# State Policies and the US Election Franchise: A Multistage Approach

**NaLette Brodnax**[1], **Ji Su Yoo**[2], **and Latanya Sweeney**[3]

[1]**Georgetown University**
[2]**UC Berkeley**
[3]**Harvard University**

## ABSTRACT

Studies that examine the impacts of state policies on voter participation tend to focus on one of five stages: eligibility, registration, turnout, balloting, and counting. We argue that because a policy can shape outcomes at multiple stages, this approach of assessing impacts on a single stage offers a limited view of how state policies and practices affect voters as they move through the election franchise. Using nationwide county-level data for presidential elections between 2008 and 2016, we employ a new, multistage approach to estimate the impacts of five categories of policies: eligibility restrictions, voter registration, convenience voting, voter identification, and provisional balloting. We show that in three of the five areas, state policies influenced two or three stages at once. We find persistent downstream effects, where policies hypothesized to influence turnout also influence balloting. This finding is most pronounced for expansions of convenience voting: their positive impact on voter turnout was undermined by a negative impact on balloting. With widespread expansion of convenience voting due to the COVID-19 pandemic, our findings suggest that increased voter participation may not translate to equivalent gains in the number of votes cast.

Keywords: *state politics, policy effects, election franchise, election outcomes, voter participation, voter registration, voter turnout*

# CONTENTS

# 1 INTRODUCTION

In the United States, the federal election franchise includes multiple stages: registration, turnout, balloting, and counting (Gerken, 2009). While state policies and practices shape outcomes at all stages, most studies of voter participation examine a single stage. These studies estimate the effects of state policies and practices, such as voter registration laws (Highton, 2004), voter identification laws (Highton, 2017), or the availability of online voter registration (Yu, 2019), on a single election outcome measure such as turnout. This approach of evaluating policies within a single stage offers a limited view of how state policies and practices affect voters as they move through the election process. Specifically, a single-stage focus can lead to biased inferences or a misinterpretation of valid inferences.

In this study, we present a multilevel analysis of how state policies affect voters in all stages of the election franchise. Using nationwide county-level data for three consecutive presidential election years between 2008 and 2016, we estimate the effects of policies in five areas: eligibility, registration, turnout, ballot issuance, and ballot counting. Across the policy areas, all but provisional-ballot counting policies influence multiple stages, suggesting that a single-stage focus may lead to bias in the estimates and interpretation of policy effects. Turning to specific policies, we find that eligibility restrictions affect only registration, while voter registration policies affect registration, turnout, and balloting. In contrast, convenience voting influences turnout and balloting, while voter identification policies influence balloting and counting. Finally, we found null effects for provisional ballot policies.

# 2 ILLUSTRATIVE EXAMPLE: TURNOUT

Each stage of the election franchise involves a different population: registered voters are a subset of the voting eligible population, and voters who turn out are a subset of the registered voter population. Scholars have documented how the use of different population baselines can introduce systematic measurement error (McDonald and Popkin, 2001; Holbrook and Heidbreder, 2010; Stockemer, 2017); however, the operating assumption has still been that the policies under study influence

**Figure 1.** The Election Franchise

voters primarily through turnout. In addition to bias resulting from measurement error, policies may exert separate influences on these populations at different stages, creating a multiplier effect. In this section, we provide an illustration of how estimates of turnout may be biased when earlier stages are ignored, and how inferences might be misinterpreted when later stages are ignored. We show that the magnitude and direction of bias depend on the underlying populations used to calculate turnout.

Figure 1 provides a diagram of the election franchise. The flowchart represents the path a member of the voting age population would take to register, participate on election day, receive a ballot, and have their ballot counted. Below the flowchart are the stages—registration, turnout, balloting, and counting—along with their corresponding outcomes of interest. Registration outcomes include $R_{VAP}$ and $R_{VEP}$: registration rates calculated using the voting age population and voting eligible population, respectively. Outcomes for the turnout stage, the focus of this illustration, are calculated using each of the voting age ($T_{VAP}$), voting eligible ($T_{VEP}$), and registered voter ($T_{RVP}$) populations. Above the franchise flowchart, the variables $X$, $Z_1$, and $Z_2$ correspond to state policies that influence outcomes at the given stage(s). Although state policies and practices exert influence at each stage, we limit the illustrative example to these three variables in order to demonstrate the limitations of a single-stage analysis.

The illustration consists of a simple experiment where members of the voting age population reside in counties. Some counties are randomly assigned to policies $X$, $Z_1$, and $Z_2$, and the remaining

counties comprise the control group. Suppose that an analyst observes all populations within the election franchise, but estimates only the effect of $X$ on turnout. In this *baseline* experiment, the effect of $X$ on turnout is calculated as the difference in turnout between treated counties and control counties.

**Table 1.** Illustration Scenarios

| | **VAP** | **VEP** | **RVP** | $R_{VAP}$ | $R_{VEP}$ | **T** | $T_{VAP}$ | $T_{VEP}$ | $T_{RVP}$ | **B** | $B_{TP}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Baseline** ($X$) | | | | | | | | | | | |
| Control | 1000 | 1000 | 750 | 0.750 | 0.750 | 500 | 0.500 | 0.500 | 0.667 | 500 | 1.00 |
| Treat | 1000 | 1000 | 750 | 0.750 | 0.750 | **475** | 0.475 | 0.475 | 0.633 | 475 | 1.00 |
| | | | | — | — | | *-0.025* | *-0.025* | *-0.033* | | — |
| **Scenario 1: Early Stage** ($X$, $Z_1$) | | | | | | | | | | | |
| Control | 1000 | 1000 | 750 | 0.750 | 0.750 | 500 | 0.500 | 0.500 | 0.667 | 500 | 1.00 |
| Treat | 1000 | **950** | 750 | 0.750 | 0.789 | **475** | 0.475 | 0.500 | 0.667 | 475 | 1.00 |
| | | | | — | *0.039* | | *-0.025* | — | — | | — |
| **Scenario 2: Multiple Stages** ($X$, $Z_2$) | | | | | | | | | | | |
| Control | 1000 | 1000 | 750 | 0.750 | 0.750 | 500 | 0.500 | 0.500 | 0.667 | 500 | 1.00 |
| Treat | 1000 | **950** | **677** | 0.677 | 0.713 | **475** | 0.475 | 0.500 | 0.702 | 475 | 1.00 |
| | | | | *-0.072* | *-0.037* | | *-0.025* | — | *0.035* | | — |
| **Scenario 3: Late Stage** ($X$) | | | | | | | | | | | |
| Control | 1000 | 1000 | 750 | 0.750 | 0.750 | 500 | 0.500 | 0.500 | 0.667 | 500 | 1.00 |
| Treat | 1000 | 1000 | 750 | 0.750 | 0.750 | **475** | 0.475 | 0.475 | 0.633 | **451** | 0.95 |
| | | | | — | — | | *-0.025* | *-0.025* | *-0.033* | | *-0.050* |

The baseline, where only turnout is affected by $X$, is represented by the first panel of Table 1. The population sizes for the voting age population, voting eligible population, registered voter population, turnout voters, and ballots are given by columns **VAP**, **VEP**, **RVP**, **T**, and **B**. The remaining columns provide the outcomes of interest for registration, turnout, and balloting. For simplicity, we establish the true impact of policy $X$ in the baseline scenario as reducing turnout by five percentage points, from 500 individuals to 475. For all scenarios, we assume that control counties exhibit a registration rate of 75% and a turnout rate of 50%. Among treated counties, we assume that each policy has the same effect of reducing the given population by five percentage points. Among these counties, the size of any affected population is indicated in bold.

In each scenario, registration and turnout are calculated for each population. For example, the

effect of policy $X$ on the voting age population in the baseline scenario is calculated as follows:

$$T_{VAP|Control} = \frac{T_{Control}}{VEP} = \frac{500}{1000} = 0.500$$
$$T_{VAP|Treat} = \frac{T_{Treat}}{VEP} = \frac{475}{1000} = 0.475$$
$$\text{Treatment Effect} = T_{VAP|Control} - T_{VAP|Treat} = 0.475 - 0.500 = -0.025$$

Since $X$ affects only turnout, the treatment effect is zero for both $R_{VAP}$ and $R_{VEP}$. The voting age and voting eligible populations are equal in size, so the treatment effect is -0.025 for $T_{VAP}$ and $T_{VEP}$. Given the assumption that not all eligible voters will register, the treatment effect for $T_{RVP}$ is slightly larger in magnitude, at -0.033. Next, we consider the implications of estimating the effects on turnout when policies influence the size of the relevant populations in treatment groups for other stages. Specifically, we consider: an early-stage policy $Z_1$ that influences the VEP; a policy $Z_2$ that influences multiple stages and therefore the VEP and RVP; and a case where policy $X$ influences both turnout $T$, and balloting $B$, a later stage.

