

Voting by Mail and Ballot Rejection:
Lessons from Florida for Elections in the Age of the Coronavirus*

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Abstract

The coronavirus and its concomitant need for social distancing have increased the attractiveness of voting by mail (VBM). VBM voting is nonetheless not a panacea for election administration in the time of a pandemic, and this is because a widespread move to this form of voting risks exacerbating existing inequities in mail-in ballot rejection rates across voters and jurisdictions. This motivates our examination of over 8.2 million ballots cast in the 2018 General Election in Florida, including 2.6 million VBM ballots, of which approximately 1.2 percent were rejected by local election officials. We theorize as to why rejected VBM ballots might be linked to individual voter characteristics and to election official discretion, offer a battery of descriptive statistics detailing rejected ballots in Florida’s 2018 election, and provide results from a selection model that analyzes all of the state’s voters in 2018. We find that younger voters and voters needing assistance are disproportionately likely to have their VBM ballots rejected. We also find disproportionately high rejection rates for out-of-state and military dependents. Lastly, we find significant variation in the rejection rates of VBM ballots cast across Florida’s 67 counties, suggesting a non-uniformity in the way local election officials verify these ballots. As interest in VBM swells in light of the coronavirus, protecting the rights of all voters requires understanding why some voters’ mail ballots are rejected—diminishing their ability to participate in electoral politics—and how this might be rectified.

Introduction

In Spring 2020, the onset of the coronavirus pandemic and the ensuing mortality caused by COVID-19 disrupted presidential primary elections across the United States. By early April 2020, the die was cast: over a dozen states had rescheduled their presidential primaries, and other states, like Wisconsin, moved hastily, if unevenly and clumsily, to push voters to request and cast mail-in ballots.¹ Beyond the United States, municipal contests in France set for March 2020 were suspended on account of the coronavirus, and the London mayoral race, planned for May 7, 2020, has been postponed for a year.²

The next American presidential election is scheduled for November 2020, and this raises a serious question: how can a national election be safely conducted in the shadow of a pandemic? One potential answer is, allow (and potentially encourage) all eligible voters to cast mail-in ballots, thus minimizing the number of voters who appear in person at early voting polling places and on Election Day.³ If as of November 2020 social distancing guidelines remain in place across the United States, it is hard to imagine how, without at least a significant number of voters casting mail-in ballots, they can be respected in an election that, if the 2018 Midterm Election is any guide, is likely to see extremely high voter turnout.⁴

¹Alaska, Connecticut, Delaware, Georgia, Hawaii, Indiana, Kentucky, Louisiana, Maryland, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, West Virginia, and Wyoming all moved their presidential primary dates. See "16 States Have Postponed Their Primaries Because of Coronavirus. Here's a List," *The New York Times*, April 9, 2020, available at <https://www.nytimes.com/article/2020-campaign-primary-calendar-coronavirus.html> (last accessed April 10, 2020).

²On French municipal elections, see "France suspends local elections because of covid-19," *The Economist*, March 19, 2020, available at <https://www.economist.com/europe/2020/03/19/france-suspends-local-elections-because-of-covid-19> (last accessed April 11, 2020). On the London mayoral race, see "Local elections and London mayoral race postponed for a year," *The Guardian*, March 13, 2020, available at <https://www.theguardian.com/world/2020/mar/13/local-london-mayoral-elections-postponed-year-coronavirus-uk> (last accessed April 11, 2020).

³Registered voters suffering from COVID-19 during an election are a special case, and all individuals in this group could in principle be provided with mail-in ballots. This is what happened in South Korea during the country's 2020 National Assembly elections. See "South Korea's Coronavirus Test Run: How to Hold an Election," *The Wall Street Journal*, April 15, 2020, available at <https://www.wsj.com/articles/south-koreas-coronavirus-test-run-how-to-hold-an-election-11586948227> (last accessed April 15, 2020).

⁴On the potential for adding voting options that could facilitate social distancing, see "As Pandemic Imperils Elections, Democrats Clash With Trump on Voting Changes," *New York Times*, April 8, 2020, available at <https://www.nytimes.com/2020/04/08/us/politics/coronavirus-2020-presidential-election.html> (last accessed April 13, 2020).

