles: one before and one after the transition leaving us with the 2010 midterm election (before the transition to a vote center) and the 2014 midterm election (after the transition to a vote center).

To be able to isolate the effects of distance on turnout, we focus only on those voters that *actually voted* in both elections *on* election day – voters that voted either via absentee ballot or during early voting were dropped from the final data.<sup>9</sup> The final data then is comprised by validated turnout of an individual voter, that is, the data includes voters that voted during and after the transition in addition to those voters that did not vote in one or both elections and did not move out of the county. Validated turnout, besides taking away the guesswork out of who voted and who did not when race is a factor (Abramson and Claggett 1984; 1989, Deufel and Kedar 2010).

The outcome variable is a dichotomous variable that takes the value of 1 to indicate if a voter voted during the 2014 midterm election and 0 otherwise. The main predictor is the absolute difference of the distance between a voter's permanent residence and that of precinct voting locations and vote centers measured in kilometers. In other words, we estimated the driving distance from each voter's residence to their precinct voting location

during the 2010 midterm election and the driving distance from each voter's residence to the closest vote center in the 2014 midterm election and took the absolute difference between these two driving distances. It is worth highlighting that voters may or may not vote at a vote center that is the closest to their residence or may vote at a vote center that is close to their workplace during their lunchbreak; however, such fine-grained analysis is impossible to conduct because records of at which location a voter voted are not kept by the counties or the state. For analysis purposes, the key factor is the relative increase or decrease in distance between the new and old polling locations.

In addition to the main predictor, we include a series of controls that traditionally influence individuals' propensity to vote. We control for an individuals' ethnicity based on their last name and reported by Texas' Secretary of State which controls for the fact that Latinos tend to be less likely to vote than other demographics such as non-Hispanic whites and African Americans. We also control for whether or not an individual voted in the 2010 midterm election, the age of the voter (given that older voters tend to be more likely to vote in comparison to younger voters), and their sex to control for any potential differences between men and women.<sup>10</sup>

## **Findings**

To test our first expectation, we estimated a logistic regression predicting the probability of voting in the 2014 midterm election while controlling for demographic variables (Table 2 below shows the results). Model 1 presents the baseline results. The effects of vote centers on counties varies -- some counties (Navarro and Rusk) see an increase in voter turnout while others see a decrease (Montage and Tom Green). The coefficient for the absolute driving distance difference as a result of transitioning from

