Turning Texas Blue

An analysis of gun-control positions on Democratic vote share

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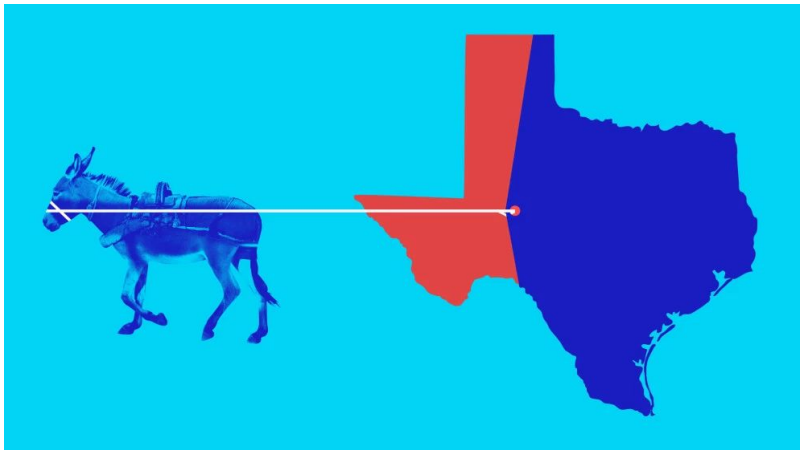


Introduction

Texas is the second largest state in the United States of America, with a population of 28, 304, 596 people (as estimated by the U.S. Census Bureau in 2017). It therefore also has the second highest number of representatives in the House with 36 seats and 38 electoral college votes for presidential elections.

It is also a traditionally conservative state in terms of its political leanings, having voted for the Republican candidate for president in each of the past ten elections. Still, recent Democratic voter turnout and engagement across the country has inspired hope that Texas can be flipped to blue in 2020. The demographics of the state are changing rapidly, with groups that traditionally vote for Democrats like young people and Hispanics growing in size. According to the Pew Research Center, over a quarter of the state's population is under 18 and "Texas is one of five states in the country where people of color make up the majority of the population. Between 2000 and 2009 Hispanic population growth accounted for 63.1 percent of all growth in the state." Given sticky political trends showing minorities and young people overwhelmingly supporting democrats in house, senate, and presidential elections across the country, it is very likely that most of the vote share from these new voters and soon-to-be new voters will go towards democratic candidates.

Another factor that could be driving a change in political sentiment is Texas' large and vibrant cities, including Austin, San Antonio, and Houston. In 2017, the Texas Demographic Center estimated that 24% of Texans lived in an urban area. Similar to cities across the country, these metropolitan areas tend to embrace liberal ideas and be Democratic strongholds. Illustratively, democratic US senate candidate Beto O'Rourke won nearly 75% of all votes from

Austin in his 2018 race. That said, it is crucial not to forget the huge swathes of rural and pastoral areas. In contrast to the cities these counties tend to be more traditional and vote in a manner similar to how Texas has voted in the past.

Recent elections have shown signs of promise, however. The percentage of Texans who voted for the Democratic candidate in a presidential election has been slowly increasing, now at 43.2% for Hillary Clinton in 2016 vs. 41.38% for Barack Obama in 2012. More recently in last month's election for Senator, Beto O'Rourke received 48.3% of the vote against incumbent Ted Cruz. O'Rourke's campaign was lauded for its unabashed progressive stances and success in increasing turnout among young people and Hispanics who had previously not even been registered -- ultimately leading to a very close election. While O'Rourke was ultimately not successful, his campaign helped numerous other candidates win their competitive races down the ballot. O'Rourke's relative success may inform how a Democrat could win the state in the future.

Problem Formulation

We began our investigation with the goal of determining the factors that contribute towards increased Democratic vote share in Texan elections. After researching Democratic candidates in the past and in recent elections, we realized that while Democrats often had similar opinions on issues such as abortion and climate change, there was an area where they varied more: gun control. In many parts of the country Democrats are often pre-judged as being staunchly pro-gun-control. However that is not necessarily the case in rural areas such as those

that make up large parts of Texas, where residents may be miles from help when it comes to confronting intruders, and the culture of hunting is much stronger.