**Scenario 1: Early Stage Omission** In the first scenario, policy $X$ reduces turnout and policy $Z_1$ reduces the eligible population, but the analyst estimates only the effect of $X$. For example, $Z_1$ might be a policy that reduces the eligible voter population by excluding temporary residents such as college students (Niemi et al., 2009). When $Z_1$ reduces the number of eligible voters in the treatment group to 950, the outcomes for both registration and turnout are impacted. As shown in the second row of the Scenario 1 panel, the registration rate in the treatment group increases from 75% to 78.9%, and the turnout rates calculated from the VEP and RVP appear no different from the control group. If the analyst calculated turnout using the VAP, no bias is introduced, as this population is not affected by $Z_1$. However, the remaining effects for $T_{VEP}$ and $T_{RVP}$ would appear to be null, resulting in a false negative. While we assume for this illustration that control counties are unaffected, the bias would be eliminated if both treatment and control counties are influenced by policy $Z_1$.

**Scenario 2: Multiple Stage Omissions** The second scenario is similar to the first, except that multiple stages are omitted, as policy $Z_2$ separately reduces both the eligible population and the number of registered voters. For example, restrictions on the voting rights of convicted felons may reduce the number of eligible voters as well as the number of registered voters. A recent study shows that children of incarcerated or formerly incarcerated parents are less likely to register, less likely to vote, and less likely to engage in community service (Lee et al., 2014). This scenario could also result if the voters deemed ineligible would have registered if eligible. The Scenario 2 panel of Table 1 indicates the affected populations, VEP and RVP, in bold. The registration outcomes are biased regardless of underlying population. Registration denoted $R_{VAP}$ is 7.2 percentage points lower among treated counties than among control counties, and $R_{VEP}$ is 3.7 percentage points lower. The treatment effect for turnout is null if calculated using the VEP and 3.5 percentage points larger if calculated using the RVP. Notably, $T_{RVP}$ changes sign, such that the analyst may interpret policy $X$ to have a positive effect on turnout.

More generally, if we calculate turnout as a proportion of the voter eligible population and do not account for the effects of a given policy on registration, then the estimate of turnout will be biased. It will be overestimated if the policy reduces registration and underestimated if it increases registration. Even if the policy does not affect registration, our choice of baseline population can affect the substantive interpretation of the results because the estimates will be interpreted relative to the size of that population. As voters move through the election franchise, the population of participants necessarily shrinks. If the appropriate population for that stage is smaller, then the magnitude of the effects may be interpreted as substantively insignificant.

**Scenario 3: Late Stage Omission** In the third scenario, policy $X$ reduces both turnout and the number of voters who receive regular ballots. For example, strict identification policies may deter low-income or less educated registered voters from voting on election day due to the barriers associated with acquiring the proper identification (Alvarez et al., 2008). In addition, voters who turn out to vote on election day but do not have the proper ID may receive provisional ballots, lowering the number of regular ballots (Pitts, 2008). In this scenario, the registration and turnout

outcomes are not affected by the policy's influence on balloting. However, the proportion of voters receiving regular ballots, $B_{TP}$ is reduced by 5 percentage points. An analyst examining only turnout may misinterpret the results by claiming that policy $X$ has a small impact on voter participation, when the magnitude of the effects when considering turnout and balloting is actually twice as large.

The literature provides ample evidence of policies that affect some combination of election franchise stages. For example, election day registration affects both registration and turnout (Street et al., 2015). Photo identification policies increase the number of registrants (Valentino and Neuner, 2016) but lower the number of traditional ballots (Pitts, 2008). Registration websites influence both registration and turnout. Also, many models utilize demographics such as race as controls in elections outcomes, but racial differences may appear across all stages. Bias may also result from interactions between policies that may not be accounted for in a model (Burden et al., 2014). We use data from the 2008, 2012, and 2016 presidential elections to demonstrate an alternative, multistage approach.

## 3 STATE POLICIES AND THE ELECTION FRANCHISE

Using a multistage approach, we estimate the effects of several state policies and practices on registration, turnout, balloting, and counting. We focus on policies that have historically had a disparate impact on voters, based on either research or court rulings. These fall into five categories: felon eligibility restrictions, voter registration, convenience voting, voter identification, and provisional balloting.

### 3.1 Felon Eligibility Restrictions

Each state determines whether and how citizens who are convicted felons can vote in their state. Although there is a growing movement to restore felon voting rights, most individuals convicted of felony charges are restricted from voting. The Sentencing Project reports that 6.1 million Americans were prevented from voting in 2016 (Uggen et al., 2016) due to felony disenfranchisement, constraining the voting age population by 2.5 percent. Felony voting restrictions affect blacks at a disproportionate rate—7.4 percent of voting age blacks were disenfranchised compared to 1.8 of

non-blacks.

## 3.2 Voter Registration

Voters in most states are required to register before they are allowed to vote, but practices vary considerably. Election administrators follow either established practices or legislation, when determining deadlines for registration and allowing voter the option to register through online voter registration, automatic voter registration, or same day registration (National Conference of State Legislatures, 2016).

### *3.2.1 Election Day Registration*

States set registration deadlines in order to ensure that voters have an opportunity to become knowledgeable about the candidates and proposals, and to give election administrators adequate time to update the rolls (Lee, 2010). The National Voting Rights Act (NVRA) of 1993 has provisions on voter registration deadlines, but these have not had a large impact on turnout because people tend to register too close to election day[1] (Street et al., 2015; U.S. Department of Justice, 2017). As a result, the earlier the deadline imposed by the state, the smaller the size of the electorate (de Oliveira, 2009). Studies generally show that reducing the number of days from the deadline to the election increases voter turnout by three to four percentage points (Neiheisel and Burden, 2012; Burden et al., 2014). Wide adoption of election day registration would increase the number of registrants by two percentage points and turnout by three percentage points (Street et al., 2015; Larocca and Klemanski, 2011).

### *3.2.2 Online Voter Registration*

In 2016, 35 states and Washington D.C. had voter registration websites that allow eligible voters to register online. Online voter registration websites have had a positive effect on turnout—Yu found a 3 percentage point increase in turnout in states that offered online voter registration (Yu, 2019). Since 2016, more states have implemented online websites. As of June 2019, 42 states and Washington D.C. host online registration portals (Yu, 2019).

[1] NVRA requires states to set a cutoff of no more than 30 days before an election

#### 3.2.3 Automatic Voter Registration

In 15 states and Washington D.C., citizens who are already registered with a government agency, like the Department of Voter Vehicles, are automatically registered to vote (National Conference of State Legislatures, 2019). The Brennan Center reports that there was between 9 and 94 percent increase in registration due to AVR using data from 2013 and 2017 (Brennan Center for Justice, 2019b). Oregon, the first state to implement automatic voter registration in 2016, witnessed a 15.9 percent increase in registration rates.

#### 3.2.4 Voter List Maintenance

State election offices maintain voter registration lists—a practice that often includes removing inactive voters from the voter rolls and making the voter list available to qualifying groups. Brater has found that collectively, almost 16 million voters were removed from the rolls, constraining the registered population between 2014 and 2016 and marking a 33 percent increase in removed voters (Brater et al., 2018). While some states provide voter lists freely to the public, others are more restrictive about sharing voter lists either by limiting access to political parties or by requiring a high purchase price in order to acquire the voter list. Voter lists contain a trove of personal data including name, address, birth year or date. In cases of voter identity theft, the low cost of accessing statewide voter data may affect provisional balloting since more voters would be asked to cast provisional ballots when they go to the wrong precinct (Sweeney et al., 2017).

### 3.3 Convenience Voting

Convenience voting is defined as all forms of voting that do not occur on election day or in a traditional location. Convenience voting, overall, has a positive effect on turnout, ranging from two to four percentage points (Gronke et al., 2008).

#### 3.3.1 Vote By Mail

Studies of vote-by-mail (VBM) policies have produced mixed results. Southwell and Burchett originally found that in Oregon, VBM resulted in a 10 percentage-point increase in turnout (Southwell and Burchett, 2000). Researchers were unable to replicate this finding, instead finding that

VBM influenced turnout in only local (subfederal) elections (Gronke and Miller, 2012). Another study reports that a mandatory VBM policy in California lowered turnout by 13 percentage points, although the authors argue that this decline can be mitigated by improved communication (Bergman and Yates, 2011).

