THE FUTURE OF VOTER REGISTRATION: ACCESS, ACCURACY, AND COST

BEST PRACTICES AND NEW AREAS FOR RESEARCH

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SUMMARY

This white paper outlines a research agenda for voter registration. It first details how voter registration lists are often incomplete and inaccurate. It then focuses on two of the most important aspects of voter registration: agency-based registration, in which eligible voters can register or update registrations at agencies such as motor-vehicle offices, and list maintenance, in which election officials cancel the registrations of registrants they believe to have moved or died. Finally, it considers state policies that go beyond the federal framework for election administration. Ultimately, much of the research on voter registration is outdated and in- sufficient. To improve the practice of election administration, this white paper makes three central recommendations for further research. First, future research should update foundational measures of the quality of voter registration lists, such as the number of eligible citizens who are registered at their current address, the number registered at a former address, and those who are not registered at all. Second, future research should evaluate promising agency- based registration and list maintenance efforts that shift part of the registration burden from citizens to the government, particularly because such policies can improve both access and accuracy. Third, future research should do more to document the financial support needed to build and improve critical voter registration infrastructure. However, academics are unlikely to be able to implement these recommendations on their own. Instead, realizing this research agenda will likely require coordinated partnerships between academics, election and other government officials, as well as civic organizations.

1   INTRODUCTION

Voter registration lists are the "backbone of election administration" (Ansolabehere and Hersh 2010). They show who is eligible to vote, record who has voted in the past, assign regis-trants to both administrative precincts and political and taxing jurisdictions, and facilitate cam-paign outreach (Ansolabehere and Hersh 2010; Shaw et al. 2015) But despite their importance, much of the foundational research on voter registration is outdated and insufficient.

This white paper proposes a research agenda for voter registration. Many eligible voters are unregistered or have outdated registration records because voter registration is often self-initiated and decentralized. Further, registrations are tied to residential addresses. Yet it is difficult for election officials to know when or where registrants move.

Today, debates about voter registration often pit the values of access and accuracy against each other. The tension is clearest in debates about what information should be sufficient to cancel voter registrations. Those who prioritize access promote policies that would make it harder to cancel registrations. They typically note the difficulty for election officials to conclusively estab-lish any particular registrant's current place of residence without direct communication from the registrant. In contrast, those who prioritize accuracy advocate for more quickly removing potentially outdated registrations. Rather than access, they focus on the possibility of outdated registrations being used to commit voter fraud. But access and accuracy need not be diametri-cally opposed. For example, transfer-ring voters' registrations following a move promises to both improve voter access in their new jurisdiction and the accuracy of voter registration lists in their prior one. The same is true of policies that increase the likelihood that registrants' confirm their current address of residence when asked.

The white paper proceeds in five parts. Section 2 begins by considering the quality of voter registration lists. The best evidence on the topic compares a national survey to commercial voter data and consumer lists (Jackman and Spahn 2021). It suggests that about 70 percent of Americans are registered to vote at their current address; 8 percent are not registered despite appearing in consumer lists at their current address; 12 percent only appear on either voter or consumer lists at their former addresses; and 11 percent appear on neither voter nor consumer lists. But despite the strength of the research design, the evidence is both outdated and sparse: it is from a sample of a few thou-sand potential voters in 2012. The election community should prioritize efforts to update estimates of who is registered, "mis-registered," and not registered to vote at all, because these estimates will inform the larger research agenda to improve elec-tion administration.

To orient readers, Section 3 provides a brief overview of the federal framework for voter regis-tration. It re-focuses attention on the National Voter Registration Act (NVRA), which governs two of the most import-ant aspects of voter registration: agency-based regis-tration, in which eli-gible voters can register or update registrations at agencies such as motor-vehicle offices, and list maintenance, in which election officials can-cel the registrations of individuals they believe to have moved or died.

With this background, Section 4 surveys research on agency-based registration. Given the feder-al frame-work, state motor vehicle agencies have emerged as the largest source of voter registra-tions in the United States (U.S. Election Assistance Commission 2023). Yet many state agencies have struggled with imple-mentation (see, e.g. Presidential Commission on Elec-tion Administra-tion 2014). More research is needed on how to convert an interaction with an agency into ei-ther a new or updated registration, when appropri-ate. Grimmer and Rodden (2022) offer a par-ticularly promising example of this type of study. Their study closely examines Colorado's im-plementation of back-end automatic voter registration (AVR) at its motor ve-hicle agency. It shows how AVR can dramatically im-prove two different types of voter registration issues: peo-ple who are registered at their former address and people who are not registered at all. Future research should thus evaluate whether policies like Colorado's have similar benefits in other states, taking into ac-count the cost of such reforms.

Section 5 then details research on voter registration list maintenance. The constant churn of the elector-ate inevitably leaves many registrations outdated. But the most commonly cited evidence of the number of so-called "deadwood" records is more than a decade old and not transparent about its methods (The Pew Center on the States 2012). So one research priority should be to understand the current scope of the dead-wood problem, particularly when many states have made improvements in list maintenance since 2012. Relatedly, there has also been little rigorous evalua-tion of list maintenance procedures. In the most re-cent election cycle, election officials sent more than 26 million NVRA notices to registrants who they thought had moved. But only about 13 percent of the

notices garnered any response (U.S. Election Assistance Commission 2023). The low response rate might be improved with research on how to more effectively solicit di-rect confirmation of residential moves from registrants.

Importantly, as with agency-based registration, list maintenance can improve both access and accuracy for voter registration. In this vein, a promising study considers a California policy to automatically update voters' registrations when they file a change-of-address request with the Post Office. Kim (2023) estimates that the policy increased voter turnout among people on the National Change of Address list by 5.8 percentage points. Few studies of any registration policy have shown a similar turnout effect, so researchers would do well to prioritize efforts to replicate the study in other contexts and understand why this policy works.

Finally, Section 6 summarizes research on state voter registration activities that go beyond the requirements of the NVRA. It considers state policies, such as election-day or same-registration; state infrastructure, such as whether registration lists are primarily managed by local or state officials; and registration coordination, such as through the Electronic Registration Information Center (ERIC) or the Common Data Format. While there is substantial literature on the effect of election-day or same-day registration, the evidence suggests that these state policies have relatively modest benefits for voter access. In contrast, there is almost no work detailing how state and local election officials construct, manage, and integrate state voter registration databases. Nor is there work on the costs of supporting various elements of voter registration infrastructure. Without this research, it is difficult to evaluate reforms that promise to improve access and accuracy.

In each section that follows, we detail the state of research on voter registra-tion. Ultimately, this white paper makes three central recommendations for research to improve the practice of election administration. First, research should reassess the current quality of voter registration lists. Second, research should evaluate promising state reforms that shift part of the registration bur- den from citizens to the government. Third, research should address the lack of attention to the financial costs of building and maintaining voter registra-tion infrastructure. In our concluding section, we call for coordinated efforts from and partnerships between scholars, election officials, stakeholders, and third-party organizations to make these proposals a reality.

2 WHO IS REGISTERED TO VOTE?

To understand the core problems with voter registration, this section first considers existing research about who is registered to vote.

2.1 METHODOLOGICAL DIFFICULTIES

While it may sound simple, measuring who is registered to vote is surprisingly difficult.

One approach focuses on the data contained in state voter files. However, it is hard to assess who is not registered to vote using this data. While commercial voter files include some eligible- but-unregistered voters, they typically capture only a slice of the overall population of eligible voters (The Pew Charitable Trust 2018). Further, eligible voters with duplicate registrations are overrepresented in voter files.

Another approach turns to data generated by surveys. But the people who are most likely to be unregistered may also be disproportionately excluded from survey sampling frames. Further, people may intentionally misreport being registered to vote, because of social desirability bias, or unintentionally misreport their registration status, perhaps because they have simply misremembered.

2.2 CURRENT ESTIMATES

The best research on registration gaps combines voter files and survey data. Jackman and Spahn (2021) leverage detailed information about the respondents in the face-to-face component of the 2012 American National Election Study, including their exact addresses, to provide a comprehensive study of respondents' registration status. Jackman and Spahn divide the respondents into four groups: registered, unregistered (found in commercial data with correct addresses but not found in voter lists), mislisted (not living at recorded addresses), or unlisted (found neither in voter lists nor commercial data). Jackman and Spahn estimate that about 70 percent of Americans are properly registered, 8 percent are unregistered, 12 percent are mislisted,[2] and 11 percent are unlisted. They also raise concerns about equity in the voter registration process. For ex-

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2 Unfortunately, Jackman and Spahn do not differentiate people who are registered at an outdated address and people who only appear in consumer data at an outdated address.

ample, about 18 percent of Black people and 20 percent of Hispanic people were mislisted, as compared to about 10 percent of White people. Similarly, about 21 percent of Black and Hispanic people were unlisted, as compared to about 8 percent of White people. Jackman and Spahn also show that lower income and shorter residential tenure positively associate with the likelihood that someone is mislisted or unlisted.

