Voter Turnout and Voting Laws

Jessica Kalbfeld, PhD
April 19, 2021

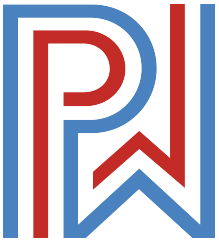
Contents

1 Executive Summary

Voting is a fundamental right in the United States. It is enshrined in Article I of the Constitution and has been refined in multiple constitutional amendments. Despite this, there continues to be a battle between those who wish to ensure the right and those who wish to constrain it. Voting rights are subject to legislation that varies from state to state and changes from year to year. Those laws govern election administration, the rules around receiving and casting ballots, and the general accessibility of voting to the eligible public. Those laws may encourage or hinder participation depending on how they constrain or open access. In order to understand the landscape of voter turnout, it is necessary to understand the relationships between voter turnout and the laws that govern our elections. The study detailed below is the first step in a long term project to map the ways in which differences in voting laws are related to voter turnout across the country.

Based on our analysis, it is clear that **voter turnout is highest where there are the fewest impediments to exercising the right, particularly in midterm election years**. Some individual laws are associated with higher turnout than others, and they should be given particular attention by public actors who wish to increase participation. These tend to be laws that make voting more accessible by providing flexibility around how and when people vote. In particular, **vote by mail** and **no-excuse absentee voting** are associated with higher turnout, as are **same day voter registration**, **automatic voter registration**, laws that allow **voting without an ID**, and laws that allow a **cure for mail in ballots**. Additionally, laws that increase voting access are not associated with increased voter fraud and laws that restrict voting access are not associated with decreased voter fraud. In fact, there is no relationship between any of the voting laws we investigated and the rate of voter fraud. Despite popular narratives that seek to link voting access to the risk of voter fraud, the data show that ***ease of access to voting is associated with higher voter turnout but not voter fraud.***

Section 2 provides a review of the previous research on voter turnout. In Section 3, we will summarize the data sources used for this project. Section 4 describes the methodology used



for the analysis. In Section 5, we will present the findings from an analysis looking at the relationship between voter turnout and overall ease of voting. Section 6 presents the findings from a law-by-law investigation. In Section 7, we discuss the results from a brief analysis of voter fraud. We will offer a discussion of the results and draw some conclusions in Section 8. Finally, the Appendix defines our statistical models and provides details on the legal variables that comprise the voting ease scale.

2 Literature Review

Despite the relative freedom of elections in the US, voter turnout here is low compared to other Western democracies. In the 2016 presidential elections, almost 56% of the voting age population participated by casting a ballot. By contrast, in national elections in 2017, ballots were cast by 69% of the German voting eligible population, 77% of the Dutch voting eligible population, and 82% of the Swedish voting eligible population.[1]

Laws related to election administration vary from state to state, and so too does turnout. Figure 2.1 shows the rates of turnout by state in 2016. Previous research has shown that certain legal changes are associated with higher voter turnout. For example, Kaplan and Yuan found that each additional day of early voting corresponds to 0.24 percentage points additional turnout, with the biggest effects on women, Democrats, Independents, and those of working and child-bearing age.[2] In addition to the number of days of early voting, the number of early voting sites may also be important in driving turnout. Fullmer found that there was higher turnout in counties with more early voting sites – specifically, on average, five additional early voting sites are needed to gain 1 additional percentage point in turnout.[3]

Beyond available voting locations and days, there is also the question of how and when people can register to vote. Automatic Voter Registration and Same Day Voter Registration

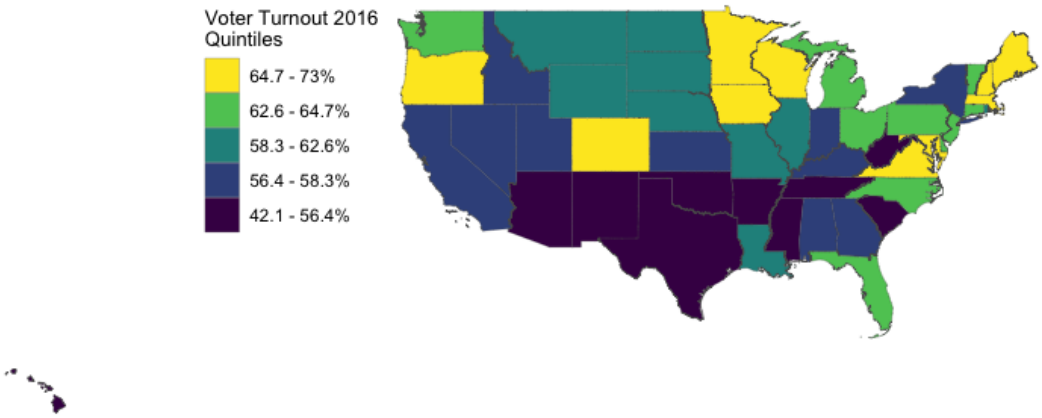
[1] Source: https://www.pewresearch.org/fact-tank/2020/11/03/in-past-elections-u-s-trailed-most-developed-countries-in-voter-turnout/

[2] Kaplan, Ethan and Haishan Yuan. 2020. "Early voting laws, voter turnout, and partisan vote composition: Evidence from Ohio." *American Economic Journal: Applied Economics* 12(1):32-60.

[3] Fullmer, Elliott B. 2015. "Early Voting: Do More Sites Lead to Higher Turnout?" *Election Law Journal.* 14(2):81-96.

Figure 2.1: Voter Turnout in 2016

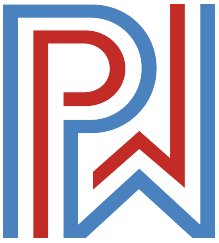
Figure shows the total votes for highest office divided by the total citizen voting age population times 100 for each state in 2016



(also known as Election Day Registration) are two policies that make voter registration easier and potentially reduce the need for advance planning in order to cast a vote. Automatic Voter Registration has only been passed in a handful of states and implemented in even fewer, therefore, there is little research validating the effect on actual voter turnout. The little research there is has found that Automatic Voter Registration has a positive effect on both rates of voter registration and rates of voter turnout, although this research is primarily preliminary and not yet peer-reviewed.[4] Election Day Registration has been shown to have a generally positive impact on turnout.[5] Interestingly, there is a partisan divide in reaction to Automatic

[4] Gujar, Ketaki. 2020. "Zooming Past Motor-Voter: An Analysis of How Automatic Voter Registration Policies Impact Voter Turnout in the United States." *College Undergraduate Research Electronic Journal.* University of Pennsylvania. https://repository.upenn.edu/curej/243; McGhee, Eric, and Mindy Romero. 2019. "Registration Effects of Automatic Voter Registration in the United States." *Election Sciences, Reform, & Administration Conference.* University of Pennsylvania.

[5] Brians, Craig Leonard, and Bernard Grofman. 2001. "Election Day Registration's Effect on US Voter Turnout." *Social Science Quarterly.* 82(1):172-185.



Voter Registration policies. Mann et al. found that when Democratic leaders show support for Automatic Voter Registration, Republicans and Independents report that they think it will reduce "fairness and legitimacy of elections," while Democrats' views of Automatic Voter Registration are "generally resistant to partisan cues."[6]

Voter ID laws are cited by some as necessary to prevent voter fraud, although there is little evidence that lack of voter ID requirements is in anyway related to fraud. Others point out that voter ID laws are likely to disenfranchise certain segments of the population over others. In fact, people of color are less likely to have the kind of ID generally required by voter ID provisions.[7] And research on the relationship between voter ID laws and voter turnout has found that these laws, in particular strict photo ID laws, are associated with lower turnout[8] . Evidence show that these laws suppress turnout for racial and ethnic minorities and more generally suppress turnout on the political left but not on the political right, which has the effect of skewing the electoral process towards those on the right side of the political spectrum by virtue of where and for whom it is easier to vote.[9]

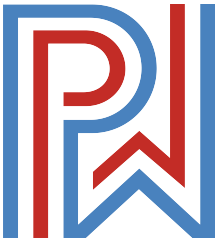
The previous literature has considered either single laws, changes in voting laws over time in single states, attitudes towards voting legislation, or comparing the impact of particular policies on turnout in the US and other countries. Here, we attempt to investigate voter turnout more holistically, taking advantage of variation between states and within states over time, and considering multiple laws and policies related to voting. We examine both the relationship between voter turnout and overall ease of voting and between voter turnout and individual laws that may affect the process. We find that there is higher turnout where it is easier to vote overall. We also find that certain individual policies are associated with higher turnout, such no-excuse absentee voting and early voting; some are associated with higher

[6] Mann, Christopher, Paul Gronke, and Natalie Adona. 2020. "Framing Automatic Voter Registration: Partisanship and Public Understanding of Automatic Voter Registration." *American Politics Research.* 00(0):1-7.

[7] Barreto, Matt A., Stephen Nuno, Gabriel R. Sanchez, and Hannah L. Walker. 2019. "The Racial Implications of Voter Identification Laws in America." *American Politics Research.* 47(2):238-249.

[8] Highton, Benjamin.2017. " Voter Identification Laws and Turnout in the United States." *Annual Review of Political Science.* 20:149-67.

[9] Hajnal, Zoltan, Nazita Lajevardi, and Lindsay Nielson. 2016. "Voter Identification Laws and the Suppression of Minority Votes." *The Journal of Politics.* 79(2):363-379.



turnout but only several years after passage, such as automatic voter registration and same day registration; and some are associated with lower turnout, such as voter ID requirements and voter purges.

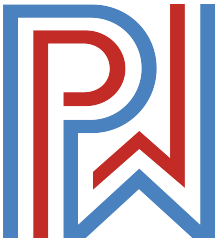
3 Data

Public Wise commissioned an initial study of the association between voting laws and voter turnout at the county level, controlling for demographic and socioeconomic characteristics and political spending. Initial data cleaning and analysis were conducted separately by BlueLabs and by CulturePoint LLC. Building on those initial analyses, we present a detailed study of the relationship between voter turnout, voter fraud, and voting laws.

To conduct the analysis, we used a variety of datasets, both proprietary and publicly available. We cleaned and harmonized the data to create a master dataset from which we could conduct analysis of how voting laws are associated with turnout controlling for a host of demographic and socioeconomic county characteristics for even years from 2008 through 2018.

3.1 Voter Turnout Data

Public Wise purchased data on voter turnout from Dave Liep's Atlas of U.S. Presidential Elections. These data provide vote counts for each office and ballot totals by county for all states except Alaska. Alaska vote totals were available by district rather than by county. Due to this discrepancy and difficulties it caused with merging the voting data to the rest of the datasets, which are measured by county, we excluded Alaska from the final dataset. Values for total ballots were missing for counties in several states. Rather than imputing values, we substituted total votes for highest office. We validated this by looking at correlations between total ballots and total votes for the highest office on the ballot for those counties for which the total ballot counts were not missing. The correlations were 0.999 on average for presidential elections and 0.984 on average for midterm elections, indicating that total votes



for highest office is a very accurate proxy for total ballots. Finally, Washington, DC, is excluded in non-presidential election years because there were no federal elections in DC in those years.

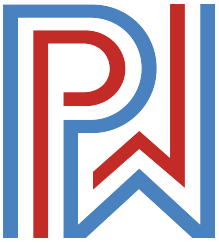
3.2 Voting and Registration Laws

Public Wise commissioned Voting Rights Lab to produce a dataset containing comprehensive, historical information on voting and registration laws in all 50 states dating back to 2006. The data indicate the law in each state in each year in a number of categories. From this dataset, we can determine if, when, and how voting and registration laws changed in each state. We recoded this dataset to create dichotomous variables for the existing laws whenever possible. For example, while there are many variations on the details of early voting, we can differentiate states and years with early voting from states and years with no early voting. In this way, we preserve important variation in the data, while allowing for enough cases in each category for each law to allow for analysis. Tables 9.1 and 9.2 in the Appendix show all of the laws for which we created dichotomies and the number of states in each category for each year in the data.[10] When dichotomous variables did not make analytic sense, we created categorical variables with the fewest meaningfully distinct categories possible.

In addition to the indicator and categorical variables, we create change variables for the laws. These variables measure change in the laws from less to more permissive over time. These change variables have 4 categories. For example, for early voting we would code the following four categories: early voting is not available and there was no change from the year before, early voting has become available in the last one or two years, early voting has become available two or more years prior but at some point within the years in the study period, or early voting was available for the whole study period. This allows us to look at elements related to voting that have recently changed due to new legislation to see if turnout was higher in years following a change.

Finally, we created a scale that indicates overall ease of voting in a particular state. To do

[10] Alaska is excluded from these tables because it is excluded from the analytic dataset for the reasons detailed in the previous section.