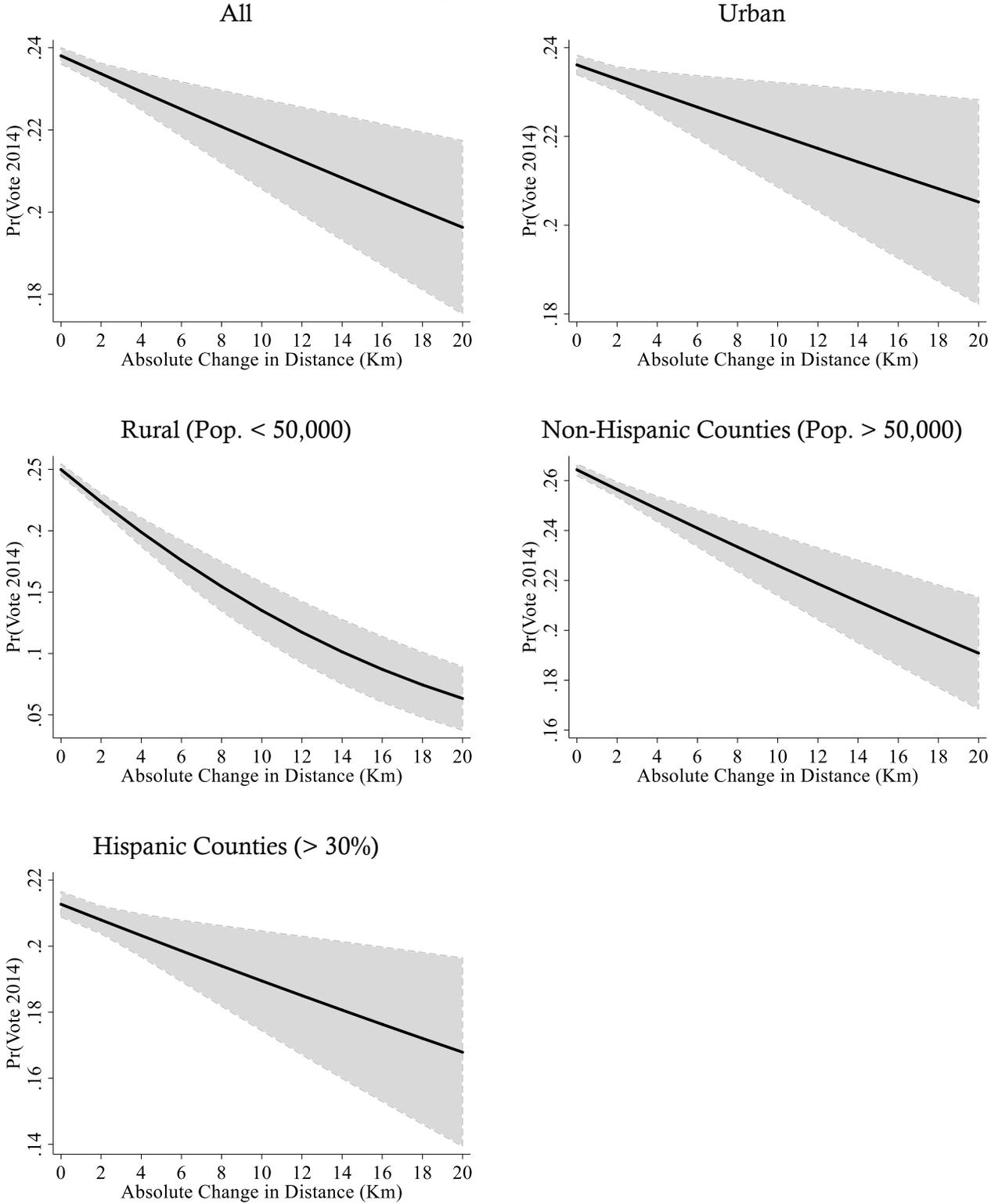
precinct level locations to vote centers suggests that as driving distance increases, the probability of voting in the 2014 midterm election decreases. Latinos in model 1, in comparison to non-Latinos, are less likely to have voted in 2014, while those who voted in 2010, men and older voters were more likely to have voted in the midterm election of 2014. Expectation 2 predicts a Hispanic voters are less likely to vote specifically if distance increases. Models 2 through 5 show the results of estimating a similar model but by subsetting the data for counties in which Latino registered voters represented more than 30% of the total registered voters and for rural (urban) counties (counties with a population of less (more) than 50,000). Overall the impact of distance on the probability of voting is consistent across models. In rural counties especially the impact of greater distance decreasing the probability of voting is more pronounced.

**Table 2. Logit regression predicting vote during the 2014 midterm election given the absolute difference of distance**

	Model 1 All	Model 2 Urban	Model 3 Rural	Model 4 Non-Hispanic Counties	Model 5 Hispanic Counties
Absolute Difference Distance	-0.02*** (0.00)	-0.01** (0.00)	-0.10*** (0.01)	-0.02*** (0.01)	-0.02*** (0.01)
Hispanic (1=yes, 0=no)	-0.71*** (0.02)	-0.79*** (0.02)	-0.62*** (0.05)	-0.75*** (0.03)	-0.72*** (0.04)
Voted 2010 (1=yes, 0=no)	2.20*** (0.01)	2.18*** (0.02)	2.23*** (0.03)	2.21*** (0.02)	2.12*** (0.03)
Sex (1=male, 0=female)	0.11*** (0.01)	0.13*** (0.02)	0.05 (0.03)	0.12*** (0.02)	0.09*** (0.03)
Age in 2014 (years)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.00*** (0.00)
Montague	-0.11*** (0.04)				
Navarro	0.28*** (0.03)				
Rusk	0.29*** (0.03)				
Taylor	-0.06*** (0.02)				
Tom Green	-0.13*** (0.02)				
Wharton	-0.02 (0.03)				
Constant	-2.35*** (0.03)	-2.35*** (0.03)	-2.25*** (0.06)	-2.35*** (0.03)	-2.34*** (0.05)
Observations	155,208	126,856	28,352	116,523	38,685
PseudoR <sup>2</sup>	0.199	0.196	0.202	0.198	0.192
$\chi^2$ test	33826	27188	6361	25706	7649
prob > $\chi^2$	0	0	0	0	0