#### *3.3.2 Absentee Voting*

Twenty-seven states allow voters to request absentee ballots freely ("no-excuse absentee voting") (U.S. Election Assistance Commission, 2017). The Current Population Survey reports that out of the voters living in states that allow no-excuse absentee voting, 42 percent actually voted with absentee ballots, which suggests a positive effect on balloting (MIT Election Data and Science Lab, ND).

#### *3.3.3 Early Voting*

Burden et al find that early voting lowers turnout by about 3 to 4 percentage points (Burden et al., 2014). Fullmer finds that counties with significant numbers of black voters tend to have lower early voting site density, where voting site density is measured as the number of early voting sites in a county per 1,000 voting-age residents (Fullmer, 2015). This result, explained by accounting for state policies, suggests that blacks are more likely to live in a county with limited access to early voting.

#### *3.3.4 Polling Place Access*

Recent policies and practices have either reduced the number of polling places, or increased access through vote centers. A 2016 report by the Leadership Conference Education Fund examined 361 counties in the US and found that 45 percent of the counties closed at least some polling places, resulting in a total of 868 fewer polling places in the 2016 presidential election than in prior years (Simpson, 2016). Brady and McNulty report that changes in polling places in Los Angeles County in 2003, such as consolidating and decreasing polling place density in an area, decreased turnout by 1.85 percent (Brady and McNulty, 2011). Vote centers are polling locations that allow individuals to vote regardless of residential precinct. Stein and Vonnahme find that election day vote centers

had a positive effect on turnout using data from the first county to implement vote centers in the United States in 2003. They found turnout to be 2.6 percent higher in the treatment group who had access to election day vote centers in Colorado (Stein and Vonnahme, 2008).

### 3.4 Voter Identification

Voter identification policies affect who is able to vote with a traditional ballot. These "ID" laws have grown in prominence only recently in order to decrease voter impersonation at the polls and increase confidence in the voting system, but many studies show that these laws may actually decrease turnout. Before the 2014 elections, only four states had strict ID laws that require a form of ID to submit a ballot (Highton, 2017). In 2016, there were ten states with strict ID laws. Alvarez et al. report that stricter ID requirements tend to lower turnout by two percentage points, primarily among less educated and lower income residents (Alvarez et al., 2008). Another study looking at the impact of voter ID policies on different racial groups finds that strict ID policies depressed turnout among Hispanic voters but only when the requirement was new (Vercellotti and Anderson, 2009). Given the variability in findings, a debate over the effects of these laws has developed. Hajnal et al. use data from five Cooperative Congressional Election Study (CCES) surveys to observe that strict ID laws lower turnout by 10 percentage points among Latinos, by 8.8 ppt among Democrats, and 3.6 ppt among Republicans (Hajnal et al., 2017). They also differentiate a stricter subset of states that require a photo ID only rather than all forms of ID. In response, Grimmer et al. find that Hajnal et al. overstated the share of the voters in some states by about 25 ppt, while underestimating turnout by 10 ppt in other states (Grimmer et al., 2018). They note that when the data inaccuracies are corrected, one cannot draw firm conclusions regarding the effect of ID laws on minority voters. Accounting for modeling problems with estimating voter turnout, strict ID laws' effects on turnout are no longer statistically significant (Erikson and Minnite, 2009).

### 3.5 Provisional Ballots

The Help America Vote Act of 2002 (HAVA) was designed to aid states in removing outdated voting machinery, administering provisional and sample ballots, and improving accessibility to voting

(Burris and Fischer, 2016). While HAVA requires that polling places provide provisional ballots, not all states count them (National Conference of State Legislatures, 2015). For example, only Maine fully counts provisional ballots that are cast in the wrong precinct. While provisional ballots are intended to be a safety net for some voters, provisional ballots can also lead to administrative confusion and disenfranchisement for eligible voters if their votes are ultimately not counted because of a state's provisional ballot policy (Weiser, 2006).

## 4 DATA

In 2002, HAVA established the US Election Assistance Commission (EAC), which has conducted surveys of all US counties following federal elections, every two years since 2004[2]. These surveys comprise comprehensive, county-level voter registration and election administration information (Field et al., 2014; Fullmer, 2015).[3]

We compiled information on individual state-level policies and state partisanship by reviewing reports from the National Conference of State Legislatures, The Pew Charitable Trusts, and the Brennan Center for Justice (National Conference of State Legislatures, 2015, 2018; Pew Center on the States, 2013; Norden et al., 2012). For state-level information on voter registration websites and their features, we used measures from Sweeney et al (Sweeney et al., 2017). Finally, we retrieved HAVA spending from the USASpending API (U.S. Department of the Treasury, 2019).

The unit of analysis for this study is the county-year. We retrieved election returns for each presidential election from 2008 to 2016 from the Federal Register, and annual demographics from the US Census Bureau API, specifically the American Community Survey and Small Area Poverty and Income Estimates (U.S. Census Bureau, 2019)[4]. The Census Bureau uses identifiers based on the Federal Information Processing Standards (FIPS), and we use these FIPS codes to match election and demographic data to the EAC survey results. We supplement the Leip data by using

[2]We include data from the Election Administration and Voting Survey (EAVS) as well as an EAVS supplement on the Uniformed and Overseas Citizens Absentee Voting Act.

[3]State voter rolls, which form the basis for many states' EAC data, may not correspond to the actual voting population. To validate our results, we conducted a sensitivity analysis using alternative datasets. See Appendix A.

[4]We note that the voting eligible population is available as part of the ACS for 2016 only. We imputed estimates of the voting eligible population for the preceding years.

CPS registration figures as a baseline to compare the accuracy of the other two sources. Adjusting the Leip county-level voter registration figures to account for the corresponding state-level error with respect to CPS, we are able to construct a third dataset for analysis.

# 5 METHODOLOGY

Since counties are nested within states, we use hierarchical linear modeling (Hersh and Nall, 2016; Hicks et al., 2016; Dyck et al., 2009) to estimate logistic regression coefficients for each of the four stages, as follows.

$$\text{Population Rate (Stage)} = \beta_{0[c,s]} + \beta_k \text{Policy}_s + \beta_j \text{Control}_c + \varepsilon$$

where $\beta_{0[c,s]}$ is the set of random intercepts for each county and state.

## 5.1 Dependent Variable: Rate

Studies covering elections as far back as 1840 calculate turnout as the sum of votes cast divided by the number of eligible voters (Engstrom, 2012). Municipalities determined eligibility on the basis of age, race, and sex, per the Constitution, rather than local rules. Various measures of turnout appear in the literature, including those based on the voting eligible population (VEP), voting age population (VAP), and registered voter population (RVP) (Alvarez et al., 2008; Erikson and Minnite, 2009; Stockemer, 2017).

We define *registration rate* as the number of registered individuals, divided by the voting eligible population. In order to maximize the completeness of our data, we define total voter registration as all registrations rather than solely active registrations. Next, the *turnout rate* is the number of individuals who participated in the election on or before election day, divided by the registered voter population. Finally, we compute the *ballot rate* as the number of voters who received regular ballots, rather than provisional ballots, divided by turnout and the *count rate* is the number of voters whose ballots were accepted, divided by turnout.

## 5.2 Independent Variables

We include state-level variables for the following policies: felon eligibility restrictions, election day registration, percentage of voters purged by the state prior to the election, registration website, all-mail voting, absentee-list voting, early voting, strict identification requirements, photo identification requirements, and whether provisional ballots are counted.

We include state-level political variables including indicators for whether the state legislature had a Republican or Democratic majority[5]. We also include controls for administrative practices such as high poll density (which we define as the number of poll workers per county divided by the registered voter population), the amount of money spent to implement provisions of HAVA, and whether the state has low-cost voter data. These election administration variables control for variation in resources, which influence the number of polls and poll workers, the quality of voting machinery, and voter roll management, respectively.

At the county level, we include the percentage of the population with at least a high school diploma, percent unemployed, median income, median age, percent female, percent black, and percent Latino. For the turnout, ballot, and count models, we include an estimate of the rates for all preceding stages. This ensures that the constants reflect baseline rates for each stage (Erikson and Minnite, 2009). We present findings in five policy areas: eligibility restrictions, voter registration, convenience voting, voter identification, and provisional balloting. Table 2 summarizes the direction and magnitude of the findings in each policy area. The *Expectation* column indicates the direction of the policy's effect on the given outcome based on existing literature. For stages denoted "N/A," we were unable to identify policy effects in the literature as of this writing. The *Finding* column indicates the direction of change based on our estimates[6]. Stages denoted "Null" refer to estimates with p-values greater than 0.05. Of the five policy areas reported in Table 2, two—voter registration and voter identification—include policies that influence multiple stages. These multistage effects support our assertion that focusing on a single stage may result in biased policy effects.