As such, we are interested in investigating how a Democratic candidate's' position on gun control impacts their ability to win in Texas. This is likely a core policy issue, made more urgent by the increase in mass shootings across the United States, and could a be a deal-breaker for undecided voters in certain states. In order to isolate the effect of supporting gun control policies, we factored in fixed effects for election year, county, district and whether the candidate was male or Hispanic. When considering racial breakdowns to include we decide that whether a candidate was Hispanic could be important due to the fact that Texas is the state with the 3rd largest Hispanic population by percentage, as calculated by the Pew Research Center.

Gun Control in Texas

Texas is a state where gun control laws are not popular or often passed. Opposition arises in the form of ardent supporters of the Second Amendment, concern about the drug trade, those who believe higher levels of gun ownership will deter crime, and those who live in more remote or pastoral areas and believe that gun ownership is necessary to ensure their safety. The Open Society Institute scores states by their firearm laws across 30 different criteria. They note, "if a state received full points (on their scale), it would score a total of 100 points. A negative score indicates a state that has very limited gun control laws of its own, and in fact undermines the minimum standards in federal law." Texas had the fourth lowest score among all states in the country with -6.

The laws in Texas are generally quite permissive of gun ownership. There is no minimum age to possess firearms, and public universities must allow concealed carry. Municipal governments are not permitted to pass laws that would regulate firearm ownership, although they can make laws regarding firearm discharge. In 2007 under Governor Rick Perry "Castle Doctrine" and "Stand Your Ground" laws were passed that expressly allow a homeowner to use deadly force against an intruder, and establish that the shooter has no "duty to retreat" before shooting.

There has been a dearth of Democrats at all levels of Texan government. The last exception to that rule was Ann Richards, who was governor from 1991 to 1995. When she lost in 1995 to George W. Bush, her decision to veto a bill that would have increased the prevalence of open carry was seen as a major reason why. After that political operatives in the state began referring to the "Ann Richards Rule" - the idea that vetoing a pro-gun law meant the end of a political career in Texas. Although this election happened over twenty years ago, its effects have not dissipated. In 2014, Wendy Davis ran for governor against current governor Greg Abbott. Known for her unapologetically liberal views in areas such as abortion, LGBT rights, and cannabis deregulation, for most of her career she fought to increase gun control. However during the gubernatorial election her opposition to a law that would permit open-carry became a major point of contention, one that Greg Abbott brought up repeatedly. Seeking to focus her campaign on other issues such as the economy or health care, Wendy Davis said that she supported the law. Despite this concession, Wendy Davis lost the election. This is just one signal of how divisive and politically toxic support for gun violence in Texas can be.

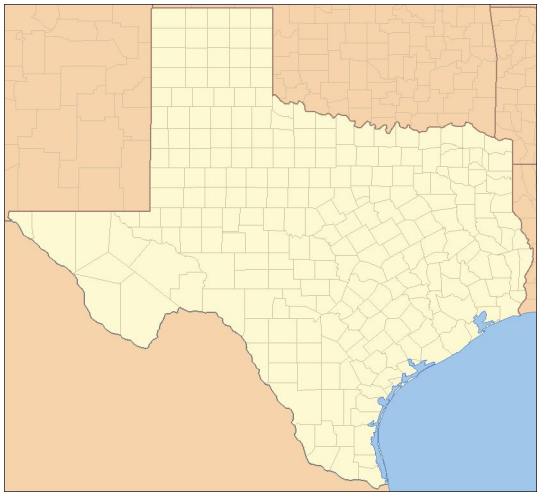
Texas Geography

Texas is split into 254 municipal counties, the most of any state. The counties were decided at different times through various local governments, and vary greatly both in population and area. This ranges from Loving county, which only contains 134 people, to Harris county, where Houston is located, with a population of 4,652,980. Presidential and Senate elections are reported by county, as those are elections are decided on a statewide basis.