Both structural and attitudinal barriers likely explain why some people are not properly registered. Structural barriers refer to features of the voter registration process that prevent someone from being properly registered, whereas attitudinal barriers refer to someone having insufficient political engagement to want to be registered. The most important structural barrier is the need to reregister after moving. For example, Jackman and Spahn (2021) find that more than half of people mislisted had moved within the past year. Their finding is consistent with existing re- search about the effect of residential mobility on voter registration (Highton and Wolfinger 2001; Ansolabehere et al. 2012). Ansolabehere et al. suggest that renters, single parents, and people facing unemployment may vote at low rates in part because they need to register to vote more often due to residential instability.

However, one reason to be somewhat cautious of entirely structural explanations for differences in registration rates across sub-groups is that unregistered people frequently cite their attitudes or values to explain their lack of registration. For example, Creek and Ueyama (2017) asked eligible-but-unregistered voters why they were not registered. The three reasons most commonly selected reasons were: "I don't want to vote, so I don't need to register" (44 percent), "I intend to register, but I haven't gotten around to it" (27 percent), and "There has not been a candidate or issue that has inspired me to register" (25 percent). To be clear, Creek and Ueyama also provide evidence for structural explanations of a registration gap. Despite the federal mandate to offer the registration opportunities described below, less than 20 percent of respondents indicated they had been asked by an official at a government office about registering to vote.

To inform reform, the election community must prioritize efforts to update estimates of who is registered, "mis-registered," and not registered to vote. Despite the strength of the research design used in Jackman and Spahn (2021), the results are drawn from a sample of a few thousand voters in 2012. The need for updated and expanded measures to assess who is registered to vote will guide the rest of this research agenda.

3 THE FEDERAL FRAMEWORK FOR VOTER REGISTRATION

To understand the legal levers available to improve the number of voters properly registered, we briefly review the federal framework for voter registration, including both the constitutional allocation of election authority and the National Voter Registration Act (NVRA).[3]

3.1 CONSTITUTIONAL ALLOCATION OF ELECTION AUTHORITY

The allocation of election authority is rooted in two distinctions set forth in the Constitution. In short, the Constitution "empowers Congress to regulate how federal elections are held, but not who may vote in them" (Arizona v. Inter Tribal Council, 570 U.S. 1, 16 (2013)).

Type of Authority. The first distinction is about the type of federal authority.

The Constitution directs the states to administer congressional elections, but subjects state choices to federal control. Under the Elections Clause, states have the authority to set the "times, places, and manner of holding elections for Senators and Representatives" but Congress "may at any time . . . make or alter such regulations" (U.S. Const. art. I, §4). The Supreme Court has held that Congress may use its authority to create a "complete code" for congressional elections, including "regulations relating to registration" (Inter Tribal Council, 570 U.S. at 8-9). It has also interpreted the federal power over election administration to apply to all federal elections, including presidential elections.

The Constitution also directs the states to set voter qualifications for federal elections but has no similar provision for Congressional control. The Voting Qualifications Clauses simply provide that, to be eligible to vote for Congress, a person "shall have the qualifications requisite for electors . . . of the state legislature" (U.S. Const. art. I, §1; amend. XVII, §1).

Reach of Authority. The second distinction is about the reach of federal authority.

The federal power over election administration is limited to federal elections. Congress cannot create a "complete code" of voter registration to reach state

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3 This section is adopted from various parts of Morse (2023)

or local elections. In practice, though, states almost always choose to conduct "unitary" elections (Morley 2016), effectively applying any federal law governing election administration in federal elections to state elections, too.

3.2   THE NATIONAL VOTER REGISTRATION ACT

For much of American history, election administration was hyper-local (Ewald 2009). More recently, Congress exercised its authority to create a federal framework for state and local election administration. The National Voter Registration Act (NVRA) of 1993 focused primarily on co-ordinating local voter registration, while the Help America Vote Act (HAVA) of 2002 partially centralized registration at the state level. We focus here on the two most important provisions of the NVRA for voter registration—agency-based registration and voter list maintenance. We discuss HAVA as relevant in Section 6.

3.2.1   AGENCY-BASED REGISTRATION

Motor-Voter. The NVRA's best-known provision is commonly referred to as "motor-voter." There are two primary aspects to motor-voter. First, an applicant must be offered an opportunity to register to vote when engaging with their state's equivalent of the Department of Motor Vehicles (DMV) (52 U.S.C. §20504(c)). Second, motor vehicle officials are also responsible for forwarding any address change to election officials, unless the voter opts out (52 U.S.C. §20504(d)). Both requirements help compensate for the fact registrants do not always inform election officials that they have moved (The Pew Center on the States 2010).

Other Agency Registration. Several governmental agencies that mostly administer governmental assistance to low-income people are also required to offer registration opportunities. However, the legal obligations here are weaker than motor-voter (Hess 2023; Morse 2023). Non-motor vehicle officials only need to distribute a blank mail voter registration form (52 U.S.C. §20506(a)(4)(A)) to satisfy their federal obligations. They do not need to use the information that they have al- ready collected to populate a registration form, thus making it easier to register, or share updated address information with election officials.

3.2.2   LIST MAINTENANCE

The NVRA also imposes a federal obligation on election officials to conduct list maintenance. Specifically, the NVRA requires that local election officials "con-duct a general program that makes a reasonable effort" to identify "ineligible voters . . . by reason of . . . death . . . or a change in residence" (52 U.S.C. §20507(a)(4)). Importantly, agency-based registration and list maintenance are intimately related—more agency-based registration translates to fewer out-of- date registrations for list maintenance to fix. Ultimately, list maintenance can lead to either the updating or cancellation of registrations when voters move.

The NVRA requires local election officials to update rather than cancel registrations when they know voters have moved within their own jurisdiction, which in most states is shorthand for a within-county move (52 U.S.C. §§20507(f), (j)). However, there are at least two limitations to this federal obligation. The first limitation is geographic: only about 55 percent of moves nationwide are within the same county (Palarino et al. 2023). The second limitation is related to information: an election official can only update a registration when they know both that a registrant has moved and the registrant's new address. When election officials believe that an individual may have moved—for example, because of undelivered mail or a lack of activity—but not where this individual may have moved to, they initiate the cancellation process.

In general, election officials have wide discretion to identify whether a registrant has moved. In fact, the NVRA does not require any "particular quantum of evidence of a change of residence" to initiate the cancellation process (Husted v. A. Phillip Randolph Inst., 138 S. Ct. 1833, 1847 (2018)). Instead, the NVRA offers voters procedural rather than substantive protection from disenfranchisement (52 U.S.C. §20507(d)(1)).

Cancellation is most often a multi-step, multi-year process. First, election officials must mail voters an official notice asking them to confirm their current residence. A voter who confirms their current residence is not canceled; a voter who confirms their move is. Second, if voters do not respond to the notice, they will remain eligible to vote as an "inactive" registrant for two federal general election cycles. Voters who vote in that period, or otherwise use their voter registration, will not be canceled; all other voters will be.

4 AGENCY-BASED VOTER REGISTRATION

In this section, we review, how the government attempts to increase voting access through agency-based registration. As a result of the legal landscape described in Section 3, transactions at state motor vehicle agencies are the most common way that people initiate and update voter registrations in the United States. We highlight research showing how agency-based registration may be better implemented.

4.1 SOURCES OF REGISTRATION

State motor vehicle agencies are the most important source of voter registrations in the United States. In the latest available data from 2021 and 2022, about 55 percent of voter registration activity—both new registrations and registration updates—originated from a transaction with a state motor vehicle agency (U.S. Election Assistance Commission 2023). The importance of motor- vehicle registration has increased over time: during the two previous federal election cycles, it was about 45 percent (2017-2018) and 39 percent (2019-2020). The pervasive use of motor-vehicle registration reflects, in part, the growth of automatic voter registration (AVR), discussed more below: while 49 percent of registration activity originates at a motor vehicle agency in non-AVR- states, 56 percent of registration activity originates at a motor vehicle agency in AVR-states (U.S. Election Assistance Commission 2023). Nonetheless, there is substantial variation across states in the share of registrations from state motor vehicle agencies. For example, neither Pennsylvania nor Ohio use AVR, but Pennsylvania reports that 60 percent of registrations come from motor- vehicle transactions, compared to 30 percent in neighboring Ohio.

The other governmental agencies required to offer voter registration opportunities under the NVRA generate far fewer registrations than state motor vehicle agencies. Nationally, only about 4 percent of registrations come from public assistance offices, disability services offices, armed forces recruitment offices, and other state agencies (U.S. Election Assistance Commission 2023).

