

Voting but for the Law: Evidence from Virginia on Photo Identification Requirements*

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Abstract

One contentious question in contemporary election administration is the impact of voter identification requirements. We study a Virginia law which allows us to isolate the impact of requiring voters to show photo identification. Using novel, precinct-level data, we find that the percentage of registered voters without a driver's license and over age 85 are both positively associated with the number of provisional ballots cast due to lacking a photo ID. To examine the law's impact on turnout, we associate precinct-level demographics with the change in turnout between the 2013 gubernatorial and 2014 midterm elections. All else equal, turnout was higher in places where more active registered voters lacked a driver's license. This unexpected relationship might be explained by a targeted Department of Elections mailing, suggesting that the initial impact of voter ID laws may hinge on efforts to notify voters likely to be affected.

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I Introduction

Twelve states conditioned the right to vote on presenting proper photo identification at the polls during the 2016 primaries.¹ This requirement, first introduced in Indiana in 2006, has sparked one of the most contentious contemporary debates in election administration.

The lack of consensus stems, at least in part, from disagreement about the number of people harmed by these laws. Arguably the greatest harm occurs when a lack of photo identification prevents someone from casting a ballot who wants to vote and is otherwise eligible. And while it is plausible that there a a sizable number of such individuals, it is also plausible that there are few. The maximum estimated ownership rate of state-issued IDs from government records is approximately 95%, leaving at the very least 5% of registered voters potentially disenfranchised. A 5% reduction in turnout would be both dramatic and detectable. However, Ansolabehere (2009) only identified seven people out of 4,000 surveyed who reported not voting at least partly because they lacked identification. Many registered voters without ID might not vote on Election Day, irrespective of whether they had proper identification. Hood and Bullock (2012), for example, show that people without a driver’s license in Georgia voted at substantially lower rates even when no photo ID was necessary to vote.

The Supreme Court is fractured on issues of voter identification, too. No opinion garnered a majority of the justices’ votes in *Crawford v. Marion County Election Board* (2008), the decision upholding the original Indiana law. This was in part because of the difficulty of measurement: the Court’s controlling opinion acknowledged that the case record contained “no evidence” of voter impersonation, but, as it pointed out, neither was there “any concrete evidence of the burden imposed on voters who now lack photo identification.”

Thirty-two states currently have some form of voter identification laws in force. As voter ID laws have proliferated, a growing academic literature has attempted to answer the questions first posed in *Crawford*. Extant work takes three general approaches. An access

¹See Figure 1 and Table A.1.

literature focuses on who lacks identification, although it is unclear what fraction of these individuals are harmed in the sense that they would vote in the absence of an identification requirement. A turnout literature addresses this criticism by attempting to estimate the effect of voter identification laws on the number of voters. This work often takes a difference-in-differences approach that compares trends in aggregated turnout in states that did and did not adopt an identification requirement, though such an approach has been critiqued as systematically under-powered. A third, smaller strand of work marries the access and turnout literatures. Hood and Bullock (2012) study variation in individual-level turnout among registered voters who did and did not match to a DMV record. Unfortunately, privacy laws make it difficult, if not impossible, to replicate such a design in many other states and no subsequent research has.²

Each of these research approaches has been valuable, but the difficulties with simultaneously distinguishing voter intent, achieving statistical power, and demonstrating external validity, respectively, have meant that the literature to date is a logjam of conflicting results that have not resolved the initial questions raised in *Crawford*. In this vein, we offer a new design to study voter ID laws. We use the lessons of Hood and Bullock (2012) to propose a methodological compromise that relies on aggregated, public information about voters available in many states. Our ecological approach shifts the unit of analysis to the precinct and analyzes how precinct-level turnout changes after a photo identification requirement is implemented as a function of many precinct-level characteristics, including the share of registered voters who file a provisional ballot for lack of ID and the share who lack a driver’s license. Thus, while our method cannot rival the granularity of results in some work, it offers researchers more opportunity for comparable empirical investigations of voter ID in other states, where the legislation, implementation, and impact may vary.

State voter identification laws are typically characterized across two dimensions. Some

²The Driver’s Privacy Protection Act of 1994 “generally prohibits academics from receiving driver’s license lists in order to conduct research in this area” (Stewart III, 2013). Hood and Bullock were only able to access the DMV data because Hood was an expert witness in *Common Cause v. Billups*.

states are strict about requiring identification to vote, while others – considered “non-strict” – merely request it. Some states also consider only a narrow range of photo IDs as valid identification, while others permit non-photo IDs such as a utility bill or paycheck. Pitts (2012) helpfully clarifies that “there is actually very little [legal] controversy about voter identification generally.” Rather, “the flashpoint of dispute [...] is when states adopt laws that essentially exclusively require a government-issued photo identification.” Seven states had such policies as of 2014: Georgia, Indiana, Kansas, Mississippi, Tennessee, Virginia, and Wisconsin. We focus specifically on Virginia.

Virginia offers two primary benefits as a case-study. For one, Virginia’s incremental policy-making allows us to isolate the legally relevant effect of a photo ID policy from the effect of a strict policy. In 2013, Virginia had a strict non-photo ID policy; in 2014, it kept its strict approach but limited acceptable forms of ID to those with a photo. Virginia also has a unique election cycle, featuring a competitive, statewide general election in both the year before and the year of the policy change. By comparing precinct-level turnout outcomes in elections of similar salience immediately before and after the law change, we minimize the risk that factors besides the new photo ID requirement are causing turnout to change between the two elections.

We focus on two different pathways through which a strict photo ID requirement burdens voters. Some voters show up to the polls but are unable to vote without proper ID, which we term ineligibility. Other voters do not show up to vote at all because they lack the proper ID or otherwise anticipate problems voting, which we term deterrence.

We observe ineligibility using a public records request. Our design is motivated by Justice Stevens’ controlling *Crawford* decision, particularly in its call for more focused evidence on who “would vote were it not for the law.” The plaintiffs in the *Crawford* case could not find a single person who fit the bill. Under Virginia law, anyone who tried to vote without showing a valid photo ID was offered a provisional ballot instead. In other words, there is documentary evidence of some people who “would vote were it not for the law.” We collect

precinct-level data on provisional ballots cast for lack of proper photo ID in the 2014 general election. 474 provisional ballots were cast in Virginia in the 2014 election for lack of adequate photo identification. This number measures the effect of ineligibility, and thus serves as a useful lower-bound of the total effect of photo ID legislation on turnout.

We relate the number of provisional ballots cast because a voter lacked a photo ID to precinct-level demographic characteristics constructed using state Department of Elections reports, Census data, and data from Catalist, a commercial data vendor. Our results show that the two most robust predictors of such provisional ballots are the percentage of registered voters with no DMV record – validating the focus of the access literature – and the percentage of registered voters over age 85. While we need to be cautious to avoid necessarily ascribing individual-level interpretations to ecological regressions, these findings are consistent with people without a valid driver’s license, the most common form of valid photo identification, being more likely to file a provisional ballot and with the oldest voters being less likely to have a driver’s license. We find no aggregate-level relationship between the number of provisional ballots cast in a precinct due to a lack of photo ID and either the percent of voters supporting the Democratic candidate or the percent of registered voters who are black or Hispanic.

Our second set of analyses examine the deterrent effect of photo ID. We use the data on provisional ballots and the percent of registered voters in a precinct who do not match a DMV record to generate two precinct-level proxies of the relative influence of the photo identification law. We relate these proxies to the change in precinct-level turnout between the 2014 midterm election, a competitive race which required photo identification, and the 2013 gubernatorial election, a competitive race which did not. We find no relationship between the number of provisional ballots cast in a precinct and the change in turnout across the two election cycles. Despite the conventional narrative about voter ID laws, our analysis reveals that, all else equal, turnout was actually higher in places where more active registered voters lacked a driver’s license.

This surprising positive relationship, however, might be explained by unique features of Virginia’s implementation of its strict photo ID scheme. Many active registered voters who did not match to a DMV record received an informational mailer from the Department of Elections informing them of the law and instructing them on how to vote. In addition, the state shared information about specific registrants who lacked driver’s licenses with several interest groups and made precinct-level information about the share of registrants who lacked such identification available to the general public. The significant increase in relative turnout we observe is limited to places that received more Department of Elections mailings. We speculate this is because this mailer, and other private campaign materials, both informed people about the law and mobilized them to vote.

There has been considerable discussion of the different elements of states’ voter ID regimes, and this study isolates only a single policy change in a single state. Still, its results suggest that the implementation of voter ID laws might be as important as the laws’ content in determining whether they impose an under burden on the right to vote. Both Pennsylvania and Wisconsin recently saw their voter ID laws struck down on these accounts. This paper also underlines how the immediate effects of voter ID legislation—potentially buffered by initial publicity and mobilization efforts—might differ from the long-term effects.

II Literature

The debate about the consequences of voter ID legislation began in earnest in 2002 with the passage of the Help America Vote Act (HAVA) (Ansolabehere, 2007). The first voter ID statute, though, was actually passed back in 1950, when South Carolina requested that registered voters show documentation at the polls.³ Before HAVA reached Congress, 14 states had a voter ID law of some sort, although these laws were considered “non-strict” in the sense that “at least some voters without acceptable identification ha[d] an option to

³The National Conference of State Legislatures has compiled a useful genealogy of the law. See <http://www.ncsl.org/research/elections-and-campaigns/voter-id-history.aspx>.

cast a ballot that [would] be counted without further action on the part of the voter.”⁴ For example, a voter might be able to sign an affidavit confirming his or her identity.

HAVA mandated some form of identification for first-time voters. Two years later, in 2004, the Carter-Baker Commission on Federal Election Reform endorsed a photo ID requirement for all in-person voting. By the next year, Indiana became the first state to require – rather than request – a photo ID. It was the nation’s first strict photo ID policy – strict in the sense that voters without a photo ID “must vote on a provisional ballot and also take additional steps after Election Day for it to be counted.”

The subsequent spread of voter ID laws – primarily adopted in the South at first and more recently in the rest of the country – has been referred to by some as “Jim Crow 2.0” (Bentele and O’Brien, 2013; Rocha and Matsubayashi, 2014). The label captures the speculation that the wave of voter ID laws will unduly burden certain vulnerable and historically disadvantaged populations, including blacks. These beliefs are driven, at least in part, by empirical evidence documenting both the characteristics of states which pass these laws (Rocha and Matsubayashi, 2014; McKee, 2015) and analyses of which demographic groups are more likely to lack specific forms of identification.

Table 1: Which Registered Voters Have Photo ID?

Study	Scope	Method	Overall	White	Black	Hispanic	Elderly
Ansolahehere (2012)	TX	Gov’t Records	86%	89%	79%	83%	–
Barreto, Nuño, and Sanchez (2009)	IN	Survey	84%	85%	81%	–	81%
Barreto and Sanchez (2012)	Milwaukee	Survey	91%	94%	85%	89%	83%
Barreto and Walker (2012)	PA	Survey	87%	88%	86%	83%	82%
Beatty (2012)	WI	Gov’t Records	89%	91%	84%	75%	–
Hood and Bullock (2008)	GA	Gov’t Records	93%	96%	93%	93%	93%
Hobby et al. (2015)	TX CD-23	Survey	97%	99%	100%	97%	–
Hood III (2012)	WI	Gov’t Records	91%	–	–	–	–
North Carolina SBE (2013)	NC	Gov’t Records	95%	96%	93%	–	–
Stewart III (2012)	SC	Gov’t Records	95%	96%	92%	93%	–
Stewart III (2013)	USA	Survey	91%	93%	79%	90%	–

Note: Expanded from Government Accountability Office (2014), this table summarizes the rates at which registered voters have photo identification.

⁴This definition – supplied by the National Conference of State Legislatures in <http://www.ncsl.org/research/elections-and-campaigns/voter-id.aspx> – is used in Dropp (2013). Alvarez, Bailey, and Katz (2008) introduce a more detailed classification scheme with eight levels.

Table 1 expands upon the published articles and expert testimony on access to photo identification originally compiled in the Government Accountability Office’s 2014 report. While the vast majority of registered voters possess a photo ID, black and Hispanic registered-voters are less likely to have one than white registered-voters.⁵ Elderly voters are also less likely to have proper ID than the overall registered population.

However, the consistent trends in Table 1 conceal considerable uncertainty. Survey work can ask whether a given person has proper ID, but it depends on self-reports of registration status and vote history which may not be reliable. The fact that both the lowest (84%) and highest (97%) rates of overall photo ID ownership come from surveys underscores the possibility of survey mis-reporting.

A more direct method would be to match government records, checking if every voter on a state registration list has a comparable record in a database of proper state identification. But such an approach has its own problems. For one, it is difficult to match people across government lists, and the quality of registration records may introduce bias in the estimates (Berent, Krosnick, and Lupia, 2011). There is also no complete coverage of who has proper identification, so the match, even if accurate, may not be comprehensive. Ansolabehere (2012), for example, could not determine whether a registered voter without a state photo identification also lacks a United States passport or military identification, which also counts as valid ID for the purposes of voting (Pitts, 2012). Further, voter rolls are likely to include dead voters or others who have moved out of the state. These outdated registration records will not match to a typically more-up-to-date DMV database, which could cause these studies to overestimate the percentage of registered voters who lack identification.

Both methods may also overstate the level of disenfranchisement for more technical reasons, too. State voter ID laws often allow voters’ names on their identification to only conform to (rather than match) a name in the poll book, and they exempt certain people from the requirements all together (Pitts, 2012). But Hood and Bullock (2008), for example,

⁵Although not listed in Table 1, it is also the case that black and Hispanic voting-eligible adults are more likely to lack photo identification than white voting-eligible adults.

exactly match people in the statewide voter file and DMV database by first name, middle name, last name, street address, city, and zip code, even though the law does not require this.

Even if these studies accurately measure the percentage of voters who lack ID, these numbers are still likely to overstate how many people would vote, but for a voter ID law. Many registered voters choose not to vote, particularly in non-presidential elections. And this may be particularly true of registered voters who lack ID.

Asking someone whether he or she did not vote because of a voter ID law is one approach that has been used to more directly estimate the disenfranchising effect. Ansolabehere (2009) finds that almost no respondents in a large, nationally representative survey report that they were prevented from voting or decided to abstain from voting because they lack identification. But Hobby et al. (2015) finds contradictory results in a more recent survey of 400 non-voters in a single Texas congressional district. While only 2.7% of those surveyed actually lacked the proper photo identification, 12.8% of non-voters blame their lack of participation at least in part on Texas' photo ID law. Hobby et al. interpret these numbers to suggest that identification requirements can also reduce turnout among those with identification by creating confusion about what is required to vote.⁶ One implication of this interpretation is that the percentage of registered voters without identification could actually understate the number of people who are disenfranchised by identification requirements.