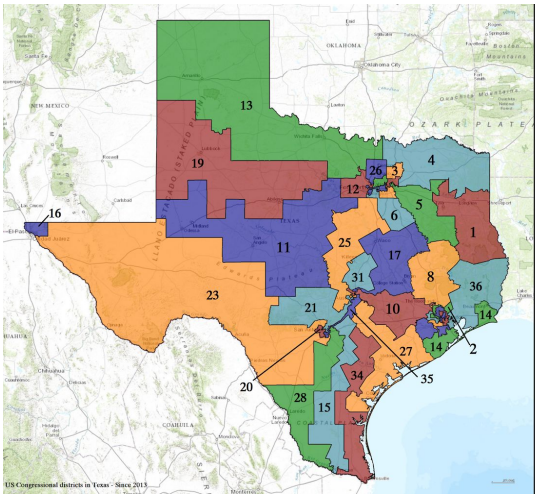
Congressional representatives, however, are elected by and serve congressional districts. The thirty-six districts were created independent of municipal boundaries, so it is both possible to have one district contain parts of multiple counties, and for one county to contain multiple districts. District borders are determined during the decennial redistricting, and do not need to correspond to county or city boundaries.

As the size of a state's delegation to the House of Representatives is determined by its population, redistricting generally happens after each Census. In 2013, Texas gained four congressional districts, making it difficult to accurately compare vote shares before and after 2013. Redistricting is often associated with partisan map creation. In Texas, it has benefited Republicans.

Counties



Congressional Districts



Elections Analyzed

Since our goal is to study the factors that will influence future elections, we wanted to use as recent data as possible. We were limited by the fact that data relating to the 2018 election was not yet uniformly available when this analysis was started, and by the 2013 redistricting mentioned above. Given these restrictions, we studied the 2014 and 2016 elections.

For the 2014 election, we compiled and analyzed county and district level information from the Texas Board of Elections for all Texas house races and Democratic US senate candidate David Alameel. For the 2016 election, we similarly looked at house election results -- but also included data corresponding to Hillary Clinton's presidential election results in the state. In 2016, there were 27 competitive house races and the presidential race, and in 2014 there were 23 competitive house races and the U.S. senate race. A race was deemed competitive if there was both a Republican and Democratic candidate running, and two party vote share was calculated as

the number of votes for the Democratic candidate over the number of votes for a Republican or Democratic candidate.

2014 Sample Dataframe:

year	county	office	district	candidate	vote_share	pro_gun_control	candidate_male	candidate_hispanic
2014	ANDERSON	senate	5	David M. Alameel	0.20564845	1	1	0
2014	ANDREWS	senate	11	David M. Alameel	0.08392268	1	1	0
2014	ANGELINA	senate	1	David M. Alameel	0.20969228	1	1	0
2014	ARANSAS	senate	27	David M. Alameel	0.20521402	1	1	0
2014	ARCHER	senate	13	David M. Alameel	0.10268949	1	1	0
2014	ARMSTRONG	senate	13	David M. Alameel	0.08133087	1	1	0
2014	ATASCOSA	senate	28	David M. Alameel	0.30315698	1	1	0
2014	AUSTIN	senate	10	David M. Alameel	0.14391091	1	1	0
2014	BAILEY	senate	19	David M. Alameel	0.11880165	1	1	0
2014	BANDERA	senate	21	David M. Alameel	0.15556307	1	1	0
2014	BASTROP	senate	10	David M. Alameel	0.35753188	1	1	0