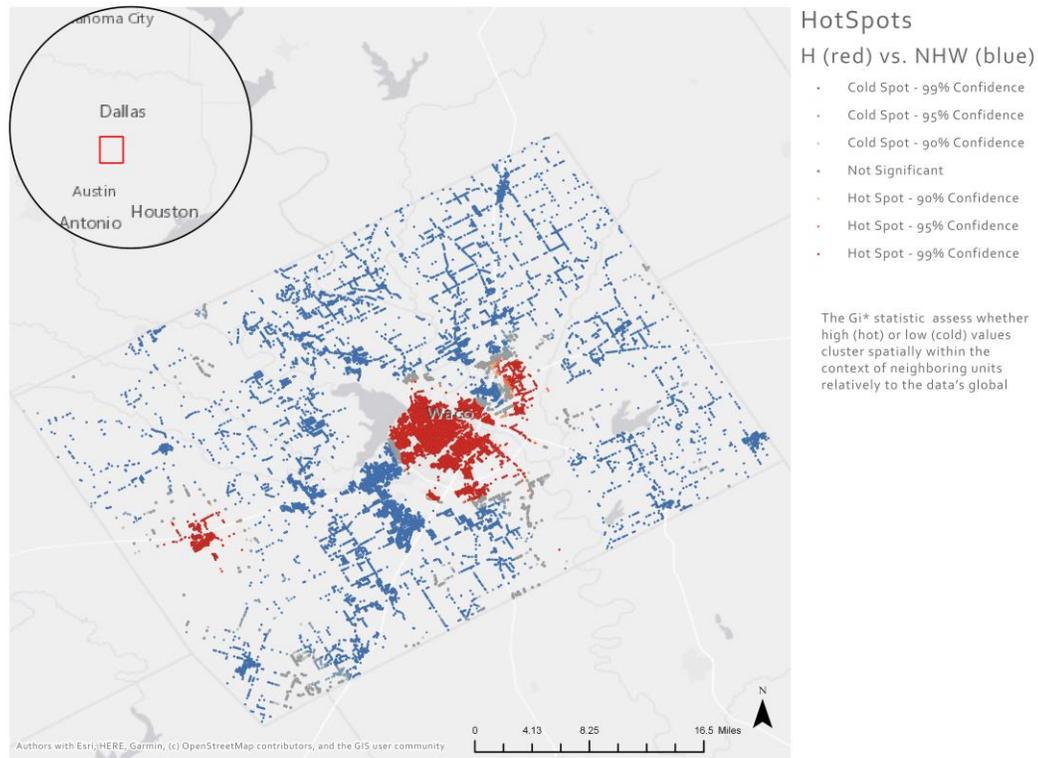
Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Figure 2. Predicted probabilities of voting in the 2014 midterm election as a function of driving distance.**