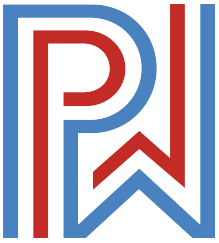


this, we took 24 dichotomous variables and added them up for each state in each year. The higher the value a state has for this variable, the easier it is to vote in that state. This is because a state with a higher value on the scale has fewer impediments to voting. While the scale has a possible range from 0 to 24, in reality, states ranged from 4 to 15 on the scale in 2008 and 2010, from 3 to 18 in 2012, and from 3 to 19 on the scale in 2014, 2016, and 2018. During the study period, it got generally easier to vote in some states and harder to vote in others as states both adopted and discarded policies related to election administration.

A limitation of this dataset is that it records laws at the state level. In fact, a lot of administrative election law is conducted at the local level. Counties within states often have different laws regarding elections and these differences within states, which may cause state-internal variation, are not captured in this study. Additionally, because of the complex nature of election law, it is possible that the choices of categorization made by Voting Rights Lab and the subsequent coding choices made by the researcher here might not be the same choices that other election law experts would make. Given that the coding choices will dictate the results, it could well be that different choices regarding the law data would produce different results. Given that, the findings here should be interpreted in the context of the choices made here and those choices will be detailed in the report that follows as much as possible. Additionally, we plan to submit the legal data and the coding choices we made for review by other experts and to seek out county level data to continue to refine this analysis.

3.3 American Community Survey

In order to control for the demographic and socioeconomic characteristics of the tracts, we use data from the American Community Survey (ACS) provided freely online by the U.S. Census Bureau. In order to get estimates for each of the presidential and midterm election years from 2008 through 2018, we use 5-year estimates for counties. The ACS conducts surveys every year and then pools five years together in order to get more accurate estimates for the years in between the decennial Census counts.

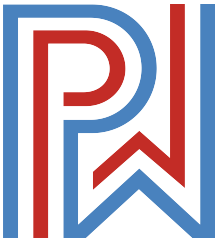


Although there is some variation in how researchers apply the 5-year estimates, we followed one common use in which the 5-year dataset is used to estimate the values for the year at the midpoint of the range. For example, to estimate values for 2008, we used the 5-year ACS estimates that pool surveys from 2006 through 2010. We were able to do this for each year of interest except 2018. This is because 2018 would need to be estimated from the 2016-2020 5-year estimates, which have not yet been released. Instead, we used linear interpolation to fill in the 2018 values based on the values from the 5 prior time points for each county.

Values for CVAP for three counties are missing from the data provided by the Census Bureau. There is no recorded CVAP for La Salle, LA for any year in the data set except 2008. CVAP is missing for Shannon, SD in 2014. It is also missing for Bedford City, VA in 2012. As we cannot calculate a rate of voter turnout with CVAP for a denominator for these counties in these years, we exclude them from the analysis.

3.4 Citizens of Voting Age Population (CVAP)

The variable of interest for our analysis is the rate of turnout in each county in each state for the even years between 2008 and 2018. The numerator of this variable is the total votes for highest office provided by the vote count data described above. In order to create the rate, we need a denominator. We use the estimates of the total citizens of voting age for each county, which is provided by the U.S. Census Bureau. As with the ACS estimates, the CVAP are not available for 2018. We use linear interpolation to fill in the 2018 values based on the values from the 5 prior time points for each county. We then divide the total votes for highest office in each county in each year by the estimated total number of citizens of voting age. For ease of interpretation, we then multiply this rate by 100 to get a value equivalent to the percentage of voting eligible population that voted. There is some argument that the voting eligible population is a better denominator for voter turnout. The voting eligible population takes subtracts citizens who are of voting but are ineligible to vote due to such things as criminal record. Using the voting eligible population as a denominator would provide perhaps a more accurate rate of who

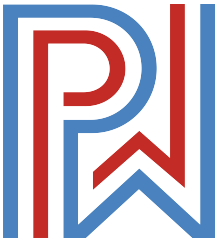


voted out of who was currently eligible to vote. The civilian voting age population, on the other hand, gives us a baseline of who is old enough to vote county by county, regardless of the county or state level legal differences in who is eligible. This provides a more standard rate that is not affected by jurisdictional differences in eligibility. It also means that when we are measuring the association between legal changes and our voter turnout rate, the change in our voter turnout rate is not automatically dependent on the change in the law based on how the law might have changed our denominator.

3.5 Political Spending

We control for several types of political spending in our analysis. For this purpose, we fold in data on the spending in gubernatorial races, house races, senate races, and campaign and commercial spending for presidential elections. Gubernatorial, senate, and presidential campaign and commercial spending are provided at the state level. House spending is provided at the district level. We adjusted all dollar amounts to 2018 dollars to account for inflation.

To allocate spending to counties, we use two datasets created by BlueLabs, which provide a way to allocate the correct percentage of voters in a state to each county in that state and to allocated the correct percentage of voters in election districts to counties based on DNC data on voter registrations in the years of interest. For the 2008 election, BlueLabs determined that the data provided by the DNC were not reliable. Furthermore, redistricting took place between 2010 and 2012. To account for these issues, we perform linear interpolation on the district to county allocations for 2008 through 2014 using pre-redistricting values to fill in the missing values for 2008 using the appropriate district boundaries. We then use those mappings from state to county and district to county to allocate spending amounts to the counties based on population distribution. This, of course, assumes that spending is allocated proportional to population. While this may not be accurate, it is the best assumption that can be made based on the available data. Finally, we add up the different spending types to create a measure of total political spending by county.



3.5.1 Spending in Gubernatorial Races

Data on spending for gubernatorial races by state for 2008 through 2016 come from datasets prepared by Doctors Boyle and Jensen of Lehigh University. For data on gubernatorial spending for 2018, Public Wise contracted with Clarity Campaign Labs to replicate data in the same form as the Lehigh data. We used the state to county proportions from the BlueLabs DNC dataset to divide gubernatorial spending in each state among the counties in that state for each year in the analysis. We chose to use the total spending rather than separating out spending in the general from primary spending due to the structure of the data. We do not think this is problematic because spending in the primaries may work to increase turnout by getting voters familiar with their choices.

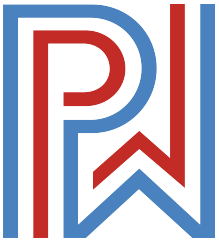
3.5.2 Spending in Senate Races

The data on senate races consist of spending reported to the Federal Election Commission and organized by the Center for Responsive Politics. These data provide the amounts spent on Senate campaigns in each state for each year of interest. We used the state to county proportions from the BlueLabs DNC dataset to divide Senate spending in each state among the counties in that state for each year in the analysis.

3.5.3 Spending in House Races

The data on House races is also based on the FEC filings for each year. These data show the amount of spending in each Congressional District. Using the dataset created by BlueLabs, which divides voters proportionally between districts and counties, we allocated the appropriate proportion of spending in each district to the appropriate counties for our analysis.[11]

[11] We excluded the spending for both house and senate races for Kansas City. This is because the house and senate spending data allocate money to Kansas City, MO even though Kansas City is not a county in Missouri and actually spans five counties in Missouri. The spending for Kansas City, MO accounts for 4.24% of the total spending in Missouri over all the years in the data.



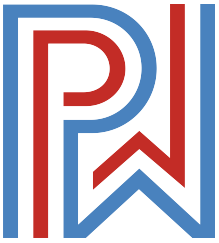
3.5.4 Spending in Presidential Races

We used two datasets to cover spending in presidential races. First, we have data from the FEC, organized by the Center for Progressive Politics, on spending by presidential campaigns. This includes spending on food, contractors, rent, events, and staff. In addition, Public Wise purchased data from Kantar/CMAG, which provides total spending on television ads on behalf of presidential candidates. Spending for both of these datasets is recorded by state. Although the datasets provide spending in both the primary and the general election, we chose to only include general election spending in the analysis.

Allocation to counties is tricky because we do not know the exact allocation of spending within the state, and we cannot necessarily assume that spending is allocated proportional to the voting population. This is especially true for states that housed presidential campaign headquarters. We used the dataset provided by BlueLabs to divide the presidential spending among the counties in each state by the proportion of voters in that county, and also included a variable that indicates if a state housed campaign headquarters for any of the major party candidates in each year.

3.5.5 Voter Fraud

In addition to the relationship between voting laws and voter turnout, we include an analysis of the relationship between voting laws and voter fraud. Voter fraud is often cited as an issue in elections – one that has received considerably more public discussion in recent months. There has been little to no evidence to this point that voter fraud is a major issue in American elections. While cases of voter fraud do exist, they are few and far between and do not occur at a rate that could possibly sway the results of an election. Here we look at the relationship between voter fraud and individual voting laws controlling for county characteristics, including voter turnout. To do this, we use a dataset from the Heritage Foundation that tracks voter fraud cases going back several decades. These data are of questionable quality. The Heritage Foundation used court records to compile the list and local news reports to fill in details when



possible. We have done additional research to fill in missing details. Problematically, some cases cross multiple elections or are hard to assign to a particular election. Some cases are about one person who has repeatedly used the wrong address to vote and it is not clear from the court documentation which elections were affected. We have made the most conservative choices possible when assigning fraud cases to election years. Additionally, there are very few fraud cases over the years of interest to this study. This means that there is very little variation to explore.

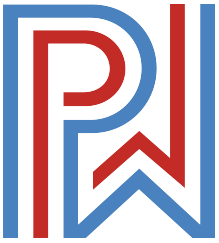
4 METHODS

The purpose of this analysis is to assess the association between voter laws and voter turnout controlling for a host of county characteristics. To that end, we combined the datasets described above into a master dataset containing 18,673 county/year observations. That is, the dataset has an observation for each county in the United States for each of the years 2008, 2010, 2012, 2014, 2016, and 2018, excluding Alaska. For each county/year observation, the dataset has values for the demographic and socioeconomic characteristics of interest, the total amount of political spending, the voter turnout rate, the contemporaneous laws for the state the county is in, as well as a measure of whether the law has recently changed in that state.

We pool the years together and conduct a panel analysis for presidential election years and for midterm election years.[12] For certain outcomes, we do a panel analysis with all the years and interact the law of interest with an indicator for whether it was a presidential or midterm year. For the analysis of the variables capturing change in a law, we do not divide the dataset by type of election but run the analysis on the full panel.

We start by looking at the association between the voting ease scale described above and percent of the voting age citizen population that turned out to vote. Then we look at the

[12] Panel data are data that include repeated observations from the same subjects over time, in our case counties within states are measured over time. Non-panel analytic techniques assume that the values for each observation are unrelated to the values for any other observation, therefore panel data requires special analytic treatment to account for the fact that the values for each subject at one time point are related to their values at other time points.

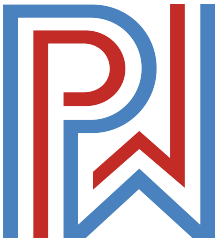


relationship between individual voting laws and turnout and change in voting laws and turnout. Coefficients presented in the tables can be interpreted as the percent change in turnout predicted for a one unit change in the variable of interest. The reader should keep in mind that the coefficients are estimates. They should not be taken as exact values or any indication of the amount of change that could be expected if a change in the law were made. Rather, this analysis provides a sense of the direction and general size of associations. Furthermore, this analysis cannot make any claims about causality. The associations we uncover are merely that, an indication that a particular law and higher voter turnout tend to go together, but not an indication that the turnout was caused by the law.

Our model uses state random effects and year fixed effects. Random effects for states are preferable to fixed effects[13] because they account for variation both within states and between states. Fixed effects, on the other hand, only account for within state variation. The preference for random effects over fixed effects was confirmed using a Hausman test. All analysis for this study was conducted in Stata 16 using -xtreg, mle-, which runs a panel regression with the random effects maximum likelihood estimator.

We built one general model that we use to estimate all the associations of interest. We use the percent of citizens of voting age who turned out to vote as our outcome variable. We control for a host of county characteristics. We control for the racial and ethnic breakdown of the county population. To do this we include the percent of the population that is non-Hispanic Black, the percent of the population that is Hispanic, the percent of the population that is non-Hispanic Asian, and the combined percent of the population that is non-Hispanic Alaskan Native or American Indian, non-Hispanic Native Hawaiian or Pacific Island, non-Hispanic Two or more races, and non-Hispanic other race. We exclude the percent non-Hispanic white as our reference category. The coefficients for the included variables should be interpreted in reference to this omitted category. We chose to exclude this category because, due to continuing residential segregation in the US, it is highly correlated with both non-Hispanic

[13] Fixed effects control for the characteristics shared by counties in each year but for which we do not otherwise have a way to measure



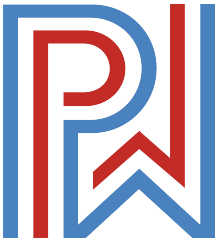
Black and Hispanic population. Due to these high negative correlations, to include these three categories together would lead to severe multicollinearity and bias our ability to determine statistical significance for our results.

