DePaul University

The Impact of Voter ID on Party Vote Share

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What are Voter ID laws?

From *The New Republic* by Rebecca Leber, October 20, 2014

Rebecca Leber / October 20, 2014

In Texas, You Can Vote With a Concealed Handgun License—but not a Student ID

JAMIE ROSE, GETTY IMAGES

What are Voter ID laws?

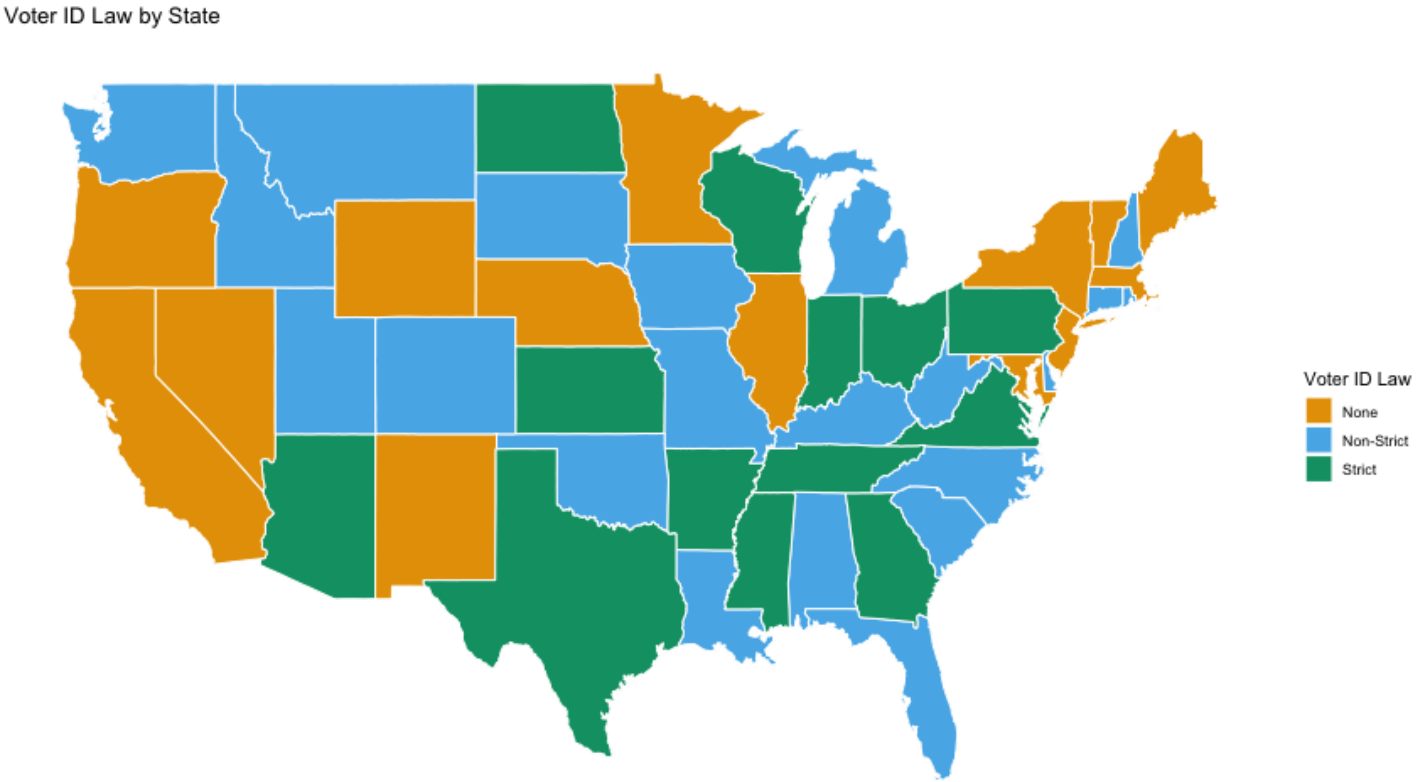
In states where voter ID laws are in place, they vary considerably!

- **Strict?** ID is required before a voter is eligible to cast a ballot
- **Not strict?** ID is requested, though not required

Recently, more states have been adopting increasingly strict measures. Why?

- voter fraud -- it is pervasive and must be stopped with definitive legal measures (such as voter ID laws)
- counterpoint -- some say it is a new form of poll tax -- an effective means of suppressing targeted groups

What are Voter ID laws?



Source: Data on state voter ID laws sourced from the National Conference of State Legislatures and the Brennan Center for Justice

Voter ID: Causes & Consequences

What increases a state's likelihood of adopting ID laws?