Returning to the illustrative example, our results correspond to the policy-stage interactions

[5] One study included whether an individual resided in a southern state (Burden et al., 2014). This may be a proxy for the constraints of the Voting Rights Act, which only affected certain states, or it may represent a history of rampant

**Table 2.** Summary of Findings by Policy Group and Stage

| | Direction of Change: | | |
|---|---|---|---|
| | Expectation | Finding | Magnitude |
| Eligibility Restrictions | | | |
| Registration | – | – | 1.3 ppt |
| Turnout | – | Null | |
| Balloting | N/A | Null | |
| Counting | N/A | Null | |
| Voter Registration | | | |
| Registration | +/– | + | $\leq$ 2.2 ppt |
| Turnout | + | +/– | $\leq$ 6.1 ppt |
| Balloting | N/A | + | 0.2 ppt |
| Counting | N/A | Null | |
| Convenience Voting | | | |
| Registration | N/A | Null | |
| Turnout | + | + | 7.6 ppt |
| Balloting | N/A | – | 1.1 ppt |
| Counting | N/A | Null | |
| Voter Identification | | | |
| Registration | N/A | Null | |
| Turnout | – | Null | |
| Balloting | – | +/– | $\leq$ 1.6 ppt |
| Counting | N/A | – | $\leq$ 0.2 ppt |
| Provisional Ballots | | | |
| Registration | N/A | Null | |
| Turnout | N/A | Null | |
| Balloting | N/A | Null | |
| Counting | + | Null | |

outlined in Figure 1. Eligibility restrictions correspond to lower registration rates, an early stage that becomes embedded in the calculation of turnout, consistent with the first scenario where turnout is a function of the observed policy $X$ and unobserved policy $Z_1$. Voter registration policies affect multiple stages: registration, turnout, and balloting. This is consistent with the illustration's second scenario, where turnout is influenced by policy $X$ and unobserved policy $Z_2$ at multiple stages. Voter identification policy relationships also fit this pattern, influencing both balloting and counting. Finally, we do not find a relationship between voter identification policies and turnout. Examining only turnout would lead one to conclude that these laws do not affect voter participation, when they in fact affect voters at a later stage in the process.

Turning to specific policies, we report estimates of the population proportion for each of the registration, turnout, balloting, and counting stages in Table 3. The constant represents the baseline rate across counties, or the proportion of the population that participated in a given stage.

### 5.3 Eligibility Restrictions

Felon eligibility restrictions alone do not significantly affect registration. However, an interaction between felon restrictions and the percentage of black residents is statistically significant. This indicates that in counties with a higher than average percentage of Blacks, felony restrictions lower registration by 1.3 percentage points. Felon eligibility restrictions, with or without interactions, do not significantly affect the remaining stages.

### 5.4 Voter Registration

Election day registration affects only one stage, increasing turnout by 6.1 percentage points. The magnitude of this estimate is approximately two to three times the size of other estimates in the literature, and in the same direction. This provides further evidence that election day registration increases turnout, perhaps more substantially than previously thought. The percentage of voters purged by the state corresponds an increase in registration of 0.1 percentage points and a reduction in turnout of 0.2 percentage points. The presence of a state-wide registration website corresponds to

voter suppression in the south.

[6] See Table 3 for estimates.

**Table 3.** Linear Mixed Effects Regression Results

| | Registration | Turnout | Balloting | Counting |
|---|---|---|---|---|
| Constant | 0.89242*** | 0.68200*** | 0.99833*** | 0.99894*** |
| Eligibility Restrictions | | | | |
| Felon Voting | −0.03128 | 0.01403 | −0.00096 | −0.00094* |
| Felon Voting*% Black | −0.01309*** | −0.00033 | 0.00121* | 0.00026* |
| Voter Registration | | | | |
| Same Day Registration | 0.00068 | 0.06070*** | −0.00196 | 0.00022 |
| Pct Voters Purged | 0.00137** | −0.00174*** | 0.00021 | −0.00001 |
| Registration Website | 0.02152*** | −0.01227*** | −0.00222*** | 0.00021 |
| Convenience Voting | | | | |
| All-Mail Voting | −0.01504 | 0.07637** | 0.00206 | −0.00003 |
| Early Voting | −0.01440 | −0.02089 | −0.00636* | −0.00084 |
| Absentee List Voting | −0.02399 | −0.00531 | −0.01079** | 0.00027 |
| Voter Identification | | | | |
| Strict ID Law | −0.02129 | 0.00002 | −0.01610*** | −0.00166** |
| Photo ID Required | 0.03626* | −0.01135 | 0.01157*** | 0.00100* |
| Balloting | | | | |
| Provisional Balloting | −0.00299 | −0.00794 | −0.00480 | −0.00042 |
| High Poll Density | 0.00801*** | −0.00792*** | −0.00030 | −0.00019** |
| HAVA Spending | −0.00196* | −0.00410*** | 0.00109*** | 0.00025*** |
| Low Cost Voter Data | −0.00851*** | 0.02012*** | 0.00041 | −0.00046** |
| Republican Majority | −0.00431** | 0.00006 | 0.00027 | 0.00012 |
| Democratic Majority | −0.01570*** | −0.00035 | −0.00028 | −0.00006 |
| % Highschool Grad | 0.00856*** | 0.01300*** | 0.00018 | −0.00010 |
| % Unemployed | 0.00207* | −0.00536*** | −0.00003 | −0.00009* |
| Ln Median Income | 0.02089*** | 0.03147*** | −0.00124*** | −0.00036*** |
| Median Age | 0.02266*** | 0.02438*** | 0.00087*** | 0.00015*** |
| % Women | 0.02876*** | 0.00866*** | −0.00086*** | −0.00018*** |
| % Black | 0.01934*** | 0.01199*** | −0.00235*** | −0.00066*** |
| % Latino | 0.02242*** | −0.00131 | −0.00066** | 0.00002 |
| Registration Rate | | −0.03549*** | 0.00084*** | 0.00049*** |
| Turnout Rate | | | 0.00238*** | 0.00081*** |
| Ballot Rate | | | | 0.00168*** |
| Observations | 8,996 | 8,650 | 8,649 | 8,649 |

*Note: Includes year, county, and state random effects* *p<0.1; **p<0.05; ***p<0.01

an increase in registration of 2.2 percentage points, a decrease in turnout of 1.2 percentage points, and a decrease in balloting of 1.1 percentage points. Across stages, voter purging and registration websites are positively correlated with registration and negatively correlated with later stages. We do not make causal claims, as these rates are likely endogenous. For example, counties with higher rates of registration may be targeted for voter purges.

### 5.5 Convenience Voting

We expect early voting to be beneficial to certain populations, particularly low-income individuals and minorities who may have more difficulty getting time off from work to vote on election day. In 2016, 37.3 percent of Black voters used early voting, compared to 39.9 percent of white voters and 43.9 of Hispanic voters (United States Census Bureau, 2018). By comparison, in the presidential elections of 2008 and 2012, over 70 percent of African American voters used early voting compared to just over 50 percent of white voters (American Civil Liberties Union, 2014). However, according to our results, early voting has no statistically significant effect on registration, turnout, or counting. It has a small and weakly significant effect of 0.6 percentage points on balloting. Given that our analysis is at the county level, additional studies at the individual level may help to investigate interactions with voter characteristics such as race.

Vote-by-mail (VBM) policies correspond to a large, statistically significant effect of increasing turnout by 7.6 percentage points. Vote-by-mail had no effects on the other stages. This result is consistent with the literature, based on at least one finding that VBM lowered turnout in California (Kousser and Mullin, 2007). In contrast to vote-by-mail, the availability of absentee list voting correspond to a lower balloting rate by 1.2 percentage points.

### 5.6 Voter Identification

Voter ID laws had no effect on registration or turnout, but had a statistically significant effect on balloting. Strict ID laws correspond to lower turnout by 1.6 percentage points. These results suggest that voters in states with strict ID laws are more likely to receive a provisional ballot and somewhat less likely to have their ballots included in the final count. Although this finding contradicts some

findings the literature, it is an intuitive result. Voters without the proper identification are excluded from casting a regular ballot on election day, as mandated by HAVA. This effect may not be registered by voter surveys because people may say they voted even when they don't get a regular ballot. Strict ID laws also lower the count rate by 0.2 percentage points, a small but statistically significant finding. This may suggest that those states with strict ID laws in place are also likely to pass measures that constrain the ability to count provisional ballots. In contrast, photo ID laws correspond to higher ballot rates by 1.2 percentage points.