We also include controls for the socioeconomic status of the county. We include the percentage of occupied households in the county with no access to a car. We suspect that voter turnout is, in part, affected by how easy it is for voters to get to the polls and, especially in non-urban counties, not having access to a car greatly reduces the options for transportation to the voting booth. Other factors that we know are associated with likelihood to vote are education and income. These are, however, highly correlated. As with race/ethnicity, we need to control for these county characteristics while avoiding the problems that come with multicollinearity. In order to do this, we used Principle Component Analysis (PCA) to create a socioeconomic status score that incorporates all the information from the median household income and the percentage of the population aged 25 and over that has a Master's, Professional, or Doctoral degree.[14] The higher the value of this socioeconomic score the higher the combined education and income of the county.

We include additional controls for the characteristics of the population of the counties. We include the percentage of the population that is female, the coefficients for which should be interpreted in reference to the omitted category, which is the percentage of the population that is male. We also include the age breakdown, with percent under age 18, percent 18-34, percent 35-54, and the percent 55 and above left out as the reference category. We also include the percent of the population aged 15 and up that has never been married. Finally, we include our measure of total political spending. We also include a dummy variable that indicates whether or not the county is in a state that housed the headquarters for a major presidential candidate.

We use the same combination of control variables for our analysis of the ease of voting and for the individual laws. For our investigation of the association between the ease of voting

[14] Principle Component Analysis (PCA) uses standardization and covariance matrices to combine the information from one set of variables into a smaller set of variables. It is often used to avoid problems of multicollinearity when a model needs to take into account multiple highly correlated variables.

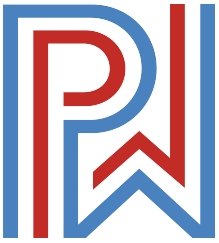


scale and voter turnout, we use all the years in the dataset and include an interaction between the ease of voting and an indicator for whether it was a presidential election year or a midterm election year. In the Appendix, we provide Equation 9.1, which shows the mathematical form of the model for our panel analysis for the individual laws and Equation 9.2, which shows the mathematical form of the model for the analysis of voting ease, including the interaction term.

For the voter fraud analysis, we constructed a second dataset that consists of 300 state/year observations. We want to determine the association between voter fraud and both individual voting laws and the change in voting laws. To do this, we create two variables that represent two ways of calculating the amount of voter fraud in each election year. First, we created a rate voter fraud out of the total population of each state in each year of interest. and scaled it by 1,000. This means the rate can be interpreted as the number of fraud cases for every 1,000 people in the population. We chose to use the total population as the denominator for our rate because fraud can be committed by anyone, regardless of their age or eligibility to vote. Second, we created a variable that represents the percent of total ballots cast that were fraudulent. We did this by dividing the total number of fraud cases in each state in each year by the total votes cast for highest office in that state in that year and then multiplying the rate by 100.[15] We ran our analysis with both outcome variables. Because the outcome variable is a state-level variable, and the voting law variables are also state-level variables, we must conduct our analysis at the state level, hence the need for a separate state-level dataset.

While there is data on fraud in odd years, we chose to focus on the fraud in the years with statewide and national elections. We control for the same demographic and socioeconomic characteristics as with the voter turnout models, except here they are aggregated to the state level. We also include the voter turnout and state political spending totals. We conduct a panel analysis with year fixed effects, which will also account for any time invariant state characteristics for which we do not have variables to measure. Results from these models indicate the

[15] This is likely a very conservative estimate of fraud. Some of the fraud cases reported by the Heritage Foundation were cases in which there was attempted voter fraud but the ballot(s) were not successfully cast. Here we treat any case of fraud as a fraudulently cast ballot, meaning it is likely we have overestimated the rate of fraud and the true rate of fraud is lower.



association between voting laws and rate of fraud within states over time controlling for state level demographic and socioeconomic characteristics and political spending. Equation 9.3 in the Appendix shows this equation in mathematical form.

5 VOTING EASE

We begin with an analysis of the association between voter turnout and the ease of voting, controlling for county characteristics. Table 5.1 shows the results from the panel analysis of the association between voting ease and voter turnout. Here, the coefficients represent the association between the variables and the outcome, holding all the control variables constant, and accounting for variation within and between the states, and variation within years. Our main predictor of interest, the ease of voting scale, is significantly associated with voter turnout. In midterm election years, one additional measure making voting easier is associated with a 0.42 percentage point higher voter turnout. The interaction between voting ease and presidential year is significant and negative. This means that in presidential election years, when we account for the variation within years, the association between ease of voting and turnout is smaller than it is in midterm years. In this case, the model estimates that one additional measure making voting easier is associated with a 0.05 percentage point higher voter turnout in presidential years. Figure 5.1 shows this difference between midterm and presidential years. Overall, turnout is higher in presidential years, but the association between turnout and voting ease is bigger in midterm years. It may be that in presidential years, higher levels of enthusiasm mean that voters are motivated to turnout and overcome obstacles that might otherwise keep them at home in midterm years. Therefore, easier voting could have greater importance for turnout in years when enthusiasm and determination are lower.

There are multiple county characteristics that are associated with voter turnout. All of the controls for the racial and ethnic composition of the county are significant. For these variables, non-Hispanic White was our reference group so we will interpret the coefficients in relation to that category. Non-Hispanic Black population is associated with slightly more

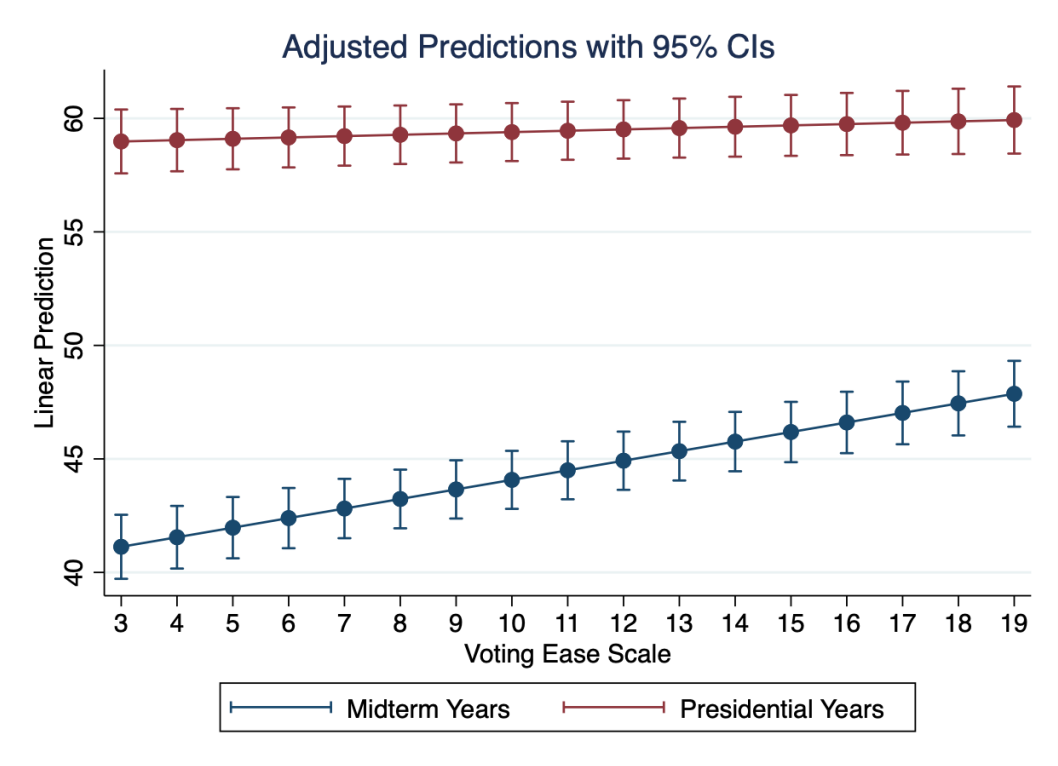
Table 5.1: Predicting Voter Turnout by Ease of Voting

	Outcome: Voter Turnout Percent
Ease of Voting	0.421***
	(0.04)
Presidential Year (Midterm is reference)	18.380***
	(0.32)
Ease of Voting * Presidential Year	-0.362***
	(0.03)
Demographic Controls	
Race and Ethnicity	
White Pop % (reference)	
Black Pop %	0.120***
	(0.01)
Hispanic Pop %	-0.022***
	(0.01)
Asian Pop %	-0.233***
	(0.01)
Other Race Pop %	-0.106***
	(0.01)
Gender	
% of Pop that is Female	0.219***
	(0.02)
Age	
% Pop Age 55 and up (reference)	
% Pop Under Age 18	-0.321***
	(0.02)
% Pop Age 18 to 34	-0.952***
	(0.02)
% Pop Age 35 to 54	-0.624***
	(0.02)
Marital Status	
% Pop Never Married	0.068***
	(0.02)
Socioeconomic Controls	
% Occupied Households with No Car	-0.218***
	(0.02)
SES Score (Education and Income)	3.601***
	(0.06)
Political Spending	
Total Political Spending	0.000*
	(0.00)
Presidential Campaign HQ	0.478
	(0.34)
Years	
2010	-3.274***
	(0.18)
2012	-3.680***
	(0.16)
2014	-8.546***
	(0.16)
2016	-4.566***
	(0.18)
Constant	74.671***
	(1.69)
σ_μ	4.551**
	(0.46)
σ_ϵ	5.807***
	(0.03)
Observations	18663

Note: Race categories are all non-Hispanic
$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

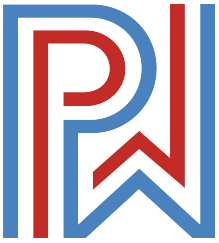
Figure 5.1: Voting Ease and Voter Turnout

Note: Figure shows voter turnout predicted by the model for presidential and midterm years across the range of values for the voting ease scale holding all other covariates at their means



voter turnout than non-Hispanic white population. This does not necessarily mean that Black Americans vote at higher rates than white Americans. It simply indicates that counties with a higher proportion Black population have higher turnout. The percentage of the population that is Hispanic, non-Hispanic Asian, or non-Hispanic people who are of another race are all associated with slightly lower turnout compared to non-Hispanic white population.

The higher the percentage of the population that is female the higher voter turnout. The model predicts that for each additional percentage point of female population voter turnout will be higher by approximately 0.22 percentage points on average. All age groups are associated with lower turnout compared to the reference category, which is age 55 and up. The higher the percentage of people in a county that have never been married, the higher the



turnout by a very small amount, all else kept equal. As we would expect, the higher the percent of occupied households in a county without access to a car, the lower the voter turnout. The higher the average socioeconomic status in the county based on a combination of education and income, the higher voter turnout by approximately 3.6 percentage points on average. This makes socioeconomic status the predictor with the largest magnitude among the county characteristics.

Total political spending is associated with voter turnout. The association seems quite small because of the variable scales. One additional dollar of political spending is associated with a 0.0000000496 percentage point higher voter turnout. But in reality, given a total voting eligible population in 2018 of just over 253 million, that could mean an additional 1 to 2 (1.25) voters for each additional dollar spent. This finding should not be taken to indicate that increased political spending will cause higher turnout. It is likely that there is more spending aimed at persuading people to choose particular candidates in places where turnout is already high. Additionally, given the way in which we allocated spending by county proportional to the distribution of voters, it may be that the association is variable across individual commercial markets, so the magnitude of the association reported here should also be considered in that context.

Finally, the coefficients on the year fixed effects help to confirm that the model is accurately predicting turnout based on what we know about the elections included in our dataset. For presidential years, the model shows that turnout was lower in all years compared to 2008. You will note that 2018 is also excluded – this is due to collinearity between the year variables and the presidential election indicator variable, so one year from midterms and one year from presidentials must be excluded.

Takeaways: There are several main takeaways from this analysis. First, the easier it is to vote the higher the voter turnout. This may be because ease of voting makes it so more people vote, or it may be that the type of place where a lot of people vote is also the type of place where the legislature tends to make it easier to do so. Second, lack of access to a car is consistently

associated with lower voter turnout. The effect is relatively small – the estimate shows that for each additional percent of households without a car there is a reduction in voter turnout by about 0.2 percent – however, initiatives to make voting more accessible either to people without a car or in places where people don't tend to own cars could be a relatively low cost way to increase voting a little bit at a time. Given a 2018 voting eligible population of approximately 253 million, 0.2 percent of that represents 506,000 potential voters. Finally, the association between voting ease and voter turnout is stronger in midterm years than in presidential years. This may indicate that voting measures are more important to help overcome inertia in years where the enthusiasm is generally lower. In presidential years, voters may be motivated enough to overcome obstacles that would otherwise block them in other years. More research is needed to test this hypothesis.

