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THE EFFECTS OF PRISON GERRYMANDERING
ON ELECTION RESULTS

by

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ABSTRACT

THE EFFECTS OF PRISON GERRYMANDERING ON ELECTION RESULTS

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This study looks at whether or not there is a correlation between the voting patterns of a county and the presence of prisons within that county. There is a history of prisons being used to inflate population numbers within states to change where voting power lies. Previous research exists indicating a speculative relationship between Republican politicians and increased prison gerrymandering, so this research was developed to reveal if there is a genuine relationship between these two factors. Some of the variables included to better isolate the influence of prison location are per county income, biographical information, total population, voter turnout, if the winner was an incumbent, along with presence and sizes of prisons within counties. Implementing regression models like multinomial logit and logit, I was able to encapsulate all my variables and their effects on voting patterns to measure the different relationships between them. I found that there was

a significant relationship between US Representative results and prison placement, and a null to negligible relationship in statewide elections.

TABLE OF CONTENTS

ACKNOWLEDGMENTS	iii
ABSTRACT.....	iv
LIST OF ILLUSTRATIONS.....	viii
LIST OF TABLES.....	ix
Chapter	
1. INTRODUCTION	1
1.1 Problem.....	1
1.2 Hypothesis.....	2
2. LITERATURE REVIEW	3
3. METHODOLOGY	9
3.1 Multinomial Logit Model for US Representatives	9
3.2 Logit Model for US Senators and Railroad Commissioner.....	10
3.3 Variable Selection.....	11
4. FINDINGS.....	15
4.1 Results for US Representative	15
4.1.2 Analysis of US Representative Results.....	16
4.2 Results for Railroad Commissioner.....	18
4.2.2 Analysis of Railroad Commissioner Results	19
4.3 Results for US Senator.....	20
4.3.2 Analysis of US Senator Results	21

5. CONCLUSION.....	22
5.1 Limitations	23
5.2 Implications for Future Research.....	23
Appendix	
A. COMPLETE REGRESSION RESULTS	25
B. R STUDIO REGRESSION CODE.....	29
REFERENCES	33
BIOGRAPHICAL INFORMATION.....	36

LIST OF ILLUSTRATIONS

Figure		Page
3.1	Election Outcome Possibilities	13

LIST OF TABLES

Table		Page
3.1	Variable Breakdown.....	12
4.1	US Representative	15
4.2	Railroad Commisioner	18
4.3	US Senator.....	20

CHAPTER 1

INTRODUCTION

1.1 Problem

In the United States there are many different tools used by politicians to assure their election. One such tool that has been speculated to be useful is the possibility of prisons being placed advantageously inside voting districts to increase population while keeping the number of voters stable; this method is known as prison gerrymandering. After researching previous efforts to prove this link, I found a lack of statistical analysis. This project's purpose is to see whether there is a correlation between prison placement and election results. According to peer reviewed articles and scholarly research, there is evidence that prisons and correctional facilities have been disproportionately placed in a manner to disenfranchise voters Suber, Sean (2014). In many states there are laws that determine what counties prison populations will count towards. A few progressive states have moved to counting their prisoners toward their county of origin. Many states, like the state of Texas, still opt to count their prisoners in the county which they are currently located in as opposed to the county where they originated from. This in turn creates an inflated result when it comes to drawing district lines as it makes it appear as if those prisoners are part of the general population of that county.

1.2 Hypothesis

The question I am answering with these regressions boils down to what the effects of prisons on voting election results are. Given the previous literature that already exists on the matter, there has been a speculative relationship between Republicans and prison gerrymandering (Nellis, 2021). This is why my null hypothesis is that there does not exist a correlation between the Republican Party winning and there being a prison within the county. This would make my alternate hypothesis that there is a correlation between these two variables, revealing a relationship between a single party and prison presence in counties, indicating the possibility of prison gerrymandering. One big issue many states still face is that they don't allow criminals with felony records to vote, and these are the largest group of long-term prisoners. Even though a few states offer opportunities like mail-in ballots provided to prisoners who are serving misdemeanor charges, it is not the majority of prisons offering those services. The choice of placing these prisons into districts that vote Republican becomes ideal as most prisoners come from large cities that tend to vote for the Democratic party.

CHAPTER 2

LITERATURE REVIEW

There are many different aspects that play into where a prison goes, how prisoners are counted when it comes to population, and who gets elected into office. Most sources only cover one of these very vast aspects of the full picture, but none have spoken exactly to what the observed effects prison gerrymandering has when it comes to local elections. In the literature I will be describing, there will be aspects that speak on the legal aspects, some on the practical aspects of jailing, and others on the general votings patterns associated with certain demographics in America, however the goal of the total projects will be to combine all of these observations and assertions to come to a definitive conclusion that may be applicable to most of the United States, and definitely applicable to the state of Texas. The question that stands before me is whether counties with prisons have a tendency to vote for certain parties? The literature as it stands seems to imply a correlation between more conservative parties, and prison locations. There is also a strong association between disenfranchisement of voters and chosen prison locations.

To begin, in the paper “The Geography of Mass incarceration: Prison Gerrymandering and the Dilution of Prisoners’ Political Representation”, the author Julie Ebenstein questions the consequences of mass incarceration on the political process in the United States. They conclude that people’s homes prior to their incarceration, not their prison cells, should be treated as their usual residence to serve constitutional principles

underlying the one-person, one-vote requirements. One of the issues that Ebenstein had was in determining the accuracy of some different statistics that were crucial to understanding the subject matter related to the original thesis. This paper mostly focuses on observing the historical usage and development of the systems that lead to imprisonment and loss of the ability to vote. It focuses very little on the outcomes of these gerrymandered systems in the ultimate political process.