### 5.7 Demographic Controls

With the exception of unemployment, all of the demographic variables correspond to one- to two-point increases in registration and turnout. Counties with higher percentages of high school graduates and higher levels of income report higher rates of registration and turnout. Higher unemployment corresponds to a small (half-percentage-point) decrease in turnout. Higher median age and a higher percentage of women corresponds to higher rates of registration, turnout, balloting, and counting. Counties with higher percentages of women, blacks, and Latinos report higher registration and turnout, but lower balloting and counting. These results may correspond to voter suppression efforts, but as noted earlier, this question is better suited to an individual-level analysis.

## 6 DISCUSSION

Multistage analysis of the election franchise is important for a number of reasons. First, even small differences in empirical results can have considerable implications. Many of the races in past election cycles have been decided within a margin of two or three percentage points. During the 2012 presidential election, two states had margins of two points or less(The Cook Political Report, 2017), and in 2016, eight states were decided within a vote margin of less than three percentage points. Second, policies that have a disparate impact on voters can have broader consequences in terms of voters' constitutional rights. The Supreme Court has weighed in on the constitutionality of many of these policies—an indicator of their salience.

Recent state laws and policies point to a larger awareness that the ability to influence outcomes

in the voting franchise requires intervention at multiple stages, not just the more commonly studied turnout. Many of the election policies discussed in this paper are contested in both state and federal judicial courts and ballots. For example, in 2018 Florida voted to pass Amendment 4 to restore voting rights to felons. In the past five years alone, 11 states have passed some form of legislation regarding the restoration of voting rights for felons (National Conference of State Legislatures, 2018). As of 2019, 21 states and Washington, D.C offered election day registration. In addition, 38 states plus Washington, D.C offer voter registration websites, an increase of 7 states since 2016 (Brennan Center for Justice, 2019a).

State legislation regarding election administration varies highly per state and targets specific aspects of the voting process. Accordingly, a holistic analysis of the voting franchise can be difficult to evaluate. This study urges a closer inspection of the assumptions associated with choosing to isolate policy effects on election outcomes. Our findings prompt a closer look at each of the policies in light of the entire eligible population's voting experience, from whether a voter can register to whether their full vote will be counted.

We reiterate the importance of examining the holistic effect of policies on political participation. A single-stage focus can lead to biased inferences or a misinterpretation of valid inferences. Our findings provide a sound starting point for further research. Our analysis points to the directional policy effects but each policy can be further investigated in light of the bias estimates and scenarios we demonstrated in Section 2.

# A APPENDIX: SENSITIVITY ANALYSIS

To understand the extent of bias that may be introduced due to inaccuracies within a particular dataset, we utilize relevant 2008, 2012, and 2016 election administration data from three different sources and perform a sensitivity analysis.

## A.1 Data Description

The original data set for the model relied on county-level registration, turnout, and voting policy data from the Election Assistance Commission (EAC) as well as population and demographic figures

from the Census Bureau's American Community Survey estimate for 2008, 2012, and 2016. Official registration totals reported by election authorities to the EAC may be unreliable. Comparisons to census data suggest that EAC data tends to overcount registered voters per county. As a result, we supplement the simulated estimates with data from Dave Leip's Atlas of U.S. Presidential Elections (Leip, 2021) and the Census Bureau's Current Population Survey (CPS).

Dave Leip's Atlas of U.S. Presidential Elections was established in 1992 as a reference site for presidential, senatorial, and gubernatorial elections. The site includes county-level data on voter registration, turnout, and political party popular vote totals compiled from official election agencies within each state. Leip election data have been used as a reference by major media outlets including The Atlantic, The Wall Street Journal, Roll Call, CBS News, Politico, and FiveThirtyEight.

The biannual Current Population Survey (CPS) conducted by the U.S. Census Bureau includes a national survey of voting and registration totals for presidential and midterm elections within each state. This survey is considered by many researchers to provide the most accurate voter registration and turnout estimates in presidential elections (Burden et al., 2014); however, its unit of analysis is state rather than county. To address this issue, we use CPS as a baseline to compare the accuracy of the other two datasets, aggregated at the state level. Whereas EAC overcounts CPS voter registration estimates by an average of more than 22 percent at the state level, Leip overcounts CPS by an average of 20 percent. Meanwhile, EAC and Leip turnout figures match CPS turnout within a margin of five percentage points.

Given the magnitude of its registration overestimate, we treat the original EAC data as the upper bound for our model. To create the lower bound dataset, we take the Leip data and adjust the county-level voter registration figures by the corresponding state-level error with respect to CPS. The unadjusted Leip data provides voter registration figures in between the EAC and CPS-adjusted Leip datasets. Incorporating these three datasets into our model allows us to gauge how sensitive our results are to systematic errors in the data.

### A.2 Model Replication with Simulated Data

In replicating the model for the two additional data sources, we merge the EAC data with the Leip and CPS-adjusted Leip data to form two new datasets. By replacing EAC registration and turnout with the Leip and CPS-adjusted Leip registration and turnout figures, variables such as residual registration rate and residual turnout rate are recalculated for the two new datasets, whereas residual balloting rate, residual counting rate, demographic figures, and voting policy data remain the same. Residual registration, turnout, balloting, and counting rates are replaced with rates calculated by subtracting the underlying rate from 1. We then replicate the baseline regression using the new datasets and create new multistage regression estimate tables.

### A.3 Simulation Results

Using the turnout estimate tables for the voting age population (VAP), voting eligible population (VEP), and registered voter population (RVP), we analyze the differences in the variable coefficients produced by the EAC, Leip, and CPS-adjusted Leip regressions. The coefficients from the three regressions are displayed side-by-side on a plot with a vertical line at zero to allow for detailed comparison of the magnitudes. We then obtain the corresponding standard errors and plot error bars showing the 95 percent confidence interval for each coefficient. Three plots were constructed for VAP, VEP, and RVP respectively.

Examining the data visualizations, we observe that the county-level demographic variables produce coefficient magnitudes with low variability and narrow confidence intervals in the positive or negative direction. On the other hand, the state-level voting policy variables produce less significant coefficient magnitudes, with wider confidence intervals that extend across the line at zero. The RVP plot shows a change in both sign and in magnitude for coefficients corresponding to percent of voters purged and existence of a voting registration website. With the exception of these two variables, the estimates produced by the EAC, Leip, and CPS-adjusted Leip datasets are similar in magnitude and exhibit overlapping confidence intervals across VAP, VEP, and RVP.