Since the contested 2000 presidential election, the United States has witnessed vitriolic debates—in the public sphere, in the halls of Congress and state capitols, and in state and federal courts—with competing claims over ballot access, election integrity, and the potential normative trade-offs between these two ideals. The coronavirus is making matters worse, exacerbating the ongoing rancor surrounding electoral politics in the United States. In the already polarized arena of election rules (Hasen 2020), VBM has entered center stage (Thompson et al. 2020), presently supplanting heated debates over voter identification laws (e.g., Hicks et al. 2015), early voting (e.g., Walker, Herron and Smith 2019), and voter list maintenance (e.g., Ansolabehere and Hersh 2014).

While the push for VBM voting in the United States has taken on greater urgency in light of the coronavirus, this way of voting is not new (Mann 2014; Biggers and Hanmer 2015). Five states—Colorado, Hawaii, Oregon, Utah, and Washington—mail ballots to all registered voters, and several others—including California, Nebraska, and North Dakota—allow counties to opt-in to all-mail elections.⁵

There is extensive scholarship on the consequences of allowing, encouraging, or even affectively mandating mail voting and whether this produces higher turnout or alters the composition of the electorate in a meaningful way (Dubin and Kalsow 1996; Oliver 1996; Berinsky 2005; Leighley and Nagler 2013; Burden et al. 2014; Thompson et al. 2020). Broadly speaking, the scholarly consensus is that voting by mail is politically neutral with respect to affecting who votes. However, there is surprisingly sparse research on the hundreds of thousands of VBM ballots cast by voters every election that are *rejected*—such as the estimated 430,000 VBM ballots not tabulated in the United States in the 2018 General Election, including more than 100,000 that had mismatched or missing signatures on return envelopes.⁶ And there has been even less

⁵See "All-Mail Elections (aka Vote-by-Mail)," *National Conference of State Legislatures*, available at <https://www.ncsl.org/research/elections-and-campaigns/all-mail-elections.aspx> (last accessed March 24, 2020). In the case of Colorado, for example, this means that all registered voters are sent ballots by mail prior to an election. However, voters have the option of voting in-person at designated centers. See "Mail-in Ballots FAQs," *Colorado Secretary of State*, available at <https://www.sos.state.co.us/pubs/elections/FAQs/mailBallotsFAQ.html> (last accessed April 12, 2020).

⁶Figures from the U.S. Election Assistance Commission's 2019 "Election Administration and Voting Survey: 2018 Comprehensive Report." Data available at <https://www.eac.gov/research-and-data/datasets-codebooks-and-surveys> (last accessed April 2, 2020).

scholarly attention placed on whether certain voters might be disproportionately more likely to have their mail ballots rejected ([Alvarez, Hall and Sinclair 2008](#); [Shino and Suttman-Lea 2020](#)). This—the potential voter disenfranchisement that can unintentionally result from mail ballots being rejected by local election officials—is our focus.

With attention on the 2018 General Election in the perennial battleground state of Florida, we examine VBM ballots both cast and rejected. Our study begins with an overview of existing research on voting by mail, and thereafter we discuss literature which sheds light on why some VBM ballots may be more likely to be rejected than others, arguing that individual voter characteristics as well as local election administrative discretion result in some voters being disproportionately susceptible to having their VBM ballots rejected. After reviewing the specifics of VBM voting in Florida, we provide a battery of descriptive data concerning rejected VBM ballots cast in the 2018 midterm. We then present results from a selection model which considers the determinants of VBM ballot rejection. Our rationale for employing a selection model is that, when assessing rejection rates of VBM ballots in a state like Florida, one that permits voters to *choose* to vote by mail or in person, those who select the former may be different than those who do not. We conclude with thoughts about how patterns in rejected VBM ballots in the 2018 General Election in Florida raise questions about unintended discrimination embedded in mail voting and what sort of considerations might be needed in November 2020 if the coronavirus pandemic continues to push the United States in the direction of increased VBM usage.

Voting in the United States

Regular and free elections are the keystone of democratic politics. They are mechanisms that translate voter preferences into elected officials, who then make policies on behalf of constituents. There are extensive theoretical and empirical literatures on the roles of elections and the extent to which they facilitate representation (e.g., [Downs 1957](#); [Miller and Stokes 1963](#); [Bafumi and Herron 2010](#); [Tausanovitch and Warshaw 2014](#)). Voters participate in elections by casting ballots and traditionally there are two ways in the United States that voters can do

this: in-person or via mail. In-person voting takes place either on Election Day and, in some states, in the days or weeks prior to Election Day during a designated early voting period. Voting by mail, in contrast, does not require a voter to present oneself at a local polling or early voting site designated by officials.