Because of the issues identified above, difference-in-differences analysis has emerged as the most commonly used method to estimate the disenfranchising effects of identification laws. This work compares trends in aggregate turnout in states that adopt some form of voter ID laws to states that do not adopt these laws. Using similar statistical models, Vercellotti and Anderson (2006), De Alth (2009), and Dropp (2013) find that strict voter ID laws lead to a decrease in turnout, while Alvarez, Bailey, and Katz (2008), and Mycoff, Wagner, and

⁶Survey error is another potential explanation for these results. Hobby et al. (2015) gave voters seven possible reasons why they did not vote, but did not offer an "other" option. It is also likely that some voters retrospectively justify their decision to not vote by claiming they lack identification.

Wilson (2009) find that strict voter ID laws have no significant effect on voter turnout.

The lack of consensus highlights the limits of the difference-in-differences framework. To start, only seven states have run a general federal election with a strict photo ID requirement thus far.⁷ As Erikson and Minnite (2009) note, this makes it difficult to estimate the effects of these laws in cross-state regressions with anywhere approaching policy-relevant precision. It is also problematic that many of these laws were implemented in conjunction with other election reforms that might also affect voter turnout. For example, North Carolina reduced the number of early voting days in the same bill that modified its voter ID law, making it hard to isolate the mechanism driving any subsequent changes in turnout.

A second set of papers analyze individual-level turnout data from large, nationally representative surveys, such as the Current Population Surveys (CPS) or the Cooperative Congressional Election Study (CCES), and examine whether the turnout of vulnerable populations is relatively lower in states with various types of voter ID laws. In this vein, Vercellotti and Anderson (2006) and Alvarez, Bailey, and Katz (2008) find that strict voter ID laws reduce turnout, particularly among less educated, lower income, and minority voters. But again, there is disagreement: Mycoff, Wagner, and Wilson (2009) conclude that voter ID laws have no significant effect on turnout, and Larocca and Klemanski (2011) suggest that voter ID laws may even increase turnout.

In theory, survey-based studies could be better powered than aggregate, state-level studies because they have more flexibility to account for election-specific turnout shocks. Individual-level studies also have the potential to identify heterogeneous treatment effects. In practice, however, most of these studies rely on cross-sectional variation across states, rather than within-state variation over time, to identify the effect of identification laws. This introduces the concern that the differences in the relative turnout of certain groups in voter ID states may have predated the implementation of voter ID laws. Most of these studies also substantially understate the potential influence of sampling error on the estimated effect

⁷See <http://www.ncsl.org/research/elections-and-campaigns/voter-id-history.aspx>

of identification laws by assuming individuals’ turnout decisions within the same state are independent (Erikson and Minnite, 2009).⁸

III Voter ID in Virginia

Figure 1 compares Virginia’s voter identification policy with all other states, which are described in more detail in Table A.1 of the Appendix.⁹

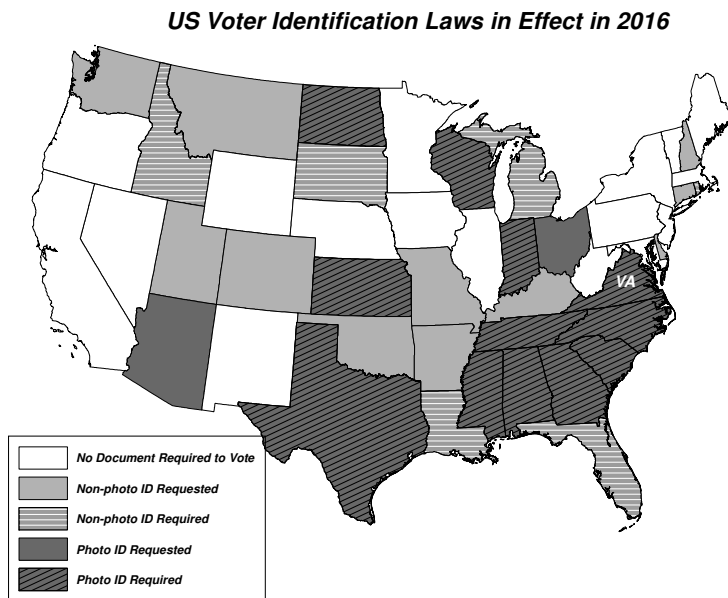


Figure 1: Voter ID Map

Virginia first passed a voter ID law in 1996 and maintained a non-strict, non-photo ID

⁸Because all individuals in a state are subject to the same identification law and other state-specific influences, clustering standard errors at the state-level or another such correction is needed to account for the unobserved factors that commonly affect the turnout decisions of everyone in a state.

⁹The map, while informative, cannot capture the nuance of each state’s voter ID law. There is also some disagreement about how to classify each state. In general, we rely on the classifications of the National Conference of State Legislatures (NCSL). However, we sometimes deviate from their classifications. For example, we classify Alabama’s law as a strict photo identification law, while the NCSL considers it a non-strict state. This is because the state has technically provided an alternative to showing photo identification: two election officials can sign sworn statements saying they know the voter. The NCSL also classifies South Carolina as a non-strict photo ID state, while we classify it as a strict photo ID state. While the state provides an alternative to showing photo ID for people with a “reasonable impediment” to obtaining one, this does not negate the fact that every in-person voter in the state is asked for identification. We thank one of the anonymous reviewers for this observation.

policy through the 2012 general election.¹⁰ During this time, a registered voter in Virginia could satisfy the identification requirement by showing various non-photo forms of identification, such as a Virginia voter registration card or social security card, or by signing a sworn statement affirming his or her identity.

Virginia adopted a strict policy in 2013, eliminating the option for proving identity through a sworn statement. But non-photo IDs continued to be permitted.¹¹ The bill expanded the list of acceptable forms of non-photo identification to include concealed handgun permits, a current student ID card issued by any four-year institution of higher education in Virginia, a copy of a current utility bill, bank statement, government check, or a paycheck that showed the name and address of the voter.

Later the same year, Virginia passed a strict photo ID law that first went into effect on July 1, 2014.¹² All Virginia voters were required to present photo ID, but the new policy reduced the acceptable forms of identification to a valid Virginia driver's license, a valid United States passport, any other form of photo identification issued by the state or federal government, a valid student identification containing a photograph, or an ID card containing a photograph issued by a voter's employer.¹³ As a result, many previously acceptable forms of identification such as a voter registration or social security card, bank statement, paycheck, or utility bill were no longer adequate. However, Virginia did make free photo IDs available at local voter registration offices throughout the state up to three days after the election, while provisional ballots were still being counted.¹⁴ While voter identification is not required for absentee ballots by mail, Virginia limits absentee voting to those with a

¹⁰See House Bill 206 here: <https://lis.virginia.gov/cgi-bin/legp604.exe?961+ful+HB206ER+pdf>.

¹¹See House Bill 9 here: <http://lis.virginia.gov/cgi-bin/legp604.exe?121+ful+CHAP0838+pdf>.

¹²See House Bill 1337 here: <https://lis.virginia.gov/cgi-bin/legp604.exe?131+ful+HB1337+pdf>.

¹³There was confusion leading up to the 2014 general election about what exactly constitutes a valid ID. In August 2014 the Virginia State Board of Elections ruled that only current IDs or IDs that expired within the last year are valid. This ruling generated additional confusion about whether election officials would accept student or employee photo IDs issued by the State of Virginia, which were explicitly listed in the original law as proper forms of identification, but often do not display expiration dates.

¹⁴Registrants only needed to provide their social security number, birthdate, and signature along with the Voter Photo Identification Application.

Figure 2: Virginia Department of Elections' mailer sent to some registered voters with no DMV record



qualifying excuse.¹⁵

Virginia engaged in an informational campaign to inform voters about the new strict photo ID law. The Department of Elections sent some registrants without a DMV record a mailer “informing them about the new voter photo identification law, what types of identifications would be acceptable on Election Day and information on how to obtain a free Voter Photo Identification Card” (*Minutes of the State Board of Elections* 2014).¹⁶ Figure 2 shows the mailer, which was sent to 90,797 of the 196,902 registrants without identification.¹⁷ In addition to this mailer, the Virginia Department of Elections shared the data of registrants without DMV records with at least four outside organizations, made templates of informational flyers and mailers available on its website, and published precinct-level reports of the number of voters without a DMV record.

Voters who could not present an acceptable photo ID during the 2014 general election were offered a provisional ballot instead.¹⁸ For that provisional ballot to be counted, the

¹⁵The list of 19 acceptable excuses and the supporting information required is available here: <http://elections.virginia.gov/casting-a-ballot/absentee-voting/index.html>.

¹⁶This was also confirmed via email by Martha Brissette, Policy Analyst at Virginia Department of Elections.

¹⁷The Department of Elections sent a mailer to active registrants who did not match to a DMV record if they met the following additional criteria: they were “not military, overseas or federal only”; they did not have an active application for an absentee ballot, either for a domestic voter with disability or illness or a uniformed service member, their family, and citizens living abroad; and their last activity, including voter registration and voting, “has been since and including the last presidential election [in 2012].”

¹⁸For the full procedure for how Virginia voters are asked for voter identification at polling places, see VA Code 24.2-643 here: <http://law.lis.virginia.gov/vacode/24.2-643/>.

voter needed to submit a copy of an acceptable photo ID in person to the city or county election board within three days after the election.

The 2013 gubernatorial election was the last statewide election under the strict non-photo scheme and the 2014 midterm election was the first under the strict photo scheme. The two elections were otherwise fairly similar, as both featured very close statewide races in non-presidential years. The 2013 gubernatorial race was decided by about 55,000 votes, with nearly 2.25 million registered voters (43.0%) participating. Even closer was the attorney general race, decided by only 165 votes. As a point of comparison, 2.19 million registered voters (41.6%) turned out in the 2014 U.S. senate race. While the Democratic candidate prevailed as expected, the national Republican wave reduced the margin of victory to only about 18,000 votes. The unexpectedly close race between Democratic incumbent Mark Warner and Republican Ed Gillespie furthered the suspicion that certain types of voters—disproportionately poor, minority, elderly, and Democratic—had been disproportionately disenfranchised by the new voter ID requirements.¹⁹

IV Design and Data

Virginia presents a clean, single-state test of the effect of enacting a strict photo ID requirement because of its piecemeal approach to voter identification. The advantage of such a single-state case study is that we can more precisely identify sub-populations whose turnout rates are hypothesized to be most affected by the implementation of voter ID and test whether there is a relatively larger turnout decline among these groups after the implementation of the law. We relate precinct-level change in turnout between the 2013 gubernatorial and 2014 senatorial elections to proxies that capture the relative impact of the photo identification requirement in a given precinct. If a substantial deterrent effect exists, we would expect

¹⁹Democratic election lawyer Marc Elias filed suit in June 2015 against the Virginia State Board of Elections challenging the law’s constitutionality. In *Lee v. Virginia Board of Elections*, the plaintiffs argue that the law does not further any legitimate state interest and that in-person voter fraud is exceedingly rare. Furthermore, they contend that racial and ethnic minorities, as well as elderly, young, low-income, and Democratic voters, had their right to vote disproportionately burdened by the photo ID requirements.

to observe a greater relative decrease in turnout between 2013 and 2014 in those precincts where we anticipate the impact of the photo identification requirement is larger.

By comparing turnout in elections in such close proximity before and after the policy change, we hope to minimize the influence of differential mobility or any other unobserved changes that may affect precinct-level turnout. Our confidence in the design assumption is bolstered by the fact that turnout in both of these elections was quite similar. One drawback of the comparison, though, is that the primary statewide race in the 2013 election was for governor, while the primary statewide race in 2014 was for the U.S. Senate. As we attempt to isolate the effect of the new photo ID law on turnout between the two elections, we must keep in mind that it is possible that certain groups may be more likely to vote in a competitive gubernatorial than senatorial race, or the reverse. A similar concern is that the type of people who turned out to vote in the off-year election (2013) might be different than those who turned out in the mid-term election (2014). For example, we expect to observe relatively higher 2014 turnout in more Republican precincts because nationally it was a Republican wave election. Therefore, we cannot necessarily attribute a change in turnout in specific types of precincts to the implementation of the new photo ID law.

With this design in mind, we estimate the number of registered voters in Virginia who, as Justice Stevens wrote, “would vote were it not for the law.” Rather than study the county- (Milyo, 2007) or individual-level (Hood and Bullock, 2012), we focus on the precinct level as the primary unit of analysis. Although our method cannot rival the granularity of results in Hood and Bullock (2012), precinct-level data is available in nearly every state in the U.S., providing researchers with the opportunity for comparable empirical investigations of voter ID in other states, where the legislation, implementation, and impact may vary.

We collect novel, precinct-level data on provisional ballots cast for lack of photo ID to focus on registered voters in Virginia who demonstrate an interest in voting but are unable to do so. Virginia poll workers logged each provisional ballot cast using a form seen in Figure A.13. The log identifies each voter by full name and address and includes why he

or she was issued a provisional ballot, whether it was counted, and, if it was not counted, why it was not counted. The Virginia Department of Elections provided us with aggregate counts of each field on the form at the precinct level, effectively withholding the names and other identifying details of individual provisional voters.²⁰ We constructed a measure of the percentage of voters who cast provisional ballots by dividing the number of provisional ballots cast by the sum of the total votes cast in the 2014 U.S. Senate race and the number of provisional ballots cast. Thus, our measure captures both would-be-voters who do not possess appropriate identification as well as those who simply did not bring it to the polls.

While previous work discusses how provisional ballots may be useful for assessing the incidence of voter ID more generally (e.g., Pitts and Neumann, 2009), no previous paper has done anything beyond presenting crosstabs of the number of provisional ballots cast by county. The strength of this approach is that it ensures that the people we study are would-be voters – they showed up to the polls on Election Day to vote – and conveniently sidesteps the issue of correctly identifying who does and does not have proper ID. But this first analysis only isolates one element of the law’s potential burden. Provisional ballots are an imperfect proxy of the actual number of disenfranchised voters, as they only measure the direct effect of ineligibility (Pitts, 2014).

To explore the deterrent effect of photo ID in Virginia, we construct a number of proxies to estimate the expected relative impact of the photo identification requirement in a given precinct. Our first proxy is the number of provisional ballots cast in the precinct, as described above. The assumption underlying this proxy is that the people deterred from showing up to the polls by a photo identification requirement come from the same geographic areas, and from precincts with similar demographic compositions, to those registered voters who show up and cast a provisional ballot. We also relate the change in turnout to the share

²⁰The quality of the data provided makes Virginia at least somewhat distinctive in the literature. Pitts and Neumann (2009) and Pitts (2012), for example, are only able to get county-level data on provisional ballots in Indiana, while Hood and Bullock (2012) report that in Georgia, “the data we received from the Secretary of State do not delineate provisional votes by cause, so we have no way of determining just how many of these provisional votes were specifically linked to ID issues.”

of active voter registration records in the precinct that fail to match to a driver’s license record, according to an analysis by the Virginia Department of Elections.²¹ Although this likely overestimates the number of registrants without identification – as some voters without a DMV-issued ID might still have acceptable identification to vote, such as a passport or military ID – a driver’s license is the form of identification most commonly provided to satisfy a photo ID requirement (Government Accountability Office, 2014, p. 110), and thus an indicator that someone may lack any of the forms of photo identification necessary to vote in Virginia. We also measure the share of registered voters in a precinct who failed to match to a DMV record and received the mailer displayed in Figure 2.