Thus, the policy and procedures used by state motor vehicle agencies will uniquely shape what voter registrations look like. A corollary is that the non-agency-based methods of registration discussed in the Beyond the National Voter Registration Act section are par-ticularly important for registering people who are not engaging in transactions at their state motor vehicle agencies.

4.2 IMPROVING COMPLIANCE AND UPTAKE FOR AGENCY-BASED REGISTRATION

Despite the promise of motor-voter, the Presidential Commission on Election Administration (2014, p. 17) characterized it as "the weakest link" in election administration. Since then, policy advocacy organizations have continued to identify further implementation problems. However there has been little to no research to date on why those recommendations have not been consistently adopted.

For example, Naifeh (2015) determined that only eight of the thirty-two states he considered were fully compliant with the NVRA. He specifically noted the low rates of registration activity at motor vehicle agencies in the states that failed to integrate voter registration into their driver's license application or that placed the burden on voters to request or submit the voter registration application. Similarly, Taylor and Albert (2016) found that twelve states' driver's license change-of-address forms failed to mention voter registration at all. In contrast, Presidential Commission on Election Administration (2014) lauded the integrated approaches used by Delaware and Michigan to seamlessly integrate data produced at motor vehicle agencies into voter registration databases.

Several studies have offered recommendations to increase registration activity at state motor vehicle agencies. For example, Naifeh (2021) recommends that state motor vehicle agencies make registering to vote more customer friendly by minimizing the transaction time, offering convenient electronic or online registration, and presenting the eligibility criteria and questions in accessible language. He also believes it is vital that states frequently audit the voter registrations produced at state motor vehicle agencies to ensure that any problems are found and addressed quickly. Further, Taylor and Albert (2016) contend that both online and physical change-of-address forms should explicitly inform the patron that the information given will be used to update their voter registration unless they opt out. Additionally, Danetz (2021) argue that relevant stakeholders at motor vehicle agencies and local election offices should be made aware of the importance of the state motor vehicle agency in election administration, as this will help them better understand their vital role in voter registration and prioritize it in their work.

Several states have adopted reforms that have led to significant increases in registration activity outside of state motor vehicle agencies. For example, U.S. Commission on Civil Rights (2016) notes that North Carolina revamped its voter registration training procedures for public agency personnel. It also created "county site coordinators," employees in the election's office tasked with communicating with public assistance agencies about their voter registration obligations. Further, North Carolina increased monitoring of agencies' voter registration activity to detect non-compliance issues promptly. In the year following the implementation of this plan, registrations from public agencies in North Carolina increased by over 250 percent (U.S. Commission on Civil Rights 2016). However, subtler interventions, such as emails reminding agency employees of their voter registration duties, have not provided much meaningful change in registration activity in underperforming agencies (Hess et al. 2016).

Our survey of the literature on agency-based registration makes it clear that the topic should be a priority for further work. More research is especially needed on establishing best practices to ensure that agencies comply with the NVRA and consistently offer their customers registration opportunities. This research should also consider whether improved agency-based registration can result in cost savings.

4.3   AUTOMATIC VOTER REGISTRATION

While automatic voter registration (AVR) is not typically framed as a response to NVRA non-compliance, AVR has a similar goal: to increase the number of transactions with state agencies that produce or update a voter registration. While AVR policies differ over states, the general policy makes voter registration the default unless the customer opts out. However, there is an important distinction between states which permit voters to opt out on the front end versus the back end. In states with front-end AVR, customers can opt out during the transaction with the agency. In contrast, in states with back-end AVR, generally, customers opt out by responding to a mailer sent to them after their transaction with the state agency.

Because AVR is new, research on its effects is still in its infancy. In 2015, California and Oregon were the first states to pass AVR, although it did not go into effect in California until 2018. By the 2022 general election, AVR had been implemented in 19 states and the District of Columbia (Fordham 2022). Using the limited data available, some early studies highlight the promise of AVR to increase registration (Griffin et al. 2017) and turnout (McGhee et al. 2021; Morris and

Dunphy 2019), while other studies find no clear effects of AVR (Garnett 2022). Two additional studies show that back-end AVR increases registration rates more than front-end AVR (Grimmer and Rodden 2022; McGhee et al. 2021). Given how many states have recently implemented AVR, we expect significantly more research on this policy to be conducted soon.

Grimmer and Rodden (2022) present the most comprehensive analysis of how AVR can improve both access and accuracy in voter registration. Grimmer and Rodden study a sequence of policy changes in Colorado. At a high level, Colorado first introduced front-end AVR at their Department of Motor Vehicles (DMV) in February 2017 and then transitioned in a piecemeal fashion to back-end AVR. Starting in June 2018, Colorado began updating addresses in voter registration records even when individuals responded "no" to the front-end prompt—in effect, the state adopted back-end AVR for existing registrants. Beginning in June 2019, DMV employees could see a customer's existing registration record when they were interacting with them. Finally, in May 2020, Colorado moved to also using back-end AVR for new registrants if they documented their citizenship status as part of their DMV transaction.[4]

Grimmer and Rodden (2022) document an increased share of unregistered customers who register as part of a DMV transaction after both the June 2019 and May 2020 reforms. Put together, the share of unregistered customers who registered during a DMV transaction increased by about 30 percentage points after these two reforms were implemented. While the nature of the data makes it challenging to know how much is attributable to each, it appears that more than half of the increase is due to the change in prompt, and the other half of the increase is due to the use of back-end AVR.

Grimmer and Rodden (2022) also quantify how many customers would not have had their registration address updated absent Colorado's new policy. From July to December of 2018, the DMV collected information on how often customers declined to update their registration, even though the DMV updated it anyways. Grimmer and Rodden find over 17,000 additional monthly address updates between July and December 2018 because the state effectively shifted to back-end AVR.

The Colorado experience suggests a few broad areas for future research. First, while existing research largely

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4 Grimmer and Rodden note that about 65% of transactions with unregistered voters use the back-end AVR process.

examines the effects of AVR on voter access, more research is needed on how AVR can make voter registrations more accurate, too. Second, more research is needed on how existing registration information can be best integrated into motor vehicle transactions, regardless of whether a state adopts AVR. Third, more research is needed on the financial costs associated with various AVR policies. For example, back-end AVR requires more up-front spending on mailings than front-end AVR. Future research should quantify the difference in up-front costs between front-end and back-end AVR and compare these costs to any downstream cost savings generated from back-end AVR.

5 VOTER REGISTRATION LIST MAINTENANCE

The second central aspect of the NVRA is voter registration list maintenance. The constant churn of the electorate inevitably leaves voter registration lists with so-called "deadwood" registration records: registrants who are no longer eligible to vote using that record, but nonetheless remain on the voter registration list. Because the federal framework for list maintenance offers election officials substantial discretion, there is a lot of potential to evaluate the consequences of the various ways in which election officials exercise that discretion. This section summarizes the research that does so, while also concluding that existing research is insufficient in several ways.

5.1 THE SCOPE OF DEADWOOD

The limited research quantifying the extent deadwood is dated. In 2011, The Pew Center on the States (2012) concluded that about 1 in 8 registrations, or 24 million registrations, had an error. Of these registrations, most had an out-of-date or inaccurate address. Further, almost 3 million registrations were considered duplicates, and another 2 million registrants had already passed away. These estimates are generally in the same ballpark as Ansolabehere and Hersh (2010), which also highlights that the share of deadwood varies substantially from state to state. However, these studies need to be updated, as they were conducted over a decade ago.

More recent work by Pettigrew and Stewart III (2017) finds that, in the past decade, states and counties were more effective at removing deceased registrants than removing those who moved. They compare the number of registration cancellations due to death by county to the actual number of deaths and find a tight correlation between both the number (and rate) of death cancellations and the number (and rate) of deaths. Pettigrew and Stewart III also investigate cancellations that are triggered by a voter changing residence. They find that this cancellation rate is positively correlated with mobility rates from the Census and IRS. The correlation between mobility and mobility-cancellations is not as strong as the correlation between death and death-cancellations, which speaks to the challenges of identifying voters who have changed addresses.

5.2 IDENTIFYING MOVERS FOR CANCELLATION

Much of the deadwood documented by The Pew Center on the States (2012) represents a break-down either in NVRA compliance or voter communication. In terms of voter communication, registrants who die clearly cannot directly inform election officials of their ineligibility. Nor do many registrants who move. One reason for the latter issue is that registrants sometimes believe election officials have access to more information than they do. For example, some eligible voters incorrectly assume that when they register to vote in a new jurisdiction, this information will get passed along to the jurisdiction where they previously registered (The Pew Center on the States 2010).