In-person voting versus voting by mail

Casting a VBM ballot is distinct from voting in-person, and this is on account of voter identification. When a voter casts a ballot in person, a local official has the opportunity to validate the individual's identity face-to-face, in real time. Even in states without formal voter identification requirements, an in-person voter must affirm his or her identity to an election official in order to commence the voting process. Once an in-person voter's identity is confirmed, either during an early voting period or on Election Day, the voter is issued a regular ballot to fill out and then cast. There are differences across jurisdictions in ballot forms, paper or electronic, but the key point here is that a voter casting an in-person ballot does not have to reaffirm his or her identity after voting. Indeed, privacy and security of the vote are of utmost importance.

In contrast, rather than self-identifying oneself or providing a form of identification prior to voting a ballot in-person, voting by mail necessitates the disembodied verification of a voter's identity by a local election official *after* the voter has already cast his or her ballot. To be clear, a VBM voter is not present when his or her ballot is verified prior to tabulation. It is this very absence of voters when election officials are verifying and tabulating ballots that is an obvious advantage of mail voting during a pandemic.⁷ The downside risk for VBM voters, though, is ballot rejection *after* having voted, something that does not happen for those casting ballots in person.⁸

Not being physically present when an election official validates a voter's VBM ballot alters the opportunities for the voter to establish his or her identity. If information on a VBM return

⁷Some states have a form of "absentee" voting whereby a voter, prior to Election Day, appears at a designated place, fills out an absentee ballot, and submits it. In our parlance, this is early in-person voting.

⁸In this paper we do not address the subject of provisional ballots, which exist in some states, cast by in-person voters.

envelope does not meet the criteria in a given state or jurisdiction, said ballot is at risk of rejection (Mann 2014).⁹ From requesting and then receiving a ballot, to correctly filling it out, to placing the completed ballot in a secrecy envelope that is then inserted into an official return envelope, to filling out and signing a voter's certificate (or even having a witness sign) on the back of a return envelope, there are multiple ways a mail ballot may fall out of the "voting pipeline" (Stewart III 2010, p. 575).

Beyond statutory definitions of what constitutes an acceptable VBM ballot, the decentralized nature of election administration in the United States means that potentially thousands of local election officials have the opportunity to exercise discretion when determining whether a signature on an VBM ballot envelope should be accepted or rejected. Local discretion in election administration is not limited to VBM voting of course, but this form of voting is uniquely vulnerable to administrative discretion because of the absence of a voter's presence in the VBM verification process.

Growth of VBM voting in the United States

Much of the attention to mail voting in the United States has focused on five states with all-mail voting systems whereby election officials mail ballots to all registered voters. VBM voting extends well beyond this handful of states, however. Nearly half the states (including Florida) allow some local elections to be conducted completely by mail, and two-thirds of states (again, including Florida) allow no-excuse voting by mail, meaning a voter does not need to provide a reason to request a VBM ballot.¹⁰ Although about 20 states still require voters to provide an excuse when requesting a VBM ballot, according to the U.S. Election Assistance Commission, over one-quarter of all ballots cast nationwide in the 2018 General Election were via mail, totalling more than 31 million votes (U.S. Election Assistance Commission 2019, p. 12).

⁹Voters casting mail ballots in 19 states, including Florida, are permitted to "cure" any deficiencies with their return envelope, although the rules and timeline to do so differ considerably. See "Logical Election Policy," *Bipartisan Policy Center*, January 2020, available at https://bipartisanpolicy.org/wp-content/uploads/2020/01/Bipartison_Elections-Task-Force_R01-2.pdf (last accessed April 17, 2020).

¹⁰See "All-Mail Elections (aka Vote-by-Mail)," *National Conference of State Legislatures*, available at <https://www.ncsl.org/research/elections-and-campaigns/all-mail-elections.aspx> (last accessed April 15, 2020).

Who votes by mail?