Along with both proxies, we also measure a host of electoral, partisan, and other demographic information about each precinct. We proxy for the political leanings of precincts by calculating the two-party vote share received by Terry McAuliffe, the Democratic candidate for governor in 2013. We also estimate the percentage of registrants by age and race in each precinct, although such information is not available from the Virginia Department of Elections. In lieu of official records, we construct two measures of these important variables using two different sources. We primarily use aggregated individual-level voter-file data from Catalist, a data vendor which has identified the precinct of each registered voter and imputed their race using a proprietary algorithm. Catalist also provided us with a count of the number of registrants in each precinct from each census block. The next paragraph discusses how we use this to aggregate census-block data on race and age from the 2009-2013 American Community Survey (ACS) to construct alternative precinct-level measures of both age and race.

We also use the ACS estimate the socio-economic status of each precinct using three different measures: the logged median income, the percentage of residents without a high school degree, and the percentage of residents with a 4-year college degree. The ACS includes

²¹The public list can be accessed at <http://elections.virginia.gov/Files/VoterRegistration/Information/VotersDMV-IDs-Precinct-10-1-2014.pdf>. The report was run on October 6, 2014, about one month before the general election.

demographic data by census block group but not by precinct. While there is no standard method to match census blocks to precincts, we use the number of registered voters in each census block that belong to a given precinct to construct a weighted, precinct-level measure of our SES variables.²²

Table 2 shows summary statistics for key variables of interest included in the analysis, while Table A.2 in the Appendix shows summary statistics for the control variables.²³

Table 2: Summary Statistics for Precinct-Level Outcomes

Variable	Mean	Std. Dev.	Min.	Max.	N
Share of Registrants with No DMV Record	0.038	0.028	0.006	0.487	2338
Share of Registrants with No DMV Record (Mailer)	0.017	0.022	0	0.428	2338
Total Ballots Cast (thousands)	0.863	0.458	0.03	2.368	2338
# of Prov. Ballot for ID Cast	0.197	0.625	0	11	2338
% of Prov. Ballots for ID Cast	0.025	0.107	0	3.226	2338
Share of Prov. Ballots for ID Cast Counted	0.523	0.472	0	1	324
ln(Sen. Votes '14) - ln(Gov. Votes '13)	-0.033	0.074	-0.828	0.37	2246

²²We first measure $s_{p,c}$, the share of registered voters in precinct p that reside in census block group c . Define v_c to be a measure of some variable of interest v in the ACS for census block group c . We construct v_p – our measure of that variable of interest for precinct p – equal to $\sum_{c=1}^C s_{p,c} v_c$. For example, if 75% of a precinct A’s registered voters reside in Census Block 1 and 25% of a precinct A’s registered voters reside in Census Block 2, then our measure of v_A equals $.75 * v_1 + .25 * v_2$. One issue with our process for constructing these variables is that it is unknown what census block a few registered voters reside in. Figure A.5 in the Appendix shows the cumulative distribution of precincts by the percentage of registered voters in the precinct that have a known census block group of residence. We only define demographics for precincts in which at least 90% of registrants reside in a known census block group of residence, which is represented by the vertical dashed line on Figure A.5. Most precincts had 100% of their registrants successfully matched to a census block group. Only 89 of 2,432 precincts were dropped for failing to meet this 90% threshold.

²³There were 2,432 unique Virginia precincts for the 2014 general election, but there are only 2,338 observations in the summary statistics table. The primary reason why some precincts are dropped from the analysis is a small number of voter file records failed to attach to a census block. As we describe in Section VII.B in the Appendix, we drop precincts from the analysis in which more than 10% of registered voters did not attach to a census block. Additionally, a few precincts in Fairfax County were split or changed just after the 2014 general election. Because we could only construct precinct-level demographics for the split or changed precincts, we combined these precincts for a successful merge to 2014 general election results.

V Results

V.A Provisional Balloting

The first analysis in the paper focuses on the 474 provisional ballots that were cast because voters could not provide adequate photo identification. While this represents an increase from the fewer than 200 provisional ballots cast for this reason in 2013 (Schmidt, 2013), the fact that fewer than five hundred provisional ballots were cast for a lack of ID means that very few ballots which would have counted in 2013 were called into question by the new Virginia law. Table 3 reveals that slightly more than half of these 474 provisionals ballots were ultimately counted.

Table 3: Reasons and Outcome for Provisional Ballots in 2014 Virginia General Election

Reason	Number	Accepted	Acceptance Rate
Voter Name Not on Poll Book	1279	171	13.37%
No ID	474	252	53.16%
Other	281	242	86.12%
Absentee Ballot Issue	225	220	97.78%
Marked Already Voted	107	105	98.13%

Table 4 presents the correlation between the percentage of provisional ballots cast in a precinct for lack of photo ID and each of the demographic measures we constructed, either from the voter-file or the ACS. While we observe measures of race and age in both data sources, we only observe SES variables at the census block-level in the ACS.

Column 1 aggregates the demographics of individual registered voters in each precinct, Column 2 aggregates the demographics of 2013 and 2014 voters, and Column 3 aggregates the demographics of the ACS block groups that make up each precinct. Empty cells in the table indicate that we do not observe that demographic measure for that population.

As expected, Column 1 reveals a statistically significant positive correlation between the percentage of voters who cast provisional ballots and the percentage of active registrants

Table 4: Pairwise Correlations Between Percentage of Provisional Ballots for Lack of Proper ID and Demographics of Precinct

Source Measurement Level	(1) Catalist Registrant	(2) Catalist Voters	(3) ACS Census Block
Share with No DMV Record	0.083 (.043, .123)		
Democratic Gov. Vote Share '13		0.029 (-.011, .070)	
Share Age 18-24	-0.051 (-.091, -.011)	-0.030 (-.071, .010)	-0.003 (-.044, .037)
Share Age 65-84	0.004 (-.036, .045)	0.010 (-.031, .050)	0.013 (-.027, .054)
Share Age 85+	0.130 (.090, .170)	0.155 (.116, .195)	0.081 (.040, .121)
Share Black	-0.018 (-.059, .022)	-0.023 (-.064, .017)	-0.016 (-.056, .025)
Share Hispanic	-0.016 (-.056, .025)	-0.015 (-.055, .026)	-0.031 (-.071, .010)
Share Other Non-White	-0.033 (-.074, .007)	-0.031 (-.071, .010)	-0.032 (-.072, .009)
Logged Median Income			-0.009 (-.050, .031)
Share with No High School Degree			-0.013 (-.053, .028)
Share with 4-Year College Degree			0.037 (-.004, .077)
Population Density			0.147 (.107, .186)

Note: N = 2,323 - 2,338 observations. 95% confidence intervals in parentheses. This table shows correlations between provisional ballots cast in a precinct for lack of photo ID and each of the demographic measures we constructed. It shows that we would reach similar conclusions about the relationship between the percentage of provisional ballots cast and the age and racial makeup of a precinct regardless of whether it was constructed using either Catalist or census-block data.

who do not match a DMV record as well as the percentage of registrants over age 85.²⁴ Column 2 shows that we observe a slightly stronger correlation when we instead focus on the percentage of voters (rather than registrants) over age 85. It is also noteworthy that we do not observe much of a relationship between the percentage of voters who cast provisional ballots and either the racial makeup of the precinct or support for Democratic gubernatorial candidate Terry McAuliffe in 2013, the year before the photo requirement.

We use the fact that we have multiple measures of race and age to address the concern that our measures constructed using census block data may be measured with a substantial amount of error. This is particularly important because we only observe SES variables at the census-block level and do not have an individual-level counterpart. Mis-measurement may cause attenuation bias when estimating the relationship between these variables and the number of the provisional ballots cast. However, a comparison of Columns 1 - 3 shows that we would reach similar conclusions about the relationship between the percentage of provisional ballots cast and the age and racial makeup of a precinct regardless of whether it was constructed using voter-file or census-block data. Below, we present results using age and race measures constructed from the voter file, but all results hold when using the aggregated census block data from the ACS instead. We continue to use the ACS for SES measures. Section VII.C in the Appendix provides further evidence of the validity of these two data sources.

We next explore in which types of precincts registrants are most likely to file provisional ballots for lack of proper identification using multivariate regression analysis. Because the dependent variable is the number of provisional ballots cast, a count model is most appropriate. Based on Cobb, Greiner, and Quinn (2010), we suspect that there may be some precincts where voter ID is not enforced, and so we want to account for potentially excess zeros. We also think that our model may not be capturing all of the factors that affect whether provisional ballots are cast, and so we also want to allow for over-dispersion. With

²⁴Virginia driver's licenses expire on one's birthday every 8 years, and one must renew in person if he or she is 75 or older.

these concerns in mind, Column 1 of Table 5 presents the results of the zero-inflated negative binomial regression. The fact that zero is not contained in the 95% confidence interval of the over-inflation parameter is evidence that we can reject the null that there is no over-dispersion at the $\alpha = 0.05$ level. In contrast, the p-value on the Vuong test statistic indicates that we cannot reject the null that there is not an excess number of precincts with zero provisional ballots. We thus use a standard negative binomial regression for the remainder of this section.

Column 2 of Table 5 shows that the statistically significant correlations highlighted in Table 4 remain so in a multivariate regression setting. Precincts that are more densely populated, have more registrants without a DMV record, and have a higher percentage of registrants who are 85 years and older cast significantly more provisional ballots for lack of ID at the $\alpha = 0.05$ level. Once we control for these other variables, we also observe significantly fewer provisional ballots cast in precincts with a higher percentage of registrants who are neither white, nor black, nor Hispanic.²⁵

Figure 3 visualizes the predicted shifts in the number of provisional ballots cast in a given precinct for lack of photo ID from a one-standard-deviation increase in a variable, given the results in Column 2 of Table 5. The figure shows that a one-standard-deviation increase in the percent of registrants over 85 associates with a 0.027, or 16 percent, increase in the expected number of provisional ballots cast in a precinct. Similarly, a one-standard-deviation increase in the number of registrants without a DMV record associates with a 0.022, or 13 percent, increase in the expected number of these provisional ballots.

As an additional robustness check, we also estimate a model in which we include county fixed effects. We do this because local election offices have substantial power to determine how elections are run in a given county, and thus the procedures they put into place may

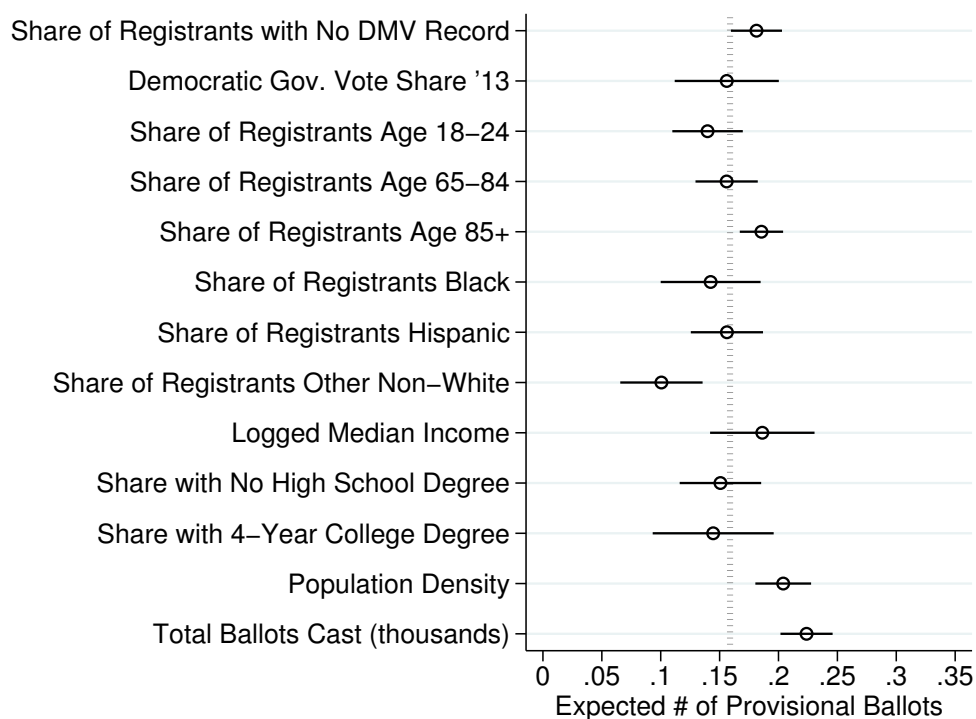
²⁵Table A.3 in the Appendix shows the variance inflation factor (VIF) for each independent variable in Table 5. Using a VIF of 10 as a general rule to assess high multicollinearity, it appears that we might have multicollinearity concerns in our county fixed-effects model. However, the consistency of our findings across model specifications alleviates this concern.

Table 5: Correlates of the Number of Provisional Ballots Cast for Lack of Proper ID in a Precinct

Model	(1)	(2)	(3)	(4)
County Fixed Effects	ZNB	NB	NB	NB
Observations	No	No	No	Yes
	2,323	2,323	1,634	1,634
Share of Registrants with No DMV Record	5.207** (2.478)	5.076** (2.505)	4.227* (2.551)	7.331** (3.027)
Democratic Gov. Vote Share '13	-0.023 (0.720)	-0.090 (0.720)	0.785 (0.742)	-1.647 (1.050)
Share of Registrants Age 18-24	-2.494 (1.926)	-2.411 (1.925)	-1.928 (1.964)	-2.098 (2.192)
Share of Registrants Age 65-84	-0.379 (1.284)	-0.275 (1.279)	-0.540 (1.251)	-1.434 (1.379)
Share of Registrants Age 85+	7.167*** (2.409)	6.413*** (2.249)	5.355*** (2.024)	6.007*** (1.586)
Share of Registrants Black	-0.461 (0.552)	-0.421 (0.553)	-1.142* (0.584)	0.926 (0.843)
Share of Registrants Hispanic	-0.234 (2.374)	-0.408 (2.385)	-3.623 (2.325)	-2.077 (2.706)
Share of Registrants Other Non-White	-5.923*** (1.807)	-5.870*** (1.815)	-5.749*** (1.715)	-1.210 (1.977)
Logged Median Income	0.352 (0.299)	0.361 (0.299)	-0.389 (0.311)	-0.491 (0.454)
Share with No High School Degree	-0.571 (1.309)	-0.608 (1.314)	2.092 (1.337)	-0.765 (1.720)
Share with 4-Year College Degree	-0.456 (0.837)	-0.459 (0.840)	0.587 (0.827)	0.124 (1.046)
Population Density	0.087*** (0.024)	0.092*** (0.024)	0.071*** (0.023)	0.038 (0.028)
Total Ballots Cast (thousands)	0.906*** (0.157)	0.893*** (0.158)	0.792*** (0.154)	0.878*** (0.167)
Constant	-5.968* (3.337)	-6.282* (3.314)	1.726 (3.405)	
Overinflation Parameter	1.347 (0.738)	2.088 (0.328)	1.308 (0.229)	0.726 (0.169)
	[.46, 3.94]	[1.53, 2.84]	[.93, 1.84]	[.46, 1.15]
Vuong Test Statistic	0.333			
p-value on Vuong Test	0.369			

Standard errors in parentheses and 95% confidence intervals in brackets. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. ZNB stands for zero-inflated negative binomial. NB stands for negative binomial. Columns 3 & 4 limit the sample to counties with variation over precincts in the number of provisional ballots cast for lack of ID.