Along the same vein of thought, the research question proposed by the author Ashley Nellis in “The Color of Justice” is essentially, what causes the disparity of different racial groups in prison? The author concludes that this is due to disparity in arrest procedure due to racial bias. Nellis also questions the institutional foundations that lead to this racial bias and even offers a path to reform. This paper focuses almost entirely on the institutional racism of mass incarceration. While much of the data and cases presented are useful, they do not focus at all on prison gerrymandering. Its data is more related to prison’s ethnic composition and incarceration rate by race, as well as delving into the demographic makeup in general of prisons and how they are operated.

With more of a legal perspective, the article “The Senseless Census: An Administrative Challenge to Prison-Based Gerrymandering” by Sean Suber explores the different reasons as to why the census continues to use the usual residence rule when it comes to counting citizens in an area. It goes on to explain that the usual residence rule stems from a point in time in which people would not move around often, and they would usually be imprisoned near where they lived if the need arose. Nowadays, that is no longer the case; people move between cities and states in a much easier and fluid way that is not taken into account with a simple census every 10 years. To make matters more complex,

prisoners are no longer housed close to where they were arrested and have lost their rights to vote from inside the prison walls. When it comes down to it, the article expands on saying that the usual residence rule infringes on the principle of “one citizen one vote” and it must have its validity questioned in court in order to change how these decisions are made. This paper focuses on the history and structure of the census, and how it has been an unfair way of redistricting and redistributing votes that needs to change.

“The Emerging Constitutional Law of Prison Gerrymandering” by Michael Skocpol looks to reshape the way in which the conversation around prison gerrymandering is administered, also from a legal perspective. It analyzes how the 2020 Census infringed on the rights of equal representation for citizens all over the United States, and how going after the “one citizen one vote” wording in the Equal Protection Clause is not enough to shift the court's opinion on its precedents. There is already an existence of case law that shows the way in which the Census is administered is considered to be fair and legal, and that the redistricting on the bases of said census is an obligation set forth by the constitution, but manner in which it is done is not specified, so there is no specific rules that need to be followed in regards to how people are counted. This journal explains why this line of thinking, while understandable based on precedent, is incorrect and why we need to create new modern arguments that show prisons are being used to disenfranchise the people within them, as well as the people that are supposed to be represented by the districts that are being drawn. It is a paper that focuses on the modern needs of the census and how the current methods can be overturned, while putting in place a new system that will be more equitable to all that are involved.

Now onto the more technical aspects of my research, in the paper “Prisons as Panacea or Pariah? The Countervailing Consequences of the Prison Boom on the Political Economy of Rural Towns”, the author John Eason asks what considerations go into choosing a town for prison siting, and what are the long-term consequences on the site chosen for the prison. The author then explores the economic, political, and bureaucratic consequences of the choices made during the siting process, as well as many historical examples of these consequences occurring under the same conditions. Some issues with this research are its limited scope and its inability to capture the full issue that it is trying to explain. The author mostly focused on the perspective of county economies and job data. Much of the data that it uses is related to the effect that prisons have on unemployment rate, per capita GDP, and where the individual employees have their home addresses. This research is not so focused on political ramifications, but rather on mostly the negative effect that prisons have on their local economies.

In Mona Lynch’s “Punishment, Purpose and Place: A Case Study of Arizona’s Prison Siting Decisions”, the author seeks to understand the primary decisions that go into the prison siting processes. This paper explains the various levels of decision making in both the municipal and state level as well as explores more in depth the different motivations that surround the placement of a prison. The author develops the process for prison siting from the ground up and answers many critical questions about the political reasoning and ramifications of prison placement within rural counties. Many of the key questions that I’ve found myself asking are brought up and answered in this paper. How it differs from past research though, is that this does not address the issue of where prisoners

are counted for regarding voting districts and does not address a relationship between certain political parties being elected along with the placement of these prisons.

With a more general perspective on voting patterns, the paper “Red rural, blue rural? Presidential voting patterns in a changing rural America”, the authors discuss the various types of political landscapes that make-up what we think of collectively as “rural America” and their recent shift against long held voting patterns into more liberal ones. This change in voting patterns is what the authors sought to understand, why is it happening? The authors discuss the complex nature of voting amongst the various rural populations of the United States. The major issue that this paper runs into is that it is trying to understand and prove a growing trend that has only recently begun to change the shape of politics in the rural U.S. This means the data that proves the proposed trend is relatively new. How this research differs from mine is that it focuses entirely on rural voting trends.

These articles answer the questions they set up for themselves and pave the way for future research with some even being applicable to possible future case law. Even though the research that I have mentioned has some issues with scope and full consideration of all the elements that play into the relationships between these independent and dependent variables, my question still stands of whether counties with prisons tend to vote for certain parties? There have been a few articles that danced around the point and some even referenced the possibility of a correlation, but none that I could quote directly knowing that there was actual empirical data proving these claims within the scope of that study.

The gap my research addresses is providing actual concrete numbers from local elections in the state of Texas, and determining whether there is a correlation between the locations of prisons and the matter in which local counties vote. My study was able to find

evidence that proves these educated claims are correct within the state of Texas only when talking about locally determined elections. In the end, these articles were a good starting point for my research that I utilized as a springboard in order to find a truly significant relationship that exists between the prison gerrymandering that is encouraged by our legal system, perpetuated by our politicians and continues to be allowed.

CHAPTER 3

METHODOLOGY

As previously stated, my null hypothesis is that there does not exist a correlation between the Republican Party winning and there being a prison within the county, and my alternate hypothesis is that there is a correlation between these two variables. Several different possible models that were considered were First Differences and Multinomial Logit. I went in this direction due to the panel nature of my data and because of the limited dependent variable of election winners. I took data from 2018, 2020 and 2022 elections and chose multiple elected positions to observe, these are the following regression models I chose to best represent these models.