An important first step in any effort to understand the correlates of VBM ballot rejection is considering who is likely to request and vote a mail ballot in the first place. Some scholars find that allowing VBM voting leads to considerable turnout effects ([Richey 2008](#); [Southwell and Burchett 2000](#)); others, though, find small and sometimes negative effects of VBM on turnout ([Dubin and Kalsow 1996](#); [Oliver 1996](#); [Karp and Banducci 2000](#); [Fitzgerald 2005](#); [Kousser and Mullin 2007](#); [Southwell 2009](#); [Bergman and Yates 2011](#); [Gronke and Miller 2012](#); [Gerber, Huber and Hill 2013](#); [Burden et al. 2014](#); [Thompson et al. 2020](#)). To the extent that there is a consensus in the literature, it is that VBM has positive albeit modest turnout effects.

With regard to whether the use of mail ballots leads to a shift in composition of the electorate, many studies of this matter are based on data gathered well before the widespread increase in voting by mail. Some have found that older, partisan, and White registered voters, as well as those who have cast mail ballots in previous elections, are more likely to vote by mail ([Patterson and Caldeira 1985](#); [Oliver 1996](#); [Berinsky, Burns and Traugott 2001](#); [Hanmer and Traugott 2004](#); [Kousser and Mullin 2007](#); [Bergman and Yates 2011](#)). Likewise, in one of the first national studies, [Karp and Banducci \(2001\)](#) find that people who vote absentee are more likely to be White and Republican; other studies, though, have found more heterogeneity in VBM participation ([Barreto et al. 2006](#); [Amos, Smith and Ste Claire 2017](#)). Strategically, both major political parties have encouraged their supporters to vote absentee ([Leighley 2001](#)), and there is some evidence that such mobilization efforts can affect the method by which voters choose to cast their ballots ([Michelson 2005](#); [Herron and Smith 2012](#); [Hassell 2017](#)). The most recent study of the political consequences of VBM finds no significant evidence of partisan effects ([Thompson et al. 2020](#))

Voting at home may be more accessible for some individuals who have differing physical or mental abilities. For example, Florida law requires that VBM ballots must be "fully accessible to all voters, including voters having a disability" to ensure that all voters may "cast a secret, independent, and verifiable vote-by-mail ballot without the assistance of another person."¹¹

¹¹Florida law dealing with VBM accessibility issues is Title IX, Chapter 101, Section 101.662, "Ac-

Voting-eligible individuals with disabilities in Florida, like in other states, are given the option to fill out a declaration when registering, confirming that they would like assistance when voting. The level of help one receives can range from marking one's ballot on an accessible machine to having someone assist in filling out a mail ballot. Drawing on national survey data, [Miller and Powell \(2016\)](#) find that individuals with disabilities are more likely to vote by mail.

Members of the military (and their dependents) and those living overseas tend to be heavy users of VBM voting, not surprising given the limited voting options available to these individuals and the laws protecting their ability to cast VBM ballots ([Smith 2009](#)). In particular, the federal Uniformed and Overseas Civilian Absentee Voting Act (UOCAVA) of 1986 provides ballot protections for civilian overseas, members of the uniformed service in active duty, and their dependents. In addition, the Federal Voting Assistance Program works to administer protections for voters under UOCAVA.¹² In 2009, Congress passed the Military and Overseas Voter Empowerment Act that requires election offices to mail ballot to UOCAVA voters no later than 45 days before each federal election.¹³ Deadlines for both requesting and submitting a mail ballot vary considerably across the states.¹⁴

When considering who is most likely to vote by mail, especially as a precursor to thinking about the types of voters most likely to have their VBM ballots rejected, it is also important to consider the context in which a voter requests and casts a VBM ballot. In many states, including Florida, there can be considerable variation with respect to the degree to which local election officials emphasize VBM voting. For example, in Florida, long-time Pinellas County Supervisor of Elections, Republican Deborah Clark, led the effort among county election officials to encourage voters to vote by mail, resulting in roughly 55 percent of all Pinellas ballots being cast by via mail in the 2018 general election. "We just started our outreach programs sooner than some of the other counties" said Clark.¹⁵ In contrast, across the state on the

cessibility of vote-by-mail ballots", available at http://www.leg.state.fl.us/statutes/index.cfm?App_mode=Display_Statute&URL=0100-0199/0101/0101.html (last accessed March 5, 2020).

¹²For details on this program, see <https://www.fvap.gov> (last accessed April 14, 2020).

¹³Following federal law, Florida Statute 101.62 (4)(b) mandates that each supervisor of election mail VBM ballots to voters who have requested a ballot within two business days of receiving the request.

¹⁴For VBM rules pertaining to military and overseas voters, see Federal Voter Assistance Program, "Voting Assistance Guide," available at <https://www.fvap.gov/guide/>, last accessed April 16, 2020.