Figure 3: Change in provisional ballots cast in a given precinct for lack of ID from a one-standard-deviation increase in a given variable



Note: Based on Column 2 of Table 5. Point estimate and 95% confidence interval in the expected number of provisional ballots cast in a given precinct when holding the given variable one standard deviation above sample mean and all other variables at sample mean. Gray line shows expected number of provisional ballots cast for lack of ID when all variables are held at sample mean.

ultimately affect how many provisional ballots are cast in each of its precincts. Because zero provisional ballots are cast in a number of counties, the inclusion of county fixed effects perfectly predicts the number of provisional ballots cast in those counties. Accordingly, we drop observations from these counties when including county fixed effects. When we include county fixed effects in column 4, the percentage of registrants with no DMV record and the percentage of registrants 85 years and older continue to significantly predict the number of provisional ballots cast. However, the percentage of other-race registrants and population density are no longer significant at conventional levels.²⁶

V.B Change in Turnout

We next turn to examining precinct-level changes in turnout, employing the number of provisional ballots cast as an independent rather than dependent variable. If strict photo identification had a sizable negative impact on turnout, it must be because a lack of identification deterred otherwise eligible voters from showing up to the polls altogether. To measure the immediate effect of Virginia’s strict photo ID law on turnout, we compare the change in turnout at the precinct level from the 2013 to the 2014 general election.²⁷

In an analogue of Table 4 above, in Table 6 we first present the correlation between the change in turnout and each of the demographic measures we constructed. Our dependent variable in these regressions is the natural log of the number of ballots cast in the 2014 Senate race minus the natural log of the number of ballots cast in the 2013 gubernatorial race.²⁸

²⁶We also examined the correlates of the acceptance of provisional ballots in Table A.4 in the Appendix. The percentage of registrants without a DMV record has little explanatory power over whether provisional ballots are ultimately counted. This finding offers suggestive evidence that provisional ballots are being cast both by people who possess and don’t possess a photo identification on Election Day.

²⁷Section VII.E in the Appendix validates our comparison of turnout data for the 2013 and 2014 election. The number of precincts included in the turnout regressions is 2,246—as opposed to the 2,338 precincts in the earlier analysis—because some precinct boundaries moved in two counties and thus couldn’t be linked across the two elections.

²⁸We find no evidence of an effect of the percentage of active or mailed registrants with no DMV record on turnout when we use the natural log of the turnout percentage in 2014 minus the natural log of the turnout percentage in 2013 as an alternative specification of the dependent variable. However, we are skeptical of this model because the photo identification requirement in 2014 is likely to have affected the number of registered voters, the denominator for calculating a turnout rate. Table A.5 shows that there is a negative

By taking the difference in the natural log of votes, our dependent variable approximates the percentage change in turnout between 2013 and 2014.²⁹ Our measures of partisanship, race, and driver’s license possession are negatively correlated with turnout and substantively large. This is in keeping with the largely Democratic characterization of voter ID legislation as having straightforward, differential partisan impacts.

But the conclusions differ when we turn to multivariate regression analyses of how the precinct-level measures associate with changes in turnout. Table 7 shows little relationship between the number of provisional ballots cast in a precinct in 2014 and the change in turnout between 2013 and 2014.³⁰

Surprisingly, columns 1 and 2 show that the percentage of registered voters without a driver’s license significantly associates with an *increase* in turnout in 2014 relative to 2013. A 1% increase in the precinct-level percentage of registrants with no DMV record predicts a 0.125 percentage-point increase in turnout.

Columns 3 and 4 clarify the potential mechanism at work by adding the number of registrants with no DMV record who received an mailer as an additional covariate. Section III explained that only about half of all registrants without a DMV record received an informational mailer from the Virginia Department of Elections. The coefficient on the precinct-level measure of registrants without ID is no longer significantly associated with an increase in turnout once we also include a comparable measure of registrants who received the mailer. The sum of the coefficients on the percent of registrants with no DMV record and the comparable percent of registrants who received the mailer implies that a 1% increase

relationship between a precinct’s percentage of registrants with no DMV record and its percent change in registered voters from 2013 to 2014, which suggests that our dependent variable specification in Table 7, where we use total votes cast, is preferable to any turnout measure constructed using registered voters.

²⁹Observations are weighted by the number of registrants in 2013 in all analyses to account for heteroscedasticity.

³⁰Table A.6 in the Appendix shows the variance inflation factor (VIF) for each independent variable in Table 7. Using a VIF of 10 as a general rule to assess high multicollinearity, it appears that we might have multicollinearity concerns in our county fixed effects model. However, the consistency of our findings across model specifications alleviates this concern.

Table 6: Pairwise Correlations Between Difference in Logged Votes Cast in 2014 and 2013 and Demographics of Precinct

Source Measurement Level	(1) Catalist Registrant	(2) Catalist Voters	(3) ACS Census Block
% Provisional Ballots	0.008 (-.034, .049)		
% Registrants with No DMV Record	-0.346 (-.382, -.309)		
% Registrants with No DMV Record (Mailer)	-0.401 (-.435, -.365)		
% Democratic Gov. '13		-0.253 (-.291, -.214)	
% Registrants Age 18-24	-0.530 (-.560, -.500)	-0.542 (-.571, -.512)	-0.455 (-.487, -.421)
% Registrants Age 65-84	0.133 (.093, .174)	0.037 (-.004, .078)	0.074 (.032, .115)
% Registrants Age 85+	-0.004 (-.046, .037)	-0.067 (-.108, -.025)	-0.009 (-.050, .032)
% Registrants Black	-0.304 (-.341, -.266)	-0.301 (-.338, -.263)	-0.301 (-.338, -.263)
% Registrants Hispanic	0.128 (.087, .169)	0.151 (.111, .192)	0.105 (.064, .146)
% Registrants Other Non-White	0.170 (.129, .210)	0.185 (.145, .225)	0.128 (.087, .168)
Logged Median Income			0.427 (.392, .460)
% No High School Degree			-0.202 (-.241, -.162)
% 4-Year College Degree			0.198 (.158, .237)
Population Density			-0.091 (-.132, -.050)

Note: N = 2,246 observations. 95% confidence intervals in parentheses. The number of votes cast is measured by the number of votes cast in the gubernatorial race and the senatorial race in 2013 and 2014, respectively. Observations are weighted by the number of registrants in 2013.

Table 7: Correlates of the Percent Change in Turnout from 2013 to 2014

County Fixed Effects	(1) No	(2) Yes	(3) No	(4) Yes
% Provisional Ballots	1.078 (1.514)	-0.485 (1.301)	0.769 (1.524)	-0.710 (1.302)
Share of Registrants with No DMV Record	0.150*** (0.053)	0.153*** (0.054)	0.009 (0.099)	-0.135 (0.119)
Share of Registrants with No DMV Record (Mailer)			0.237* (0.140)	0.412*** (0.152)
Democratic Gov. Vote Share '13	-0.101*** (0.015)	-0.051*** (0.018)	-0.100*** (0.015)	-0.045** (0.018)
Share of Registrants Age 18-24	-0.582*** (0.029)	-0.606*** (0.027)	-0.607*** (0.032)	-0.634*** (0.029)
Share of Registrants Age 65-84	-0.020 (0.027)	-0.015 (0.025)	-0.018 (0.027)	-0.013 (0.025)
Share of Registrants Age 85+	-0.018 (0.059)	-0.025 (0.050)	-0.025 (0.060)	-0.038 (0.050)
Share of Registrants Black	0.031*** (0.011)	0.027** (0.013)	0.031*** (0.011)	0.025* (0.013)
Share of Registrants Hispanic	0.238*** (0.047)	0.072 (0.046)	0.247*** (0.048)	0.086* (0.046)
Share of Registrants Other Non-White	-0.022 (0.027)	-0.043 (0.027)	-0.019 (0.027)	-0.053** (0.027)
Logged Median Income	0.048*** (0.006)	0.049*** (0.007)	0.049*** (0.006)	0.050*** (0.007)
Share with No High School Degree	0.077*** (0.026)	0.001 (0.029)	0.073*** (0.026)	-0.000 (0.029)
Share with 4-Year College Degree	0.051*** (0.017)	0.013 (0.018)	0.046*** (0.017)	0.011 (0.018)
Population Density	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)
Constant	-0.496*** (0.064)		-0.503*** (0.064)	
R^2	0.431	0.646	0.432	0.647
p-value on H_0 : sum of DMV coefs. = 0			0.002	0.000

Note: N = 2,246 observations. Standard errors in parentheses. *** p<0.01, ** p<0.05,

* p<0.1. Observations weighted by the number of registrants in 2013.

in the share of people mailed in the precinct associates with about a 0.31% increase in turnout. The bottom row shows that we can reject the null that this sum equals zero at less than the $\alpha < 0.001$ level. In short, this evidence is suggestive of an off-setting role for the informational mailer, a mailer which was targeted to precisely those registered voters less likely to have photo identification.

As we noted in Section III, interest groups were also informing and mobilizing registrants who lacked identification and geographies where a higher percentage of registrants lacked identification. Because areas that received the informational mailer also likely received more of these other forms of mobilization and information, we should not interpret these coefficients as the causal effect of the mailer. One piece of information included in the mailer was the availability of free photo ID cards at any voter registration office. Thus, we also look at whether the density of mailers in a precinct relates to the number of free IDs distributed to individuals in the precinct. According to the Virginia Department of Elections, a total of 5,201 free IDs were issued to voters across the state leading up to Election Day in 2014. While Table A.7 in the Appendix shows a strong association between the receipt of mailers and the number of free IDs issued, the significance of this association is not robust to the inclusion of the same controls from Table 7.³¹

We also find a number of additional precinct-level demographic characteristics associate with the percent change in turnout between 2013 and 2014. Contrary to many expectations and the initial correlations, turnout did not significantly drop in precincts with a higher share of black registrants. When county fixed effects are included, the percentage of black registrants is associated with slightly higher turnout. The percentage of other-race registrants is also sensitive to model specification, but in neither model is there a negative effect.³² In contrast, the percentage of voters who vote Democrat, the percentage of residents age 18 to

³¹This may be because the distribution of free photo IDs to a precinct is right skewed as a few precincts that primarily serve senior assisted living centers receive substantially more free photo IDs than any other precincts. For example, about three times more IDs were issued to a precinct serving the Greenspring Retirement Community in Fairfax County than any other precinct in the state.

³²We find the same results when using the aggregated census block data for race variables from the 2009-2013 ACS (5-Year Estimates) data rather than the Catalist voter-file measures.

24, and population density are all still associated with lower turnout at the $\alpha = 0.01$ level, and the median income of the precinct is associated with higher turnout at the $\alpha = 0.01$ level.

Although we have no way to parse out how much of the change in turnout can be directly attributed to the type of election, to the implementation of the photo ID law, or to other factors, these analyses suggest that changes in the national electoral environment in 2013 and 2014 likely played some role in the decreased turnout among Democratic voters, voters age 18 to 24, low-income voters, and those living in densely populated areas. By contrast, they do not appear to indicate that the implementation of a photo ID requirement in itself had a differential impact on precincts where those groups were concentrated. Moreover, besides population density, none of these variables are significantly related to the percentage of provisional ballots cast in a precinct.

VI Discussion

The recent wave of voter identification laws has produced at best mixed evidence of the effect of the policies on participation. This continued uncertainty is in part because of differences in the quantity of interest, the quality of survey data, and access to government records across studies. In light of this, we adopt a narrow, one-state focus to better address the Court’s predicament in *Crawford*, in which the case record contained “no evidence” of voter impersonation, but also no “concrete evidence of the burden imposed on voters who now lack photo identification.”

Specifically, we obtained data through a public information request to determine that at least 474 people attempted to vote on Election Day in the 2014 Virginia election but were unable to do so due because they lacked proper photo ID. We find the most robust predictors of such provisional ballots are the percentage of registered voters with no driver’s license and the percentage of registered voters over the age 85, both of which positively associate with the

number of provisional ballots cast. In contrast, we find no relationship between the number of provisional ballots cast and either the percentage of voters supporting the Democratic candidate for governor in the previous election or the percentage of registered voters who are black.

This verification of actual disenfranchisement is particularly useful given the lack of evidence of voter impersonation (Goel et al., 2016). But the 474 provisional ballots filed due to a lack of ID is small in relation to the total number of ballots cast. And 252 of these provisional ballots were ultimately accepted, meaning that only 222 votes were disqualified by ineligibility. Thus, any significant decrease in turnout because of voter identification would need to occur because of deterrence.

To investigate this, we also consider the broader deterrent effect of Virginia’s decision to require a photo ID to vote. Our analysis reveals that, all else equal, turnout actually increased in places where more active registered voters lacked a driver’s license.

Comparing the difference in turnout between the 2013 gubernatorial and 2014 midterm elections, the surprising positive relationship we report seems to be explained by the fact that many who lacked photo identification received an informational mailer from the Department of Elections informing them of the law and instructing them on how to acquire photo identification. The significant increase in turnout we observe is consolidated in places that received more of these mailings. This is consistent with evidence from other recent studies that find that informational mailings from the state can increase turnout among marginalized and potentially misinformed populations (Gerber et al., 2013; Gerber et al., 2015; Meredith and Morse, 2015).

Two limitations of our research design should be noted when interpreting these findings. The first is that our study has limited external validity. While the fact that we are analyzing one-year changes in turnout helps us rule out other potential causes, it also opens the possibility that the law’s long-term effects could differ dramatically, particularly as the initial efforts to inform voters about the requirements recede. The effect might also vary with the

salience of the election, meaning that a similar investigation of a presidential election could produce different results as well. Thus, it will be important to continue to study how these laws affect turnout over a longer time horizon.