2016 Sample Dataframe:

year	county	office	district	candidate	vote_share	pro_gun_control	candidate_male	candidate_hispanic
2016	ANGELINA	house	1	Shirley McKellar	0.32466880	1	0	0
2016	ARANSAS	house	27	Raul (Roy) Barrera	0.24397996	*NA*	1	1
2016	ATASCOSA	house	28	Henry Cuellar	0.47043663	0	1	1
2016	AUSTIN	house	10	Tawana W. Cadien	0.16299932	1	0	1
2016	BANDERA	house	21	Tom Wakely	0.15805849	1	1	0
2016	BASTROP	house	10	Tawana W. Cadien	0.38228515	1	0	1
2016	BASTROP	house	17	William Matta	0.30649351	1	1	0
2016	BASTROP	house	27	Raul (Roy) Barrera	0.38318748	*NA*	1	1
2016	BEE	house	34	Filemon B. Vela	0.43432489	0	1	1
2016	BELL	house	25	Kathi Thomas	0.65485424	1	0	0
2016	BELL	house	31	Mike Clark	0.35222805	1	1	0

Data Collection and Cleaning

Election results were found on the Texas Board of Elections website. Information was either collected on a page-by-page basis and compiled in spreadsheets, or collected through a web scraper. The web scraping was done using the Python package Beautiful Soup and can be found in the Jupyter notebook county_scraping.ipynb.

Democratic vote share and candidate names were compiled on a district basis for House candidates and a county basis for Presidential and Senate candidates. The candidates demographics information and stances were then found using sources such as their own websites, news articles, and election information websites such as ballotpedia.com and vote411.com.

The information was then compiled into a dataframe where each candidate-district-county combination was one row. This allowed us to consider county and district fixed effects across all the elections. As a county could contain more than one district, the largest district in that county was used for the Presidential and Senate elections in the relatively small number of counties that had that issue. (29/254 counties).

We initially also researched factors about each county such as whether it is urban and its racial makeup. However once we controlled for county fixed effects it was found that these factors were not needed. These can be found in the county_info dataframe.

Sample Sources:

(Texas Board of Elections)

U. S. Representative District 1

...	Louie	Shirley J.	Phil	Renee	...	...	...
...	Gohmert	McKellar	Gray	Culler	Total	Total	...
County	REP	DEM	LIB	W-I	Votes	Voters	TurnOut
ALL COUNTIES	192,434	62,847	5,062	66	260,409	N/A	N/A
ANGELINA	21,890	7,107	542	0	29,539	N/A	N/A
GREGG	29,445	11,197	825	4	41,471	N/A	N/A
HARRISON	18,880	6,819	466	4	26,169	N/A	N/A
NACOGDOCHES	15,127	6,391	591	7	22,116	N/A	N/A
PANOLA	8,354	1,791	127	1	10,273	N/A	N/A
RUSK	14,751	3,657	278	14	18,700	N/A	N/A
SABINE	3,872	606	62	3	4,543	N/A	N/A
SAN AUGUSTINE	2,521	868	60	0	3,449	N/A	N/A
SHELBY	7,092	1,697	146	1	8,936	N/A	N/A
SMITH	60,595	20,948	1,768	31	83,342	N/A	N/A
UPSHUR	3,793	790	93	0	4,676	N/A	N/A
WOOD	6,114	976	104	1	7,195	N/A	N/A

Data Dictionary

vote_share	The percent of two party (Republican + Democratic) vote won by the Democratic candidate specified
pro_gun_control	Binary for whether the candidate has voted for gun control laws or supported progressive gun control policies in their platform
candidate_male	Binary for whether the candidate is male (1) or female (0)
candidate_hispanic	Binary for whether the candidate is hispanic (1) or non-hispanic (0)
year	Categorical variable for the year of that

	election (2016 or 2014)
office	Categorical variable for the office the candidate is running for (senate, house, or president)
district	Categorical variable for which district a house of representatives candidate is running in. For statewide elections this is the district most dominantly represented by that county. See *Data Collection and Cleaning* for more information
county	Categorical variable for which county a candidate is running in.
incumbent	A binary variable indicating whether the office was held by a democratic party incumbent.
prog_min_wage	A binary variable indicating whether the candidate endorses and/or votes for (1) progressive minimum wage policies.