In the absence of direct voter communication, one list maintenance strategy involves election officials matching voter registration records to other administrative data to identify registrants who have died or moved. Such administrative data includes individual-level death information that appears in state death registers and the Social Security Death registry and data generated by the United States Post Service's National Change of Address Program (National Association of Secretaries of State 2017). One challenge that election officials face, which is discussed in more detail in the next subsection, is that voter registration records do not always have identifying information that makes it easy to link a registrant's registration record with their records in other administrative databases.

Another list maintenance strategy involves election officials monitoring registrant activity to identify registrants who have died or moved. In states that use this approach, election officials move a registration to inactive status after a certain amount of time has passed since the registrant last confirmed their eligibility to vote by casting a ballot or contacting election officials in some other way.

As we discuss in more detail below, there is little research evaluating how well these various list maintenance strategies perform at identifying registrants who have died or moved. Given the importance of list maintenance for both access and accuracy, this is a ripe area for future research.

5.2.1 MATCHING ADMINISTRATIVE DATA

Some states look for evidence that a voter moved by matching voter files across states or matching a voter file to another source of administrative data. Any matching must confront what Morse (2023) labels "privacy obstacles" and "uniformity obstacles." While ideally, both the voter file and the other administrative data would contain a field that uniquely identifies individuals, like a Social Security number or driver's license number, such identifiers are, at best, incompletely observed in voter registration data. Moreover, privacy concerns often make it so that unique identifiers are not included in the administrative data that are being matched to the voter file. As a result, voter files often are linked to administrative data using fields that are not ideally suited for robust matching.

One implication of using less-than-ideal fields to link voter files with other administrative data is the possibility of both false positives and false negatives. False positives refer to cases in which a registrant's registration record is linked to another person's record in administrative data, while false negatives refer to cases in which a registrant's registration records fail to link to their own record in administrative data. The Interstate Voter Registration Crosscheck Program (Crosscheck) is now defunct, but it remains a controversial example of a list maintenance process that generated a substantial number of false positives. Specifically, Crosscheck looked for registration pairs in member states in which a registrant in each state shared first name, last name, and date of birth. Goel et al. (2020) showed that while a majority of the registration pairs identified by Crosscheck were cases in which the same person was registered to vote in multiple states, there were also a significant number of false positives. These false positives represent cases of what McDonald and Levitt (2008) called the "birthday problem." In short, a substantial number of registrants could end up sharing the same linking variables even when the probability of any two specific registrants sharing them is infinitesimal. Goel et al. also highlight the value of using partial social security numbers as one of the linking variables when matching registration records to administrative data to avoid false positives.

Recent advances in fuzzy matching may be helpful for reducing the incidence of false negatives when matching voter files to administrative data. One challenge in record linkage is that an individual's information may be presented differently in two data sources because of typographical errors, use of nicknames, or omission (National Research Council 2010). Fuzzy matching refers to record linkage that accounts for such discrepancies. In recent years, there have been several developments that make it easier for people without expertise in record linkage to use fuzzy matching (e.g., Enamorado et al. 2019).

Even when an administrative match is accurate, identifying a registrant's current registration can still pose challenges for election officials. That's because statewide voter lists do not all use the same data conventions. For example, Crosscheck suggested that states could remove duplicate registrations with an earlier registration date. However, Goel et al. (2020) found that registrants used the registration with the earlier registration date to cast a ballot just under 20 percent of the time. More broadly, Grimmer et al. (2021) discuss the challenges of determining a voter's eligibility to vote at a given location relying only on data that appears in the public domain.

Scholars have worried about false positives in list maintenance partly because the confirmation process for voters can be an unreliable safeguard to prevent disenfranchisement. For example, between the 2020 and 2022 general elections, election officials sent more than 26 million confirmation notices. Only about 13 percent of the notices garnered any response from a voter. In contrast, about 57 percent were neither received back from voters nor returned as undeliverable.

Huber et al. (2021) show how some voters who do not respond to a confirmation notice still vote at their address of registration. Huber et al. focused on about 260,000 registrants in Wisconsin's 2018 general election who had been identified (by the Electronic Registration Information Center, discussed below) as having potentially moved and did not respond to a confirmation notice. Of the registrants who subsequently voted, 12 percent voted at the address flagged as potentially out of date—even though they did not respond to a postcard seeking the same information.

The findings of Huber et al. (2021) suggest that more research is needed on confirmation notices. Huber et al. (2021) focus on a single state not subject to the NVRA. Is the low response rate explained by registrants who moved never receiving the notices or registrants receiving the notices but not responding to them, either because of all their other mail or because of the availability of same-day registration in Wisconsin? Are there measures that election officials can take to make registrants pay more attention to the election mail that they send? Are there additional ways of contacting registrants who may have moved besides these mailings that would generate higher response rates? Answering all of these questions should be priorities for voter registration research moving forward.

5.2.2 VOTER ACTIVITY

One of the more common reasons why states initiate list maintenance is voter non-activity. National Conference of State Legislatures (2023e) notes that at least twenty states currently use non-activity as a reason to initiate the cancellation process, although the length of non-activity that triggers list maintenance varies over states. For example, National Conference of State Legislatures shows that Ohio initiates the cancellation process after two years of no activity, while Pennsylvania waits five years. In Wyoming, which is not subject to the NVRA because of its longstanding use of Election Day registration, registrations are removed if a registrant fails to vote in a single general election.

Given the substantial public discussion on the issue, it is surprising how little research focuses on non-voting as a trigger for list maintenance. Such research would be informative to policymakers when considering how to promote both access and accuracy in list maintenance. Moreover, the policy variation across states would be helpful for facilitating research on how many registration records get used to vote after different periods of non-voting. Herron and Smith (2018) provide an example of such a study, documenting how many registrants voted in both the 2008 and 2016 presidential elections in Florida and North Carolina, after not voting in any elections in between. A larger study could consider more states and more pairings of elections. Currently, policymakers are setting lengths of non-activity that trigger list maintenance without systematic evidence about the length of time eligible registrants are likely to go without activity. Thus, it is important that research documents how many registrations are used to vote after a period of inactivity and after not responding to a confirmation notice.

More research is also needed to document whether people who are removed for non-activity have moved or are simply not interested in engaging in politics. Differentiating between the two is important not only because of the potential implications for access but also because of the implications for cost. However, such studies face challenges in establishing the current residential address of those registrants who are not voting. Ansolabehere et al. (2010) come the closest to developing a scalable approach to differentiate between the two by combining data on vote records and mail surveys. More work in this vein would be valuable.

5.3   IDENTIFYING MOVERS FOR UPDATES

The NVRA encourages, but does not require, election officials to use the United States Post Service's National Change of Address (NCOA) Program to identify voters who moved (52 U.S.C. § 20507(c)(1)). One benefit of the NCOA data is that election officials can learn both a voter's old address and their new address. However, Morse (2023) notes that because supporting list maintenance is not the primary goal of the NCOA program, the NCOA data does not have all of the individual-level information necessary to generate reliable matches.

Kim (2023) examines California's use of the NCOA list to automatically update voter registrations after in-state moves. To identify the causal effect of updating voter registrations on voter turnout, Kim takes advantage of the fact that federal law prevents any list maintenance in the 90-day period before an election. She identifies individuals who submitted an NCOA request and compares those who had their registration automatically transferred to those who did not, presumably because election officials received the request within the 90-day limitation period. Ultimately, Kim estimates that California's policy, which she calls "automatic re-registration," increased voter turnout by 5.8 percentage points among registrants on the NCOA list.

Particularly given this large effect size, there should be substantially more research on automatically updating voter registrations based on NCOA data. It is important for further research to replicate the findings in other states and detail the potential mechanisms driving this increase in registration and turnout. California has a policy of portable voter registration, discussed further below, which already reduces the burdens of mobility on registration. In California, then, the increase Kim may be driven by numerous mechanisms besides eligibility to vote. For example, the mailer sent to voters confirming the address update might have reminded them about their registration status and the election; or, the updated registration information could have facili- tated campaign outreach and ensured official election communication was received. Other states that do not have portable registration may see an even more substantial increase in registration and turnout than Kim observed. However, the benefits of address updates all depend on the accuracy of matching, so scholars should also continue to examine best practices for matching voter registration lists to the NCOA list, given the limited individual information it contains. As such, research should also focus on identifying other sources of data besides NCOA that could be used to reliably identify registrants who have moved.

6 BEYOND THE NATIONAL VOTER REGISTRATION ACT

Some states have gone beyond the federal requirements for agency-based registration and voter list maintenance. This section assesses the state of research on various state registration policies, such as Election Day registration, state infrastructure, and state coordination, such as through participation in the Electronic Registration Information Center.