6 Individual Voting Laws

Now we turn our attention to the association between individual laws and voter turnout. Here we look individually at a select subset of the laws that went into the voting ease scale. We have divided the results by category of law. We ran separate regressions for each of the law variables controlling for the same variables as in the model in the previous section. In some cases, we ran the analysis separately on midterm and presidential years and sometimes we pooled the years together. In addition, for some of the variables we look at the change in the law – for these models, we only run them on the full panel. In the tables below, we show the association between the law and voter turnout out from those regressions. For ease of reading, we do not show the coefficients for each of the control variables for each of the regressions. Across the board their coefficients were consistent with what was presented in the previous section.

6.1 Absentee Voting

In this category, we consider whether voters need an excuse to request an absentee ballot and if absentee ballots can be tracked by the voter to ensure they have been received and counted.

Table 6.1: Predicting Voter Turnout by Voting Laws – No Excuse Absentee Voting

	Outcome: Voter Turnout Percent	
	Presidential Years	**Midterm Years**
Excuse Required (reference)		
No Excuse Required	-0.130	1.603*
	(0.36)	0.52)
Ballots Automatically Sent	0.479	2.409**
	(0.75)	(0.88)

Note:Model was run with that voting law as the main predictor, with the same controls as in the analysis using the voting ease scale. The coefficients here represent the association between the voting law and voter turnout holding all other covariates constant. Midterm years exclude DC from the sample.
$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 6.1 shows the results from the analysis of no-excuse absentee voting in presidential and midterm years. In presidential years in our study, there is no association between no-excuse absentee voting and voter turnout. In midterm years, counties in states where no-excuse is required to vote absentee had turnout that was approximately 1.6 percentage points higher on average than counties in states where an excuse is required. Also, in midterm years, counties in states that mail absentee ballots automatically, turnout was approximately 2.4 percentage points higher on average than counties in states where an excuse is required.

Table 6.2: Predicting Voter Turnout by Voting Laws – No Excuse Absentee Voting

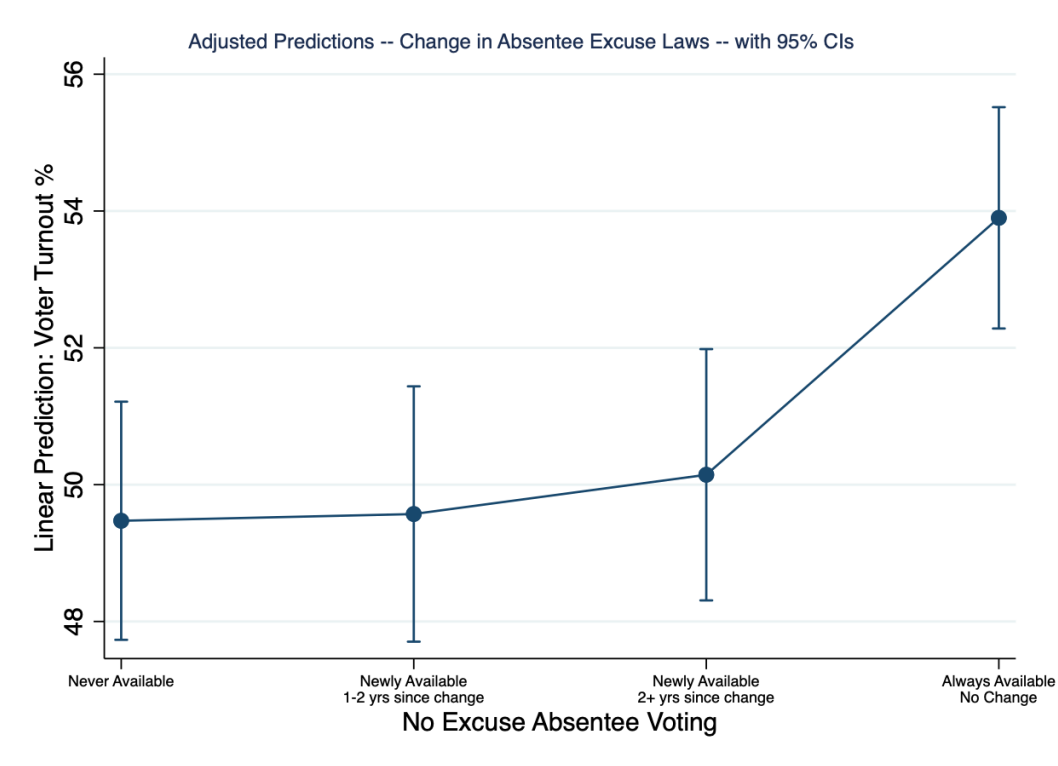
	Outcome: Voter Turnout Percent
Absentee Requires Excuse - No change (reference)	
No Excuse Required - New change within 1-2 years	0.099
	(0.37)
No Excuse Required - New change 2+ years prior	0.672*
	(0.33)
No Excuse Required - No change in study period	4.428***
	(1.21)

Note:Model was run with that voting law as the main predictor, with the same controls as in the analysis using the voting ease scale. The coefficients here represent the association between the voting law and voter turnout holding all other covariates constant.
$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 6.2 shows the results from the analysis of the change in no-excuse absentee voting. Figure 6.1 shows the average voter turnout predicted for counties in the different categories. Counties in states that recently changed to no-excuse absentee voting do not have significantly

Figure 6.1: Voter Turnout and Change in No-Excuse Absentee Voting

Note: Figure shows voter turnout predicted by the model for the different categories of the change variable holding all other covariates at their means



different turnout than counties in states that do not allow no-excuse absentee voting. Counties in states that changed to no-excuse absentee 2 or more years prior to the election but at some point during the study period have approximately 0.7 percentage point higher voter turnout than counties that require an excuse. Finally, counties in states that allowed absentee voting without an excuse for the whole study period had approximately 4.4 percentage point higher turnout on average than counties that required an excuse across the whole study period. It should be noted that the standard error for that estimate is large, meaning our estimate is not very precise.

Table 6.3 shows the results from the analysis of absentee ballot tracking. Ballot tracking was not significantly associated with turnout in presidential years. In midterm years, counties in

Table 6.3: Predicting Voter Turnout by Voting Laws – Absentee Ballot Tracking

	Outcome: Voter Turnout Percent	
	Presidential Years	**Midterm Years**
No Tracking (reference)		
Tracking exists	0.337	1.263***
	(0.25)	0.35)

Note:Model was run with the same controls as in the analysis using the voting ease scale. The coefficients here represent the association between the voting law and voter turnout holding all other covariates constant.
$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

states where ballot tracking exists had 1.26 percentage point higher turnout on average than counties in states where there is no ballot tracking, holding all other county level characteristics equal.

6.2 VOTER REGISTRATION

In this section, we consider laws related to voter registration, specifically automatic voter registration and same day/election day voter registration. For these analyses, we limit the dataset to counties in states where voter registration is required. Whether or not automatic or same day registration exists is only a fair comparison within the subset of states that require any registration at all. North Dakota is the only state that does not require registration to vote, therefore, it is excluded from this analysis.

Table 6.4: Predicting Voter Turnout by Voting Laws – Change in Automatic Voter Registration

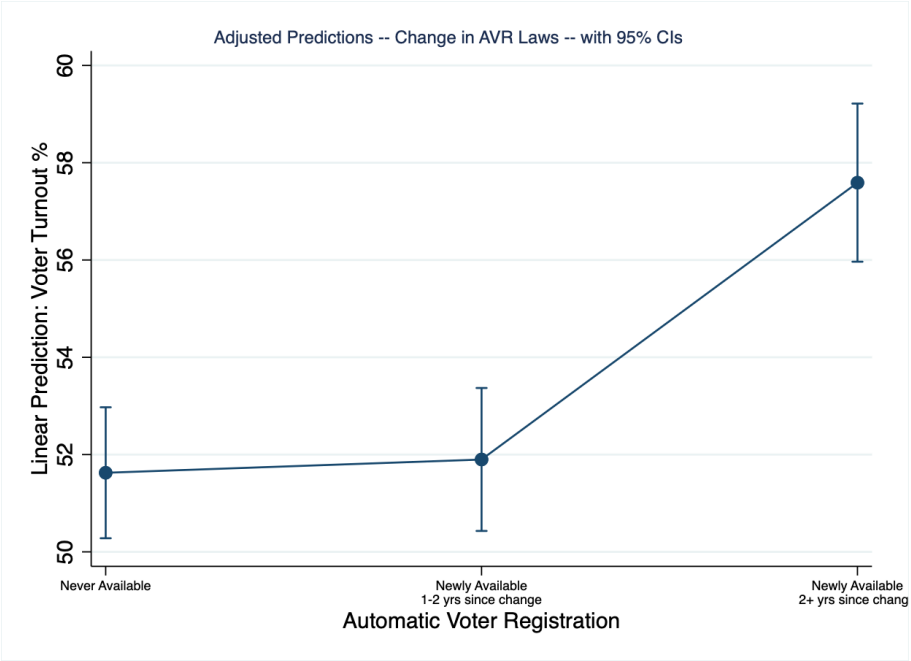
	Outcome: Voter Turnout Percent
No Automatic Registration - No change (reference)	
Automatic Registration - Newly available within 1-2 years	0.273
	(0.31)
Automatic Registration - Newly available 2+ years prior	5.965***
	(0.47)

Note:Model was run with the same controls as in the analysis using the voting ease scale. The coefficients here represent the association between the voting law and voter turnout holding all other covariates constant.
$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

First, we consider change in automatic voter registration. Table 6.4 shows the relationship

Figure 6.2: Voter Turnout and Change in Automatic Voter Registration

Note: Figure shows voter turnout predicted by the model for the different categories of the change variable holding all other covariates at their means



between voter turnout and the change in automatic voter registration laws. The predictions from this model are shown in Figure 6.2, which provides the average predicted turnout for each category of change in automatic registration holding all the other covariates at their means. In other words, the figure shows the predictions for what voter turnout is for the average county in the sample in each of the possible conditions of change for automatic voter registration. Note that there are only three categories of the automatic voter registration change variable, compared to four categories for the previous change variables. This is because the missing category is automatic voter registration that existed continuously across the whole study period – no state meets that criteria. Additional analysis with subsequent years of data might be able to shed light on the effect of long term automatic voter registration on turnout, but for this analysis we are limited to states that adopted it more recently. Counties in states that gained automatic registration in the one to two years prior to the election did

not have significantly different turnout than counties in states that do not have automatic registration. Counties in states that gained automatic registration two or more years prior but within the study period had approximately 6 percentage point higher turnout on average than counties in states without automatic registration. There is likely a time lag between passage and implementation, so it is not surprising to see that recent changes in automatic registration are not associated with higher voter turnout but changes that happened farther back in time are associated with higher turnout.