Second, while our precinct-level analysis permits us to study voter ID legislation in a state where we might otherwise not be able to do so, it requires a cautious interpretation. Ecological regressions – where we study an individual-level phenomenon using aggregate data – may mask important effects (e.g. King, 1997), such as competing trends within a precinct. For example, Valentino and Neuner (In Press) find that voter identification laws generate an emotional response that make some people who actually possess identification more likely to vote. These individuals might turnout because they are angry that their neighbors could be disenfranchised. This could result in turnout increasing in areas where people lack identification, despite a substantial disenfranchising effect. More generally, our results should be interpreted as suggestive, rather than conclusive, evidence that adopting a photo ID requirement did not substantially reduce turnout in Virginia.

Still, we uncover a more nuanced relationship between DMV records and turnout than the literature describes. In addition to the mailer we discussed, the Virginia Department of Elections shared the data of registrants without DMV records with at least four outside organizations, made templates of informational flyers and mailers available on its website, and published the precinct-level reports of potentially disenfranchised voters that we use in our analysis. Our results suggest the importance of electoral administration in potentially mediating the relationship between voter ID legislation and subsequent turnout, at least in the short-term.

Extant work, however, has generally taken a national approach, with less focus on any specific state. The result is that empirical scholars up to this point have paid comparatively less attention to differences across states in how voter identification laws have been implemented, even as the legislative language remains similar. Virginia appeared to engage in an aggressive outreach effort to inform voters about the law, perhaps because it was the first

state to implement strict photo identification under a Democratic governor.³³ In doing so, it provided a template that other states can draw upon for a low cost outreach campaign that appears to have been relatively successful.³⁴

The Virginia effort also suggests that the simplified typologies of voter ID legislation – strict versus non-strict, photo versus non-photo ID – might be misleading, for both scholarship and policymaking. Voter ID laws should be conceptualized as broader than their literal legislation to encompass the bureaucratic infrastructure that builds up around it. Some state courts have already begun focusing on issues of state and local implementation. In *Applewhite v. Commonwealth of Pennsylvania*, the state court struck down Pennsylvania’s voter ID law because while “the statute as intended assures entitlement to ID so that no one will be disenfranchised... [t]he statute as implemented, imperfectly and inaccurately, does not assure the franchise, it de facto denies it.” The court was particularly critical of the state’s poor efforts at educating the electorate. More work should continue in this vein. Future scholarship might leverage existing, precinct-level public information in a range of other states and localities to study how other features of electoral administration affect the consequences of requiring identification to vote.

³³However, Virginia’s outreach efforts were initially a response to Executive Order 62, signed by its then-Republican governor, to “direct the State Board of Elections to engage in a robust voter outreach campaign.”

³⁴Martha Brisette, Policy Analyst at Virginia Department of Election, indicated in an email that the information mailer we described earlier only cost \$21,839 in general funds flagged for voter outreach.

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VII Appendix

VII.A Validating Catalist Precinct-Level Data

This section explains why registered voters, rather than 2014 general election voters, are used to construct measure of precinct-level age and race. Figure A.1 shows a scatter plot of the number of Senate votes in the 2014 general election versus the number of vote records for the 2014 general election in the Catalist dataset—which also contains race and age variables for registered voters and number who voted. Clearly, the number of Senate votes is a good predictor of the number of vote records in the Catalist data, with the exception of a few observations. The problem observations appear to be those with an unusually low number of vote records in the Catalist data relative to the number of senate votes in the precinct.

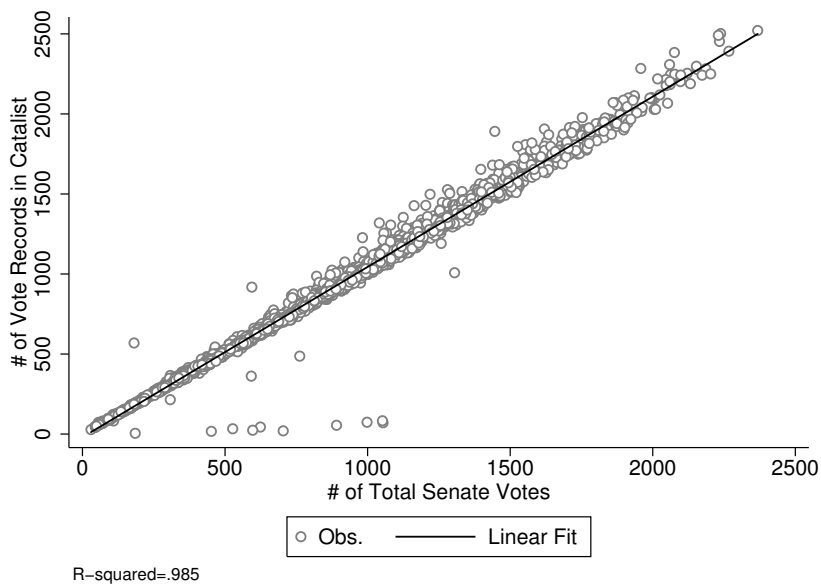


Figure A.1: General election votes vs. Catalist votes

Note: This figure shows that the number of Senate votes is a good predictor of the number of vote records in the Catalist data, with the exception of a few observations. The problem observations appear to be those with an unusually low number of vote records in the Catalist data relative to the number of senate votes in the precinct.

Figures A.2 and A.3 separate the scatter plot from Figure A.1 into all precincts in Rich-

mond City and all precincts outside of Richmond City, respectively. These figures highlight that all of the problem observations are from Richmond City.

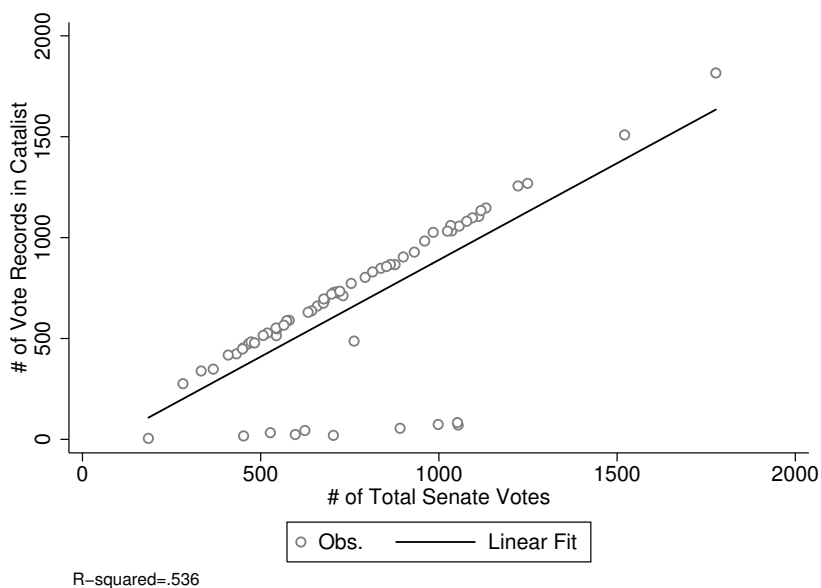


Figure A.2: General election votes vs. Catalyst votes, Richmond City

Note: This figure shows only Richmond City observations from Figure A.1. It highlights that all of the problem observations are from Richmond City.

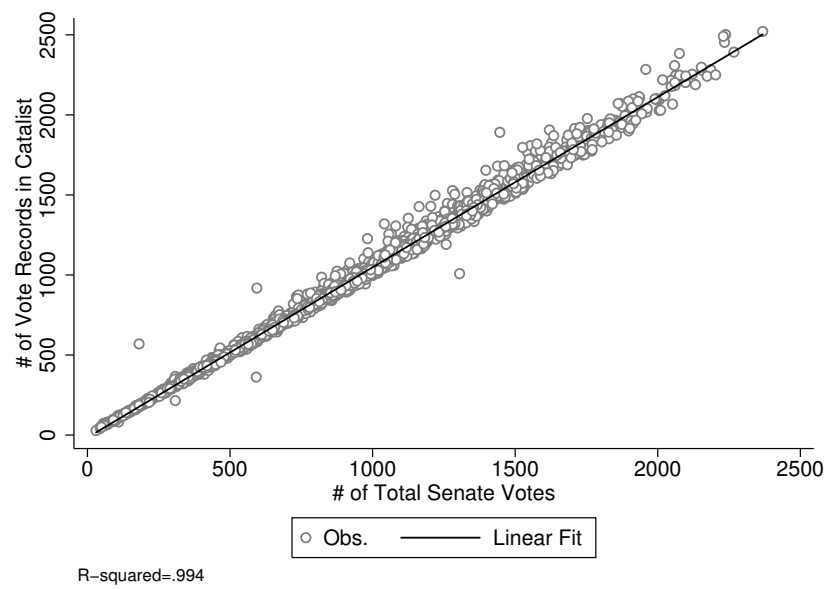


Figure A.3: General election votes vs. Catalist votes, excluding Richmond City

Note: This figure shows non-Richmond City observations from Figure A.1. It highlights that all of the problem observations are from Richmond City.

Because we prefer to keep as many observations as possible, we would like to avoid dropping precincts from Richmond City. To see if there are problem observations from Richmond City in the number of registered voters as well as the number who actually voted, Figure A.4 plots the number of Senate votes from the 2014 general election versus the number of registered voters from the Catalist data for all precincts in Richmond City. The results of this are shown in Figure A.4. There are two important notes to make about this scatter plot. First, the relatively lower R^2 value is not that concerning, as there should be more variable relationship between the number of senate votes in the precinct and the number of registered voters. Second, there doesn't seem to be any difference in the relationship between the number of senate votes in the precinct and the number of registered voters in precinct in the problem precincts. Therefore, in order to keep the Richmond City observations, we decide to use the number of registered voters in our analysis for race and age measurements.

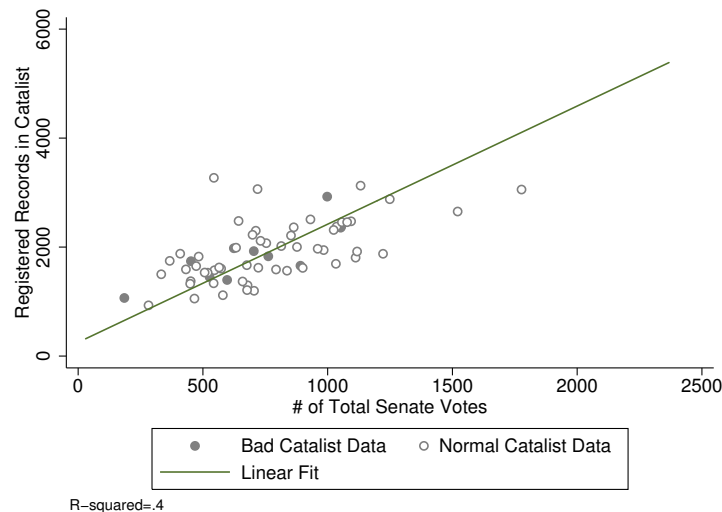


Figure A.4: General election votes vs. number of registered voters, Richmond City

Note: This figure plots the number of Senate votes from the 2014 general election versus the number of registered voters from the Catalist data for all precincts in Richmond City. In order to keep the Richmond City observations, we decide to use the number of registered voters in our analysis for race and age measurements.

VII.B Constructing Precinct-Level Demographics using the ACS

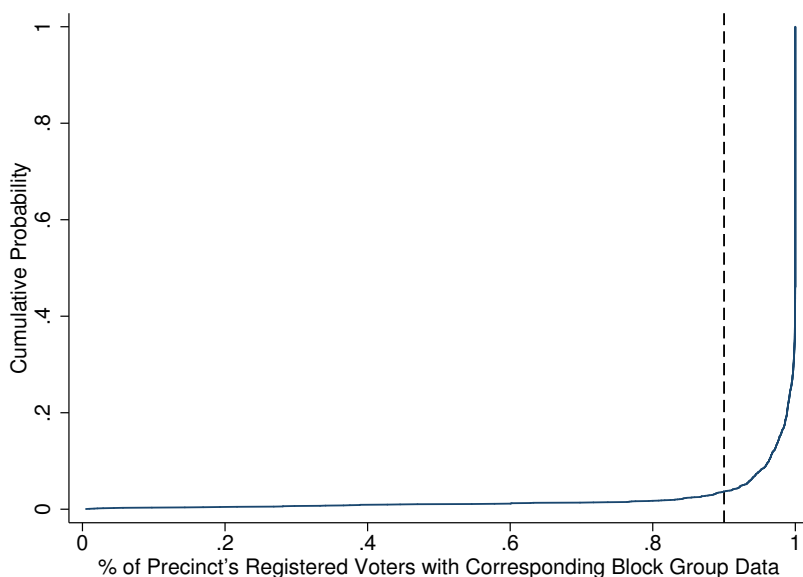


Figure A.5: Cumulative distribution function

Note: This figure shows the cumulative distribution of precincts by the percentage of registered voters in the precinct that have a known census-block group of residence. We only define demographics for precincts in which at least 90% of registrants reside in a known census-block group of residence. Only 89 of 2,432 precincts were dropped for failing to meet this 90% threshold.

VII.C Validating Precinct-Level Demographics using the ACS

Because we are aggregating weighted block group demographics up to the precinct, we want to assess how well these weighted block group characteristics match precinct-level data. Because we have actual precinct-level measurements for race and age variables, we can assess how close our weighted ACS estimates approximate the Catalist data for these variables. One important difference to keep in mind is that the ACS estimates are for the whole population, while the Catalist data is specifically for registered voters. Therefore, differences in rates of voter registration among these groups can explain some of the variation in these measures.

For example, the average percentage of residents age 18-24 in the ACS data for all precincts is about 12.1%, while the average percentage of registered voters from the Catalist data for all precincts is only 8.4%. Because people age 18-24 are registered at a lower rate than other groups in the voting age population, this is not necessarily evidence of error.

The results of these comparisons are shown in Figures A.6 through A.11. While rates of registration differ with age, this is the case to a much lesser extent for race. Moreover, there tends to be more residential segregation with respect to race than age. Therefore it is not surprising that there is more similarity – as measured by R^2 – when we approximate racial composition using ACS data than when we approximate age composition using ACS data. But there is a relatively strong correlation between all of our Catalist and ACS measures for all five variables. These patterns make us more confident to use our weighted ACS estimates for income, education, travel, and geography variables.