6.1 METHODOLOGICAL CONSIDERATIONS

Much of the research presented in this section involves comparisons of registration and turnout outcomes in states that adopt different voter registration policies. To best evaluate that research— and account for inconsistent results—it's helpful to first consider how scholars study a given policy's effect.

Within the social sciences, the so-called "identification revolution" has brought greater acknowledgment of how difficult it can be to establish that a given policy caused a given outcome (Imai 2011). Experiments that randomly assign treatments are the best method for establishing causality, and have been used effectively to establish how outreach increases the likelihood that an eligible voter registers to vote (e.g., Bennion and Nickerson 2014; Nickerson 2015; Bryant et al. 2020; Mann and Bryant 2020; Bennion and Nickerson 2022). But it is often neither feasible nor ethical to randomly assign potential voters to different voter registration policies. In the absence of experiments, researchers increasingly consider how research designs can establish causality with observational data.

Historically, most scholarship on voter registration did not convincingly account for selection bias when evaluating the effects of state registration policies on voter outcomes. For example, states that adopt a policy that is thought to make voter registration more accessible might also be more likely to have adopted other policies that increase registration and turnout. To convincingly estimate the effect of a given registration policy, a researcher must have a research design that accounts for preexisting differences across states. However, until recently, most research used cross-sectional data (i.e., data from a single point in time) and attempted to address selection bias by including control variables in a multivariate regression model. The problem is that researchers must include control variables for every factor that relates to states' adoption of registration policies that also affects the registration outcome of interest. But the social and political world is very complex: it is difficult, if not impossible, to account for every factor that relates to states' adoption of registration policies that also affects the registration outcome of interest, as is necessary to avoid selection bias (Steiner et al. 2010). If the researcher omits a relevant control variable, a multivariate regression will not produce an unbiased estimate of the causal effect.

Modern scholarship has developed methods to better estimate causal effects using observational data. One such method is through difference-in-differences (DiD) research designs, which rely on data gathered over time instead of at a single point in time. A difference-in-differences study first examines the difference in an outcome of interest in a state pre- and post-implementation of a policy. It then compares that difference to the difference in the same periods in those states that never implemented the policy. The difference between the pre-and post-implementation differences in states that did and did not implement the policy serves as the DiD estimate of the effect of the treatment. Interpreting the DiD estimate as a causal estimate relies on an assumption that the trends observed in states that did not implement the policy are what the trends would have otherwise been in states that did implement the policy, had the policy not been implemented. While this so-called parallel trends assumption is sometimes unwarranted, studies that utilize a DiD research design are generally more likely to estimate a causal effect of a registration policy on registration outcomes than studies relying on cross-sectional data.

Hanmer's (2009) study of how motor voter provisions of the NVRA affected turnout is a useful model of how a DiD design can credibly establish causality. His DiD design examines the impact of pre-NVRA motor voter policies on voter turnout in four states. In his analyses, Hanmer care- fully justifies his selection of control units to make the case that the parallel trends assumption is met. His findings suggest that implementing motor voter policies caused, at most, a modest increase in turnout.

6.2 STATE REGISTRATION POLICIES

The next sub-sections evaluate the state of research on registration deadlines, election or same- day registration, pre-registration, online registration, third-party registration, and the restoration of voting rights.

6.2.1 REGISTRATION DEADLINES

Registration deadlines are one prominent example of how states have adopted different approaches. Federal law requires that states set their voter registration deadlines for federal elections no more than 30 days before an election (52 U.S.C. §20507(a)(1)). But states have discretion about whether or how to shorten the time between an election and a registration deadline. Most states currently set their so-called "closing dates" closer to the election than to the 30-day federal mark (National Conference of State Legislatures 2023d).

There are reasons to believe that shortening registration deadlines would cause more eligible voters to register to vote. Research shows that people pay more attention to politics as Election Day approaches (Powers et al. 2016; Mitchell et al. 2020; Younis 2020). Thus, some unregistered people may not realize they want to register until just before Election Day. Empirically, we observe a substantial number of Americans register just before their state's registration deadline (Gimpel et al. 2007). What is unclear is how many of these people would register earlier if that deadline was moved up. The best evidence on this point comes from Street et al. (2015). Using web searches for voter registration in the months leading up to the 2012 presidential election, as well as voter file data, they predict that 3.5 million Americans were interested in registering but unable to do so before this election.

Many studies further show that places with later registration deadlines have more voter turnout. While dated, the best-known study on the topic is Rosenstone and Wolfinger (1978), which finds that having no deadline at all increased the likelihood of voting by 3 to 9 percentage points compared to a 30-day deadline. Other studies come to similar conclusions, although the numbers vary slightly over time (Rhine 1995; Brians and Grofman 2001; Vonnahme 2012; Leighley and Nagler 2013). However, none of these studies have been conducted in the last 10 years, and all are open to the criticism that they do not sufficiently address selection bias.

Theoretically, there are reasons to think that registration deadlines may be most consequential for young people and recent movers, two groups who more often need to register or re-register before voting in a given election (Teixeira 1992; Highton and Wolfinger 1998; Gimpel et al. 2007). But empirical studies produce inconsistent evidence. While Nagler (1991) found that registration deadline effects differed across educational groups, Leighley and Nagler (2013) finds that changing a registration deadline does not have significantly disparate effects on turnout among people in different income, education, or age categories.

Ultimately, more research is needed to determine how registration deadlines affect turnout. In addition to bringing in data from more recent elections, future work should consider more convincing ways to account for selection bias. Future work should also pay attention to accuracy and costs. We are aware of no work that quantifies how much of the registration activity that occurs within 30 days of an election is new registrations versus registration updates. Such work would be helpful for thinking about how later registration deadlines might help reduce the incidence of provisional ballots by making registrations more accurate. We also did not come across research detailing the effects of registration deadlines on election officials. For example, when Pennsylvania reduced its closing date from 30 days to 15 in 2019, the Philadelphia Board of City Commissioners warned that navigating the change could necessitate a 20 percent increase to their budget (Lai 2019). Research on how registration deadlines affect staffing needs would be useful for evaluating such a claim.

6.2.2 ELECTION/SAME-DAY REGISTRATION

Some states go so far as to allow eligible voters to register (or update their registration) and vote at the same time. We distinguish between two related policies: Election Day registration (EDR) allows residents to register up to and including Election Day itself, while same-day registration (SDR) permits registration in the early voting period, up to but not including Election Day. Overall, sixteen states allow both SDR and EDR; five states and D.C. allow EDR exclusively; and one allows for SDR during early voting periods but does not open registration on Election Day (National Conference of State Legislatures 2023c). Portable registration is a related policy that overlaps in important ways with EDR and SDR: it allows at least some previously registered voters to transfer their existing registration to their new address on Election Day (Brennan Center for Justice 2017).

We expect that SDR and EDR will make registration easier and more convenient for voters. In fact, it was precisely this logic that led lawmakers to exempt states from the NVRA if they made EDR available prior to the 1994 midterm elections (52 U.S. Code §20503(b)). In one sense, SDR and EDR are similar to policies shortening registration deadlines. However, an additional benefit of EDR and SDR is that they capture eligible voters who believe they are registered when they are not.

EDR is one of the most commonly studied voter registration reforms. Summarizing the findings of thirty-three studies that examine how EDR relates to turnout, U.S. Government Accountability Office (2016) reports that twenty-one of the thirty-three conclude that turnout is higher in states with EDR than in states without EDR. However, there are wide-reaching issues with studies conducted on how EDR affects turnout. The states that adopted EDR tended to already have higher turnout than the states that have not adopted EDR, which could cause selection bias if not properly accounted for in a study's research design (Stewart III 2017). Several of the studies included in the U.S. Government Accountability Office's summary do not utilize research designs that convincingly isolate the causal effect of EDR from other potential explanations for why turnout might be higher in states that adopted EDR than in states that did not. We are particularly skeptical that cross-sectional studies can estimate a causal effect of EDR on turnout.

Studies using more credible research designs generally find a modest increase in turnout after EDR is implemented in a state. Fenster (1994) examines election returns from before and after Minnesota, Maine, and Wisconsin's enactment of EDR in the 1970s, finding that the states' average turnout increased by roughly 5 percentage points relative to 33 other states, and that this increase in turnout is sustained for decades. Leighley and Nagler (2013) also employ a DiD de- sign with survey data, and similarly estimate that EDR led to a 4 to 6 percentage point increase in turnout in these 3 states. However, Leighley and Nagler also find that EDR caused lower increases in turnout in those states who adopted EDR in the 1990s and 2000s than it caused among early adopters. They find that EDR only increased turnout by 0.1 percent for states which enacted the policy in the 1990s and by 1.5 percent for states which did so in the 2000s.