Table 6.5: Predicting Voter Turnout by Change in Same Day Registration Laws

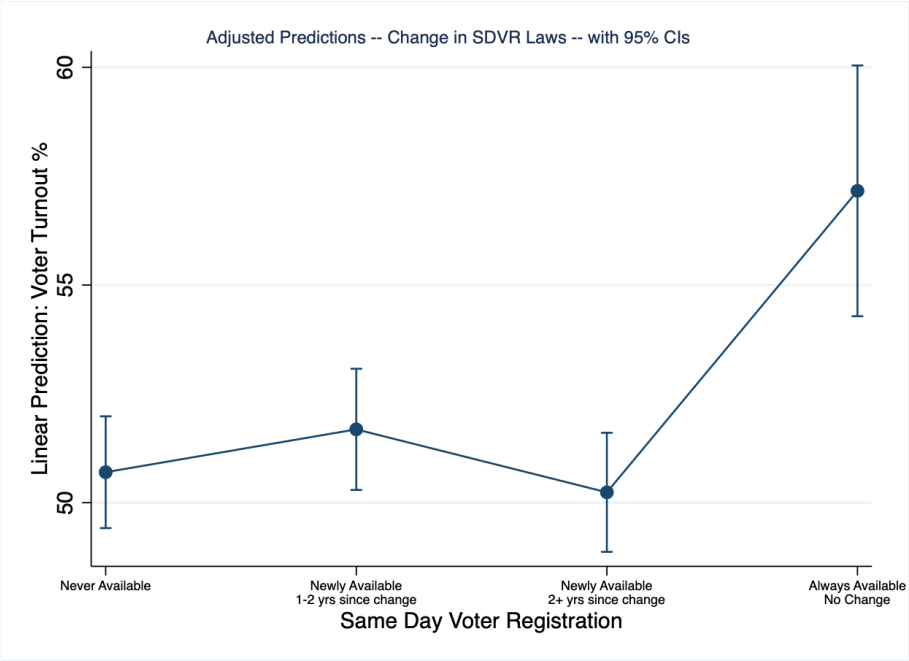
	Outcome: Voter Turnout per 1,000 Population
No SDVR - No change (reference)	
SDVR - Newly available with 1-2 years	0.984**
	(0.31)
SDVR - Newly available within 2+ years	-0.462
	(0.29)
SDVR - Available for whole study period	6.462***
	(1.61)

Note: Model was run with the same controls as in the analysis using the voting ease scale. The coefficients here represent the association between the voting law and voter turnout holding all other covariates constant.
$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 6.5 shows the relationship between the change in same day registration and voter turnout holding other county characteristics constant. Predictions from the model for the average voter turnout in an average county at each level of the change variable are shown in Figure 6.3. Here an interesting pattern emerges. Counties in states that recently got same day voter registration had slightly higher turnout on average than counties in states that never got same day voter registration. Counties in states that got same day registration two or more years prior but within the study period had turnout that was not statistically different from counties in states that never got same day registration. Counties in states that had same day registration across the whole study period had approximately 6.5 percentage point higher voter turnout than counties in states that never got same day registration. The estimate for the second category may seem confusing. How could it be that a relatively recent addition of same

Figure 6.3: Voter Turnout and Change in Same Day Voter Registration

Note: Figure shows voter turnout predicted by the model for the different categories of the change variable holding all other covariates at their means



day registration could be associated with lower turnout when a shorter term adoption and a longer term adoption are both associated with higher turnout? It may be that the types of states that have had same day registration for a longer time are fundamentally different from the types of states recently adopting same day registration in ways that we cannot capture with our administrative data.

6.3 Early Voting

In this section, we look at laws related to early voting. We consider whether or not early voting is available, if an ID is needed for early voting, and how many days before the election early voting can begin. Table 6.6 shows the results from the analysis of presidential and midterm years comparing counties in states with early voting to those in states that do not allow early vote. In the presidential years in our study period, early voting was not associated with

turnout. In the midterm years, counties in states that offered early voting had approximately 2.4 percentage point higher voter turnout than counties in states without early voting.

Table 6.6: Predicting Voter Turnout by Voting Laws – Early Voting

	Outcome: Voter Turnout Percent	
	Presidential Years	**Midterm Years**
No Early Voting (reference)		
Early Voting Available	0.276	2.397***
	(0.43)	(0.47)

Note: Model was run with that voting law as the main predictor, with the same controls as in the analysis using the voting ease scale. The coefficients here represent the association between the voting law and voter turnout holding all other covariates constant.
$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 6.7 shows the results from the analysis of change in early voting laws. The predicted turnout for the average county in our data for each of the categories of change are shown in Figure 6.4. Compared to counties in states that did not allow early voting at any point during the study period, counties in states that gained early voting in the one to two years prior did not have significantly different turnout. Counties in states that gained early voting two or more years prior but within the study period had approximately 1.2 percentage point higher turnout on average than counties that never gained early voting. Counties in states that had early voting over the whole study period had approximately 3.4 percentage point higher turnout on average than counties in states that never had early voting. As we pointed out with automatic voter registration, it may take time from passage to implementation to adoption for policies to have a demonstrable impact on voter turnout.

The regression detailed in Table 6.8 looks at the relationship between voter turnout and the number of days prior to the election early voting is allowed to begin in presidential and midterm years. Predictions from the model are shown in Figure 6.5. In presidential years, there is higher turnout in counties in states that start early voting 14 days or fewer before election day. Those that start it 8 to 14 days prior are predicted to have 1.4 percentage point higher turnout than counties in states with no early voting and counties in states that start early voting fewer than eight days prior to election day are predicted to have 3.6 percentage point

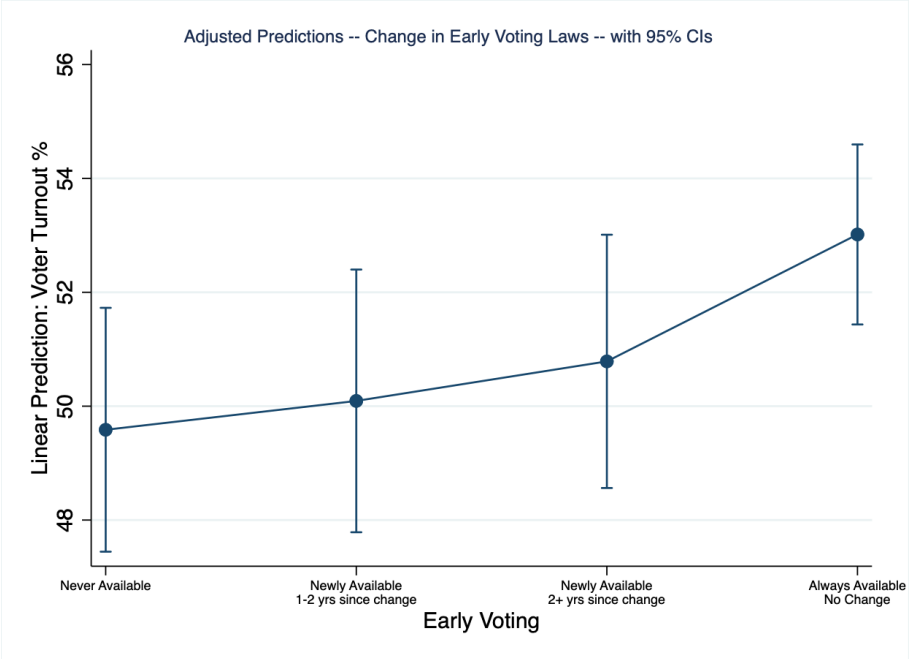
Table 6.7: Predicting Voter Turnout by Change in Early Voting Laws

	Outcome: Voter Turnout Percent
No Early Voting - No change (reference)	
Early Voting - Newly available with 1-2 years	0.507
	(0.48)
Early Voting - Newly available within 2+ years	1.201**
	(0.37)
Early Voting - Available for whole study period	3.430*
	(1.36)

Note: Model was run with the same controls as in the analysis using the voting ease scale. The coefficients here represent the association between the voting law and voter turnout holding all other covariates constant.
$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

Figure 6.4: Voter Turnout and Change in Early Voting

Note: Figure shows voter turnout predicted by the model for the different categories of the change variable holding all other covariates at their means



higher turnout on average than counties in states with no early voting. Early voting that starts more than 14 days prior to election day in presidential years is not associated with higher or lower voter turnout. In midterm years, all early voting time frames are associated with higher

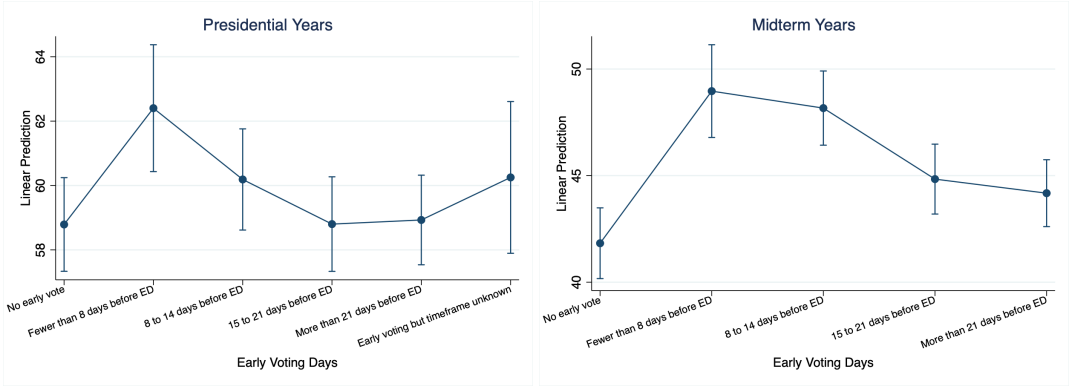
Table 6.8: Predicting Voter Turnout by Voting Laws – Days for Early Voting

	Outcome: Voter Turnout Percent	
	Presidential Years	**Midterm Years**
No Early Voting (reference)		
Fewer than 8 days before Election Day	3.613***	7.136***
	(0.88)	(0.94)
8 to 14 days before Election Day	1.399*	6.339***
	(0.62)	(0.70)
15 to 21 days before Election Day	0.012	3.009***
	(0.55)	(0.60)
More than 21 days before Election Day	0.140	2.348***
	(0.44)	(0.48)
Early voting avail but time frame unknown	1.462	
	(1.07)	

Note: Model was run with the same controls as in the analysis using the voting ease scale. The coefficients here represent the association between the voting law and voter turnout holding all other covariates constant.
$^{*}p<0.1$, $^{**}p<0.05$, $^{***}p<0.01$

Figure 6.5: Voter Turnout and Days for Early Voting

Note: Figure shows voter turnout predicted by the model for the different categories of the change variable holding all other covariates at their means



turnout compared to counties in states with no early voting. The largest effects, however, are for the smallest time periods, consistent with the association in presidential years for the two shortest time frames. More research is necessary to understand why early voting periods that start closer to election day might be associated with higher turnout. This finding also seems to be contradictory to the findings from Kaplan and Yuan (2018) that were discussed in the

literature review. They found higher turnout for each additional day of early voting, therefore, perhaps we should have expected to find higher turnout in places that started early voting the farthest from election day. In fact, while they were measuring the number of early voting days, we are measuring how far in advance of election day early voting starts, regardless of when the early voting period is slated to end. Additionally, Kaplan and Yuan (2018) focused only on early voting in Ohio, whereas this analysis takes a national view. The number of days for early voting and where the early voting period is situated on the calendar in relation to election day are two separate things that should both be considered further in future research.

Table 6.9: Predicting Voter Turnout by Voting Laws – ID for Early Voting

	Outcome: Voter Turnout Percent	
	Presidential Years	**Midterm Years**
No ID for Early Voting (reference)		
ID required for Early Voting	-0.696*	-1.596***
	(0.31)	(0.30)

Note: Model was run with the same controls as in the analysis using the voting ease scale. The coefficients here represent the association between the voting law and voter turnout holding all other covariates constant.
$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

Finally, we consider whether or not a piece of identification is required to cast a ballot during early voting. For this, we run the analysis on only those counties in states where early voting is an option so that we can compare between early voting with and without an ID. Table 6.9 shows the results from this analysis. In both presidential and midterm years, voter turnout is lower in counties in states where an ID is required for early voting compared to those where an ID is not required. In presidential years, turnout is approximately 0.7 percentage points lower on average where ID is required. In midterm years, turnout is approximately 1.6 percentage points lower on average where ID is required.

6.4 VOTE BY MAIL

In this section, we will look at laws related to vote by mail. We begin by comparing states that have vote by mail in some manner versus those that do not. Then, within the states in which

vote by mail is available, we look at the availability of dropboxes and voter centers, as well as a cure process for vote by mail ballots.

Table 6.10: Predicting Voter Turnout by Voting Laws – Vote by Mail

	Outcome: Voter Turnout per 1,000 Population	
	Presidential Years	**Midterm Years**
No Vote by Mail (reference)		
Vote by mail only in certain circumstances	0.864	5.021***
	(0.54)	(0.64)
Counties have the option to do vote by mail	2.796**	7.151***
	(1.03)	(0.90)
Vote by mail for all elections	2.212*	6.433***
	(0.90)	(0.95)

Note: For each voting law in this table, model was run with that voting law as the main predictor, with the same controls as in the analysis using the voting ease scale. The coefficients here represent the association between the voting law and voter turnout holding all other covariates constant.
$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

Figure 6.6: Voter Turnout and Vote by Mail

Note: Figure shows voter turnout predicted by the model for the different categories of the change variable holding all other covariates at their means

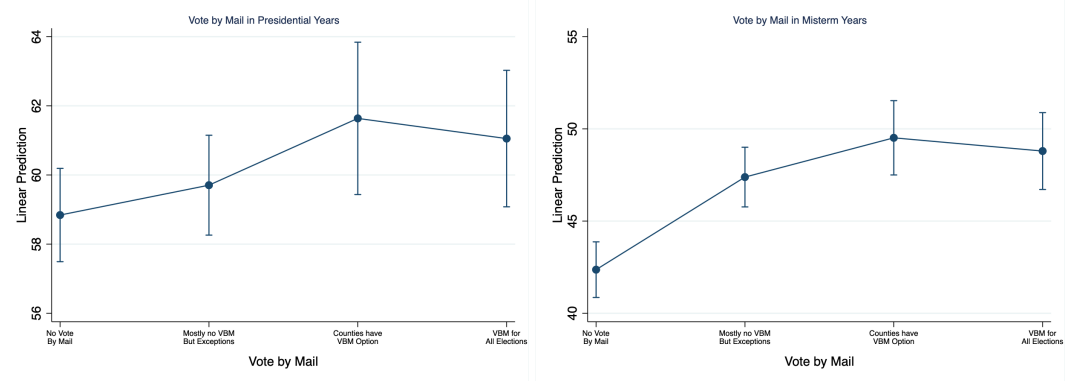


Table 6.10 shows the results from the analysis based on the existence of vote by mail. Vote by mail is complicated and the categories used in this analysis are perhaps more crude than we would like. We plan to put additional resources into gathering county by county vote by mail data since it is generally administered at the county level and, therefore, much may be obscured by attempting to categorize vote by mail using state level data. Here the categories

are no vote by mail, mostly no vote by mail but it can be used under certain circumstances, vote by mail is available county by county, and vote by mail is available for all elections across the state. In both presidential and midterm years, vote by mail is associated with higher turnout. In presidential years, counties in states where the counties have discretion to use vote by mail and counties in states where vote by mail is universally available had between 2.2 and 2.8 percentage point higher turnout than counties in states with no vote by mail. In midterm years, any vote by mail availability at all is associated with 5 and 7 percentage point higher turnout. Figure 6.6 shows the turnout predicted by the model for the average county across all categories of vote by mail availability.