- significantly predicted by the racial and electoral composition of districts (McKee (2015) and Hicks et al. (2015))
- change of control from Democratic state leadership to Republican in both the executive and legislative branches (Biggers and Hanmer (2017))

Consequences of adopting voter ID laws?

- several studies found the presence of ID laws decreased turnout levels in general and particularly among historically marginalized groups (de Alth (2009) and Barreto, Nuno, and Sanchez (2009))
- other studies found there could be factors that mitigate the negative effects on turnout (Vercellotti and Andersen (2009); Citrin, Green, and Levy (2014); de Alth (2009); Lynch and Bright (2017))
    - time for voters to become more aware and adjust to new voting requirements
    - active campaigns to increase awareness of changes in voting requirements

Consequences: More Recent Work

- Voter ID laws found to depress turnout on racial and ethnic minority groups across elections (Hajnal, Lajevardi, and Nelson (2017))
- Voter ID laws found to have decreased the Democratic vote in two out of three elections (Burden et al. (2017))
- Based on 2016 presidential election data, there is an estimated probability of 61% of a larger increase in voter share for the GOP than the Democratic candidate when voter ID laws are present (Bergman, Tran, and Yates (2018))
    - In fact, voter ID laws may attributed to Trump narrowly beating Clinton in Wisconsin in 2016

Compositional Data

2016 United States presidential results in Vermont by county:

County	Clinton	Trump	Other
Addison	0.590	0.278	0.132
Bennington	0.549	0.341	0.110
Caldeonia	0.458	0.393	0.149
Chittenden	0.657	0.223	0.120
Essex	0.348	0.515	0.137
Franklin	0.437	0.409	0.155
Grand Isle	0.510	0.362	0.129
Lamoille	0.567	0.280	0.153
Orange	0.515	0.342	0.143
Orleans	0.430	0.428	0.141
Rutland	0.460	0.421	0.118
Washington	0.598	0.257	0.145
Windham	0.634	0.241	0.126
Windsor	0.587	0.288	0.126

Logratio Analysis

The **additive logratio** (ALR) transformation is one way to handle compositional data.

Let $x = \{x_1, \ldots, x_D\} \in S^D$ be a D-part composition. The ALR then takes

$$S^D \rightarrow R^{D-1}$$

In other words

$$y = ALR(x) = \left\{ \log\left(\frac{x_1}{x_D}\right), \left(\frac{x_2}{x_D}\right), \ldots, \log\left(\frac{x_{D-1}}{x_D}\right) \right\}$$

So? The ratios involve the division of each of the first $D - 1$ components by the final component.

Voter Share & ALR

For the analysis of the U.S. presidential election at the county level, the response of interest is:

$$\mathbf{y}_i = \left[\log\left(\frac{V_{i,GOP}}{V_{i,Other}}\right), \log\left(\frac{V_{i,Dem}}{V_{i,Other}}\right)\right]^T$$

where V_i represents the voter share for a given party/candidate for the i^{th} county This idea works just fine for modeling voter share in presidential elections where third party candidates receive a non-zero percentage of the vote.

What about congressional races where only the Democrat and Republican candidates are involved?

- essential or structural zeros!

Structural Zeros

Structural zeros occur in many compositional data scenarios. These examples include (Aitchison and Kay (2003))

- household budget patterns where some households may spend nothing on tobacco, alcohol, entertainment over the period of observation
- time budgets where the subject may not take part in one or more of the assigned activities during the recording period
- paleontology -- levels of a number of different varieties of the pollen fossils may be absent
- ecological abundance studies where the abundances of different species are often expressed as percentages and for some regions some species are absent

Unfortunately analyzing the 2018 U.S. congressional races at the county level, there are plenty of structural zeros (see next slide)

Ternary Diagram

Ternary diagram of voter share for the three parties for all contested U.S. congressional contests in 2018

Structural Zeros

What do we do when structural zeros are present in compositional data?

For the congressional data set, all of the structural zeros occur in the "Other" dimension

We will adjust $V_{i,GOP}$ and $V_{i,Dem}$:

$$V^*_{i,GOP} = \frac{V_{i,GOP}}{V_{i,GOP} + V_{i,Dem}} \quad V^*_{i,Dem} = \frac{V_{i,Dem}}{V_{i,GOP} + V_{i,Dem}}$$

This then simplifies to a **logit** transformation!

$$Y_i = \log\left(\frac{V^*_{i,GOP}}{V^*_{i,Dem}}\right)$$

where Y_i is the log-odds of (adjusted) Republican support versus (adjusted) Democrat support in county i