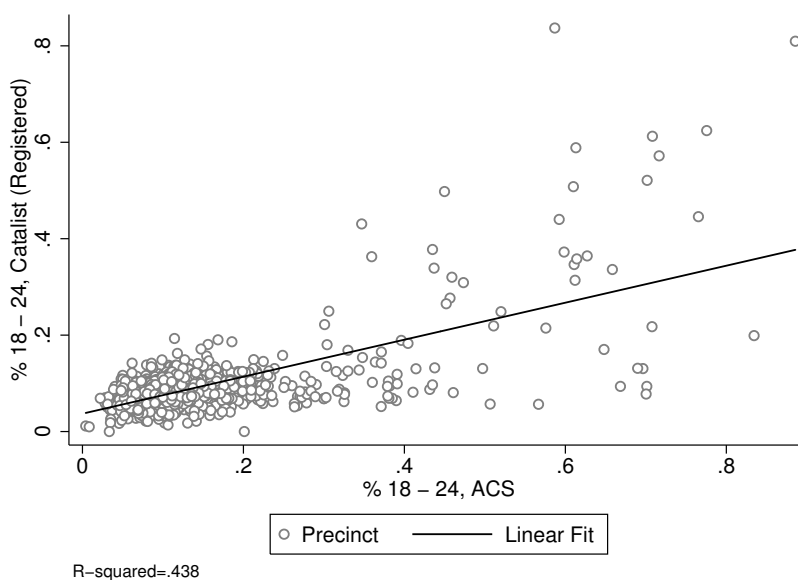


Figure A.6: Age 18-24

Note: This figure assesses how well our 2009-2013 ACS (5-Year Estimates) weighted block group measure of percentage of residents age 18-24 matches precinct-level Catalist data.

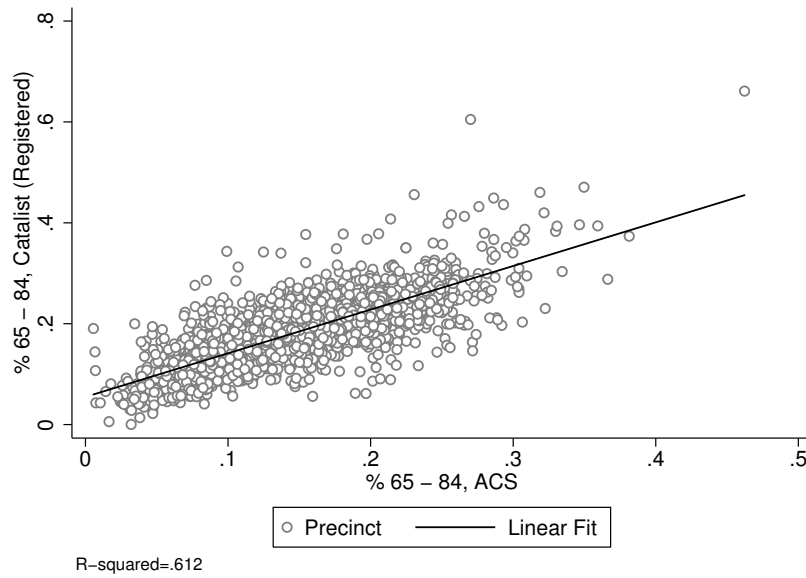


Figure A.7: Age 65-84

Note: This figure assesses how well our 2009-2013 ACS (5-Year Estimates) weighted block group measure of percentage of residents age 65-84 matches precinct-level Catalist data.

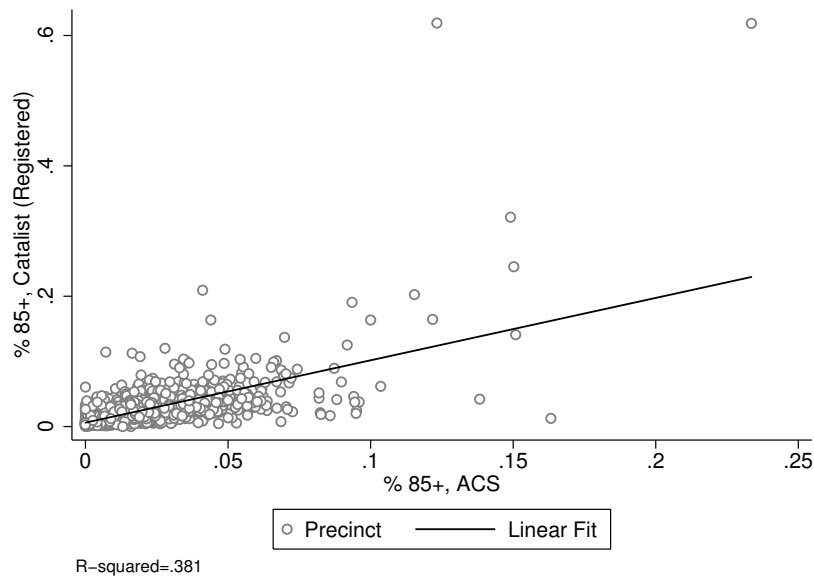


Figure A.8: Age 85+

Note: This figure assesses how well our 2009-2013 ACS (5-Year Estimates) weighted block group measure of percentage of residents age 85+ matches precinct-level Catalist data.

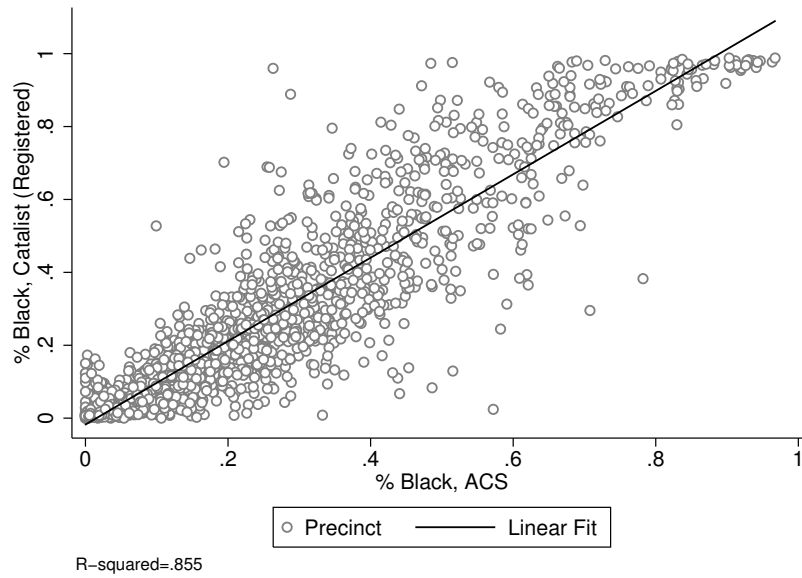


Figure A.9: Percent Black

Note: This figure assesses how well our 2009-2013 ACS (5-Year Estimates) weighted block group measure of percentage of black residents matches precinct-level Catalist data.

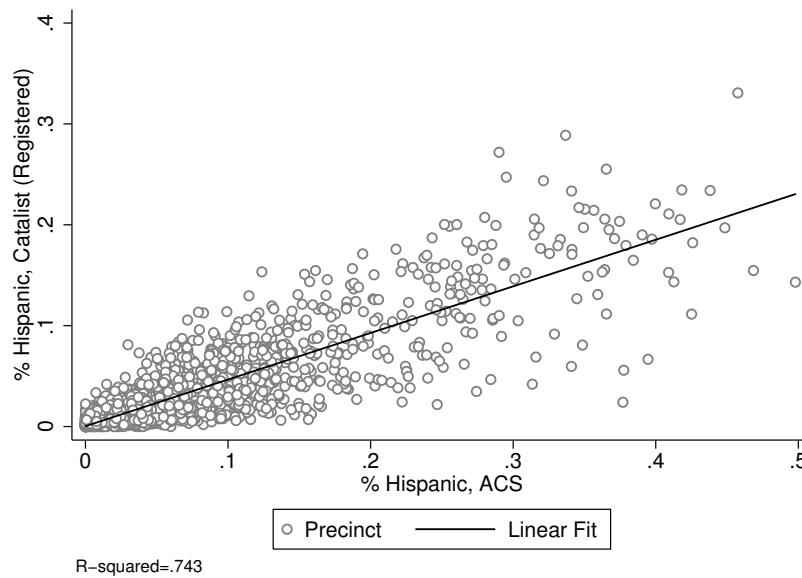


Figure A.10: Percent Hispanic

Note: Note: This figure assesses how well our 2009-2013 ACS (5-Year Estimates) weighted block group measure of percentage of Hispanic residents matches precinct-level Catalist data.

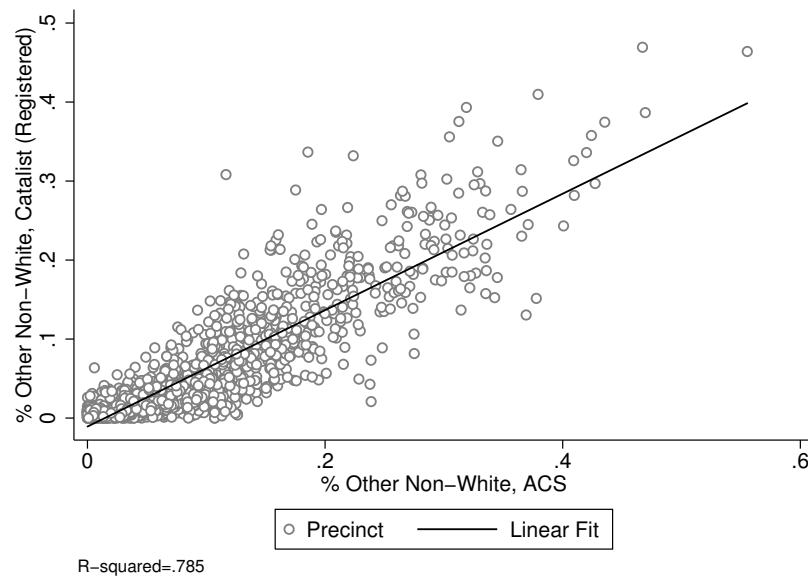


Figure A.11: Percent other non-White

Note: Note: This figure assesses how well our 2009-2013 ACS (5-Year Estimates) weighted block group measure of percentage of other non-White residents matches precinct-level Catalist data.

VII.D Validating Comparisons of Precinct-Level Turnout Over Time

Figure A.12 shows a scatter plot of each precinct's total votes for Governor in 2013 versus its total votes for Senate in 2014. Note that some precincts from Montgomery County and all precincts from Prince William County are excluded when making this figure because redistricting made turnout in the precincts incomparable over the two elections.

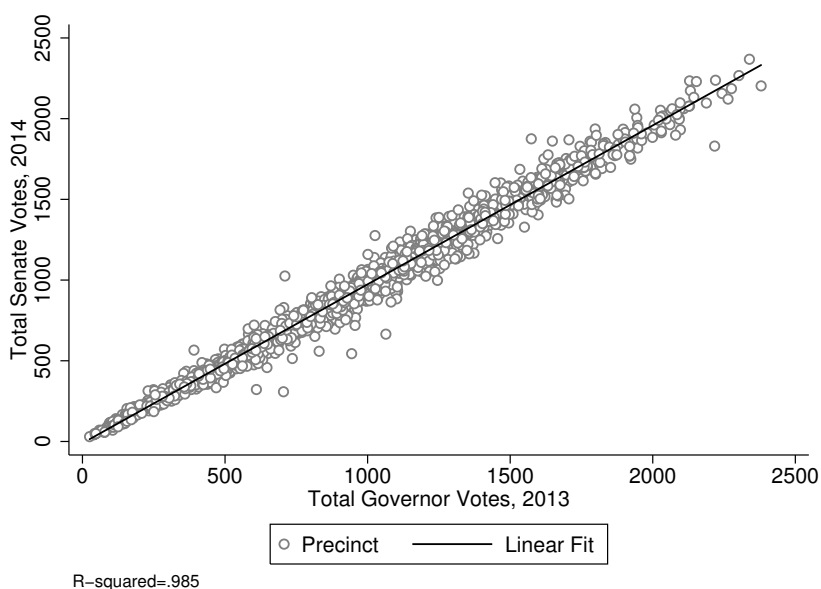


Figure A.12: Total governor votes, 2013 vs. total senate votes, 2014

Note: This figure shows a scatter plot of each precinct's total votes for Governor in 2013 versus its total votes for Senate in 2014. Vote totals are from the Virginia Department of Elections.

The R^2 value for this plot is high, indicating that the change in turnout from 2013 to 2014 was pretty consistent across most precincts. The question here, then, deals with which types of precincts had the largest negative change in turnout between the two elections. Although we cannot make sweeping claims about the effect of the new voter ID law on turnout—as many variables may have influenced turnout change in a precinct from 2013 to 2014—it is certainly interesting to see if precincts with the largest decrease in turnout have

large numbers of residents that are believed to be affected most by the new voter ID law.