**Table 4.** Linear Mixed Effects Regression Results (Leip Data)

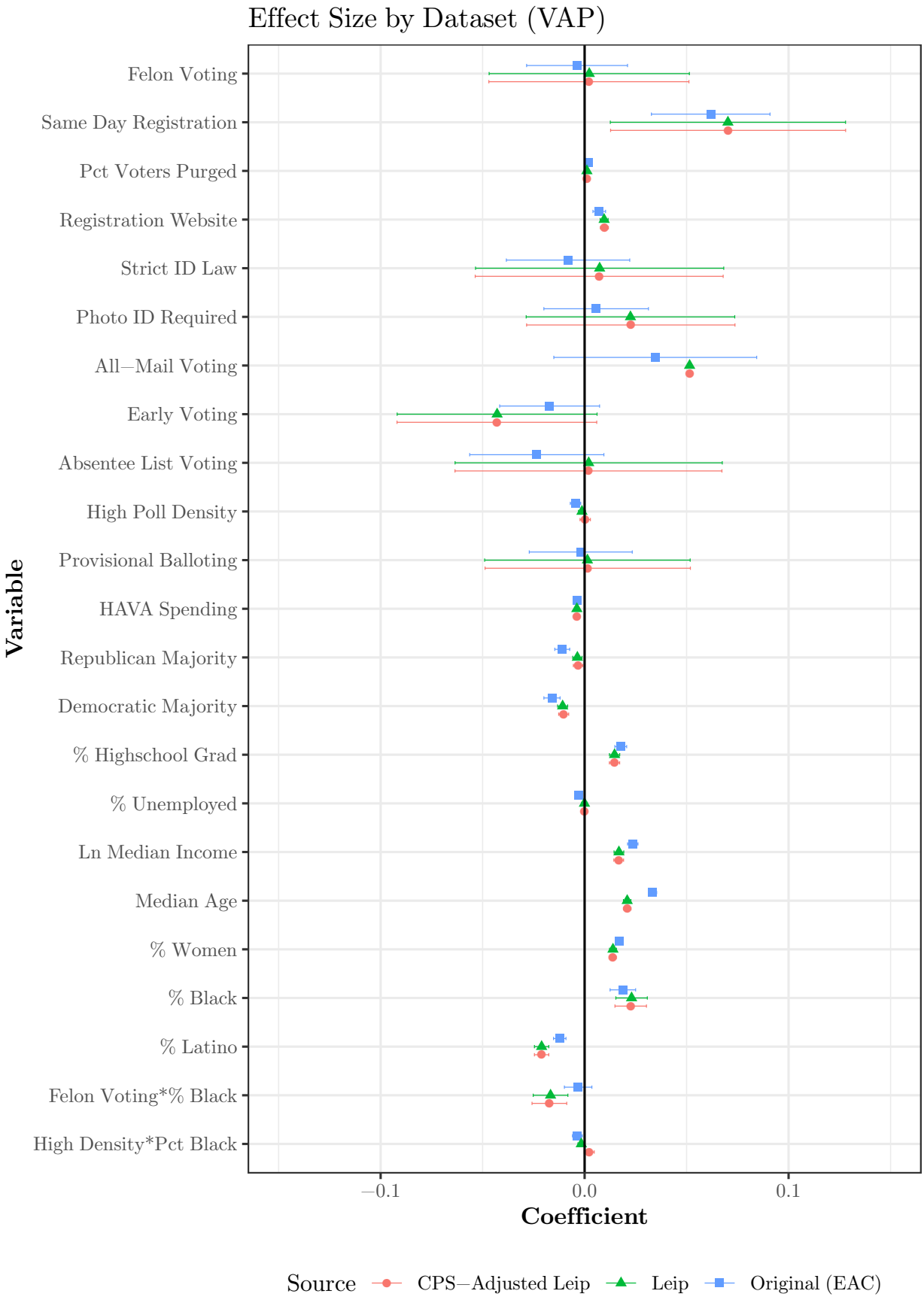
| | Dependent Variable (Rate) | | | |
|---|---|---|---|---|
| | Registration | Turnout | Balloting | Counting |
| Constant | 0.87889*** | 0.65867*** | 0.98852*** | 0.99549*** |
| Felon Voting | 0.00410 | 0.01881 | −0.00680 | −0.00079 |
| Felon Voting*% Black | −0.02678*** | 0.00018 | −0.00166 | 0.00011 |
| Same Day Registration | −0.08564* | 0.07165*** | 0.00614 | 0.00186 |
| Pct Voters Purged | −0.00096** | 0.00174*** | −0.00022 | −0.00008 |
| Registration Website | 0.00560*** | −0.00292*** | −0.00139 | 0.00049** |
| All-Mail Voting | −0.00152 | 0.00610*** | −0.01764*** | −0.00008 |
| Early Voting | −0.02818 | 0.07874** | 0.00829 | 0.00009 |
| Absentee List Voting | −0.10331** | −0.00489 | 0.00679 | −0.00016 |
| Strict ID Law | 0.02468 | 0.00085 | −0.00873 | 0.00255* |
| Photo ID Required | −0.10433* | 0.00924 | 0.00053 | 0.00315** |
| Provisional Balloting | 0.07973* | −0.00920 | 0.00536 | −0.00094 |
| High Poll Density | 0.02512 | 0.00128 | −0.00650 | 0.00085 |
| HAVA Spending | −0.00101 | −0.00505*** | −0.00137 | 0.00044*** |
| Low Cost Voter Data | 0.01993*** | −0.00170 | 0.01614*** | 0.00036 |
| Republican Majority | 0.00520*** | −0.00287** | 0.00699*** | 0.00071** |
| Democratic Majority | −0.00239 | −0.00809*** | 0.01321*** | 0.00101*** |
| % Highschool Grad | 0.00806*** | 0.01215*** | 0.00014 | −0.00032* |
| % Unemployed | 0.00157 | −0.00332*** | −0.00002 | −0.00020 |
| Ln Median Income | 0.01048*** | 0.02533*** | −0.00640*** | −0.00064*** |
| Median Age | 0.01803*** | 0.01585*** | −0.00198** | −0.00021* |
| % Women | 0.02434*** | 0.00327*** | −0.00580*** | −0.00058*** |
| % Black | 0.02310*** | 0.00837*** | −0.00451* | −0.00068* |
| % Latino | 0.01145*** | −0.00634*** | −0.00543*** | −0.00046*** |
| Registr. Rate | | −0.03050*** | 0.01682*** | 0.00222*** |
| Turnout Rate | | | 0.00641*** | 0.00048*** |
| Ballot Rate | | | | 0.01546*** |
| Observations | 8,934 | 8,934 | 8,934 | 8,934 |