Table 6.11: Predicting Voter Turnout by Vote by Mail Dropbox Laws

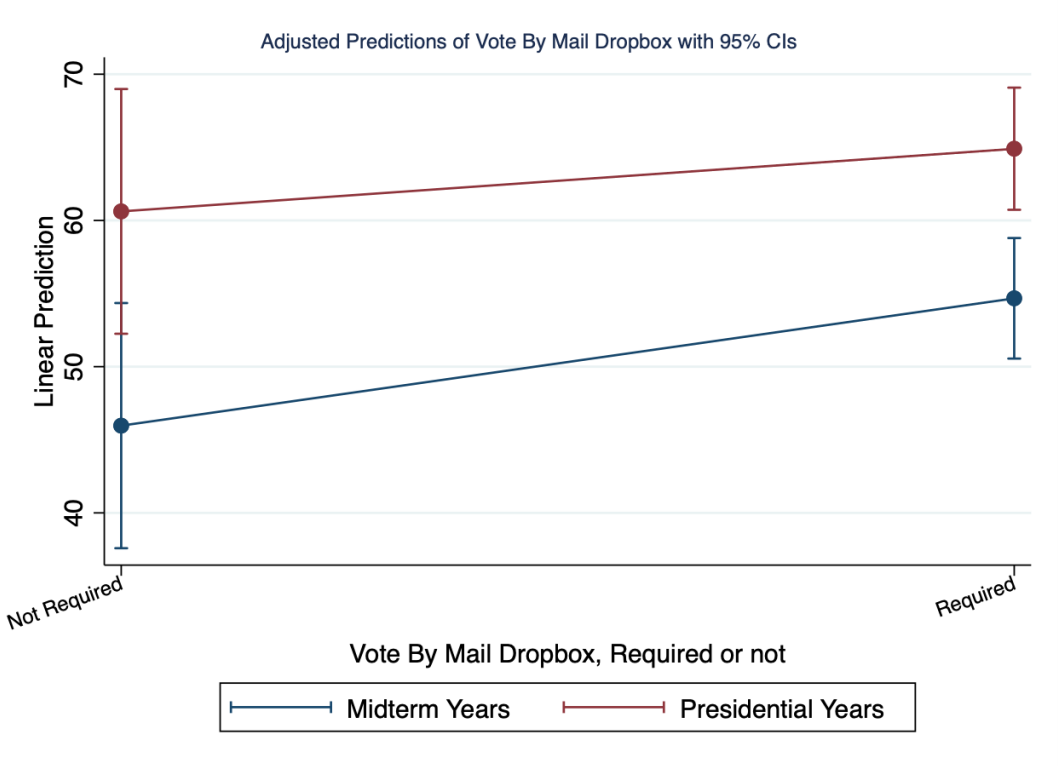
	Outcome: Voter Turnout Percent
Dropboxes not required (reference)	
Dropboxes required	8.708
	(4.78)
Midterm year (reference)	
Presidential year	15.299***
	(1.49)
Interaction	
Dropboxes * Presidential Year	-4.422***
	(1.23)

Note:Model was run with the same controls as in the analysis using the voting ease scale. The coefficients here represent the association between the voting law and voter turnout holding all other covariates constant.
$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 6.11 shows the predictions from the analysis of vote by mail dropboxes among counties in those states that offer vote by mail either county by county or universally. In this analysis, we run the full panel and interact the dropbox variable with the indicator of whether it was a presidential year or a midterm year. Due to the interaction, it is easiest to interpret the results from a graph rather than a table. Figure 6.7 shows predicted voter turnout for the average county both with and without dropboxes. In both presidential and midterm years, among counties in states where vote by mail is available, turnout is higher in counties in states that require dropboxes compared to those in states that do not. The association is slightly larger in

Figure 6.7: Voter Turnout and Vote by Mail Dropboxes

Note: Figure shows voter turnout predicted by the model holding all other covariates at their means



midterm years, consistent with the findings from the rest of our analysis.

Table 6.12 shows the analysis of the availability of vote by mail voter centers among counties in states that allow vote by mail either county by county or universally. As with the previous model, we ran this analysis with the full panel of years and included an interaction between vote by mail voter center requirement and the presidential election indicator. Again, due to the interaction, it is easiest to interpret the results via a graph rather than from the coefficients in the table. Figure 6.8 shows the predicted turnout in the average county both with and without a voter center requirement. As with dropboxes, voter centers are associated with higher turnout in both midterm and presidential years, and in this case the association is approximately the same in both types of election years, as evidenced by the similar slopes for the two lines.

Table 6.12: Predicting Voter Turnout by Vote by Mail Voter Center Laws

	Outcome: Voter Turnout Percent
Voter Centers not required (reference)	
Voter Centers required	4.816***
	(1.27)
Midterm year (reference)	
Presidential year	12.267***
	(1.18)
Interaction	
Voter Centers * Presidential Year	-0.360
	(0.95)

Note:Model was run with the same controls as in the analysis using the voting ease scale. The coefficients here represent the association between the voting law and voter turnout holding all other covariates constant.
$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

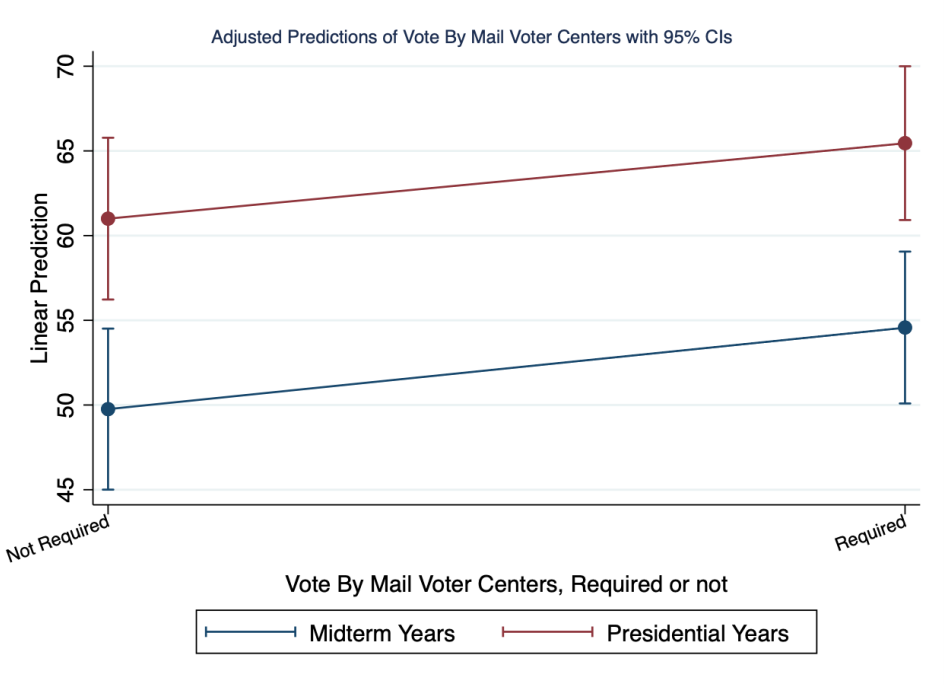
Table 6.13: Predicting Voter Turnout by Vote by Mail Cure Process Laws

	Outcome: Voter Turnout Percent
No cure process available (reference)	
Cure process exists	8.531***
	(1.67)
Midterm year (reference)	
Presidential year	20.313***
	(1.78)
Interaction	
Cure Process Exists * Presidential Year	-8.539***
	(1.47)

Note:Model was run with the same controls as in the analysis using the voting ease scale. The coefficients here represent the association between the voting law and voter turnout holding all other covariates constant.
$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

Figure 6.8: Voter Turnout and Vote by Mail Voter Centers

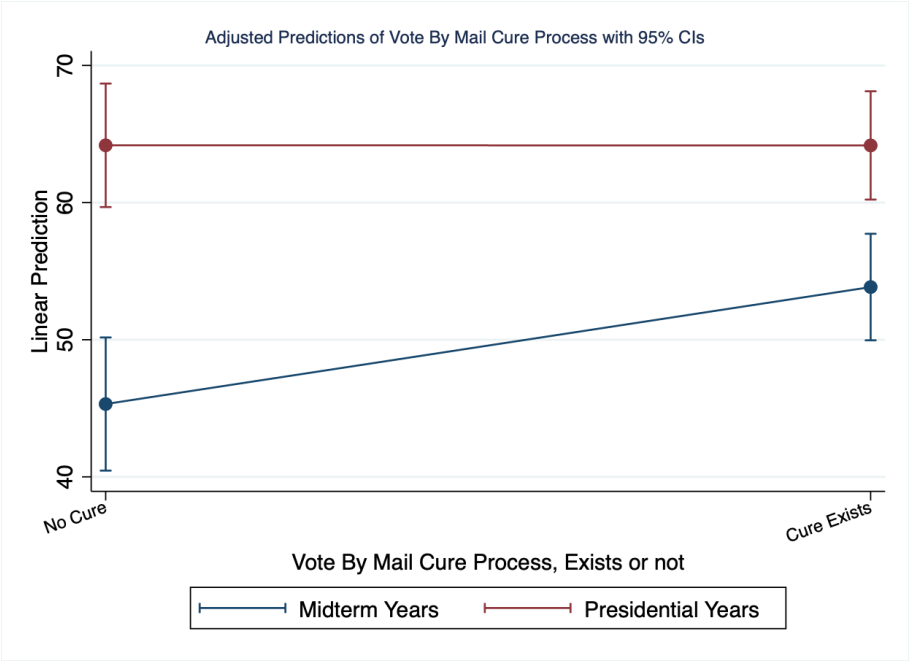
Note: Figure shows voter turnout predicted by the model holding all other covariates at their means



Finally, we look at the existence of a cure process for vote by mail ballots. A cure process allows voters who have made a mistake on their ballot, such as a signature that doesn't match or some other technical error, to cure their ballot so that it can be counted by verifying their identity and fixing the problem. As with the prior two analyses, we use the full panel and interact cure process with the presidential election indicator. Table 6.13 shows the results from the regression analysis and Figure 6.9 shows the predictions from the model for the average county both with and without the cure process in midterm and presidential years. Among those counties that are in states with vote by mail, those that have a cure process have higher turnout than those that do not in midterm election years but not in presidential years. In midterm years, counties in states with vote by mail that have a cure process had approximately 8.5 percentage point higher turnout than counties in states with vote by mail but no cure process. One implication of this finding is that measured voter turnout is dependent on the

Figure 6.9: Voter Turnout and Vote by Mail Cure Process

Note: Figure shows voter turnout predicted by the model holding all other covariates at their means



number of ballots successfully cast rather than the number of legitimate attempts to cast a ballot that fail for some reason. It may be that we see turnout is higher in midterm year where a cure is available because a higher percentage of legitimately attempted ballots are successfully counted. It is unclear why this association does not hold in presidential years, although perhaps there is a bigger legal push to cure ballots in presidential years than in midterm years or a more dedicated information campaign to educate voters on how to make sure their ballots don't get rejected, either of which could explain the difference.