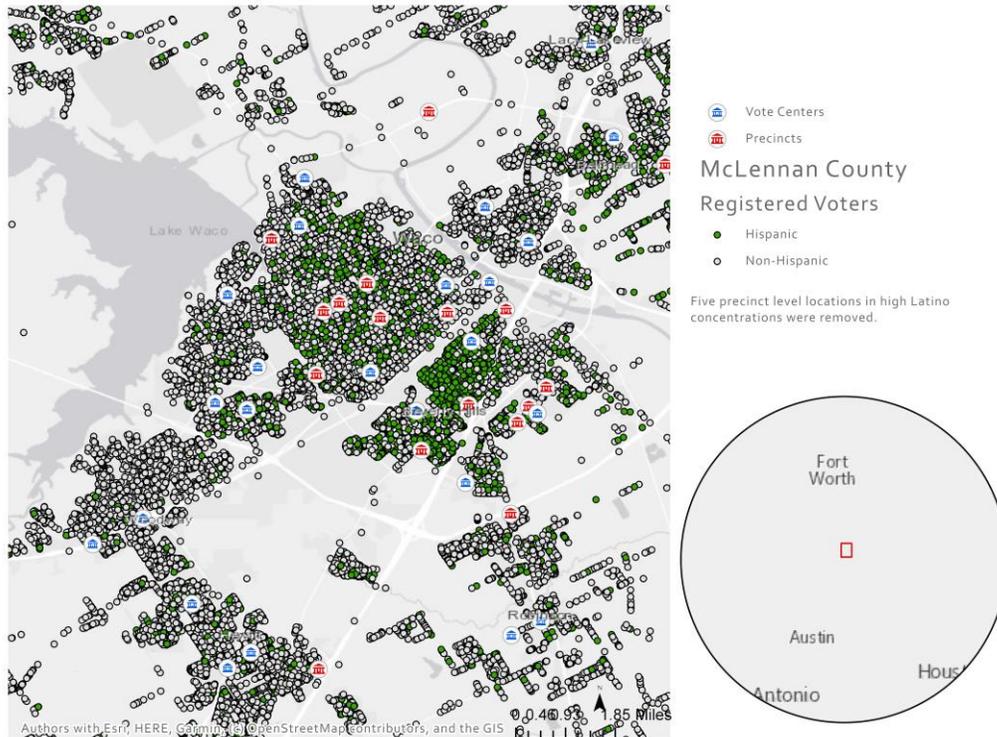
To further test Expectation 2 we concentrate on McLennan County (home to large cities like Waco and smaller cities like West) that experienced the most significant Latino growth in absolute numbers during the 2010-2014 period. From 2010 to 2014, the Latino population increased from 51,840 to 58,550. No other county in our sample experienced such growth. For instance, the Latino population in Montague County increased by 258 Latinos, while in Tom Green County increased by 4,025 Latinos. Also, McLennan County shows significant residential segregation patterns. In order to assess the spatial residential distribution of Latino and non-Latino registered voters, we use the  $G_i^*$  statistic that weighs whether high (hot) or low (cold) values, in this case, Hispanic and non-Hispanic voters cluster spatially within the context of other voters relative to the overall data's global patterns. The results of the  $G_i^*$  statistic are essential for one reason. If they show that Hispanic registered voters tend to cluster on particular places vs. non-Hispanic voters, then that is a sign of residential segregation, which could have an impact on the location and number of vote centers. Figure 3 shows the cold-to-hot spatial rendering with 90 to 99% confidence intervals for Latino and non-Latino registered voters. A hot spot is defined as blocks that have high concentrations of Latino registered voters and are surrounded by other blocks with high values. Conversely, a cold spot would be given by those blocks with low values surrounded by other blocks with low values. Figure 3 clearly shows that there are indeed significant patterns of residential segregation between Hispanic and non-Hispanic voters.

**Figure 3. Hot-Cold (Gi\* Statistics) for Latino and non-Latino Registered Voters**



The question that arises from Figure 3 is: is there a relationship between residential segregation and the transition from precinct level voting locations to vote centers, and are Hispanics more or less impacted by such changes? To address these questions Figure 4 shows the locations of precinct-level voting places (red halls) before the transition, the locations of vote centers (blue halls) after the transition as well as the number of Hispanic (green circles) and non-Hispanic (hollow circles) registered voters in the hot spot indicated by Figure 3. If a vote center was located in the same place as a previous precinct level voting location, it will be depicted only by the presence of a vote center, that is, by a blue hall. If a precinct level voting location was not replaced by a vote center then it will be depicted by a red hall.

**Figure 4. Latino and non-Latino Registered Voters in McLennan County with Vote Centers and Precinct Level Locations**



The visual results suggest that in such hot spot the number of precinct level voting locations that were not replaced by vote centers was higher than in comparison to other places. In other words, it seems that after the transition and during the 2014 midterm election Latinos had on average fewer closer places to exercise their democratic franchise, that is, regardless of the reasons behind the location of vote centers, Latinos in McLennan County had to travel farther than non-Hispanic whites.

Are Latino voters less likely to turn out if the distance between their residence and the closest voting location increases (as predicted in Expectation 2)? Table 4 shows the results of estimating a logistic regression predicting the probability of voting in the 2014 midterm election given voters' closest distance to a vote center in McLennan County, voter ethnicity, and the interaction between distance and voter ethnicity while controlling for demographic variables. Model 6 presents the baseline results. Like the results presented in Table 2, and demonstrating support for both Expectation 1 and 2, the coefficient for the absolute distance suggests that increasing distance to a vote center is associated with a lower probability of voting. Once again, the estimates suggest Latinos are less likely to vote and male and older voters are slightly more likely to vote than their respective counterparts.