Some researchers argue that even DiD designs could overstate the causal effect of EDR on turnout. Using data from Minnesota and Wisconsin in the 1970s, Keele and Minozzi (2013) test a number of approaches to identifying EDR's causal effects on turnout and demonstrate the extent to which research design influences estimates of the EDR's effect on turnout. One test they apply is whether the enactment of EDR had a greater effect in municipalities that were mandated to have voter registration than in municipalities didn't have such a mandate because they were sufficient small. Their finding that turnout increased by a similar amount after the enactment of EDR in municipalities with and without a mandate to use voter registration brings into question whether at least some of the

substantial relative increase in turnout that occurred in Minnesota and Wisconsin after EDR was adopted could have been caused by other factors.

There is less work on whether SDR during early voting affects turnout. One challenge is that most states that currently allow for SDR also use EDR, making it hard to isolate the effect of SDR. Some research finds that early voting alone has negligible or even negative effects on turnout—possibly because it diffuses the focus on an election across days or weeks of voting—but there is one study that offers some tenuous evidence to suggest that SDR can overcome that effect (Gronke et al. 2007; Larocca and Klemanski 2011; Burden et al. 2014). Distinguishing between SDR and EDR across the 2004 and 2008 elections, Burden et al. (2014) find that "an additional 10 days of early voting decreases voter turnout by about a percentage point while an additional 10 days of SDR increases turnout by about 2.5 points," indicating that SDR alone can be significant boost to turnout—though they find that it has smaller marginal effects than EDR and is most activating when combined with EDR. It is important to note that while Burden et al. predominantly employ a cross-sectional design, they also report a DiD design that does not find a significant effect of SDR alone on turnout.

Given that we often see a positive relationship between EDR and SDR and turnout, researchers have gone on to examine which groups are most likely to show increased turnout due to EDR and SDR. As with registration deadlines, much of the literature suggests that the effects of SDR and EDR are conditional on age, with young people and recent movers experiencing the strongest positive effects (Knack and White 2000; Holbein and Hillygus 2020; Grumbach and Hill 2022). For example, Grumbach and Hill uses a DiD design to estimate that SDR increases turnout among 18 to 24-year-olds in presidential elections by between 3 to 7 percentage points. They also find that SDR significantly increases turnout among 25-34 year-olds, while not finding a significant increase in turnout from SDR among any other age group.

Compared to the amount of research on EDR and SDR, there is insufficient existing research on portable registration. One way to conceptualize portable registration is as EDR or SDR registration for those individuals who are registered to vote in a state at an outdated address. In the most comprehensive study of statewide portable voter registration to date, McDonald (2008) finds that while movers are always less likely to vote than non-movers, the gap is smaller in states with statewide portable voter registration. This suggests to us that more research should be done on whether por-

table statewide voter registration is an effective policy for supporting turnout among registrants who move.

More research is also needed on the effects of SDR and EDR on the accuracy of voter registrations. It is notable given the large literature on the access effects of SDR and EDR that there is almost no research demonstrating its effects on accuracy. Morse (2023) notes one intriguing fact that underlines the need for more research: 55 percent of registrants who used SDR in Nevada's 2020 general election were registrants who updated their registrations as opposed to new registrants.

Finally, more research is also needed on how to make SDR and EDR less burdensome on election officials. While a survey of Wisconsin clerks by Burden et al. (2009) found that only 20% of clerks disagreed with the statement that "the benefits of election day registration outweigh the costs," 55 percent of these same clerks agreed with the statement that "[e]lection day registrations increases the administrative burden on election officials like me." A more recent national survey of election officials found that they were almost evenly split in supporting or opposing allowing SDR (Elections & Voting Information Center 2022). Future research can help figure out ways to conduct SDR and EDR in a manner that makes it less burdensome for the election officials who implement it.

6.2.3 PREREGISTRATION OF TEENS

To the extent that there is a registration deadline, individuals who recently turned eighteen are particularly likely to be burdened. That's because first-time voters can't draw from past experiences that might make it easier to navigate the registration process (McDonald and Thornburg 2010). More broadly, Holbein and Hillygus (2020) argue that it is important that young people can vote without having to acquire substantial political knowledge to do so.

In general, preregistration is designed to make it easier to vote by allowing teenagers to pre- register before turning eighteen. Once they turn eighteen, preregistrations then become valid registrations. But states vary in the availability of preregistration for teenagers (National Confer- ence of State Legislatures 2023a).

Research shows that increasing the length of preregistration has positive effects on youth turnout (McDonald and Thornburg 2010; Holbein and Hillygus 2016, 2017; Fowler 2017). Of these studies, we find the design employed by Fowler (2017) to be the most convincing. His primary focus is on comparing turnout among eligible voters under the age of twenty-six based on whether they could have preregistered at age sixteen in their current state of residence. He finds that the availability of such preregistration, on average, increases both registration and turnout among 18- to 26-year-olds by about two percentage points, respectively.

One reason that Fowler (2017) argues that preregistration for 16-year-olds is important is that it gives young eligible voters more opportunity to register at their states' motor vehicle agencies. All 16-year-olds who get a driver's license will go through motor vehicle agencies when seeking to obtain their driver's license or permit. Using Federal Highway Administration data on licensed 16-year-olds by state as a proxy for the proportion of teens who visit their states' motor vehicle agencies, Fowler examines whether states with greater proportions of licensed 16-year-olds also see greater effects of preregistration on turnout. Consistent with this, he finds the effects of preregistration on youth turnout are larger in states with greater driver's license rates among 16-year-olds compared to states with lower driver's license rates. While Fowler acknowledges some limitations of this analysis, these findings suggest there are positive participatory effects of making it possible for customers of states' motor vehicle agencies to initiate preregistrations even before they are eligible to vote.

One potential area for future research is to think about how other policy choices affect the ability of preregistration to increase turnout. For example, research could examine whether preregistration has differential effects in states that have statewide portable registration or vote-by-mail given that many young people may not be residing on Election Day at the place that they lived when they were sixteen or seventeen.

6.2.4 ONLINE VOTER REGISTRATION

Federal law requires that states accept the federal mail voter registration form (52 U.S.C. §20505), but does not require online voter registration (OVR). That is less of a policy choice than a sign of the times: the NVRA was passed before the rise of the Internet. As a result, states have pioneered OVR on their own. Arizona was the first state to offer OVR in 2002. Today, about three-quarters of states report having an online system that allows voters to register to vote and update their registration information (U.S. Election Assistance Commission 2023, p. 65).

OVR is the second-most commonly used method of voter registration, at about 14 percent (U.S. Election Assistance Commission 2023). The popularity of OVR soared during the 2020 election cycle, accounting for about 28 percent of the total registrations received. This spike in popularity can be attributed at least in part to the COVID-19 pandemic; the use of online voter registration has since returned to pre-pandemic levels.

Research shows that OVR improves the accuracy of voter registrations without increasing ad- ministrative costs or otherwise burdening election officials. That's because voters are responsible for inputting their own information and clerks no longer have to adjudicate discrepancies in handwriting (Maluk et al. 2015; Trusts" 2015). In fact, Adona et al. (2019) find that 79 percent of election administrators indicated that online voter registration has either made their jobs easier or made no difference. And research shows that the cost of constructing and implementing an online registration system was generally less than $300,000. Moreover, states later recouped these upfront expenditures through the cost-saving measures associated with online registration, such as reductions in staffing costs and reliance on paper forms (Barreto et al. 2010; Trusts" 2015). In Maricopa County, Arizona, for example, Barreto et al. find that processing a paper registration form was estimated to cost around eighty-three cents in staffing costs, compared to just three cents on average per online voter registration application. It would be helpful if researchers updated these cost estimates to help inform future decisions about whether to invest in OVR.

While OVR is used frequently, the literature thus far has found that OVR only slightly increases overall voter registration and turnout rates. For example, Garnett (2022) finds only a minimal relationship between the availability of online registration and a voter's likelihood of being registered or voting. As Garnett explains, these minimal effects are likely the result of individuals still bearing the responsibility to register to vote, even when there is a more convenient method such as OVR. One factor that further limits the ability of OVR to increase registration rates is that OVR typically requires a driver's license. So the same people who miss out on opportunities to register at motor vehicle agencies and other agencies may also not be able to access OVR (Merivaki 2020a). In the 2022 federal election cycle, a majority of states required citizens to provide a state-issued ID to verify their identity online (U.S. Election Assistance Commission 2023). One area of future research is thus whether registration rates increase when states offer other modes of identity ver-

ification besides a state ID or driver's license for OVR (Trusts" 2015; U.S. Election Assistance Commission 2021).

Still, there is evidence to suggest OVR is particularly effective at boosting registration and turnout rates among young voters. In the aforementioned Garnett (2022) study, she finds that online registration is associated with about a two-percentage-point increase in registration rates among eligible voters below the age of thirty. Relatedly, Bennion and Nickerson (2022) show a registration drive was more effective when it provided students with a link to an online voter registration form than a paper registration form (although see also Bennion and Nickerson (2014)). Finally. Yu (2019) finds a three-percentage-point increase in turnout among young voters when a state implements online voter registration.