Model

In order to measure the modeled effect of differing positions on gun-control by democratic house, senate, and presidential candidates, we tested out several OLS models for both years included in this analysis (2014 and 2016). In these models, we incorporated control features for candidate-related information including a binary field for whether the candidate is male, another binary for whether the candidate is hispanic, as well as our primary independent variable of interest -- namely, whether the candidate is in favor or not in-favor of gun control-related policies.

We further refined the model by including fixed effects for county, district, office, and year. Including these variables as fixed effects accounts for area specific shocks that may affect

the Democratic candidates vote share, but are unique to that area and should not unduly influence the model at large. We had initially gathered information on each county, such as whether the county was rural or if it bordered Mexico, but fixed effects account for these demographic and geographic differences as well, so the country descriptors were not needed.

Model Refinement

Although the initial set of models that we tested yielded promising results, after discussion with Professor Fouirnaies, we expanded our model.

Our first step was to add another control, whether or not the office was currently held by a Democrat. This is because incumbency is often correlated with other factors that would affect vote share such as name recognition, local party support, and quality of the candidate, as discussed in class.

We wanted to further refine our models by parsing out the effect of gun-control policy positions on democratic vote-share -- while separating the impact of candidates holding generally liberal stances overall. In order to do so, we imputed an instrumental variable -- in our case a dummy variable for whether a candidate supports progressive minimum wage positions.

Minimum wage was selected as an instrumental variable as it is a predominantly Democratic policy across the country, but more liberal Democrats tend to support and fight for a higher minimum wage than more moderate ones. For example David E. Cozad, who ran for representative in the 6th district in 2014, supported a $15-an-hour or higher minimum wage, while the U.S. Senate candidate David Alameel did not espouse a strong stance on this issue. On the national level, while running for president Bernie Sanders proposed a $15 national minimum

wage. Hillary Clinton suggested a $12 minimum wage nationally, and supported a $15 minimum wage in cities where the cost of living is higher. This is indicative of some of the reasons why Democrats across the country have different stances on minimum wages.

In addition, minimum wage is not a politically toxic issue in Texas. On the other hand, supporting other commonly progressive ideas such as being pro-life may severely lessen a candidate's chances of winning. Therefore candidates are more willing to be outspoken about their support for higher minimum wages, particularly as it affects their constituency. Strong stances on minimum wage and gun control are both hallmarks of a liberal candidate. Controlling for support of progressive minimum wage policies will allow us to further isolate the effect of supporting gun control over just how liberal a candidate is.

Results

As our data and testing developed we ran a number of models, varying the years of data used, the offices considered, and the variables included. After imputation of the instrumental variable and including a control for incumbency, we found that pro gun-control positions among democratic candidates in Texas is associated with a decrease of 7.1% in democratic two-party vote share. These results were also significant given a 95% confidence level.

Final Model

$$Vote\_share = pro\_gun\_control + candidate\_male + candidate\_hispanic + prog\_min\_wage + incumbent + factor(year) + factor(office) + factor(county) + factor(district)$$

Partial Regression Output

```
lm(formula = vote_share ~ pro_gun_control + candidate_male +
    candidate_hispanic + factor(year) + factor(office) + factor(county) +
    factor(district))

Residuals:
     Min       1Q   Median       3Q      Max
-0.17285 -0.01673  0.00000  0.01541  0.26917

Coefficients: (4 not defined because of singularities)
                            Estimate Std. Error t value        Pr(>|t|)
(Intercept)                 0.2786479  0.0959542   2.904        0.004082 **
pro_gun_control            -0.0586844  0.0174682  -3.359        0.000929 ***
candidate_male              0.0192312  0.0192475   0.999        0.318883
candidate_hispanic         -0.0384933  0.0136572  -2.819        0.005290 **
factor(year)2016            0.0232432  0.0106154   2.190        0.029667 *
factor(office)senate       -0.0495906  0.0147624  -3.359        0.000930 ***
```

When evaluating variables we incorporated as fixed effects, we found that some of the counties had significant negative effects on democratic vote share. Qualitative research into those districts showed that they were generally Republican strongholds, and the Democratic candidates chances in the election were seen as slim.