3.1 Multinomial Logit Model for US Representatives

When it came to looking at the effects of prison presence on the election results of US representatives, I chose a multinomial logit model since there were more candidates from differing parties. The multinomial logit model takes the Ordinary Least Squares model and constrains the data to not go past the reasonable limits of the data. It takes the variables and divides them into categories like so:

$$y = 2 \text{ if } w_2 \geq \max(w_1, w_0)$$

$$y = 1 \text{ if } w_1 \geq \max(w_2, w_0)$$

$$y = 0 \text{ if } w_0 \geq \max(w_1, w_2)$$

With these limits it makes the resulting effects take into account the boundary of options that are created by the limited dependent variables that represent the Republican, Democrat

and Libertarian parties that had officials run for this position. The equation for this model is as follows:

$$\Pr(y = n) = e^{w_n} / 1 + \sum_{j=0}^J e^{w_j}$$

Where $w_i = \beta_0i + \beta_1i x_1 + \beta_2i x_2 + \dots + \beta_ki x_k + \epsilon$, for $i = 0, 1, 2$

The one issue is that the Multinomial Logit Function requires the assumption of Independence of Irrelevant Alternatives (IIA), meaning that if one of the parties were to disappear, then the votes that went to the dissolved party would be equally distributed among the ones that are left over based on their original relative probabilities. This model violates IIA since there is no way to guarantee that the data fulfills this specific assumption. If the Libertarian party were to disappear this assumption may stand true, but if the Democratic party were to disappear, we may see more people switch to the Green party or other more liberal ones that do not even have representatives in this election currently. However, there are no other models that fit this situation better than Multinomial Logit so it was still the final choice for this set of variables, but it is taken hesitantly given these circumstances.

3.2 Logit Model for US Senators and Railroad Commissioner

The model I chose for the elections of US Senators and the Texas Railroad Commissioner was the simple Logit Model. The way the Logit Model works is very similar to the Multinomial Logit. However, due to the dependent variable being a binomial since these races did not see third party candidates succeed, there was no need to create stratas to categorize the results into before calculating marginal effects, instead it limits the results to be between zero and one in the following manner:

$$f(w) = e^w / e^w + 1 = 1 / 1 + e^{-w}$$

where $w = \beta_0 + \beta_1x_1 + \beta_2x_2 + \dots + \beta_k x_k + \epsilon$.

The reasoning behind this choice was reinforced given that these races only saw Democrats and Republicans succeed and did not have many third-party competitors that made it into the final calculations. The original plan was to also use Multinomial Logit for all of these, but due to that complication the choice was made to switch over to this model when calculating the correlation and results between the independent variables and the winners of these elections.

3.3 Variable Selection

In order to holistically answer the question I took multiple election results from close years and compared them along with variables that I felt would play a role on election results at the county level given the previous research I had done on voting patterns in Texas. My variables were:

Table 3.1: Variable Breakdown

Dependent Variables	Independent Variables
US Representative Winner (USREP)	Prison (Dummy where 0 = no prison and 1 = prison)
US Senator Winner (USSEN)	Incumbent (Dummy were 0 = lost and 1 = won)
Railroad Commissioner Winner (RRC)	Highschool Graduation Rate (Highschool Grad Rate)
	College Graduation Rate (College Grad Rate)
	Median Income
	Age 65+ (Percent of population over 65)
	Black (Percent of population that is Black)
	Hispanic (Percent of population that is Hispanic)
	Asian (Percent of population that is Asian)
	White (Percent of population that is White)
	American Indian/Alaskan Native (AIAN)
	Pacific Islander
	Rural (Percent of Population in a rural community)

Given prior research on voting patterns these were the independent variables that I found could lead to the explanation of the correlation between the presence of prisons and voting results. These variables are aspects that could help determine how an individual is most likely to vote. In order to see if there was an observable relationship that was statistically significant between my null hypothesis variables, I made sure to include other factors that may impede the measurement of this relationship.

A majority of my statistics came from various government websites. I made sure to use the newest information available and tried to line it up with the information I had. I was not able to find differing demographic statistics for my variables so I used the same ones for each county across the different time periods. The data I collected came from all 257 Texas counties so it was a little difficult to summarize in just a few short snippets, but the important data related to the elections results show how prevalent the Republican party is in the state of Texas. The color blue in the following charts shows the percentage of Republicans that won elections in the state of Texas. They all indicate the percentage of representatives that were elected and is divided by party.