6.2.5 THIRD PARTY REGISTRATION

Third-party voter registration organizations, which are often referred to in the academic literature as "3PVROs," are another method by which eligible voters register to vote. The total number of registrations received through 3PVR0s is modest; it accounts for about 2.4 percent of registration applications received in 2021 and 2022 (U.S. Election Assistance Commission 2023). However, research suggests that 3PVR0s are more important for reducing disparities in registration rates between groups than increasing the overall number of registrants.

Research shows that racial and ethnic minorities are more likely to be registered through 3PVR0s. Using data from the Current Population Survey (CPS) from 2004 through 2010, Kasdan (2012) finds that "Blacks and Hispanics are nearly twice as likely to register through a drive as whites." Similarly, a recent analysis of survey data in Florida finds that people of color were significantly more likely than White people to report relying on a 3PVRO to register to vote (Shino et al. 2023).

Additional research finds that 3PVR0s also help boost registration rates among low-income individuals. Using data from the Current Population Survey (CPS) from 2012, Mortellaro and Cohen (2014) conclude that the likelihood of an eligible voter registering through a voter registration drive decreases with that person's income. Another study, involving a field experiment with door-to-door canvassing, found voter registration drives, on average, increased the number of registered voters by 4.4 percent, with the largest effects observed in relatively poor neighbor- hoods (Nickerson 2015).

One promising avenue for future research is to leverage more administrative data in studying who gets registered through 3PVROs. A concern with using survey data to document the method of registration is that people may not remember how they registered to vote. Thus, administrative data may provide a more accurate picture of how different people register to vote. Smith (2021) provides an example of this methodology, using administrative data from Florida to demonstrate that 10 percent of non-White registrants used a 3PVRO to register compared to only 2 percent of White registrants.

6.2.6   PROVISIONAL BALLOTING

Federal law requires that election officials make provisional balloting available as a fail-safe for voters. Specifically, voters who do not appear on a local voter registration list may cast a pro- visional ballot upon affirmation that they are both registered in the registrar's jurisdiction and eligible to vote in the election (52 U.S.C. §21082(a)). State law often specifies additional classes of voters who can cast provisional ballots that must be counted (National Conference of State Legislatures 2023b).

Provisional ballots certainly help enfranchise voters. For example, in federal general elections between 2006 and 2016, election officials counted 7 million provisional ballots. But there are concerns about the costs that provisional ballots place upon election administrators. Because provisional ballots must be adjudicated quickly following an election, they can use up election official bandwidth at a point in time when it is particularly scarce. Foley (2005) also discusses the legal issues that could arise if it were not possible to resolve the validity of all provisional ballots by the time a state needs to certify votes.

Moving forward, more research is needed on why voters cast provisional, as opposed to regular, ballots. Provisional ballots cast by people who have moved but have not updated their registration address are of particular interest. Researchers should examine why these address updates do not happen before Election Day. For example, do we observe fewer of such provisional ballots in states that have AVR than in states that do not have AVR? Provisional ballots cast by people who are not registered to vote are also of great interest. Researchers should quantify the share of these individuals who were never registered to vote, were registered to vote at an outdated address, or had their previous registration canceled. Finally, research should be conducted on the staffing costs associated with provisional balloting and the financial burdens associated with adjudicating and counting provisional ballots. Accounting for these staff and financial costs may help policymakers justify investments in other registration reforms that reduce the use of provisional balloting.

6.2.7   CRIMINAL DISENFRANCHISEMENT

As discussed in Section 3, states have the authority to set voter qualifications. While a combination of federal law and Supreme Court precedent has made voter qualifications more uniform, the voting rights of people convicted of crimes still vary tremendously across states. Every state besides Maine and Vermont disqualifies at least some people who have been convicted of a crime for some period of time (Uggen et al. 2022). While most states automatically restore the voting rights to people once they complete certain forms of supervision, a few states continue to dis- enfranchise people convicted of crimes after they complete supervision if they have not paid all of the legal and financial obligations that they accrued from their criminal convictions (Meredith and Morse 2017; Morse 2023).

The existence of criminal disenfranchisement policies raises at least two issues for election officials with respect to voter registration. First, how can election officials identify existing or prospective registrants who have become ineligible to vote because of a criminal conviction? Second, what, if anything, should be done to inform someone who has been criminally disenfranchised that their voting rights have subsequently been restored?

There is existing scholarship on how to (re-)enfranchise people with felony convictions. A sizable number of people who have come into contact with the criminal justice system incorrectly believe that they are ineligible to vote (Shineman 2020; Morse 2021). This occurs not just because people do not realize that their voting rights have been restored, but also because they never lost them in the first place (e.g., someone believes they cannot vote because they were convicted of a misdemeanor) (Meredith and Morse 2014; White 2019). Thus, there may be participatory benefits to providing information about eligibility not just to those individuals who have had their voting rights restored, but also to the broader universe of people who have been convicted of crimes. Second, the research explores how participation changes when information about the restoration of voting rights is provided to people who had previously been disenfranchised (Meredith and Morse 2014; Gerber et al. 2015; Meredith and Morse 2015; Doleac et al. 2023; White et al. 2023). Overall, this literature shows that there are likely to

be some participatory benefits to using direct mail to inform people about their voting rights, although the magnitude of the benefit is small and varies somewhat across studies. More than anything else, we suspect this inconsistency reflects the challenges of getting good address information for people whose voting rights have recently been restored. Given that people with criminal convictions are an extremely mobile population, our primary recommendation is to either substitute mailings entirely for notifications directly from probation or parole officers upon release or to send mailings immediately after release, when address information may be more accurate.

6.3   STATE REGISTRATION INFRASTRUCTURE AND PRACTICES

State-specific features of election administration are not limited to registration policies. In fact, the infrastructure for maintaining a high-quality voter registration list differs widely across states.

6.3.1   THE ORGANIZATION OF STATE VOTER REGISTRATION LISTS

All states must have a single, statewide, electronic voter registration list (52 U.S.C. §21083(a)(1)(A)). But states have taken different approaches to implementing the federal requirement. For example, about two-thirds of states have a so-called "top-down" database, which is "hosted on a single, central platform ... and connected to terminals housed at the local level" (Election Assistance Commission 2005). Other states take a "bottom-up," or hybrid, approach of "gather[ing] ... information from local voter registration databases to form the statewide voter registration list" (Election Assistance Commission 2005). However, there is almost no research on how these two different approaches affect voter registration accuracy. Nor is there any research on how these different approaches to voter registration affect costs.

To be clear, some research has been done on the accuracy of state voter lists. For example, Ansolabehere and Hersh (2010) show that there was significant variability in the quality of state voter registration lists in 2008. Shino et al. (2020) provides a case study of Florida in 2017, with similar findings to Ansolabehere and Hersh (2010). But neither of the papers actually identifies what the sources of the voter registration errors may be. As Shino et al. (2020) notes, "understanding how sources of voter registration input (from motor vehicle offices, registration drives, or paper or online registration) affect error rates can illuminate trade-offs between costs and data quality."

Future research should not just look at the overall quality of states' voter registration lists, but also how quality can vary across counties. Merivaki (2020b) finds that the accuracy of list maintenance varies substantially across counties in Mississippi. The state vests local election officials with the responsibility of updating voter records. However, it is hard to know what to make of the county variability without being able to compare it to those of other states. Future research should build on the approach of Merivaki and think more about how to explain variation in voter list quality within states.

Beyond accuracy, other areas of future research should involve surveying election officials about their experiences with their state's voter registration systems and developing recommendations for the next generation of voter registration infrastructure. Many states developed their cur- rent voter registrations databases in the 2000s, using federal money appropriated by HAVA. At the time, there were multiple research efforts to identify necessary and recommended features of voter registration databases (Association for Computing Machinery 2006; National Research Council 2010). Similar research should support the development of the next generation of voter infrastructure, particularly as many voter registration databases become outdated.

6.3.2   MONITORING ANOMALIES

Voter registration accuracy is related to the broader focus on voter registration anomalies. Voter registration anomalies refer to cases in which something in a voter registration database is non- standard. It could refer to something about an individual registration (e.g., a registration address outside of their county of registration) or the entire database (e.g., a sudden increase in the number of registrations or changes to registrations).