6.5 VOTER ID

In this section, we look at whether or not an ID is required to vote. Table 6.14 shows the results from the model of voter ID and voter turnout. In both presidential and midterm years, counties in states that did not require ID to vote had higher turnout than counties in states

Table 6.14: Predicting Voter Turnout by Voting Laws – Voter ID

	Outcome: Voter Turnout Percent	
	Presidential Years	**Midterm Years**
Voter ID required (reference)		
Voter ID not required	0.776**	2.179***
	(0.29)	(0.27)

Note: Model was run with the same controls as in the analysis using the voting ease scale. The coefficients here represent the association between the voting law and voter turnout holding all other covariates constant.
$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

that did require ID to vote. In presidential years, the association is small with counties in states that do not require ID having approximately 0.8 percentage point higher turnout than counties in states where ID is required. The association is somewhat larger in midterm years when counties in states that do not require ID to vote had approximately 2.2 percentage point higher turnout than counties in states where ID is required. This is consistent with the findings from previous research as discussed in the literature section.

6.6 DISENFRANCHISEMENT

In this section, we look at laws that expressly limit voting rights. We look specifically here at laws that remove voters from the voter rolls for failure to vote in a previous election and laws that take away the right to vote for incarceration or conviction. In both cases, we restrict the analysis to counties in states that required registration to vote. This excludes North Dakota from the analysis. Table 6.15 shows the results from the analysis of removal from the rolls for failure to vote. As with the vote by mail analysis, we use the full panel and include an interaction between removal and the presidential election year indicator. Figure 6.10 shows predicted turnout for the average county both with and without removal. In both presidential and midterm elections, removal for not voting is associated with lower turnout than in counties that do not remove voters from the voter rolls for failure to vote.

Finally, we look at vote loss for incarceration and conviction. There are only two states in which voting eligibility is not lost for either incarceration or conviction. The lack of variation

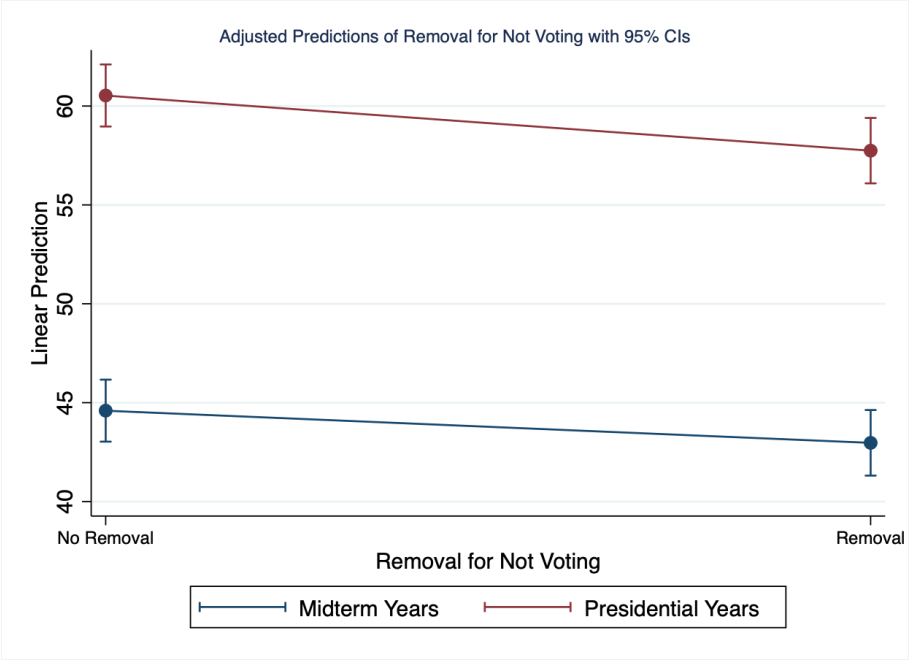
Table 6.15: Predicting Voter Turnout by Voter Removal For Not Voting

	Outcome: Voter Turnout Percent
No Removal for not voting (reference)	
Removal for not voting	-1.327**
	(0.59)
Midterm Election Year (reference)	
Presidential Election Year	15.220***
	(0.20)
Interaction Removal * Presidential	-1.163***
	(0.18)

Note: For each voting law in this table, model was run with that voting law as the main predictor, with the same controls as in the analysis using the voting ease scale. The coefficients here represent the association between the voting law and voter turnout holding all other covariates constant.
$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

Figure 6.10: Voter Turnout and Removal for not Voting

Note: Figure shows voter turnout predicted by the model for the different categories of the change variable holding all other covariates at their means



makes analysis difficult. Table 6.16 shows the results from the analysis of the vote loss laws. As with the vote removal analysis, we use the full panel and interact the vote loss variable with the indicator for presidential election years. Figure 6.11 shows the predicted turnout for

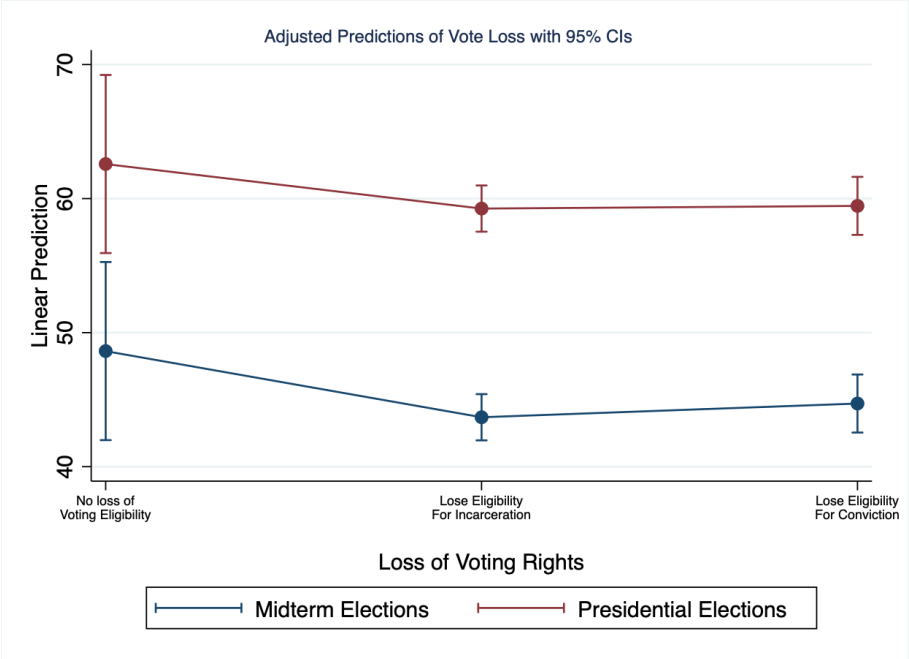
Table 6.16: Predicting Voter Turnout by Vote Loss for Incarceration or Conviction

	Outcome: Voter Turnout Percent
No Loss of Eligibility (reference)	
Loss of Eligibility for Conviction	-4.938
	(3.50)
Loss of Eligibility for Incarceration	-3.915
	(3.56)
Midterm Election Year (reference)	
Presidential Election Year	13.188***
	(0.89)
Interaction Loss for Conviction * Presidential	1.614
	(0.88)
Loss for Incarceration * Presidential	0.791
	(0.89)

Note: For each voting law in this table, model was run with that voting law as the main predictor, with the same controls as in the analysis using the voting ease scale. The coefficients here represent the association between the voting law and voter turnout holding all other covariates constant.
$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

Figure 6.11: Voter Turnout and Vote Loss for Incarceration or Conviction

Note: Figure shows voter turnout predicted by the model for the different categories of the change variable holding all other covariates at their means



the average county for each of the vote loss categories. Note the wide confidence intervals and the lack of statistical difference in voter turnout across these categories. Due to the lack of variation, there are large standard errors (which lead to the large confidence intervals), indicating lack of precision in the estimates. However, the point estimates for turnout are suggestive of higher turnout in counties that do not take away eligibility for incarceration or conviction compared to those counties that do. As more states change the laws related to vote loss, we plan to continue updating the analysis to reflect those changes in the hopes of better understanding this relationship and how it changes as more variation enters the data.

7 Voter Fraud

In this section, we investigate voter fraud in conjunction with voting laws. We counted up all the instances of fraud from the Heritage Foundation dataset in each state in the even election years from 2008 through 2018. We calculate a possible rate of voter fraud two ways. First, we divide voter fraud by the total population in the state and multiply by 100. Second, we divide voter fraud by the total ballots cast for highest office and multiply by 100. Using the latter mode of calculating fraud, at its very highest, 0.004% of ballots cast were fraudulent in Minnesota in the 2008 presidential election. The percent of potentially fraudulent ballots out of total ballots cast was lower in every other state in every other year in our data set. We should also note that this is a very conservative estimate of fraud. We used all reported incidents of fraud in the Heritage Foundation database and treated them as if they were all fraudulently cast ballots, although some of the incidents represent attempts at fraud that were not successful.This means that the rates of fraud we present in this analysis are likely higher than the actual rates of fraud and therefore we consider this to be a conservative estimate.

We use the same basic model that we used to predict voter turnout to predict fraud, except the variables are aggregated to the state level rather than the county level, and we add the percent of the citizen voting age population that cast a ballot for the highest office in each state as a control variable because it is conceivable that there is more fraud where there is

Table 7.1: Predicting Voter Fraud by Ease of Voting

	Outcome: Voter Fraud	
	% Fraud out Total Population	% Fraud out of Total Ballots
Ease of Voting	0.00000	0.00000
	(0.00)	(0.00)
Percent Voter Turnout	0.00000	0.00000
	(0.00)	(0.00)
Demographic Controls		
Race and Ethnicity		
White Pop % (reference)		
Black Pop %	-0.00000	-0.00000
	(0.00)	(0.00)
Hispanic Pop %	-0.00000	-0.00000
	(0.00)	(0.00)
Asian Pop %	-0.00000	-0.00000
	(0.00)	(0.00)
Other Race Pop %	-0.00000	-0.00001
	(0.00)	(0.00)
Gender		
% of Pop that is Female	0.00004	-0.00010
	(0.00)	(0.00)
Age		
% Pop Age 55 and up (reference)		
% Pop Under Age 18	0.00000	0.00000
	(0.00)	(0.00)
% Pop Age 18 to 34	0.00001	0.00001
	(0.00)	(0.00)
% Pop Age 35 to 54	0.00001	0.00002
	(0.00)	(0.00)
Marital Status		
% Pop Never Married	0.00001	0.00002
	(0.00)	(0.00)
Socioeconomic Controls		
% Occupied Households with No Car	-0.00000	-0.00000
	(0.00)	(0.00)
SES Score (Education and Income)	-0.00001	-0.00002
	(0.00)	(0.00)
Political Spending		
Presidential Campaign HQ in State	-0.00010	-0.00020
	(0.00)	(0.00)
Total CMAG Spending	0.00000	0.00000
	(0.00)	(0.00)
Total Presidential Spending	0.00000	0.00000
	(0.00)	(0.00)
Total Governor Spending	-0.00000	-0.00000
	(0.00)	(0.00)
Total Senate Spending	0.00000*	0.00000*
	(0.00)	(0.00)
Total House Race Spending	-0.00000	-0.00000
	(0.00)	(0.00)
Years		
2008 (reference)		
2010	-0.00003	-0.00002
	(0.00)	(0.00)
2012	-0.00001	-0.00000
	(0.00)	(0.00)
2014	-0.00002	-0.00002
	(0.00)	(0.00)
2016	-0.00004	-0.00008
	(0.00)	(0.00)
2018	-0.00006	-0.00012
	(0.00)	(0.00)
Constant	0.00143	0.00413
	(0.00)	(0.00)
Observations	300	297

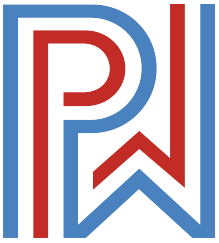
Note: Race categories are all non-Hispanic
$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 7.2: Predicting Voter Fraud by Voting Laws

	Outcome: Voter Fraud	
	% Fraud out Total Population	% Fraud out of Total Ballots
Absentee Voting		
No Excuse Absentee Voting	-0.00003	-0.00008
	(0.00)	(0.00)
Ballot Tracking	-0.00001	-0.00002
	(0.00)	(0.00)
Voter Registration		
Automatic Voter Registration	0.00002	0.00004
	(0.00)	(0.00)
Same Day Registration	0.00005	0.00008
	(0.00)	(0.00)
Early Voting		
Early Voting Available	0.00001	0.00000
	(0.00)	(0.00)
No ID Needed	0.00002	0.00004
	(0.00)	(0.00)
Vote by Mail		
Vote By Mail Available	-0.00007	-0.00016
	(0.00)	(0.00)
Dropboxes	-0.00005	-0.00010
	(0.00)	(0.00)
Voter Centers	-0.00002	-0.00007
	(0.00)	(0.00)
Cure Available	-0.00001	-0.00004
	(0.00)	(0.00)
Voter ID		
No Id needed for Voting	0.00001	0.00001
	(0.00)	(0.00)
Disenfranchisement		
No Removal for not voting	-0.00000	0.00001
	(0.00)	(0.00)
No loss of Voting Rights	-0.00006	-0.00014
	(0.00)	(0.00)

Note: For each voting law in this table, model was run with that voting law as the main predictor, with the same controls as the voting ease scale analysis. Coefficients represent the association between the voting law and voter fraud holding all other covariates constant.
$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

higher turnout. Table 7.1 shows the results of a panel regression with ease of voting as the main predictor variable, with results for each way of calculating voter fraud. How easy it is to vote on our 24 point scale is not statistically associated with the rate of voter fraud in either formulation. The rate of voter turnout is not statistically associated with the rate of voter fraud. The racial/ethnic composition of a state is not associated with voter fraud. Neither are any of the other demographic and socioeconomic characteristics we control for. Political spending is not associated with fraud, except total Senate spending which is significantly associated for both ways of calucalting a rate of voter fraud, but the magnitude is exceedingly small – for each



additional dollar spent in a Senate race, there is a predicted 0.00000000000146 percentage point increase in fraud by population or an additional 0.00000000000262 percentage point increase in fraud by ballots cast. Voter fraud is extremely rare and, given the data available for this study, there is no evidence that it is related to the ease of voting, let alone any of the demographic and socioeconomic characteristics available to us.