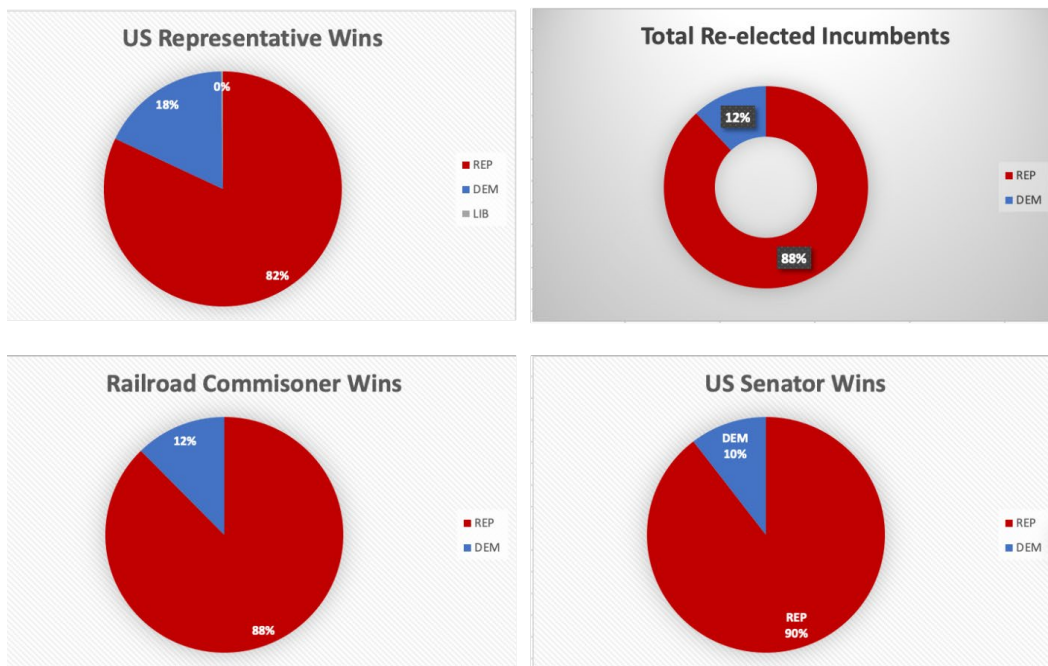


Figure 3.1: Election Outcome Possibilities

Right from the start it is clear that there are many republicans being elected all over the state of Texas, and one of the more interesting charts on here is the total re-elected

incumbents. These numbers indicate that a Republican had already been in office previously and was chosen to be in that position again, 88% of the incumbents that ran and won in the state of Texas were Republicans. Now we need to take these results and see how our different independent variables have a role to play in determining these end results that we are seeing.

In total I ran 5 regressions per dependent variable. The first regression for each included only prison as an independent variable to isolate its effect on election results without considering other variables. The second included both the dummy prison variable and the dummy incumbent variable to calculate both effects on the dependent variable of voting results. For the third regression I included the variable prison along with education and income data. The fourth regression included prison and demographics data. And the fifth regression included all of the aforementioned independent variables and their effects on voting results.

Given the nature of the variables I ran the regressions and then utilized the R Studio stargazer package Hlavac, Marek (2022) to calculate the marginal effects with the base group being Republicans for the Multinomial Logit Regression used in Table 1. Then the same thing was done for the Logit Regression using the R Studio MFX package.

CHAPTER 4

FINDINGS

4.1 Results for US Representative

The summary of the first five regressions that I ran for the dependent variable US Representative can be found below:

Table 4.1: US Representative

Model	Model 1		Model 2		Model 3		Model 4		Model 5	
	DEM	LIB	DEM	LIB	DEM	LIB	DEM	LIB	DEM	LIB
Prison	0.392*** (0.193)	0.189 (1.418)	0.601 (0.322)	0.353 (1.460)	0.450*** (0.0002)	0.469*** (0.000)	0.183*** (0.303)	0.439 (1.973)	0.371*** (0.303)	0.084 (1.46)
Incumb			0.120*** (0.328)	0.00003 (33.94)					0.068*** (0.0001)	0.081 (0.85)
HS Grad					0.859*** (0.328)	0.965 (33.94)			0.915*** (0.002)	0.021*** (0.0000)
Age 65+							0.967 (0.050)	0.886 (0.185)	0.823*** (0.001)	0.994*** (0.0001)
Rural							0.991 (0.008)	0.981 (0.049)	1.044*** (0.010)	0.092*** (0.000)
Educ Controls	No	No	No	No	Yes	Yes	No	No	Yes	Yes
Demo Controls	No	No	No	No	No	No	Yes	Yes	Yes	Yes
AIC	887.205	887.205	372.496	372.496	755.273	755.273	488.815	488.815	179.059	179.059

Notes: *: Significant at the 10% level; **: Significant at the 5% level; ***: Significant at the 1% level. All marginal effects come from a Multinomial Logit regression with the base variable being Republican. Standard errors listed in parentheses below the coefficients. Educ controls include education statistics plus median income. Demo controls include all data in regards to race, ethnicity, age and urban status.

4.1.2 Analysis of US Representative Results

For the first regression shown under Model 1 I found that a Democrat was 60.8% less likely to get elected in a county that did have a prison in comparison to a Republican; these results were found significant at the 0.01 level. When comparing a Libertarian to a Republican they were 81.1% more likely to get elected if there was a prison present in that county, however this result was not found to be statistically significant at any level. This second regression found under Model 2 shows that a Democrat is 39.9% less likely to be elected as a US Representative when compared to a Republican and a Libertarian was 64.7% less likely when compared to a Republican. However, neither of these results are statistically significant. The only result that was from this table was the fact that if an Incumbent won the election, it was 88% less likely to be a Democratic representative when compared to a Republican. The results from these two regressions still are not significant enough to make conclusions about but they do start to create doubt that the null hypothesis could be factual. It may be that the relationship we were observing between the dependent and independent variable in the previous regression can be explained away by some of the independent variables we are introducing. However, given that only one result was found significant at the 10% level, it is not a likely result.

Under Model 3 we are starting to see more significant values, Democrats were 55% less likely to get elected in a county with a prison than Republicans and Libertarians were 53.1% less likely than Republicans. As high school graduation rates increased, the likelihood of a Democrat being elected were also 14.1% lower than a Republicans, while an increase in college graduation rates (please see Appendix A) showed Democrats being 50% more likely to be elected compared to Republicans. Model 4 indicates that a majority

of these relationships are significant to the 0.001 level, with all of them favoring Republicans when compared to Democrats. And in Model 5 we see the cumulative effect of all the independent variables on the voting results which indicated a significant relationship in a few variables, but the most important was that presence of a prison was still a significant and determining factor with Democrats being 62.9% less likely to win when compared to Republicans in counties with correctional facilities. Even across all models there is evidence that Democrats lose about 60% more often in districts that have prisons when compared to those without them. The candidacy of US Representatives is determined at the local level, going down to the county and voting district. The fact that there is such a significant and prevalent relationship across all of these models indicating that there is indeed a link between Republicans winning and a prison being within that county.