¹⁵See "Absentee voting makes Pinellas an early winner in Florida primary," *Tampa Bay*

Atlantic, slightly more than a quarter of all votes cast in Florida's Broward County in 2018 were through the mail. Indeed, although the southeast Florida county has more than 50 percent more registered voters than Pinellas, nearly 50,000 more voters cast VBM ballots in Pinellas in the 2018 election.¹⁶

Explaining VBM ballot rejection rates

We have now provided some context on voting in the United States and described literature on VBM ballot usage in the country. With this as background, we now turn to our subject of interest, VBM ballot rejection.

The scholarly literature is sparse when it comes to understanding the correlates of rejected VBM ballots. We offer two explanations that can explain VBM ballot rejections. The first, broadly construed, turns on voters themselves and the second, on the discretion of local election officials.

Explanation 1: voter characteristics

Individual voter characteristics may affect whether a VBM ballot is deemed invalid (Alvarez, Hall and Sinclair 2008; Shino and Suttman-Lea 2020). Concerns begin with a voter's socio-demographic background and difficulties some individuals may have in casting valid votes (Knack and Kropf 2003; Kimball and Foley 2009). Scholars have found that voting technology interacts with voter demographics, in some cases leading to racial minorities casting more "residual" (or uncounted) votes (Darcy and Schneider 1989; Herrnson, Hanmer and Niemi

Times, March 14, 2016, available at <https://www.tampabay.com/news/politics/elections/romano-absentee-voting-makes-pinellas-an-early-winner-in-florida-primary/2269332> (last accessed April 11, 2020).

¹⁶Local variation in the extent to which elections officials encourage mail voting is not restricted to Florida. In California, for example, the embrace of VBM by county election administrators varies greatly. Since 2016, the state has allowed county election administrators to offer all-mail ballot elections; five counties chose to adopt the new system prior to the 2018 election, but others have resisted. See "Say goodbye to your local precinct. Voting in California is about to change dramatically," *Los Angeles Times*, May 31, 2019, available at <https://www.latimes.com/opinion/op-ed/la-oe-kousser-mcghee-romero-elections-vote20190531-story.html> (last accessed April 13, 2020).

2012; Tomz and Houweling 2003; Buchler, Jarvis and McNulty 2004; Herron and Sekhon 2005). Findings like these lead us to incorporate voter race and age in our analysis of VBM ballot rejection. In terms of partisan affiliations, voters registered with a major party, as opposed to those registered with a third party or without a party (in Florida, these registrants are known as "NPA's"—registrants with "No Party Affiliation"), may be less likely to have their ballots rejected, considering the guidance voters receive from parties during Get-out-the-Vote campaigns that urge supporters to request and cast mail ballots (Michelson 2005; Hassell 2017).

We have already noted that VBM ballots are accepted or rejected based on voter signatures, and not all registered voters may have equally stable signatures. Unlike physiological characteristics that are static (such as one's iris, fingerprints, or DNA), behavioral characteristic, such as one's gait, voice, or handwriting, are dynamic in nature and may "change with the passage of time, mood, age and other factors" (Bibi, Naz and Rehman 2020, p. 290). An individual's signature may be fluid throughout life and might be more variable among the youngest voters who are not yet accustomed to providing signatures for verification (Hilton 1992). As a result, some voter registrants may be more likely to have discrepancies between their current signatures and what is on file with local election offices. Advocates of VBM systems like Neal Kelley, a former president of the California Association of Clerks and Election Officials, does admit that there "are difficulties on occasion" with poor penmanship,¹⁷ and forensic experiments have found a non-zero chance of real signatures being rejected as not matching and forged signatures being accepted as valid (Herbst and Liu 1977).

Names are ultimately composed of letters, and with this in mind we consider in our analysis of VBM ballot rejection whether individuals with longer or more syntactically complicated names are more likely to have signature match problems. By complicated, we mean here a name that contains a suffix, an apostrophe, or a hyphen. It is possible that individuals with syntactically complicated names are more likely to alter their signatures depending on the context. For example, people with hyphenated last names may choose only to sign their

¹⁷See "Does penmanship—good or bad—affect elections?" *Electionline Weekly*, December 18, 2014, available at <https://electionline.org/electionline-weekly/2014/12-18> (last accessed April 13, 2020).

terminal name on bills at restaurants but may have another signature, including the entirety of their last name, for more formal occasions. Moreover, we expect the extent to which voters have recently updated their names with their local election office may affect the likelihood of VBM ballot rejection. Voters who have updated their names in this way will presumably have signatures on file that are relatively current. Given that approximately 94 percent of women change their name after marriage (Gooding and Kreider 2010), it is possible that gender is also related to VBM ballot rejection.