A series of recent government reports have examined best practices for safeguarding election infrastructure, including monitoring anomalies (Cybersecurity and Infrastructure Security Agency (CISA) 2021; Belfer Center for Science and International Affairs, Harvard Kennedy School 2018; Center for Election Innovation & Research (CEIR) 2023; United States Agency for International Development (USAID) 2022; MITRE 2019). But even without external threats, there is still a need to monitor, flag, triage, and address voter registration anomalies. While sometimes there is an explanation for the anomaly (e.g., a large voter registration drive causes a significant number of people to submit voter registrations), anomalies can indicate that there's a po-

tential problem with either access, accuracy, or both. For example, agency-based registration can result in multiple streams of input for voter registration databases, leading to duplicates, conflicting records for the same voter, or accidental removals.

An emerging area of scholarship examines how to detect anomalies in registration data using various statistical and methodological techniques. However, all of these methods require re- searchers to have access to the right data. Alvarez et al. (2020) and Kim et al. (2020) highlight the temporally shifting nature of voter files—in short, who is registered to vote changes in real-time because of the dynamic nature of voter files (Kim and Fraga 2022; Grimmer et al. 2023). Thus, to effectively monitor data quality within given jurisdictions, it is necessary to produce frequent snapshots of the voter file (Kim et al. 2020; Kim and Fraga 2022). These snapshots can then be used to measure rates of change in probabilistically-linked individual records.

After determining the average rate of change, anomalous shifts in the volume of record changes may indicate either internal list maintenance errors or malign external interference. For example, Kim et al. (2020) focuses on the distribution of changes over time using the interquartile range (IQR) method, based on data from a single county. Cao et al. (2022) further refine this method to identify abnormalities over time and across counties. Other scholars and election administrators have also used advanced machine learning as a tool for detecting voter registration irregularities (Cook and Baez 2021; Royston et al. 2021). In the nonprofit world, VoteShield provides tools to monitor changes to voter rolls for any suspicious anomalies (Westrope 2019).

At this early stage, it is still unclear which states take which measures to monitor and flag anomalies. Indeed, currently, anomaly detection is often the job of database managers at the state and county level. Documenting local and state policies can help facilitate the development of best practices for election administrators.

6.4 STATE REGISTRATION COORDINATION

6.4.1 THE ELECTRONIC REGISTRATION INFORMATION CENTER

Perhaps the most significant recent development in voter registration is state coordination through the Electronic Registration Information Center. Morse (2023) recently provided the first comprehensive account of ERIC, a non-profit corporation in which state

chief election officials serve as the Board of Directors. States participating in ERIC regularly share both voter registration and motor vehicle records. ERIC supplements the states' data with federal death records and the Postal Service's National Change of Address list. It then does two things. First, ERIC facilitates list maintenance by identifying voters who have moved or died, are not yet registered, or potentially voted illegally. However, how effectively it does this is understudied. Because of federal privacy laws, there has been only one independent evaluation of ERIC to date (Huber et al. 2021). Second, ERIC facilitates new registrations by identifying eligible-but-unregistered voters. Here, we do have two recent field experiments, which estimate that sending a mailer to one of these eligible-but-unregistered voters increased their likelihood of registration by between 1 and 2.4 percentage points (Bryant et al. 2020; Mann and Bryant 2020).

ERIC is one of the most promising developments for voter registration. But the state-based solution is both limited and fragile. At its peak, ERIC had thirty-four states as members, counting Washington D.C. But in the past year, nine states have quit the effort.

Future research could take many directions. For one, it is critical for more studies to evaluate ERIC's list maintenance operations. Research exceptions to privacy laws may be a creative avenue to permit evaluation. For another, Morse (2023) suggests that ERIC's unmatched data can help identify NVRA non-compliance. Beyond the scope of this white paper, he also suggests a slate of legal reforms to the federal framework for list maintenance.

6.4.2 COMMON DATA FORMAT

There is also a promising, though still nascent, effort to develop a common data format across states. The idea of using common data formats to ease the sharing of election information has been around since the early 2000s. Efforts have involved standards organizations, non-profits, election technology providers, and election officials. Since 2015, the National Institute of Standards and Technology (NIST) has produced six Common Data Formats (CDF) covering a wide range of use-cases, including the Voter Records Interchange (Wack et al. 2019). The adoption of the Voter Records Interchange could make voter registration records more accurate by reducing the number of times that election officials have to re-key data and making it simpler for voter registration data to be integrated with other databases for the purpose of voter list maintenance (Hubler 2019). The Voter Records Interchange could also make it easier to produce data for the

U.S. Election Assistance Commission's Election Administration and Voting Survey (EAVS).

As with anomaly detection, future research must first focus on documenting which jurisdictions use the Voter Records Interchange and for what purpose before there can be rigorous evaluation. While there are some known use cases (e.g, Ohio adopted the Voter Records Interchange CDF in 2017 to support an online voter registration system), such information is still quite limited. Collecting data on usage will be important to facilitate preliminary evaluation of the cost and accuracy benefits of CDF in a similar vein to the evaluations that took place of some of the early adopters of online voter registration (Barreto et al. 2010; Trusts" 2015).

7 FUTURE RESEARCH

After surveying the voter registration literature, our primary takeaway is that such research is both under-provided and outdated. When asked about voter registration, many political scientists only think about access and cite Rosenstone and Wolfinger (1978) as evidence that voter registration is a barrier to turnout. Indeed, Rosenstone and Wolfinger shows that having a bundle of restrictive registration policies was associated with almost a 10 percentage point decrease in turnout in the 1972 presidential election. But this work predates both the National Voter Registration Act and the causal revolution in political science. A renewed research agenda is essential to improving access, accuracy, and costs in voter registration. In this final section, we conclude by explaining the current under-provision of voter registration research and highlighting how partnerships could facilitate this research agenda.

The first key barrier to voter registration research is data confidentiality (Morse 2023). For ex- ample, the Driver's Privacy Protection Act makes it nearly impossible for researchers to access driver's license transaction data through standard public records requests. Similarly, researchers cannot easily access identifiable death records.

Even if data is not confidential, another barrier to research is data decentralization. Critical information about voter registration is spread out among thousands of local and state election officials as well as motor vehicle and public assistance employees. Earning trust across many different stakeholders and coordinating data collection is at best a significant challenge. In fact, it is often not even clear what data is available from some key stakeholders.

Finally, even if the data collection is possible in theory, it can be cost-prohibitive in practice. It might be cost-prohibitive because of the time necessary to collect original data from decentralized sources, or because critical datasets, such as the NCOA list, are expensive to acquire. Some state- level voter files can also be extremely expensive. While commercial, national voter files have become more viable than in the past, they are also expensive. The various costs have likely caused some able researchers, especially those whose career incentives mean that they need to quickly generate peer-reviewed publications, to turn their attention to other topics, or focus on a subset of states where data is more easily available.

Partnerships can reduce these barriers to research on registration in several ways. First, partnerships that bring data together from decentralized sources can increase data accessibility. The EAVS is the most comprehensive method of data consolidation, but it has significant limitations. For example, the EAVS does not collect any information about the costs of election administration. One path forward is expanding the scope of the EAVS so that it collects more of the information researchers need. However, given the challenges that the EAVS already faces in receiving high-quality responses, only so much can be accomplished by reforming the EAVS. Moreover, many areas of future research identified in this white paper cannot be conducted just by observing the type of county-level aggregates reported in the EAVS. Thus, it is essential to form new partnerships between researchers and election officials to collect more expansive and granular data on voter registration. In doing so, associations like the National Association of State Election Directors, as well as ERIC, could be helpful intermediaries.

In particular, partnerships between researchers and election officials are also needed to help researchers evaluate list maintenance, given the sensitive information involved. Some of the best research on voter registration done in the last ten years has resulted from individual states generating a creative solution to offer researchers access to confidential information without jeopardizing privacy. Goel et al. (2020), for example, used information provided by Iowa on whether two registration records shared the same last four digits of a social security number, without revealing its value, to evaluate the Crosscheck list maintenance program. Similarly, Kim (2023) relied on information provided by Orange County, California, about when registrants appeared in the NCOA database, without distributing the full underlying database. Additionally, election officials can anonymize data or generate MOUs to help facilitate research like Grimmer and Rodden (2022), while ensuring that confidential information is not released.

Partners with financial resources are also needed to support voter registration research. First, grants can help compensate election officials for the additional time they spend to generate and provide data about voter registration. Second, grants could help bring new data sources into voter registration research that have previously been prohibitively costly. A study like Jackman and Spahn (2021) is expensive because it requires money to pay for both a) nationally representative survey data that includes detailed current and former address information, and b) access to a commercial firm's national registration database. Money could also be spent to access databases, like the Experian credit database, that could help establish an individual's current and former address information outside of a survey. Finally, providing financial resources to researchers could expand the pool people engaged in voter registration research.

Ultimately, any successful partnership requires a common understanding. By setting forth both the scope of the problem and opportunities for further research, this white paper will hopefully facilitate the next generation of efforts to improve election administration.

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