Limitations and Potential Sources of Bias

There are certainly some limitations related to our analysis that should be noted. Among those, we are limited by our data which covers two election years. Ideally, we would be able to go back further in time to add more depth to our dataset. Unfortunately, the last census resulted in redrawn congressional districts in 2013 -- so including them in our model would cause us to improperly compare unlike election results (the rows in our model). Along similar lines, a

potential source of bias inherent in our data is that county sizes vary greatly across the state -- possibly biasing the interpretation of the percentages we see in the county-by-county election results.

During data collection one issue was that data was provided on a district and county level for representatives, and only on the county level for senate and presidential candidates. However it was important to include district fixed effects as the redistricted representative boundaries can make a large difference on the elections there. Therefore for counties that contained multiple districts, we did not have district by district information within those counties.

Another potential limitation in our analysis is that we chose an imperfect instrumental variable when we imputed prog_min_wage in order to refine the modeled effects of pro_gun_control on democratic two-party vote share. As explained above, we attempted to choose a variable that would not be particularly politically toxic in Texas and would also be an indicate for how liberal a candidate is overall, but it is true that we may not have picked the most appropriate instrumental variable possible for our desired ends.

In addition to the controls we included, there may be other controls whose inclusion would make a substantial difference. One example of this could be an indicator of candidate quality. This is difficult to ascertain in quantitative terms, especially given the number of new candidates. However during our research we noticed that there were wide differences in how qualified, well-known, or charismatic the candidates were, all factors which can affect vote share.

It is also worth noting that in the process of collecting candidate issue stance data for our models (like whether each candidate was in favor of progressive minimum wage policies or in

favor of gun control policies), we had to make some judgement calls when categorizing candidates into binary categories. More specifically, in the cases where a candidate's position was not explicit, we made decisions based on certain imperfectly precise criteria like approval ratings from independent organizations like the NRA.

Applications to Future Elections

The 2018 midterm election results in Texas motivated much of this analysis. Texas Republican incumbent governor Greg Abbott easily won reelection, as a vocal conservative and supporter of President Trump, by a margin of over 14 points. On the same statewide ballot however, outspoken progressive senatorial candidate Beto O'Rourke only lost his campaign by a margin of just over 2 points. The election results seem to indicate that certain democratic candidates have a legitimate opportunity to turn the state blue -- an unthinkable feat until very recently.

This analysis focused on one particular issue of importance -- democratic candidate positions on gun control -- in a historically conservative, pro-gun state like Texas. On a quantitative basis, we sought to determine the modeled impacts of differing positions on this issue on the likelihood of success for democratic candidates. Further, on a more qualitative level, we believe that the results of our analysis can inform how likely new democratic candidates running in Texas during the 2020 elections are to succeed.

More specifically, we learned that overall and on average, staking a pro gun-control policy position results in performing over 7 points worse than those democratic candidates in the state who argued against gun-control policies. While this analysis does not seek to make claims

about what suite of policy positions need to be endorsed by 2020 democratic candidates, it may still be informative in terms of influencing to what extent those candidates publicly *emphasize* their pro gun-control positions (the policy endorsed by nearly all prospective 2020 democratic candidates).

Future Analytical Work

In the future, the scope of this analysis could be expanded to look at more policy positions in the model feature sets. We could also incorporate interaction effects between the features indicating support or lack of support for each policy position. The inclusion of these interaction effects would aid us in obtaining an idea of how different possible candidates are estimated to perform in Texas. We would like to quantify, for example, how supporting gun control would affect the potential success of a white male candidate versus a Hispanic female candidate. This could help inform campaigns in the future and provide an idea of how politically prudent it would be to vocally emphasize support for the progressive positions studied. Areas of interest could include support for movements like Black Lives Matter, opposition to Immigration and Customs Enforcement (ICE), or policies such as affirmative action.

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