Lastly, a voter's physical distance from a polling location may play a part in the likelihood that his or her VBM ballot is rejected. This is particularly important in states that provide voters the opportunity to correct problems with return envelopes. In Florida, for example, a voter who returns a VBM ballot prior to the deadline is permitted to "cure" it if a problem is identified. As a result of successful litigation prior to the 2014 and 2016 General Elections, the opportunities for Florida voters to cure rejected VBM ballots prior to Election Day were in place in the 2018 General Election. However, given time considerations and communication limitations for voters who cast VBM ballots from beyond Florida's borders, members of the military, their dependents, and Florida registered voters residing overseas or out of state presumably have less of an opportunity to cure rejected mail ballots than do in-state voters .

Explanation 2: administrative discretion

The second potential cause of a VBM ballot's being rejected lies in the discretion of local election administrators. In most states, including Florida, responsibility for VBM ballot processing is in the hands of local election officials and their canvassing boards. Functioning as "street-level bureaucrats" (Kimball and Kropf 2006; Lipsky 2010), local officials, some (like in Florida) of whom are partisan elected officials, have considerable leeway when evaluating the veracity of a signature on a VBM ballot return envelope. Given that both people and machines are not foolproof in identifying genuine signatures, this discretion may foment non-uniformity in the application of the law. Imai and King (2004) describes considerable discretion in Florida's 2000 recount with respect to how the 67 local election officials both processed and validated overseas VBM ballots. Similarly, Merivaki and Smith (2016) find considerable variation in

rejected provisional ballots across Florida counties in recent elections.

More generally, some states have fairly lax standards for VBM envelope design. This may exacerbate VBM ballot rejection rates in jurisdictions whose return envelopes have instructions that are less clear than those in others.¹⁸ In Florida, relatedly, local election officials continue to retain considerable latitude under state law concerning how they are to notify voters if their VBM return envelope have problems.¹⁹ In the 2018 General Election, for instance, elections offices contacted voters who had problems with their VBM return envelopes' certificates over the phone, by email, and even through Facebook; other offices simply mailed postal notices (Smith 2018). Indeed, a judicial order by Federal Judge Mark E. Walker prior to the 2016 General Election called Florida's statute governing rejected VBM ballots "a crazy quilt of conflicting and diverging procedures" with the "canvassing boards across the state employing a litany of procedures when comparing signatures."²⁰

Discretion of local election officials or county canvassing boards may result in unequal treatment of VBM ballots due to implicit biases or partisanship, allowing racial or party preferences to be subconsciously present (Greenwald and Banaji 1995). There is ample evidence of such bias in other administrative realms: Black individuals face less favorable mortgage terms regardless of credit (Ross and Yinger 1999) and are less likely to receive job callbacks than White individuals (Pager, Bonikowski and Western 2009). Elected officials, too, may harbor implicit biases towards minorities. In particular, White, Nathan and Faller (2015) show that local elec-

¹⁸For examples of the wide range of designs for VBM return envelopes in Florida, see "Vote by Mail Envelope REDESIGN," *Clay County Supervisor of Elections*, Florida Supervisors of Elections 2017 Annual Summer Conference, June 18-22, 2017, available at https://www.myfloridaelections.com/portals/fsase/Documents/ConferencePresentations/Robin_Conte_-_VBM_Redesign_reduced.pdf?timestamp=1499433610334 (last accessed April 14, 2020).

¹⁹For details, see fn. 27.