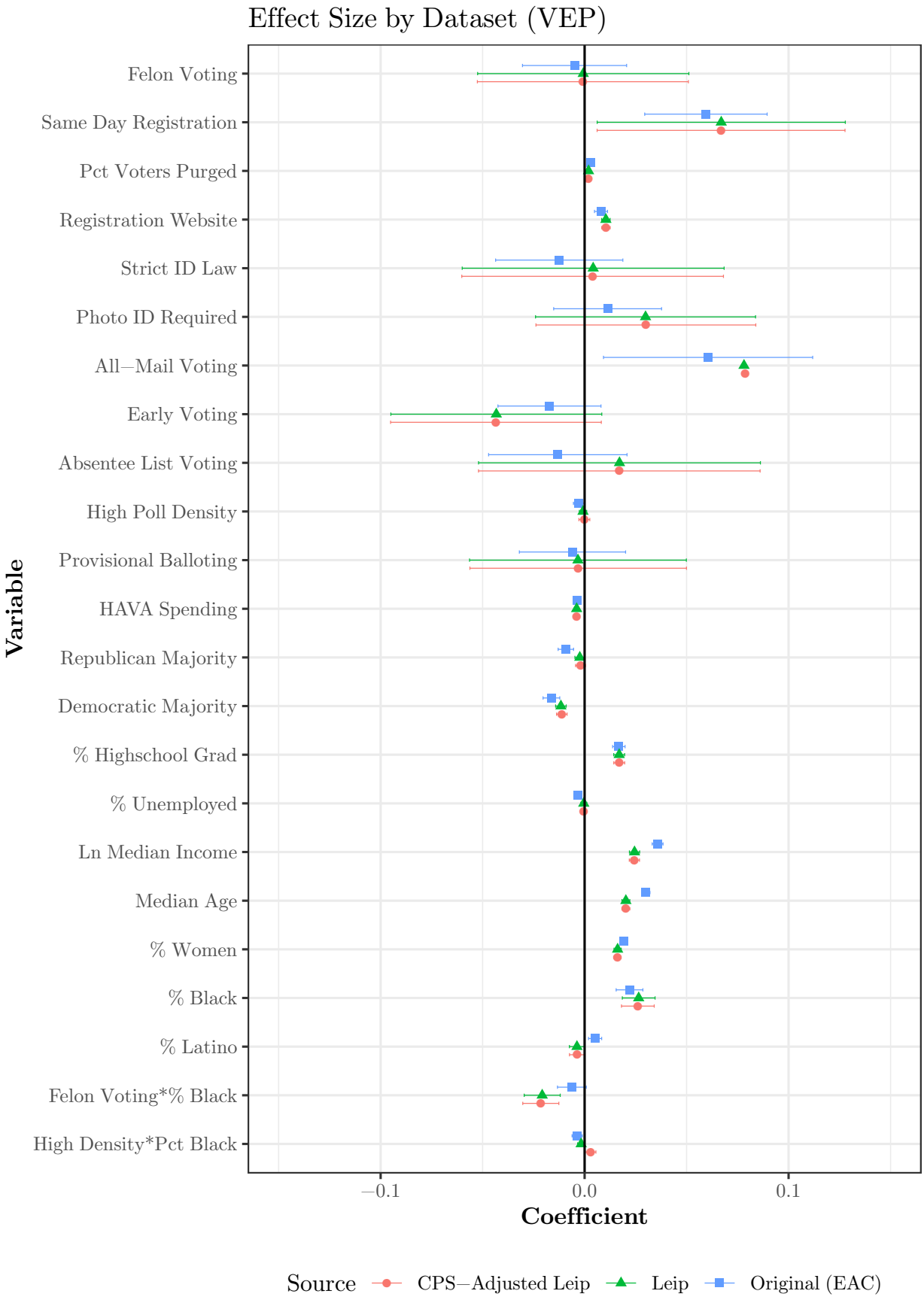
*Note:* *p<0.1; **p<0.05; ***p<0.01

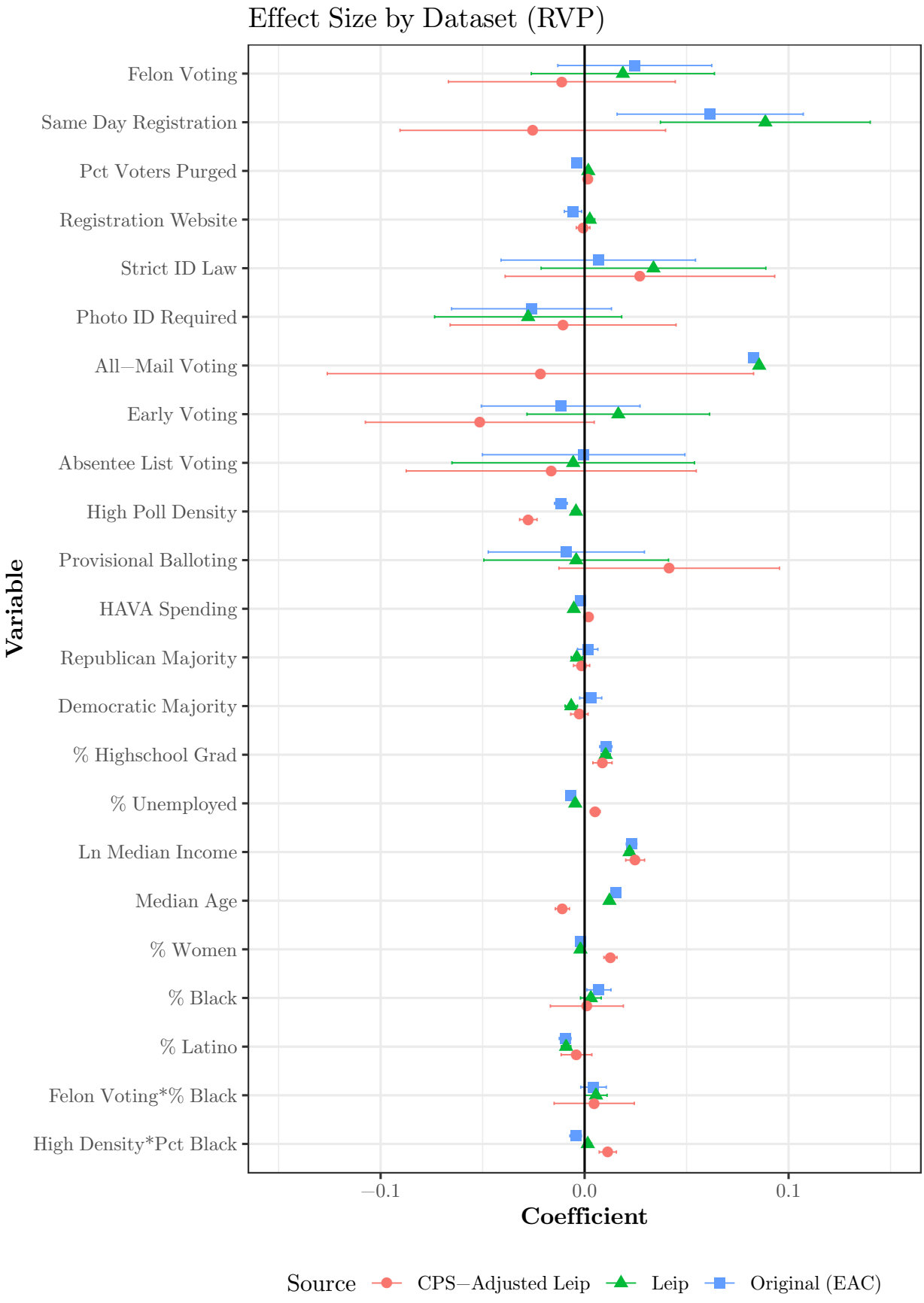
**Table 5.** Linear Mixed Effects Regression Results (CPS-Adjusted Leip Data)

| | Dependent Variable (Rate) | | | |
|---|---|---|---|---|
| | Registration | Turnout | Balloting | Counting |
| Constant | 0.25828*** | 0.86966*** | 0.98903*** | 0.99598*** |
| Felon Voting | 0.06155 | 0.01254 | −0.00440 | −0.00071 |
| Felon Voting*% Black | −0.00453 | 0.00589 | −0.00450 | −0.00034 |
| Same Day Registration | 0.11038* | 0.02121* | −0.00058 | 0.00072 |
| Pct Voters Purged | −0.00111 | 0.00107** | 0.00019 | −0.00003 |
| Registration Website | 0.04876*** | −0.01154*** | −0.00514*** | 0.00074** |
| All-Mail Voting | 0.00191 | 0.00791*** | −0.01752*** | −0.00033 |
| Early Voting | 0.10929 | 0.01610 | 0.01314 | 0.00011 |
| Absentee List Voting | 0.08814 | −0.01756* | −0.00549 | −0.00159 |
| Strict ID Law | 0.05787 | 0.00509 | −0.00503 | 0.00274* |
| Photo ID Required | −0.04586 | 0.01053 | −0.01157 | 0.00172 |
| Provisional Balloting | 0.03995 | 0.00353 | 0.01529** | 0.00020 |
| High Poll Density | −0.08629 | 0.00766 | −0.00431 | 0.00105 |
| HAVA Spending | −0.00744*** | 0.00005 | −0.00205*** | 0.00044*** |
| Low Cost Voter Data | 0.02395*** | −0.00297 | 0.01824*** | 0.00061 |
| Republican Majority | 0.00562* | −0.00073 | 0.00598*** | 0.00065** |
| Democratic Majority | 0.00201 | −0.00401** | 0.01186*** | 0.00101*** |
| % Highschool Grad | −0.01743*** | 0.00065 | 0.00170 | −0.00008 |
| % Unemployed | −0.00562*** | 0.00286*** | −0.00051 | −0.00017 |
| Ln Median Income | −0.04022*** | 0.00982*** | −0.00251** | −0.00017 |
| Median Age | 0.02538*** | 0.00132 | 0.00202** | 0.00011 |
| % Women | −0.00484* | 0.00967*** | −0.00252*** | −0.00009 |
| % Black | −0.00633 | −0.00162 | −0.00068 | −0.00017 |
| % Latino | 0.00430 | −0.00055 | −0.00401*** | −0.00025 |
| Registr. Rate | | −0.14028*** | −0.00017 | 0.00034* |
| Turnout Rate | | | −0.00038 | 0.00029 |
| Ballot Rate | | | | 0.01564*** |
| Observations | 8,881 | 8,881 | 8,881 | 8,881 |

*Note:* *p<0.1; **p<0.05; ***p<0.01


Effect Size by Dataset (VAP)
Felon Voting
Same Day Registration
Pct Voters Purged
Registration Website
Strict ID Law
Photo ID Required
All−Mail Voting
Early Voting
Absentee List Voting
High Poll Density
Provisional Balloting
HAVA Spending
Republican Majority
Democratic Majority
% Highschool Grad
% Unemployed
Ln Median Income
Median Age
% Women
% Black
% Latino
Felon Voting*% Black
High Density*Pct Black
Variable
−0.1
0.0
0.1
Coefficient
Source
CPS−Adjusted Leip
Leip
Original (EAC)


Effect Size by Dataset (VEP)
Felon Voting
Same Day Registration
Pct Voters Purged
Registration Website
Strict ID Law
Photo ID Required
All−Mail Voting
Early Voting
Absentee List Voting
High Poll Density
Provisional Balloting
HAVA Spending
Republican Majority
Democratic Majority
% Highschool Grad
% Unemployed
Ln Median Income
Median Age
% Women
% Black
% Latino
Felon Voting*% Black
High Density*Pct Black
Variable
−0.1
0.0
0.1
Coefficient
Source
CPS−Adjusted Leip
Leip
Original (EAC)


Effect Size by Dataset (RVP)
Felon Voting
Same Day Registration
Pct Voters Purged
Registration Website
Strict ID Law
Photo ID Required
All−Mail Voting
Early Voting
Absentee List Voting
High Poll Density
Provisional Balloting
HAVA Spending
Republican Majority
Democratic Majority
% Highschool Grad
% Unemployed
Ln Median Income
Median Age
% Women
% Black
% Latino
Felon Voting*% Black
High Density*Pct Black
Variable
−0.1
0.0
0.1
Coefficient
Source
CPS−Adjusted Leip
Leip
Original (EAC)

## REFERENCES


Alvarez, R. M. M., Bailey, D., and Katz, J. N. (2008). The Effect of Voter Identification Laws on Turnout. *SSRN Electronic Journal*, pages 1–27.