VII.E Additional Tables

Table A.1: Voter ID Laws by State

State	Acceptable Forms of ID	Voters without ID
Alabama	-Valid Alabama driver's license or non-driver ID card -Valid photo voter ID card or other valid ID card issued by any state or the federal government , as long as it contains a photo -Valid U.S. passport -Valid government employee ID card with a photo -Valid student or employee ID card issued by a college or university in the state, provided it includes a photo -Valid U.S. military ID card containing a photo -Valid tribal ID card containing a photo	Vote a provisional ballot or vote a regular ballot if s/he is identified by two election officials as an eligible voter on the poll list, and both election workers sign a sworn affidavit so stating. If voting a provisional ballot, the voter has until 5:00PM on the Friday after the election to bring the required ID
Alaska	-Official voter registration card -Driver's license -Birth certificate -Passport -Hunting or fishing license -Current utility bill, bank statement, paycheck, government check or other government document with the voters name and address	An election official may waive the identification requirement if the election official knows the identity of the voter. A voter who cannot exhibit a required form of identification shall be allowed to vote a questioned ballot.
Arizona	-Valid Arizona driver's license -Valid Arizona non-driver identification -Tribal enrollment card or other form of tribal identification -Valid U.S. federal, state or local government issued identification -Utility bill dated within 90 days of the election -Bank or credit union statement dated within 90 days of the election -Valid Arizona vehicle registration -Indian census card -Property tax statement -Vehicle insurance card -Recorders Certificate	An elector who does not provide the required identification shall receive a provisional ballot. Provisional ballots are counted only if the elector provides identification to the county recorder by 5 pm on the fifth business day after a general election that includes an election for federal office, or by 5 pm on the third business day after any other election.
Colorado	-Colorado driver's license -CO Dept. of Revenue ID card -U.S. passport -Employee ID card with photo issued by the -U.S. government, CO state government, or political subdivision of CO -Pilots license -U.S. military ID with photo -A copy of a current utility bill, bank statement, government check, paycheck, or other government document that shows the name and address of the elector -Medicare or Medicaid card -Certified copy of birth certificate -Certified documentation of naturalization	An eligible elector who is unable to produce identification may cast a provisional ballot. The designated election official shall attempt to verify that an elector who cast a provisional ballot is eligible to vote. The designated election official or designee shall complete the preliminary verification of the elector's eligibility to vote before the ballot is counted.
Connecticut	-Social Security card -Any other preprinted form of identification which shows the elector's name and either the elector's address, signature or photograph	Elector shall, on a form prescribed by the Secretary of the State, write the elector's residential address and date of birth, print the elector's name and sign a statement under penalty of false statement that the elector is the elector whose name appears on the official checklist.
Delaware	-Photo ID -Utility bill -Paycheck -Any government document with voters name and address	In the event the voter does not have proof of identity with them, he or she shall sign an affidavit of affirmation that he or she is the person listed on the election district record.
Florida	-Florida driver's license -Florida ID card issued by the Dept. of Highway Safety and Motor Vehicles -U.S. passport -Debit or credit card -Military identification -Student identification -Retirement center identification -Neighborhood association ID -Public assistance identification	If the elector fails to furnish the required identification, the elector shall be allowed to vote a provisional ballot. The canvassing board shall determine the validity of the ballot by determining whether the elector is entitled to vote at the precinct where the ballot was cast and that the elector had not already cast a ballot in the election. Florida uses signature matching: the voter signs the provisional ballot envelope. That signature is compared to the signature in the voter registration records. If they match, the ballot is counted.
Georgia	-Georgia drivers license, even if expired -ID card issued by the state of Georgia or the federal government -Free voter ID card issued by the state or county -U.S. passport -Valid employee ID card containing a photograph from any branch, department, agency, or entity of the U.S. Government, -Georgia, or any county, municipality, board, authority or other entity of this state -Valid U.S. military identification card -Valid tribal photo ID	A voter without one of the acceptable forms of photo identification can vote on a provisional ballot. He or she will have up to three days after the election to present appropriate photo identification at the county registrar's office in order for the provisional ballot to be counted.
Hawaii	Poll workers request photo ID with a signature. Acceptable types of ID are not specified by law.	If the voter has no identification, the voter will be asked to recite his/her date of birth and residence address to corroborate the information provided in the poll book.
Idaho	-Idaho driver's license -Idaho ID card -Passport -ID card, including a photo, issued by an agency of the U.S. government -Tribal ID card, including a photograph -Student ID card, including a photograph, issued by a high school or accredited institution of higher education within the state of Idaho	A voter may complete an affidavit in lieu of the personal identification. The affidavit shall be on a form prescribed by the secretary of state and shall require the voter to provide the voter's name and address. The voter shall sign the affidavit. Any person who knowingly provides false, erroneous or inaccurate information on such affidavit shall be guilty of a felony.
Indiana	Specific forms of ID are not listed in statute. ID must be issued by the state of Indiana or the U.S. government and must show the following: -Name of individual to whom it was issued, which must conform to the individual's registration record -Photo of the person to whom it was issued -Expiration date (if it is expired, it must have an expiration date after the most recent general election; military IDs are exempted from the requirement that ID bear an expiration date) -Must be issued by the United States or the state of Indiana	Voters who are unable or decline to produce proof of identification may vote a provisional ballot. The ballot is counted only if (1) the voter returns to the election board by noon on the Monday after the election and: (A) produces proof of identification; or (B) executes an affidavit stating that the voter cannot obtain proof of identification, because the voter: (i) is indigent; or (ii) has a religious objection to being photographed; and (2) the voter has not been challenged or required to vote a provisional ballot for any other reason.
Kansas	The following forms of identification are valid if they contain the name and photograph of the voter and have not expired. Expired documents are valid if the bearer is aged 65 or older. -Driver's license issued by Kansas or another state -State identification card -Government-issued concealed handgun or weapon license -U.S. passport -Employee badge or identification document issued by a government office or agency -Military ID -Student ID issued by an accredited postsecondary institution in Kansas -Government-issued public assistance ID card	A voter who is unable or refuses to provide current and valid identification may vote a provisional ballot. To have his or her ballot counted, the voter must provide a valid form of identification to the county election officer in person or provide a copy by mail or electronic means before the meeting of the county board of canvassers.
Kentucky	-Drivers license -Social Security card -Credit card	When the officers of an election disagree as to the qualifications of a voter or if his right to vote is disputed by a challenger, the voter shall sign a written oath as to his qualifications before he is permitted to vote.
Louisiana	-Louisiana drivers license -Louisiana special ID card -Other generally recognized picture identification	If the applicant does not have identification, s/he shall sign an affidavit to that effect before the commissioners, and the applicant shall provide further identification by presenting his current registration certificate, giving his date of birth or providing other information stated in the precinct register that is requested by the commissioners. However, an applicant that is allowed to vote without the picture identification required by this Paragraph is subject to challenge as provided in R.S. 18:565.
Michigan	-Michigan driver's license -Michigan personal identification card A voter who does not possess either of the above may show any of the following, as long as they are current: -Driver's license or personal identification card issued by another state -Federal or state government-issued photo ID -U.S. passport -Military ID with photo -Student ID with photo from a high school or accredited institution of higher education -Tribal ID with photo	An individual who does not possess, or did not bring to the polls, photo ID, may sign an affidavit and vote a regular ballot.
Mississippi	-A driver's license -A photo ID card issued by a branch, department, or entity of the State of Mississippi -A United States passport -A government employee ID card -A firearms license -A student photo ID issued by an accredited Mississippi university, college, or community/junior college -A United States military ID -A tribal photo ID -Any other photo ID issued by any branch, department, agency or entity of the United States government or any state government -A Mississippi Voter Identification Card	An individual without ID can cast an affidavit ballot which will be counted if the individual returns to the appropriate circuit clerk within five days after the election and shows government-issued photo ID. Voters with a religious objection to being photographed may vote an affidavit ballot, which will be counted if the voter returns to the appropriate circuit clerk within five days after the election and executes an affidavit that the religious exemption applies.
Missouri	-Identification issued by the federal government, state of Missouri, an agency of the state, or a local election authority; -Identification issued by Missouri institution of higher education, including a university, college, vocational and technical school; -A copy of a current utility bill, bank statement, paycheck, government check or other government document that contains the name and address of the voter; -Driver's license or state identification card issued by another state.	If an individual does not possess any of these forms of identification, s/he may still cast a ballot if two supervising election judges, one from each major political party, attest they know the person.
Montana	-Drivers license -School district or postsecondary education photo identification -Tribal photo identification -Current utility bill, bank statement, paycheck, notice of confirmation of voter registration, government check, or other government document that shows the elector's name and current address	If the identification presented is insufficient to verify the elector's identity and eligibility to vote or if the elector's name does not appear in the precinct register, the elector may sign the precinct register and cast a provisional ballot. Montana uses signature verification to verify the eligibility of provisional ballots. If the voter's signature on the provisional ballot affirmation matches the signature on the voter's registration record, the ballot is counted.
New Hampshire	-A driver's license from NH or any other state, regardless of expiration date -A photo ID card issued by the NH director of motor vehicles -A voter ID card issued under R.S. 260:21 -A U.S. armed services photo ID card -A U.S. passport, regardless of expiration date -A valid student ID card -Any other valid photo ID issued by federal, state, county or municipal government -Any other photo ID that is determined to be legitimate by the supervisors of the checklist, the moderator, or the town or city clerk, provided that if any person authorized to challenge a voter under RSA 659:27 objects to the use of such photo identification, the voter shall be required to execute a qualified voter affidavit as if no identification was presented. -Verification of the voters identity by a moderator or supervisor of the checklist or clerk of a town, ward or city (not a ballot clerk). If any person authorized to challenge a voter does so under this provision, the voter shall be required to fill out a challenged voter affidavit before obtaining a ballot.	A persons identity may be verified by a moderator or supervisor of the checklist or the town or city clerk, but if any person authorized to challenge a voter under RSA 659:27 objects to such verification, the voter shall be required to execute a challenged voter affidavit. If a voter does not have a valid photo identification, the ballot clerk shall inform the voter that he or she may execute a qualified voter affidavit. The voter may then cast a regular ballot. By Jan. 10 in odd numbered years or within 90 days after any other election, the secretary of state is required to mail a non-forwardable letter to each voter who executed a qualified voter affidavit, notifying the person that a person who did not present valid photo identification voted using his or her name and address and instruct the person to return the letter within 90 days with a written confirmation that the person voted or to contact the attorney general immediately if he or she did not vote. Any such letters returned as undeliverable must be turned over to the attorney general, who shall investigate for voter fraud. Notice from any voter receiving such a letter that s/he did not vote is also forwarded to the attorney general for investigation. The secretary must also turn over to the attorney general a list of all voters who fail to respond to the letter to confirm that they voted.

North Carolina	-NC driver's license (can be expired) -US passport (unexpired) -US military or veterans identification card, issued by the Department of Defense or Department of Veterans Affairs, containing a photo. An ID containing an expiration date must be unexpired, but IDs without an expiration date are also accepted. -A tribal enrollment card issued by a federally recognized tribe. If the card does not have an expiration date, it may still be used if the card has a date of issuance that is within 8 years of the date it is presented. A tribal enrollment card issued by a tribe recognized by North Carolina under Chapter 71A that is (i) issued in accordance with a process approved by the State Board of Elections requiring an application and proof of identity equivalent to the requirements for issuance of a special identification card by the Division of Motor Vehicles, and (ii) signed by an elected official of the tribe. -Driver's license or special identification card issued by another state, D.C., or a territory or commonwealth of the U.S. only if the voter's registration was within 90 days of the election. -Voters who are over the age of 70 may use acceptable photo ID that has been expired for any length of time, provided the ID expired after the voter turned 70.	Voters who are unable to obtain an acceptable photo ID due to a reasonable impediment can vote a provisional ballot if they also sign a declaration describing the impediment and provide date of birth and last four digits of social security number, or an acceptable document bearing the name and address (i.e. a current utility bill, bank statement, paycheck or other government-issued document). The ballot will be counted when the information on the declaration is verified and all other eligibility requirements are met. An individual who voted a provisional ballot due to lack of photo ID can also come in person to the CBOE no later than 12:00 noon on the day before the election caucuss to seek the counting of the ballot. If the voter does one of the following at the CBOE, unless otherwise disqualified, the ballot will be counted: Present Photo ID -A voter may present photo ID that bears a reasonable resemblance to the voter. The elections officials are to determine if the photo ID bears a reasonable resemblance. Religious Objection -A voter who had not previously filed a religious objection declaration may show a HAVA document and sign a declaration of their religious objection, as well as have an opportunity to complete a declaration for future elections. A voter may also choose to apply for an absentee ballot, which does not require a photo ID.
North Dakota	-Valid driver's license or state ID card -Valid government-issued tribal ID card -Long-term care identification certificate (provided by ND facility)	If an individual offering to vote does not have or refuses to show an appropriate form of identification, he or she will not be able to vote.
Ohio	-Current and valid photo identification, defined as a document that shows the individuals name and current address, includes a photograph, includes an expiration date that has not passed, and was issued by the U.S. government or the state of Ohio -Current utility bill -Current bank statement -Current government check, paycheck or other government document	A voter who has but declines to provide identification may cast a provisional ballot upon providing a social security number or the last four digits of a social security number. A voter who has neither identification nor a social security number may execute an affidavit to that effect and vote a provisional ballot. A voter who declines to sign the affidavit may still vote a provisional ballot. Voters who cast a provisional ballot because they did not provide acceptable proof of identity must appear in person at the board of elections to provide such proof within the 10 days immediately following Election Day.
Oklahoma	"Proof of identity" shall mean a document that satisfies the following: -Shows a name that substantially conforms to the name in the precinct registry -Shows a photograph -Includes an expiration date that is after the date of the election -Was issued by the United States, state of Oklahoma, or a federally recognized Indian tribe or nation. A voter registration card issued by the appropriate county elections board may serve as proof of identity without meeting all of the above requirements.	A provisional ballot cast by a voter who declines or is unable to produce proof of identity shall only be considered verified and approved for counting if the voter's name, residence address, date of birth, and driver's license number or last four digits of social security number as provided on the affidavit match what is in the registration database.
Rhode Island	A valid and current document showing a photo of the person to whom it was issued, including: -RI driver's license -RI voter identification card -U.S. passport -Identification card issued by a U.S. educational institution -U.S. military identification card -Identification card issued by the U.S. government or state of RI -Government-issued medical card	If the person claiming to be a registered and eligible voter is unable to provide proof of identity as required, the person shall be allowed to vote a provisional ballot pursuant to section 17-19-24.2. The local board shall determine the validity of the provisional ballot pursuant to section 17-19-24.3. Summary of section 17-19-24.3. The local board shall examine each provisional ballot application to determine if the signature matches the signature on the voter's registration. If the signatures match, the provisional ballot shall count. If the signatures do not match, the ballot shall not count and shall be rejected as illegal.
South Carolina	-South Carolina driver's license -Photo ID card issued by the SC Dept. of Motor Vehicles -Passport -Military ID bearing a photo issued by the federal government -South Carolina voter registration card with a photo Voters who have a reasonable impediment to obtaining photo ID may show a non-photo voter registration card in lieu of photo ID, sign an affidavit attesting to the impediment, and cast a provisional ballot.	If you have a reasonable impediment to obtaining Photo ID, you may vote a provisional ballot after showing your non-photo voter registration card. A reasonable impediment is any valid reason, beyond your control, which created an obstacle to obtaining Photo ID. Some examples include: Religious objection to being photographed Disability or illness Work schedule Lack of transportation Lack of birth certificate Family responsibilities Election within short time frame of implementation of Photo ID law (January 1, 2013) Any other obstacle you find reasonable To vote under the reasonable impediment exception: Present your current, non-photo registration card at the polling place Sign an affidavit stating why you could not obtain a Photo ID Cast a provisional ballot that will be counted unless the county election commission has reason to believe your affidavit is false. If you do NOT have Photo ID and do NOT have a reasonable impediment to obtaining one, or you simply forgot to bring it with you to the polls, you may still vote a provisional ballot. However, for your vote to be counted, you must provide one of the Photo IDs to the county election commission prior to certification of the election (usually Thursday or Friday after the election).
South Dakota	-South Dakota drivers license or nondriver identification card -U.S. passport -Photo ID issued by an agency of the U.S. government -Tribal ID card, including a photo -Student ID card, including a photo, issued by an accredited South Dakota school	If a voter is not able to present a form of personal identification as required, the voter may complete an affidavit in lieu of the personal identification. The affidavit shall require the voter to provide his or her name and address. The voter shall sign the affidavit under penalty of perjury.
Tennessee	-TN drivers license -Valid photo ID card issued by any state -Valid photo ID license issued by TN Dept. of Safety -Valid U.S. passport -Valid U.S. military ID with photo -TN handgun carry permit with photo	If a voter is unable to present the proper evidence of identification, then the voter will be entitled to vote by provisional ballot in the manner detailed in the bill. The provisional ballot will only be counted if the voter provides the proper evidence of identification to the administrator of elections or the administrator's designee by the close of business on the second business day after the election. However, "A voter who is indigent and unable to obtain proof of identification without payment of a fee or who has a religious objection to being photographed shall be required to execute an affidavit of identity on a form provided by the county election commission and then shall be allowed to vote." 2-7-112(f)
Texas	- Texas driver's license -Election identification certificate -Dept. of Public Safety personal ID card -U.S. military ID -U.S. citizenship certificate -U.S. passport -License to carry a concealed handgun issued by the Dept. of Public Safety All of the above must include a photo of the voter. With the exception of the certificate of citizenship, these forms of ID cannot be expired, or cannot have expired more than 60 days before the election.	A voter who fails to present the required identification may cast a provisional ballot. The voter must present, not later than the sixth day after the date of the election, the required form of identification to the voter registrar for examination OR the voter may execute, in the presence of the voter registrar, an affidavit under penalty of perjury stating that the voter has a religious objection to being photographed or that the voter does not have identification as a result of a natural disaster declared by the president or the governor which occurred not earlier than 45 days before the date the ballot was cast.
Utah	-Current valid UT driver's license -Current valid identification card issued by the state or federal government -UT concealed weapon permit -U.S. passport -Current valid U.S. military ID card -Bureau of Indian Affairs card -Tribal treaty card -Tribal ID card OR -Two forms of ID that bear the name of the voter and provide evidence that the voter resides in the precinct.	The voter may cast a provisional ballot as provided by 20A-3-105.5 20A-4-107 states that a county clerk may verify the identity and residence of a voter who fails to provide valid voter identification "through some other means."
Virginia	-Virginia voter registration card -United States passport -Virginia driver's license -Any other identification card issued by a government agency of the Commonwealth, one of its political subdivisions, or the United States -Concealed handgun permit -Any valid student ID card issued by any institution of higher education located in Virginia -Employee identification card	Any voter who does not show one of the forms of identification specified in this subsection shall be offered a provisional ballot marked ID-ONLY that requires no follow-up action by the registrar or electoral board other than matching submitted identification documents from the voter for the electoral board to make a determination on whether to count the ballot. In order to have his or her ballot counted, the voter must submit a copy of one of the forms of identification to the electoral board by facsimile, electronic mail, in-person submission, or timely United States Postal Service or commercial mail delivery, to be received by the electoral board no later than noon on the third day after the election.
Washington	The identification must be valid photo identification, such as: -A driver's license -A state identification card -A student identification card -A tribal identification card -An employer identification card	Any individual who desires to vote in person but cannot provide identification shall be issued a provisional ballot, which shall be accepted if the signature on the declaration matches the signature on the voter's registration record.
Wisconsin	-Wisconsin driver's license -ID card issued by a U.S. uniformed service -Wisconsin non-driver ID -U.S. Passport -Certificate of naturalization issued not more than 2 years before the election -ID card issued by a federally recognized -Indian tribe in WI -Student ID card with a signature, an issue date, and an expiration date no later than 2 years after the election -a photo ID card provided by the Veteran's Health Administration. All of the above must include a photo and a name that conforms to the poll list. If the ID presented is not proof of residence, the elector shall also present proof of residence.	An elector who appears to vote at a polling place and does not have statutory ID shall be offered the opportunity to vote a provisional ballot. An elector who votes a provisional ballot may furnish statutory ID to the election inspectors before the polls close or to the municipal clerk no later than 4pm on the Friday following Election Day.