²⁰Per Judge Walker: "What [Florida] vote-by-mail voters likely do not know, however, is that their vote may not be counted. In Florida, if a voter's signature on a vote-by-mail ballot does not match the signature on file with the supervisor of elections office then the ballot is declared "illegal" and their vote is not counted. Moreover, that voter only receives notice that their vote was not counted after the election has come and gone and, further, is provided no opportunity to cure that defect. On the other hand, if a vote-by-mail voter doesn't bother to sign the ballot in the first place, that voter is immediately notified and provided an opportunity to cure." Judge Walker's order appears in *Florida Democratic Party v. Detzner*, available at <https://moritzlaw.osu.edu/electionlaw/litigation/FloridaDemocraticPartyv.Detzner.php> (last accessed April 2, 2020).

tion officials are less likely to respond to emails from Hispanics requesting information on the voting process than they are to respond to non-Hispanic White individuals. Similarly, [Butler and Broockman \(2011\)](#) show that when asked to assist an individual to register to vote that state legislators are less responsive to email requests from putative Black individuals relative to White individuals, even when holding constant the partisanship of the individual requesting the information.

In addition, some studies suggest that a public official's partisanship may shape his or her bias. [Kimball, Kropf and Battles \(2006\)](#) find that in the 2004 General Election, more provisional ballots were cast and counted in jurisdictions in which the local election official belonged to the same party as the majority of voters. .

Voting by mail in Florida

We now turn to Florida in particular. We use this state as a laboratory for our study of VBM, and our rationale is as follows. What is presently being debated in the United States is the possibility of increasing or facilitating VBM opportunities for voters in the 2020 General Election. Florida allows both VBM (no excuse required, as noted earlier), early in-person voting, and Election Day voting. Because voters in Florida can choose from a variety of ways to vote, Florida is a useful benchmark for a state, say, that is considering transitioning from a limited VBM policy to a more generous one. There is already some movement in this direction in the United States. New Hampshire, for example, traditionally allows mail-in voting but only if an acceptable reason ("excuse") is provided. This requirement has been lifted during the ongoing pandemic.²¹ In Texas, however, where voting by mail is more restricted than in Florida, as of the writing of this paper no decision has been made by state officials to expand mail-voting opportunities.²² While states that have fully embraced all-mail voting systems

²¹See "Elections Operations During the State of Emergency," New Hampshire Secretary of State and New Hampshire Attorney General, April 10, 2020, available at https://www.nhpr.org/sites/nhpr/files/202004/covid-19_elections_guidance.pdf (last accessed April 13, 2020).

²²In Texas, those wanting to vote a mail ballot must be at least 65 years old, absent their county of residence on Election Day or during the early in-person voting period, sick or disabled in a way that makes in-person voting, or incarcerated. See "How absentee

might constitute a useful benchmark for jurisdictions considering effectively eliminating in-person voting in November 2020, the administration of all-mail voting states tends to be very centralized, or "top-down."²³ All-mail voting states are not necessarily comparable to the more decentralized election administration apparatuses in states like Florida.

For more than a decade, Floridians have utilized, in nearly equal shares, three methods of casting a ballot: VBM, early in-person, and Election Day. Since the adoption of no-excuse mail voting in the Sunshine State in 2001, the popularity of voting by mail has grown steadily. In the 2008 General Election, 21.9 percent of all ballots cast were by mail; in the 2018 General Election, this figure rose to 31.6 percent, the highest share of any of the last six elections.²⁴

Beyond the fact that it offers multiple modes of voting, Florida is a useful location for a study of VBM usage given its large and heterogeneous racial and ethnic population. Florida is also a regular political battleground, implying that voters in the state have real incentives to ensure that their votes count, incentives that may not exist in a state in which elections are more of a formality than they are in Florida. Florida also features an election system in which both state and local election officials have control, what the U.S. Election Assistance Commission characterizes as a "hybrid" election system.²⁵

Elections are administered in Florida at the county level by county Supervisors of Elections (SOE), all 67 of whom are elected officials except for Miami-Dade's, who is appointed by the Mayor of Miami-Dade. Florida SOEs must follow state statutes as well as rules adopted by the Florida Division of Elections.²⁶ Despite reforms that allow voters to "cure" problematic

ballots and voter fraud stopped Texans from voting by mail," *The Dallas Morning News*, April 14, 2020, available at <https://www.dallasnews.com/news/from-the-archives/2020/04/14/how-absentee-ballots-and-voter-fraud-stopped-texans-from-voting-by-mail/> (last accessed April 14, 2020).

²³See "Statewide Voter Registration Systems," *U.S. Election Assistance Commission*, available at <https://www.eac.gov/statewide-voter-registration-systems> (last accessed April 15, 2020).