American Civil Liberties Union (2014). The Long and Short of Voting Lines in North Carolina.

Bergman, E. and Yates, P. A. (2011). Changing election methods: How does mandated vote-by-mail affect individual registrants? *Election Law Journal*, 10(2):115–127.

Brady, H. E. and McNulty, J. E. (2011). Turning Out to Vote: The Costs of Finding and Getting to the Polling Place. *American Political Science Review*, 105:115–134.

Brater, J., Morris, K., Perez, M., and Deluzio, C. (2018). Purges: A Growing Threat to the Right to Vote. Technical report.

Brennan Center for Justice (2019a). Automatic voter registration and modernization in the states. Technical report.

Brennan Center for Justice (2019b). Avr impact on state voter registration. Technical report.

Burden, B. C., Canon, D. T., Mayer, K. R., and Moynihan, D. P. (2014). Election laws, mobilization, and turnout: The unanticipated consequences of election reform. *American Journal of Political Science*, 58(1):95–109.

Burris, A. L. and Fischer, E. A. (2016). The Help America Vote Act and Election Administration: Overview and Selected Issues for the 2016 Election. Technical Report 7-5700, Congressional Research Service.

de Oliveira, P. (2009). Same day voter registration: Post-crawford reform to address the growing burdens on lower-income voters. *Georgetown Journal on Poverty Law & Policy*, 16(2).

Dyck, J. J., Gaines, B. J., and Shaw, D. R. (2009). The effect of local political context on how americans vote. *American Politics Research*, 37(6):1088–1115.

Engstrom, E. J. (2012). The rise and decline of turnout in congressional elections: Electoral institutions, competition, and strategic mobilization. *American Journal of Political Science*, 56(2):373–386.

Erikson, R. S. and Minnite, L. C. (2009). Modeling Problems in the Voter Identification—Voter

Turnout Debate. *Election Law Journal*, 8(2):85–101.

Field, J., Posner, C., and Chu, A. (2014). Uncounted Votes: The Racially Discriminatory Effects of Provisional Ballots. Technical report, Center for American Progress.

Fullmer, E. B. (2015). Early voting: Do more sites lead to higher turnout? *Election Law Journal*, 14(2).

Gerken, H. K. (2009). *The Democracy Index: Why Our Election System is Failing and How to Fix It*. Princeton University Press.

Grimmer, J., Hersh, E., Meredith, M., Mummolo, J., and Nall, C. (2018). Obstacles to estimating voter id laws' effect on turnout. *The Journal of Politics*, 80(3):1045–1051.

Gronke, P., Galanes-Rosenbaum, E., Miller, P. A., and Toffey, D. (2008). Convenience voting. *Annual Review of Political Science*, 11:437–455.

Gronke, P. and Miller, P. (2012). Voting by mail and turnout in orgeon: Revisiting Southwell and Burchett. *American Politics Research*, 40(6):976–997.

Hajnal, Z., Lajevardi, N., and Nielson, L. (2017). Voter Identification Laws and the Suppression of Minority Votes. *The Journal of Politics*, 79(2):363–379.

Hersh, Eitan, D. and Nall, C. (2016). The primacy of race in the geography of income-based voting: New evidence from public voting records. *American Journal of Political Science*, 60(2):289–303.

Hicks, W. D., McKee, S. C., and Smith, D. A. (2016). A bipartisan election reform? Explaining support for online voter registration in the American states. *American Politics Research*, 44(6):1008–1036.

Highton, B. (2004). Voter registration and turnout in the United States. *Perspectives on Politics*, 2(3):507–515.

Highton, B. (2017). Voter identification laws and turnout in the united states. *Annual Review of Political Science*, 20:149–167.

Holbrook, T. and Heidbreder, B. (2010). Does measurement matter? the case of vap and vep in models of voter turnout in the united states. *State Politics & Policy Quarterly*, 10(2):157–179.

Kousser, T. and Mullin, M. (2007). Does voting by mail increase participation? using matching to

analyze a natural experiment. *Political Analysis*, 15(4):428–445.

Larocca, R. and Klemanski, J. S. (2011). U.S. state election reform and turnout in presidential elections. *State Politics & Policy Quarterly*, 11(1):76–101.

Lee, A. M. (2010). Don't save the date: How more restrictive state voter registration deadlines disenfranchise minority movers. *Columbia Journal of Law and Social Problems*, (43):245–281.

Lee, H., Porter, L. C., and Comfort, M. (2014). The collateral consequences of family member incarceration: Impacts on civic participation and perceptions of legitimacy and fairness. *The ANNALS of the American Academy of Political and Social Science*, 651:44–73.

Leip, D. (2021). Dave Leip's Atlas of US Presidential Elections. http://uselectionatlas.org.

McDonald, M. P. and Popkin, S. L. (2001). The myth of the vanishing voter. *The American Political Science Review*, 95(4):963–974.

MIT Election Data and Science Lab (N.D.). Voting by Mail and Absentee Voting. Technical report.

National Conference of State Legislatures (2015). Provisional Ballots.

National Conference of State Legislatures (2016). Voter registration.

National Conference of State Legislatures (2018). Felon voting rights.

National Conference of State Legislatures (2019). Automatic voter registration.

Neiheisel, J. R. and Burden, B. C. (2012). The impact of election day registration on voter turnout and election outcomes. *American Politics Research*, (40):636–664.

Niemi, R. G., Hanmer, M. J., and Jackson, T. H. (2009). Where can college students vote? a legal and empirical perspective. *Election Law Journal*, 8(4):327–348.

Norden, L., Quesenbery, W., and Kimball, D. C. (2012). Better design, better elections. Technical report, Brennan Center for Justice at New York University School of Law.

Pew Center on the States (2013). Elections performance index methodology. Technical report, Pew Charitable Trusts.

Pitts, M. J. (2008). Empirically Assessing the Impact of Photo Identification at the Polls Through An Examination of Provisional Balloting. *Journal of Law and Politics*, 24:475–527.

Simpson, S. (2016). The great poll closure. Technical report, The Leadership Conference Fund.

Southwell, P. L. and Burchett, J. I. (2000). The effect of all-mail elections on voter turnout. *SAGE Journals*.

Stein, R. M. and Vonnahme, G. (2008). Engaging the unengaged voter: Vote centers and voter turnout. *The Journal of Politics*, 70(2):487–497.

Stockemer, D. (2017). Electoral participation: How to measure voter turnout? *Social Indicators Research*, 133:943–962.

Street, A., Murray, T. A., Blitzer, J., and Patel, R. S. (2015). Estimating voter registration deadline effects with web search data. *Political Analysis*, (23):225–241.

Sweeney, L., Yoo, J. S., and Zang, J. (2017). Voter Identity Theft: Submitting Changes to Voter Registrations Online to Disrupt Elections. *Technology Science*, pages 1–134.

The Cook Political Report (2017). Competitive states: 2012 vs 2016. Technical report.

Uggen, C., Larson, R., and Shannon, S. (2016). 6 million lost voters: State-level estimates of felony disenfranchisement, 2016. *The Sentencing Project*.

United States Census Bureau (2018). Characteristics of Voters in the Presidential Election of 2016.

U.S. Census Bureau (2019). Small Area Income and Poverty Estimates (SAIPE) Program.

U.S. Department of Justice (2017). The national voter registration act of 1993.

U.S. Department of the Treasury (2019). The USASpending application programming interface (api).

U.S. Election Assistance Commission (2017). EAVS Deep Dive: Early, Absentee, and Mail Voting.

Valentino, N. A. and Neuner, F. G. (2016). Why the sky didn't fall: Mobilizing anger in reaction to voter ID laws. *International Society of Political Psychology*.

Vercellotti, T. and Anderson, D. (2009). Voter-identification requirements and the learning curve. *Political Science*, pages 117–120.

Weiser, W. R. (2006). Are HAVA's provisional ballots working? Technical report, Brennan Center for Justice.

Yu, J. (2019). Does state online voter registration increase voter turnout? *Social Science Quarterly*.