**Table 4. Logit regression predicting vote during the 2014 midterm election given the absolute difference of distance for McLennan County**

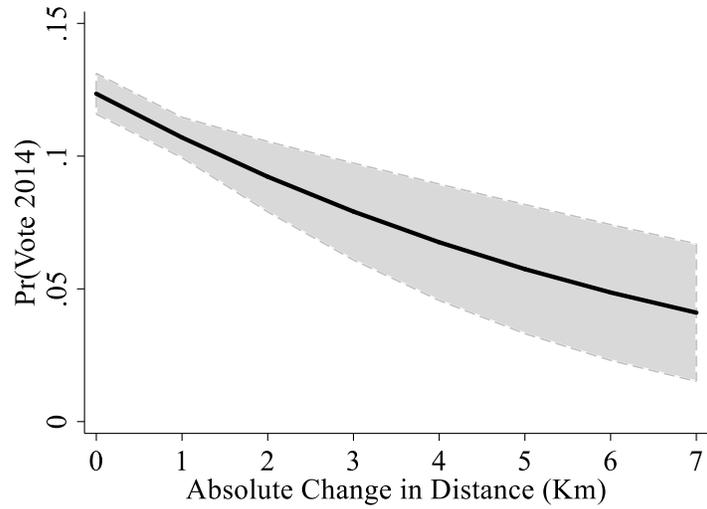
	Model 6 Baseline	Model 7 Interaction
Abs. Distance (Kms)	-0.07*** (0.01)	-0.06*** (0.01)
Hispanic (1=yes, 0=no)	-0.79*** (0.04)	-0.73*** (0.04)
Hispanic x Abs. Distance	--	-0.13** (0.06)
Voted 2010 (1=yes, 0=no)	2.29*** (0.02)	2.29*** (0.02)
Sex (1=male, 0=female)	0.09*** (0.02)	0.09*** (0.02)
Age in 2014 (years)	0.01*** (0.00)	0.01*** (0.00)
Constant	-2.37*** (0.04)	-2.37*** (0.04)
Observations	58,020	58,020
PseudoR <sup>2</sup>	0.211	0.211
$\chi^2$ test	13673	13679
prob > $\chi^2$	0	0

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Model 7 shows the results of interacting geographic distance with ethnicity. Due to the conditional nature of the hypothesis—i.e., that geographic distance and ethnicity both condition voters' likelihood to vote—it is important to highlight how to understand the results. The main effects of geographic distance and/or ethnicity must not be interpreted as the mean effects of a change in these variables based on the probability of voting, since the effect of ethnicity on the probability of voting depends on voters' proximity to a particular vote center. The coefficient on ethnicity captures only the effect of ethnic identification upon the probability of voting when proximity to a vote center is zero, while the coefficient of absolute distance captures the effect on the outcome variable when ethnicity is zero (see

Brambor et al. (2006) for a discussion on how to interpret interaction models). The results indicate that absolute distance (i.e., the main effect when ethnicity is zero) has a negative statistically significant impact on the probability of voting. The main effect of ethnicity (i.e., when absolute distance is zero) is also in line with previous evidence that Latinos are less likely to vote in general. In terms of the significance of the controls, if a voter voted in the previous election, sex and age remain statistically significant. The interaction coefficient suggests that distance interacts with ethnicity: as distance increases, the probability of voting decreases for Hispanics ( $p < 0.05$ ). Figure 5 plots the predicted probabilities with 95% confidence intervals of voting during the 2014 midterm election for Hispanics – as distance increases, the probability of voting for Hispanics decreases.

**Figure 5. Predicted probabilities of voting in the 2014 midterm election for Hispanic registered voters as a function of driving distance.**



To parse out the results further, it is necessary to estimate the change in the probability of voting due to a change in the absolute distance. In a logistic regression that incorporates a transformed predictor (i.e.,  $\log(x)$ ), the odds-ratio associated with a relative change in the predictor (i.e., multiplying  $X$  by a factor  $q$ ) is given by  $e^{\beta \log(q)}$  or equivalently to  $q^{\hat{\beta}}$  (see Barrera-Gómez and Basagaña 2015) in contrast to a logistic regression with an untransformed predictor in which the change of the outcome variable associated with a one-unit increase in the predictor is given by  $e^{\beta}$ . For instance, a 2-fold increase in the absolute distance from a voter's residence to a vote center ( $q=2$ ) decreases the odds of a Hispanic Voting by .91 ( $2^{-.13}$ ). The probability of a Hispanic voter to vote when there was no change in terms of her/his previous precinct voting location and the new vote center is around 12% holding everything else at their mean values. This is in contrast the probability of voting for a Hispanic voter whose closest vote center is on average 7 kms (4.34 miles) farther than her/his previous precinct level location is only 4%.