Note: Table from the National Conference of State Legislatures. See <http://www.ncsl.org/research/elections-and-campaigns/voter-id.aspx>

Figure A.13: Provisional ballot log

Envelope 1A (1B if used)

PRECINCT PROVISIONAL BALLOTS LOG

➤ Enter the information requested below for each voter who completes a provisional ballot. Do NOT mark pollbook for provisional voters. Circle multiple reasons for casting the provisional ballot if multiple reasons apply. If lack of ID is one of multiple reasons, the ballot should be placed in the regular provisional envelope. Put **LOG** in Envelope 1A with voted, sealed provisional ballot envelopes completed during normal voting hours

➤ If voting hours are extended by court order, begin new LOG sheet, restart page count from "1" and check "after hours" below. These voters may only vote by provisional ballot (reason #3; other reasons may also apply). Do NOT mark pollbook for provisional voters. Provisional ballots and LOG sheets must be kept separate from those used during normal voting hours. Put after hours **LOG** in Envelope 1B with all voted, sealed provisional ballot envelopes completed by those persons voting after the normal close of polls.

County or City of _____ Log Page # _____ Election Date _____
Precinct Name / # _____ Cong. Dist. # _____ Check if after hours ☐

Please print legibly

Voter's Full Name, Virginia Address, SSN, Date of Birth, Gender and Phone # from Provisional Ballot Envelope.	Reason(s) PB Issued (circle; explain if necessary)							EB counted? Yes No	If not counted, reason why:
	1	2	3	4	5	6	ID		
1.									
2.									
3.									
4.									
5.									
6.									
7.									
8.									
TOTALS:									

Provisional Reasons: 1 or 2-Voter's name NOT on Pollbook (# indicates residency status); 3-Court order extending voting hours; 4-Absentee ballot cannot be confirmed as returned; 5-Voter listed as having already voted; 6-Other; ID-Voter failed to present proper identification

Page #: _____

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Note: From the Virginia Department of Elections, this is the form Virginia poll workers use to log each provisional ballot.

Table A.2: Summary Statistics for Precinct-Level Demographics

Variable	Mean	Std. Dev.	Min.	Max.	N
Democratic Gov. Vote Share '13	0.496	0.197	0.087	0.992	2323
Share of Registrants Age 18-24	0.084	0.05	0	0.846	2338
Share of Registrants Age 65-84	0.187	0.066	0	0.661	2338
Share of Registrants Age 85+	0.026	0.026	0	0.619	2338
Share of Registrants Black	0.206	0.246	0	0.988	2338
Share of Registrants Hispanic	0.031	0.041	0	0.331	2338
Share of Registrants Other Non-White	0.042	0.062	0	0.469	2338
Logged Median Income	11.033	0.477	9.543	12.45	2338
Share with No High School Degree	0.138	0.085	0	0.449	2338
Share with 4-Year College Degree	0.318	0.197	0.014	0.946	2338
Population Density	2.143	3.099	0.004	30.354	2338

Table A.3: Table 5 VIF Stats

	(1)	(2)	(3)	(4)
Model	ZNB	NB	NB	NB
County Fixed Effects	No	No	No	Yes
Observations	2,323	2,323	1,634	1,634
Share of Registrants with No DMV Record	1.87	1.87	1.81	2.92
Democratic Gov. Vote Share '13	5.85	5.85	6.47	11.99
Share of Registrants Age 18-24	1.78	1.78	1.53	2.07
Share of Registrants Age 65-84	2.1	2.1	2.03	2.58
Share of Registrants Age 85+	1.3	1.3	1.29	1.39
Share of Registrants Black	5.06	5.06	5.7	11.44
Share of Registrants Hispanic	2.54	2.54	2.63	3.99
Share of Registrants Other Non-White	2.62	2.62	2.52	3.75
Logged Median Income	5.79	5.79	6.32	13.68
Share with No High School Degree	3.26	3.26	2.98	4.89
Share with 4-Year College Degree	7.64	7.64	8.11	13.13
Population Density	2.44	2.44	2.58	4.72
Total Ballots Cast (thousands)	1.64	1.64	1.47	1.77

Note: This table shows that we have some multicollinearity concerns in our Table 5 models that include county fixed effects. The consistency of our findings across model specifications, however, alleviates this concern.

Table A.4: Correlates of the Percent of Provisional Ballots Accepted

Share of Registrants with No DMV Record	1.084 (0.787)
Democratic Gov. Vote Share '13	0.377 (0.305)
Share of Registrants Age 18-24	-0.797 (0.760)
Share of Registrants Age 65-84	0.818 (0.505)
Share of Registrants Age 85+	0.373 (0.422)
Share of Registrants Black	-0.145 (0.249)
Share of Registrants Hispanic	-3.312*** (1.000)
Share of Registrants Other Non-White	2.226*** (0.720)
Logged Median Income	0.155 (0.128)
Share with No High School Degree	0.954* (0.568)
Share with 4-Year College Degree	-0.063 (0.370)
Population Density	-0.003 (0.008)
Total Ballots Cast (thousands)	0.010 (0.064)
Constant	-1.590 (1.380)
R-squared	0.100

Note: N = 324 observations. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Observations weighted by number of provisionals cast in precinct. This table shows that the explanatory variables that significantly predict the number of provisional ballots are unrelated to whether these provisional ballots are ultimately counted.

Table A.5: Correlates of the Percent Change in Registered Voters from 2013 to 2014

County Fixed Effects	(1) No	(2) Yes	(3) No	(4) Yes
% Provisional Ballots	-1.206 (0.991)	-0.569 (0.992)	-1.414 (0.997)	-0.666 (0.994)
Share of Registrants with No DMV Record	-0.113*** (0.035)	-0.080* (0.041)	-0.207*** (0.065)	-0.204** (0.091)
Share of Registrants with No DMV Record (Mailer)			0.160* (0.092)	0.177 (0.116)
Democratic Gov. Vote Share '13	-0.004 (0.010)	0.000 (0.013)	-0.003 (0.010)	0.003 (0.013)
Share of Registrants Age 18-24	-0.093*** (0.019)	-0.099*** (0.021)	-0.110*** (0.021)	-0.111*** (0.022)
Share of Registrants Age 65-84	-0.052*** (0.017)	-0.034* (0.019)	-0.051*** (0.017)	-0.033* (0.019)
Share of Registrants Age 85+	-0.031 (0.039)	-0.050 (0.038)	-0.036 (0.039)	-0.056 (0.038)
Share of Registrants Black	0.001 (0.007)	-0.006 (0.010)	0.001 (0.007)	-0.007 (0.010)
Share of Registrants Hispanic	0.023 (0.031)	0.021 (0.035)	0.030 (0.031)	0.027 (0.035)
Share of Registrants Other Non-White	0.052*** (0.017)	0.071*** (0.020)	0.055*** (0.017)	0.067*** (0.021)
Logged Median Income	0.008** (0.004)	0.009 (0.006)	0.009** (0.004)	0.010* (0.006)
Share with No High School Degree	0.001 (0.017)	-0.001 (0.022)	-0.002 (0.017)	-0.002 (0.022)
Share with 4-Year College Degree	0.017 (0.011)	0.015 (0.014)	0.013 (0.011)	0.014 (0.014)
Population Density	-0.003*** (0.000)	-0.003*** (0.000)	-0.003*** (0.000)	-0.003*** (0.000)
Constant	-0.097** (0.042)		-0.102** (0.042)	
R^2	0.157	0.287	0.158	0.288
p-value on H_0 : sum of DMV coefs. = 0			0.350	0.625

Note: N = 2,246 observations. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Observations weighted by the number of registrants in 2013. This table shows that there is a negative relationship between a precinct's percentage of registrants with no DMV record and its percent change in registered voters from 2013 to 2014. This finding suggests that we prefer to use the percent change in number of votes cast in our turnout models in Table 7 rather than a turnout measure related to the number of registered voters.

Table A.6: Table 7 VIF Stats

County Fixed Effects	(1)	(2)	(3)	(4)
	No	Yes	No	Yes
% Provisional Ballots	1.07	1.2	1.09	1.2
Share of Registrants with No DMV Record	2.19	3.36	7.52	16.58
Share of Registrants with No DMV Record (Mailer)			9.78	17.51
Democratic Gov. Vote Share '13	6.22	12.66	6.25	12.87
Share of Registrants Age 18-24	2.11	2.92	2.7	3.34
Share of Registrants Age 65-84	2.13	2.88	2.14	2.88
Share of Registrants Age 85+	1.42	1.53	1.42	1.55
Share of Registrants Black	5.42	11.4	5.42	11.43
Share of Registrants Hispanic	2.66	3.86	2.7	3.9
Share of Registrants Other Non-White	2.6	3.99	2.61	4.08
Logged Median Income	5.45	13.62	5.52	13.65
Share with No High School Degree	2.95	5.56	2.98	5.56
Share with 4-Year College Degree	8.35	14.86	8.62	14.89
Population Density	2.54	4.85	2.56	4.86

Note: This table shows that we have some multicollinearity concerns in our Table 7 models that include county fixed effects. The consistency of our findings across model specifications, however, alleviates this concern. There are also some multicollinearity concerns between the share of the precinct that lacks a driver's license and the share of the precinct that lacks a driver's license and received a mailing about it even when county fixed effects are omitted.

Table A.7: Correlates of the Number of Free Photo Identifications Issued by Precinct in 2014

	(1)	(2)	(3)	(4)
Share of Registrants with No DMV Record	4.753*** (1.421)	-13.253*** (3.033)	-0.617 (1.357)	-3.942 (2.884)
Share of Registrants with No DMV Record (Mailer)		26.200*** (3.919)		4.952 (3.782)
Democratic Gov. Vote Share '13			0.890** (0.356)	0.936*** (0.358)
Share of Registrants Age 18-24			-0.942 (0.721)	-1.244* (0.756)
Share of Registrants Age 65-84			0.154 (0.550)	0.160 (0.550)
Share of Registrants Age 85+			10.816*** (1.022)	10.682*** (1.034)
Share of Registrants Black			0.330 (0.281)	0.320 (0.282)
Share of Registrants Hispanic			-0.980 (1.155)	-0.784 (1.165)
Share of Registrants Other Non-White			-2.522*** (0.837)	-2.673*** (0.846)
Logged Median Income			-0.848*** (0.169)	-0.845*** (0.169)
Share with No High School Degree			0.965 (0.626)	0.960 (0.626)
Share with 4-Year College Degree			0.760* (0.427)	0.747* (0.427)
Population Density			-0.019 (0.014)	-0.021 (0.014)
Registered Voters in 2013 (thousands)	0.235*** (0.030)	0.257*** (0.031)	0.427*** (0.029)	0.427*** (0.029)
Overinflation Parameter	0.740 (0.041)	0.728 (0.040)	0.388 (0.029)	0.389 (0.029)
p-value on H_0 : sum of DMV coefs. = 0	[.664, .825]	[.654, .811]	[.336, .449]	[.337, .450]

Note: N = 2,323 observations. Standard errors in parentheses and 95% confidence intervals in brackets. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. All columns present coefficients from a negative binomial regression that also includes county fixed effects. This table shows that the share of the precinct that lacks a driver's license and received the mailer is significantly related to the number of free photo IDs issued in that precinct, but that the significance of the association goes away once controls are added to the regression.