This evidence is the important link that proves what is said in previous literature, the Republican party is drawing district lines in order to place prisons in areas that are advantageous for them and provides them with political positions they would otherwise not have access to (Ebenstein, 2018). When it comes to elections that depend on the division of voting districts a well-established relationship exists and is continuing to be used to the Republicans advantage when it comes to positions in the state of Texas.

4.2 Results for Railroad Commissioner

The summary of the first five regressions that I ran for the dependent variable Railroad Commissioner can be found below:

Table 4.2: Railroad Commissioner

Model	Model 1	Model 2	Model 3	Model 4	Model 5
Prison	-0.027 (0.034)	-0.35 (0.049)	7.1280e-03 (2.8090e-02)	-0.0630* (0.5156)	-7.6198e-02* (3.3256e-02)
Incumb		-0.199*** (0.072)			1.2392e-02 (1.5484e-02)
			-1.4038e-02*** (2.8134e-03)		1.4192e-03 (1.6620e-03)
HS Grad				0.00468 (0.0721)	-6.6497e-03 (4.1397e-03)
Age 65+				0.00045 (0.0093)	1.5450e-03 (7.9892e-04)
Educ Controls	No	No	Yes	No	Yes
Demo Controls	No	No	No	Yes	Yes
AIC	620.62	309.5	516.79	260.56	179.059

Notes: *: Significant at the 10% level; **: Significant at the 5% level; ***: Significant at the 1% level. All marginal effects come from a Logit regression with the base variable being Republican. Standard errors listed in parentheses below the coefficients. Educ controls include education statistics plus median income. Demo controls include all data in regards to race, ethnicity, age and urban status.

4.2.2 Analysis of Railroad Commissioner Results

For the first regression Model 1 in Table 4.2 it is evident that Railroad Commissioner was found to be 2.7% less likely to be Democratic if the county had a prison in it. However these results were not found to be statistically significant at any level. Moving on to Model 2, we can see that the results for Incumbent were statistically significant at the 5% level and indicated that the Railroad Commissioner was 19.9% less likely to be a Democrat if an Incumbent won the race, the lack of correlation to the prison variable indicates that there may not be a significant relationship between who wins this state level race and prison placement, but there is no certainty of anything yet.

In Model 3 we see more significant results with the one highlighted in the chart being a 1.4% decrease in Democratic votes if highschool graduation rates increased, and an opposite effect for college graduation rates (please see Appendix A). These variables were found to be statistically significant, however they are so miniscule that their effects are not very impactful.

For Model 4, Prison was the only variable that was even slightly significant in any way, with a 10% significance level the results showed that Democratic votes for Railroad Commissioner decreased by 6.3% when there was a prison present within a county. And when it came to Model 5, the only significant values were prison presence and college graduation rate, with prison being present having an effect of 7.6% in favor of Republicans, and an increase in college rates having a 1.14% increase for Democrats. The results for Railroad Commissioner across all of these models indicates that there is not a significant and large relationship between the variables. It indicates that even if there exists a

relationship between the two, it is extremely miniscule and does not show a true effect of prisons on the election results of Railroad Commissioner.

4.3 Results for US Senator

The summary of the first five regressions that I ran for the dependent variable US Senator can be found below:

Table 4.3: US Senator

Model	Model 1	Model 2	Model 3	Model 4	Model 5
Prison	-0.028 (0.045)	-0.084 (0.812)	7.8992e-03 (3.9524e-02)	-9.0899e-02* (0.5156)	-1.2107e-01 (3.6411e+02)
Incumb		0.0843 (0.813)			1.3859e-08 (4.7069e-04)
HS Grad			-1.0501e-02*** (3.0581e-03)		-3.8026e-10 (2.5196e-06)
Age 65+				-8.9499e-05 (0.0841)	-5.7248e-10 (3.8186e-06)
Rural				1.3622e-04 (0.0115)	6.6637e-11 (4.6012e-07)
Educ Controls	No	No	Yes	No	Yes
Demo Controls	No	No	No	Yes	Yes
AIC	343.41	97.116	302.66	488.815	179.059

Notes: *: Significant at the 10% level; **: Significant at the 5% level; ***: Significant at the 1% level. All marginal effects come from a Logit regression with the base variable being Republican. Standard errors listed in parentheses below the coefficients. Educ controls include education statistics plus median income. Demo controls include all data in regards to race, ethnicity, age and urban status.

4.32 Analysis of US Senator Results

Finally, to go over the results of the US Senator regressions, we start with the same Model 1 that only includes the results of prison presence in a county and who won the election. If a prison was in a county Republicans had an advantage of 2.8%, however these results were in no means statistically significant.

In Model 2 there were no statistically significant results that could be used to draw conclusions from. Model 3 is where we finally start seeing some statistically significant results with both the highschool graduation rate and median income increasing the number of Republican votes, however the percentages are so miniscule that their effects or not impactful one way or another.

In Model 4 the only significance we see is at the 10% level for the relationship between prisons and Republicans with a 9.089%. And in Model 5 we see that there are no results are significant to any level. These results are in line with my question and research since this, like the Railroad Commissioner, is a state level position that does not depend on the redistricting of voting districts to win elections. All the models for US Senator indicate no observable relationship between the results of these elections and the presence of a prison. Which is the opposite of US representative races as they are contingent on voting districts and how they are laid out in order to determine where they can run and if they will win.