## Discussion and Conclusion

Access to polling places, wait times to vote, and the hours a polling place are open are all efforts to make voting more convenient. The revolution in “convenience” voting has expanded many voters ability to cast a ballot but has also introduced unforeseen circumstances to other voters. In this paper we examined one type of voting change – a transition from neighborhood precincts to county-wide vote centers – and found vote centers to have a negative impact on voting. Overall, the results presented in this paper suggest that distance between a voters’ residence and polling locations matters. Simply put: increasing the absolute distance between precinct voting locations and vote centers decreases the probability of voting. This decrease is even more apparent among Hispanic voters in urban counties that over the past years have experienced significant growth of the Latino population. As Hispanic voters become a larger share of the population and a greater proportion of the voters with each passing election cycle (Ura and Jin 2019), the impact of how counties arrange their voting administration will be more significant.

Several questions remain to be explored in future research. For instance, do African Americans and Asians experience similar decreases in the probability of voting similar to that of Latino voters. Does the length of time a polling location was in a particular precinct have a greater effect on lowering the probability of voting. If a long-standing community voting location was relocated to another location, it may have a greater impact on voters in that community. There may be a partisan effect as well. Brady and McNulty’s (2011) observe that “there is a potential for major impacts if systematic attempts are made to disrupt voting in precincts that all lean in one partisan direction.” The drop in turnout was modest but significant enough to allow for outcomes to be manipulated by future changes in

polling locations. Amos, et. al (2019) are considerably more dubious that most local election supervisors draw precinct boundaries neutrally. Such political outcomes are not examined here.

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## Endnotes

<sup>1</sup> Stein, Robert M. and Greg Vonnahme. 2008. “Engaging the Unengaged Voter: Vote Centers and Voter Turnout.” *Journal of Politics* 70 (2): 487-497.

<sup>2</sup> “Who Votes, Who Doesn’t and Why?” Pew Research Center Report. October 18, 2006.

<sup>3</sup> The National Conference of State Legislatures. “Vote Centers.”

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<sup>4</sup> League of Women Voters of Texas Education Fund, “Voting Procedures to Increase Voting Participation: Education Day Centralized Voting.” Researched and written by Charlotte Foulkes.

<sup>5</sup> HB 719 Bill Analysis, Committee On Elections. This legislation expanded the number of eligible elections to include constitutional amendment elections and the general election for state and county offices.

<http://www.capitol.state.tx.us/tlodocs/81R/analysis/pdf/HB00719H.pdf#navpanes=0>

<sup>6</sup> Texas Secretary of State, Report to the 80<sup>th</sup> Legislature on House Bill 758, Relating to Countywide Polling Place Pilot Program.

<http://www.sos.state.tx.us/elections/laws/hb758.shtml>

<sup>7</sup> Interim Report to the 82<sup>nd</sup> Texas Legislature. House Committee on Elections, January 2011.

<sup>8</sup> The terms “Latino” and “Hispanic” are used interchangeably in this paper.

<sup>9</sup> To be eligible to vote early by mail in Texas, voters must be 65 years or older; be disabled, be out of the country on election day and during the period of early voting by personal appearance; or be confined in jail, but otherwise eligible. Absentee voting makes geographic distance irrelevant for voters’ voting decision since it suggests an apparent impossibility for voters to move from one point to another point. Early voting allows Texas registered voters to vote by personal appearance in designated locations around ten days before election day. Distance, in early voting, may come to voters’ decision to cast a ballot; however, if voters regularly vote during the early voting period there is no counterfactual to determine the impact of geographic distance on voting after the transition from precinct level voting locations to vote centers.

<sup>10</sup> Voters that did not specify their sex during registration were dropped from the final data.