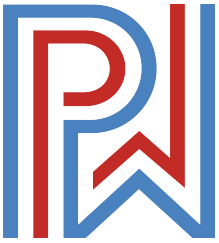
Table 7.2 shows the coefficients for each voting and registration law from individual regression run for each law for both ways of calculating fraud (by population and by ballots). Each of these regressions included the same covariates from our basic model. None of the voting laws are statistically related to either rate of voter fraud. Based on this analysis, there is no evidence of systematic voter fraud. There is also no evidence that any particular voting or registration law is related to voter fraud.

8 Conclusions

The analysis presented above provides a broad overview of the association between voting laws and voter turnout in the years 2008 through 2018. We considered the relationship between voter turnout and overall ease of voting. We also looked at the associations between voter turnout and individual laws related to voting and voter registration. Finally, we considered voter fraud, looking at the relationship between voter fraud and ease of voting and between voter fraud and individual voting and registration laws. In this section, we will summarize what we believe are the most important takeaways from the results of this analysis.

- **Takeaway 1:** The overall ease of voting in the state in which a county is located is associated with higher voter turnout in that county. This association is stronger in midterm years than in presidential years. This suggests an interaction between enthusiasm and voting ease that merits further investigation.

- **Takeaway 2:** Individual voting laws that make voting more accessible are associated with higher voter turnout.

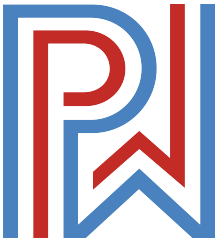


- **Takeaway 3:** Voter fraud is exceedingly rare - at its highest, 0.004% of ballots cast were fraudulent in the most conservative estimate of fraud - and voter fraud is not associated with either laws that increase access to voting or laws that restrict access to voting, such as voter ID laws.

- **Takeaway 4:** Counties with larger percentage of occupied housing units with no access to a car are associated with lower voter turnout. While this analysis cannot make any claims about causality, initiatives to help people without vehicles get to the polls could be associated with increases in voter turnout.

- **Takeaway 5:** No-excuse absentee voting, early voting, and vote by mail are all associated with higher voter turnout, particularly in midterm elections. We estimate that counties that did not require an excuse for voting absentee throughout the study period had about 4.4% higher turnout than counties that required an excuse. In midterm years, early voting is associated with approximately 2.4% higher voter turnout than counties in states with no early voting and counties that gained early voting as an option during the study period, or always had it, had higher turnout than counties that never had it. Counties in states with vote by mail we estimate to have between 5 and 7 % higher voter turnout on average than counties in states with no vote by mail in midterm years and between 2.2 and 2.8% higher in presidential years, depending on how vote by mail is administered. These options make voting easier by providing alternatives to voting in-person on election day. Additionally, vote by mail dropboxes and voter centers are associated with higher turnout, especially in midterm years. And the availability of a cure process for vote by mail ballots is associated with approximately 8.5% higher turnout in midterm years, which raises the question of how rejected ballots affect geographic patterns of recorded voter turnout.

- **Takeaway 6:** Automatic voter registration and same day registration are both associated with higher turnout. Counties in states that had automatic voter registration across the

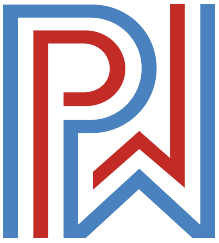


whole study period had, on average, approximately 6% higher voter turnout compared to counties in states that did not have automatic voter registration during the study period. Counties that had same day registration across the whole study period had approximately 6.5% higher voter turnout than counties in states that never had same day registration. For both same day registration and automatic registration, the results suggest that it may take a while from passage to implementation to adoption for these kinds of policies to affect voting behavior. More research is required to flesh this out further.

- **Takeaway 7:** Counties in states with fewer voter ID requirements tend to have higher voter turnout. Counties in states where no ID is needed to vote have approximately 0.8% higher turnout in presidential years and approximately 2.2% higher turnout in midterm years, on average, compared to counties in states where ID is required. Counties in states where a no ID is required for early voting have approximately 0.7% higher turnout in presidential years and approximately 1.6% higher turn out in midterm years compared to counties in states where ID is required for early voting.

- **Takeaway 8:** Counties in states that do not remove voters from the voter rolls for not voting in previous elections have higher voter turnout in midterm election years compared to counties in states that do remove voters for not voting.

In summary, places that have laws that make it easier to vote, with more options for how and when to exercise the right, are places with higher voter turnout. In particular, we see a pattern of higher turnout in places where the laws make voting more accessible with less advanced planning. Vote by mail, no-excuse absentee voting, and early voting all expand election day to election days. This allows people with complicated and busy lives to find the most convenient way to vote, which may lead to more of them exercising the right. Same day voter registration allows people to make up their minds to vote at the last minute. Not removing voters from the rolls for not voting in previous elections means that voters don't have to remember to check



their registration status before heading to the polls. Allowing a cure process for mail in ballots means voters can make human mistakes and still have their vote counted. Less stringent ID requirements allow people to go vote even if they haven't been able to sort out any ID issues they may have in time for election day. Conversely, we see no relationship between voting laws and voter fraud. The narrative that making voting more accessible will also make fraud more likely is not based in verifiable, empirical fact. The data show that laws making voting more accessible do not increase fraud and neither do laws that make voting more restricted decrease it.

We should note that the main outcome variable in this analysis – the percentage of the voting age population that cast a ballot for the highest office – measures successful voter turnout. It does not, however, measure attempted voter turnout. We do not know how many voters showed up at the polls and were turned away for not having proper ID, or because they were no longer registered for failure to vote in a previous election, or whose mail in ballots were rejected with no opportunity for them to fix it. It may be that actual voter turnout is much higher than successful voting. This suggests an opportunity to conduct further research to determine the true voter turnout rate and differentiate it from the successful voter turnout rate. Additionally, data on how many voters were turned away and for what reasons could shed light on the policies that are thwarting voters who are attempting to exercise their legal franchise.

9 Appendix

9.1 Appendix: Model Equations

In this Appendix section, we provide the equations for the models used in the analysis.

- **Base model for panel analysis of voter turnout:** We divide the sample between presidential years and midterm years and include year dummies for year fixed effects. State random effects are included through -xtreg- in Stata with maximum likelihood estimation. The base model for midterm years is:

$$\begin{aligned} VoterTurnout_{it} = \beta_{i0} + \beta_{i1} VotingLaw_{it} + \beta_{i2} BlackPop_{it} + \\ \beta_{i3} HispanicPop_{it} + \beta_{i4} AsianPop_{it} + \\ \beta_{i5} OtherRacePop_{it} + \beta_{i6} PercentFemale_{it} + \\ \beta_{i7} PercentAgeUnder18_{it} + \beta_{i8} PercentAge18to34_{it} + \\ \beta_{i9} PercentAge35to54_{it} + \beta_{i10} PercentNeverMarried_{it} + \\ \beta_{i11} PercentOccupiedHousingNoCar_{it} + \\ \beta i12 EducationIncomeScore_{it} + \\ \beta_{i13} [PoliticalSpending]_{it} + \\ \beta_{i14} 2010 + \beta_{i15} 2014 + \beta i162018 + \alpha + u_{it} + \epsilon_{it} \end{aligned} \tag{9.1}$$

- For the analysis of ease of voting, we include an interaction between the ease of voting and the indicator for presidential versus midterm elections:

$$\begin{aligned} VoterTurnout_{it} = \beta_{i0} + \beta_{i1} VotingEase_{it} + \beta_{i2} Presidential_{it} + \\ \beta_{i3} VotingEase * Presidential_{it} + \beta_{i4} \textbf{[ControlVariables]} + \alpha + u_{it} + \epsilon_{it} \end{aligned} \tag{9.2}$$

- **Base model for analysis of voter fraud:**

$$VoterFraudRate_{it} = \beta_{i0} + \beta_{i1} VotingLaw_{it} + \beta_{i2} VoterTurnout_{it} + \beta_{i3}[\textbf{ControlVariables}] + \beta_{i4}2010 + \beta_{i5}2012 + \beta_{i6}2014 + \beta_{i7}2016 + \beta_{i8}2018 + \alpha + u_{it} + \epsilon_{it} \tag{9.3}$$

9.2 APPENDIX: DICHOTOMOUS LAW VARIABLES

Table 9.1: Dichotomous Voting and Registration Laws

	2008	2010	2012	2014	2016	2018
No Excuse Absentee Voting						
Excuse needed	23	21	21	20	20	19
No excuse needed	27	29	29	30	30	31
Absentee Pre-Paid Postage						
No postage	39	39	39	39	39	39
Pre-paid postage	11	11	11	11	11	11
Absentee Ballot Tracking						
No tracking	43	36	34	31	30	30
Tracking available	7	14	16	19	20	20
In Person Absentee Voting						
No in person	8	7	6	5	5	3
In person available	42	43	44	45	45	47
Absentee 3rd party collection						
No 3rd party collection	12	12	10	9	8	5
3rd party collection allowed	38	38	401	41	42	45
Automatic Voter Registration						
Not available	50	50	50	50	47	41
Available	0	0	0	0	3	9
Same Day Voter Registration						
Not available	39	37	36	32	30	28
Available	11	13	14	18	20	22
Online Registration						
Not available	47	412	37	30	17	12
Available	3	9	13	20	33	38
Voter Pre-Preregistration						
Not available	7	3	2	1	1	1
Available	43	47	48	49	49	49
Early Voting						
Not available	18	16	14	14	13	13
Available	32	34	36	36	37	37
ID for early voting						
ID needed	26	25	29	30	32	34
ID not needed	24	25	21	20	18	16
Early Voting on Weekends						
Not available	24	21	20	20	18	18
Available	26	29	30	30	32	32

Table 9.2: Dichotomous Voting and Registration Laws

	2008	2010	2012	2014	2016	2018
Vote by Mail						
Not available	48	48	47	46	46	45
Available	2	2	3	4	4	5
Vote by Mail 3rd Party Collection						
Not available	42	40	37	35	35	36
Available	8	10	13	15	15	14
Vote by Mail Pre Paid Postage						
Not available	33	31	30	30	30	31
Available	17	19	20	20	20	19
Vote by Mail Drop Boxes						
Not available	47	45	44	44	44	44
Available	3	5	6	6	6	6
Vote by Mail Voter Centers						
Not available	49	46	45	45	44	44
Available	1	4	5	5	6	6
Vote by Mail Cure						
No cure available	42	41	41	41	41	39
Cure available	8	9	9	9	9	11
Voter ID						
ID required for voting	21	23	30	30	31	34
ID not required	22	24	31	31	32	35
Photo ID						
Photo ID required for voting	7	8	17	18	19	21
Photo ID not required	43	42	33	32	31	29
Alternative ID						
Not accepted	35	34	31	31	31	28
Accepted	15	16	19	19	19	22
Removal from Permanent Absentee List						
Removal possible	4	4	4	4	4	6
No removal	46	46	46	46	46	44
Removal from voter rolls for not voting						
Removal occurs	20	20	20	19	19	19
No removal	30	30	30	31	31	31
Loss of voting rights for felons						
Loss of voting rights	48	48	48	48	48	48
No loss of rights	2	2	2	2	2	2
Vote Restoration						
No automatic restoration	7	7	7	7	6	6
Automatic restoration or no loss of rights	43	43	43	43	44	44