CHAPTER 5

CONCLUSION

These results point to a trend; a correlation between the voting results within a county, and the presence of a prison within a county. As more variables were accounted for, that significance persisted with the results in the tables for US Representatives, while the relationships were not as evident in the tables for the statewide positions of US Senators and Railroad Commissioners. This coupled with the observational evidence of Republicans historically gerrymandering Texas (Ebenstein, 2018) in order to gain a political advantage in areas that they would not win otherwise points to a possible, purposeful relationship between these two variables.

There is a heightened association between disenfranchised voters that are placed in prisons and Republicans having a higher likelihood of being elected to legislative positions that are counting on the drawing of voting district lines. The results are indicative of a larger relationship between officials chosen at the county level and those chosen at the state level. When it came to Railroad Commissioner and US Senator, they are elected positions the whole state votes on and they did not see a correlation between our variables and the results of those elections.

However, there was strong evidence in the results that there does exist a relationship between Republicans and prison placement within counties when looking at local elections. Throughout this entire research study, I aimed to see if Republicans were

utilizing the disenfranchisement of voters as a political pawn that they could utilize in order to win representative seats they may have otherwise seen go to Democrats due to the cities in Texas becoming more democratic. Something as simple as looking where the most recent congressional lines have been drawn, and using these results show that in conclusion there does exist a relationship between prisons and this specific party.

5.1 Limitations

In completion of this research, I was afforded approximately four months in order to complete this process from beginning to end, which has lead to their being limitations in the data I collected and in assumptions that were made regarding the type of data used for this study. The demographical information per county was found for one time period and used in every race in order to determine if a relationship exists since data was not available for every election year.

In addition to this, the structure of the data collected is panel data, however there were not any regressions or adjustments made to the data in order to account for the existence of the time invariant portion of the error term. These results are to be taken with a grain of salt since not enough time was dedicated to the details of this study, however the results do show in some instances an overwhelming relationship.

5.2 Recommendations for Future Research

For future research that is done on this topic, it would be extremely helpful to take national data from an array of states. This research is limited to county results within Texas which as a state is a good example of what not doing anything to address prison gerrymandering results in, but the inclusion of states and counties that do have measure put in place to counteract this strategy would be very beneficial. This comparison would

allow more people to see that this relationship is not just a theoretical one, but mathematically proven. With the ultimate goal being to motivate our government to do something in regards to the use of disenfranchised voters in order to manipulate elections.

APPENDIX A
COMPLETE REGRESSION RESULTS

Table 1: US Representative: Prison

	Democrat	Libertarian
Prison	0.392*** (0.193)	0.189 (1.418)
AIC	887.205	887.205

Notes: *. Significant at the 10% level; **. Significant at the 5% level; ***: Significant at the 1% level. All marginal effects come from a Multinomial Logit regression with the base variable being Republican. Standard errors listed in parentheses below the coefficients.

Table 1.1: RRC and USSEN: Prison

	Railroad Commissioner	US Senator
Prison	-0.027 (0.034)	-0.028 (0.045)
AIC	620.62	343.41

Notes: *. Significant at the 10% level; **. Significant at the 5% level; ***: Significant at the 1% level. All marginal effects come from a Logit regression with the base variable being Republican. Standard errors listed in parentheses below the coefficients.

Table 2: US Representative: Prison +
Incumbent

	Democrat	Libertarian
Prison	0.601 (0.322)	0.353 (1.460)
Incumbent	0.120*** (0.328)	0.00003 (33.936)
AIC	372.496	372.496

Notes: *. Significant at the 10% level; **. Significant at the 5% level; ***: Significant at the 1% level. All marginal effects come from a Multinomial Logit regression with the base variable being Republican. Standard errors listed in parentheses below the coefficients.

Table 2.1: RRC and USSEN: Prison +
Incumbent

	Railroad Commissioner	US Senator
Prison	-0.35 (0.049)	-0.084 (0.812)
Incumbent	-0.199** (0.072)	0.0843 (0.813)
AIC	309.5	97.116

Notes: *. Significant at the 10% level; **. Significant at the 5% level; ***: Significant at the 1% level. All marginal effects come from a Logit regression with the base variable being Republican. Standard errors listed in parentheses below the coefficients.

Table 3: US Representative: Prison +
Education + Income

	Democrat	Libertarian
Prison	0.450*** (0.0002)	0.469*** (0.0000)
Highschool Grad Rate	0.859*** (0.328)	0.965*** (33.936)
College Grad Rate	1.050*** (0.363)	0.957*** (1.056)
Median Income	1.000*** (0.0000)	1.0000*** (0.00001)
AIC	755.273	755.273

Notes: *. Significant at the 10% level; **. Significant at the 5% level; ***: Significant at the 1% level. All marginal effects come from a Multinomial Logit regression with the base variable being Republican. Standard errors listed in parentheses below the coefficients.

Table 3.1: RRC and USSEN: Prison + Education
+ Income

	Railroad Commissioner	US Senator
Prison	7.1280e-03 (2.8090e-02)	-7.8992e-03 (3.9524e-02)
Highschool Grad Rate	-1.4038e-02*** (2.8134e-03)	-1.0501e-02*** (3.0581e-03)
College Grad Rate	5.3393e-03 ** (0.363)	03.8702e-03 (2.2408e-03)
Median Income	-6.3875e-06*** (1.3427e-06)	-5.3733e-06*** (1.5760e-06)
AIC	516.79	302.66

Notes: *. Significant at the 10% level; **. Significant at the 5% level; ***: Significant at the 1% level. All marginal effects come from a Logit regression with the base variable being Republican. Standard errors listed in parentheses below the coefficients.

Table 4: US Representative: Prison + Demographics

	Democrat	Libertarian
Prison	0.183*** (0.303)	0.439 (1.973)
Age 65+	0.967 (0.050)	0.886 (0.185)
Black	0.292*** (0.022)	0.935 (0.261)
Hispanic	0.305*** (0.010)	1.120*** (0.043)
Asian	0.318*** (0.039)	0.179 (2.664)
White	0.268*** (0.012)	1.129 (0.076)
AIAN	0.216*** (0.374)	0.033 (2.534)
Pacific Islander	0.072*** (1.023)	5.611 (3.404)
Rural	0.991 (0.008)	0.981 (0.049)
AIC	488.815	488.815

Notes: *: Significant at the 10% level; **: Significant at the 5% level; ***: Significant at the 1% level. All marginal effects come from a Multinomial Logit regression with the base variable being Republican. Standard errors listed in parentheses below the coefficients.

Table 4.1: RRC and USSEN: Prison + Demographics

	Railroad Commissioner	US Senator
Prison	-0.06303308* (0.5156)	-9.0899e-02* (0.752627)
Age 65+	-0.00468286 (0.07208)	-8.9499e-05 (0.0841)
Black	0.02441221 (0.5018)	2.9518e-02 (0.6243)
Hispanic	0.02242446 (0.4953)	2.7669e-02 (0.6115)
Asian	0.03609576 (0.5459)	4.0790e-02 (20.6791)
White	0.01636340 (0.5023)	2.2527e-02 (0.6177)
AIAN	-0.02123101 (0.4525)	-3.4754e-02 (0.5851)
Pacific Islander	-0.04614307 (2.3159)	3.8618e-02 (2.3774)
Rural	0.00045041 (0.0093)	1.3622e-04 (0.0115)
AIC	260.56	488.815

Notes: *: Significant at the 10% level; **: Significant at the 5% level; ***: Significant at the 1% level. All marginal effects come from a Logit regression with the base variable being Republican. Standard errors listed in parentheses below the coefficients.

Table 5: US Representative: All Independent

	Democrat	Libertarian
Prison	0.371*** (0.303)	0.0843 (1.460)
Incumbent	0.068*** (0.0001)	0.0813 (0.846)
Highschool Grad Rate	0.915*** (0.002)	0.021*** (0.00002)
College Grad Rate	1.209*** (0.001)	0.001*** (0.000)
Median Income	1.000 (0.0000)	1.003*** (0.00004)
Age 65+	0.823*** (0.001)	0.9939*** (0.0001)
Black	0.201*** (0.002)	0.044*** (0.0000)
Hispanic	0.194*** (0.0007)	0.797*** (0.0000)
Asian	0.140*** (0.001)	0.000*** (0.0000)
White	0.150*** (0.003)	5.277 (0.0003)
AIAN	0.054*** (0.0001)	7.067*** (0.0000)
Pacific Islander	0.011*** (0.00001)	0.5611 (0.11)
Rural	1.044*** (0.010)	0.092*** (0.000)
AIC	179.059	179.059

Notes: *: Significant at the 10% level; **: Significant at the 5% level; ***: Significant at the 1% level. All marginal effects come from a Multinomial Logit regression with the base variable being Republican. Standard errors listed in parentheses below the coefficients.

Table 5.1: RRC and USSEN: All Independent

	Railroad Commissioner	US Senator
Prison	-7.6198e-02* (3.3256e-02)	-1.2107e-01 (3.6411e+02)
Incumbent	1.2392e-02 (1.5484e-02)	1.3859e-08 (4.7069e-04)
Highschool Grad Rate	1.4192e-03 (1.6620e-03)	-3.8026e-10 (2.5196e-06)
College Grad Rate	1.1429e-02* (5.3026e-03)	3.4304e-10 (2.2513e-06)
Median Income	-9.7749e-07 (8.5187e-07)	-1.0428e-13 (7.2778e-10)
Age 65+	-6.6497e-03 (4.1397e-03)	-5.7248e-10 (3.8186e-06)
Black	7.6730e-02 (4.2527e-02)	3.6325e-09 (2.5233e-05)
Hispanic	7.4550e-02 (4.1618e-02)	3.4795e-09 (2.4341e-05)
Asian	7.4352e-02 (4.3061e-02)	3.1311e-09 (2.2790e-05)
White	6.8275e-02 (3.9615e-02)	3.2769e-09 (2.3256e-05)
AIAN	1.7811e-02 (2.3304e-02)	-4.6855e-09 (3.1622e-05)
Pacific Islander	-5.8370e-02 (9.5508e-02)	-1.7109e-08 (1.1327e-04)
Rural	1.5450e-03 (7.9892e-04)	6.6637e-11 (4.6012e-07)
AIC	179.059	179.059

Notes: *: Significant at the 10% level; **: Significant at the 5% level; ***: Significant at the 1% level. All marginal effects come from a Logit regression with the base variable being Republican. Standard errors listed in parentheses below the coefficients.

APPENDIX B

R STUDIO REGRESSION CODE

#1st regression using Multinomial Logit Prison Dummy and Voting ONLY for USREP

```
reg1 = multinom(USREPWIN~PRISON,Combined_Capstone_Sheet)
summary(reg1)
```

```
reg1rrr = exp(coef(reg1))
```

```
stargazer(reg1, type="text", coef=list(reg1rrr), p.auto=FALSE)
```

#1st regression using Logit Model for RRC and USSENWIN

```
reg1.1 = glm(RRCWIN~PRISON, data = Combined_Capstone_Sheet,
            family = binomial(link = "logit"))
summary(reg1.1)
```

```
logitmfx(reg1.1, data = Combined_Capstone_Sheet, atmean = FALSE)
```

```
reg1.2 = glm(USSENWIN~PRISON, data = Combined_Capstone_Sheet,
            family = binomial(link = "logit"))
summary(reg1.2)
```

```
logitmfx(reg1.2, data = Combined_Capstone_Sheet, atmean = FALSE)
```

#2nd regression with prison and incumbent for USREP

```
reg2 =multinom(USREPWIN~PRISON+INCUM2,data = Combined_Capstone_Sheet)
summary(reg2)
```

```
reg2rrr = exp(coef(reg2))
```

```
stargazer(reg2, type="text", coef=list(reg2rrr), p.auto=FALSE)
```

#2nd regression using Logit Model for RRC and USSENWIN

```
reg2.1 = glm(RRCWIN~PRISON+INCUM2, data = Combined_Capstone_Sheet,
            family = binomial(link = "logit"))
summary(reg2.1)
```

```
logitmfx(reg2.1, data = Combined_Capstone_Sheet, atmean = FALSE)
```

```
reg2.2 = glm(USSENWIN~PRISON+INCUM2, data = Combined_Capstone_Sheet,
            family = binomial(link = "logit"))
summary(reg2.2)
```

```
logitmfx(reg2.2, data = Combined_Capstone_Sheet, atmean = FALSE)
```

#3rd regression with prison and education and income for USREP

```
reg3 =multinom(USREPWIN~PRISON+HSGRAD+COLGRAD+MEDINC, data =
Combined_Capstone_Sheet)
summary(reg3)
```

```
reg3rrr = exp(coef(reg3))
```

```
stargazer(reg3, type="text", coef=list(reg3rrr), p.auto=FALSE)
```

#3rd regression using Logit Model for RRC and USSENWIN

```
reg3.1 = glm(RRCWIN~PRISON+HSGRAD+COLGRAD+MEDINC, data =  
Combined_Capstone_Sheet,  
family = binomial(link = "logit"))  
summary(reg3.1)
```

```
logitmfx(reg3.1, data = Combined_Capstone_Sheet, atmean = FALSE)
```

```
reg3.2 = glm(USSENWIN~PRISON+HSGRAD+COLGRAD+MEDINC, data =  
Combined_Capstone_Sheet,  
family = binomial(link = "logit"))  
summary(reg3.2)
```

```
logitmfx(reg3.2, data = Combined_Capstone_Sheet, atmean = FALSE)
```

#4th regression given prison and demographics for USREP

```
reg4 = multinom(USREPWIN~PRISON+AGE65+BLACK+HISP+  
ASIAN+WHITE+AIAAN+PACIFICISLD+RURAL, data =  
Combined_Capstone_Sheet)  
summary(reg4)
```

```
reg4rrr = exp(coef(reg4))
```

```
stargazer(reg4, type="text", coef=list(reg4rrr), p.auto=FALSE)
```

#4th regression using Logit Model for RRC and USSENWIN

```
reg4.1 = glm(RRCWIN~PRISON+AGE65+BLACK+HISP+  
ASIAN+WHITE+AIAAN+PACIFICISLD+RURAL, data =  
Combined_Capstone_Sheet,  
family = binomial(link = "logit"))  
summary(reg4.1)
```

```
logitmfx(reg4.1, data = Combined_Capstone_Sheet, atmean = FALSE)
```

```
reg4.2 = glm(USSENWIN~PRISON+AGE65+BLACK+HISP+  
ASIAN+WHITE+AIAAN+PACIFICISLD+RURAL, data =  
Combined_Capstone_Sheet,  
family = binomial(link = "logit"))  
summary(reg4.2)
```

```
logitmfx(reg4.2, data = Combined_Capstone_Sheet, atmean = FALSE)
```


#5th regression given all variables for USREP

```
reg5
=multinom(USREPWIN~PRISON+INCUM2+HSGRAD+COLGRAD+MEDINC+AGE
65+BLACK+HISP+
    ASIAN+WHITE+AIAN+PACIFICISLD+RURAL,data =
Combined_Capstone_Sheet)
summary(reg5)
```

```
reg5rrr = exp(coef(reg5))
```

```
stargazer(reg5, type="text",coef=list(reg5rrr), p.auto=FALSE)
```

#5th regression using Logit Model for RRC and USSENWIN

```
reg5.1 =
glm(RRCWIN~PRISON+INCUM2+HSGRAD+COLGRAD+MEDINC+AGE65+BLAC
K+HISP+
    ASIAN+WHITE+AIAN+PACIFICISLD+RURAL, data =
Combined_Capstone_Sheet,
    family = binomial(link = "logit"))
summary(reg5.1)
```

```
logitmfx(reg5.1, data = Combined_Capstone_Sheet, atmean = FALSE)
```

```
reg5.2 =
glm(USSENWIN~PRISON+INCUM2+HSGRAD+COLGRAD+MEDINC+AGE65+BL
ACK+HISP+
    ASIAN+WHITE+AIAN+PACIFICISLD+RURAL, data =
Combined_Capstone_Sheet,
    family = binomial(link = "logit"))
summary(reg5.2)
```

```
logitmfx(reg5.2, data = Combined_Capstone_Sheet, atmean = FALSE)
```

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BIOGRAPHICAL INFORMATION

Francesca Jaubert started their undergraduate degree in Fall 2020 and is graduating from The University of Texas at Arlington with an Honors Bachelor of Science in Economics with a Minor in Spanish for Global Competence. They are graduating in May 2023 and will be going into The University of Texas at Arlington's graduate program for a Master of Science in Economics and Data Analytics starting Fall 2023. While an undergraduate, Francesca helped found the College of Business' Diversity, Equity, and Inclusion student organization, and was an active participant in the Pre-Law Society. In the future Francesca hopes their academic career will continue at an esteemed law school in the state of Texas and result in a position as a certified, practicing attorney.