²⁴In 2018, slightly less than one-third (32.8 percent) of all ballots cast were in-person early votes, with another 35.7 percent cast by voters in-person on Election Day. Over the past six general elections, from the 2008 presidential through the 2018 midterm, Floridians have cast nearly 46.4 million ballots, 27.4 percent of them VBM, 30.3 percent early in-person, and 42.3 percent on Election Day. See "General Election Summaries," Florida Division of Elections, available at <https://dos.myflorida.com/elections/data-statistics/elections-data/general-election-summaries/> (last accessed March 26, 2020). Calculations by the authors.

²⁵See fn.23.

²⁶There are always exceptions to local SOEs complying with state directives. For an example from the 2018 General Election, see "Bay County allowed voters to cast

Table 1: VBM ballots cast and rejected, 2012, 2014, and 2016 Florida General Elections

Year	VBM accepted	VBM rejected	VBM total	Rejection percent
2012	2,341,435	23,933	2,365,368	1.0
2014	1,877,847	27,924	1,905,771	1.5
2016	2,713,053	27,707	2,740,760	1.0

Note: 2012 and 2016 data from *Smith (2018)*; 2014 data from the Florida Division of Elections.^a

^aSee "Absentee Voting: The Numbers—The Process," *Florida Division of Elections*, December 8, 2014, available at https://www.myfloridaelections.com/portals/fsase/documents/gary_holland_fsase_winter_conf__absentee_ballots_final.pdf (last accessed April 16, 2020).

VBM ballots, the rejection rate of VBM ballots in Florida elections has remained relatively constant over time.²⁷ As Table 1 shows, in the two most recent presidential elections, 1.0 percent of VBM ballots were rejected, and in the 2014 midterm, 1.5 percent of VBM ballots were rejected.²⁸

The initial decision regarding the acceptance or rejection of an absentee ballot in a given Florida county is made by clerks in an SOE office in principle upon receiving said ballot. Final decisions about ballot rejection, however, are made by county-level canvassing boards made up of elected officials. In Florida, each county canvassing boards is comprised of three members, typically the county SOE, a county court judge, and the chair of the Board of County Commissioners. County canvassing boards meet both before and after Election Day, and their meetings are public. According to Florida Statutes, "The canvassing board must, if the supervisor has not already done so, compare the signature of the elector on the voter's certificate. . . to see that the elector is duly registered in the county and to determine the legality

ballots online despite law, Scott's orders, *Politico*, November 11, 2018, available at <https://www.politico.com/states/florida/story/2018/11/12/bay-county-allowed-voters-to-cast-ballots-online-despite-law-gov-scotts-orders-692157>, last accessed April 15, 2020.

²⁷In 2019, Florida changed the law to allow voters up to two days after Election Day to "cure" their problematic VBM ballot. Florida law dealing with the affidavit cure process of rejected VBM ballots is available at <http://www.leg.state.fl.us/statutes/index.cfm.html>, Title IX, Chapter 101, Section 101.68 "Canvassing of vote-by-mail ballot" (last accessed March 5, 2020).

²⁸The numerator in the calculations for rejected VBM ballots differs slightly for the two presidential elections versus the midterm election, as the midterm election percentage includes *all* rejected VBM ballots in the numerator, whereas the two presidential election numerators do not include, at the individual voter level, any rejected VBM ballots cast by voters if they successfully cast another ballot that was valid. See fn. 34 for a fuller discussion of how the 2012, 2016, and 2018 rejected VBM rates are calculated.

of that vote-by-mail ballot."²⁹ A VBM ballot is to be initially rejected by a local elections official if a voter did not sign the voter's certificate on the back of her absentee ballot envelope or if the voter did sign the certificate but in a way that did not match the voter's signature on file with the county SOE. Canvassing boards must agree by majority vote that a voter's signature does not match a signature on file. If a canvassing board decides that the signature on a voter's certificate does not match a signature on file, the ballot will not be opened or counted and instead will be marked with the phrase, "rejected as illegal."³⁰

Insofar as a rejected ballot represent a lost opportunity for an eligible voter to participate in the political process, it is important to ascertain the types of absentee voters whose ballots are ultimately rejected. Notwithstanding opportunities for voters to cure missing or mismatched signatures, in the 2018 General Election more than 1/100 VBM ballots cast were ultimately rejected by local elections officials, amounting to some 31,969 ballots that did not count.³¹ To put this figure in context, there were two very close contests in Florida in the 2018 General Election, including the United States Senate race (final vote margin, 10,033 votes) and the Florida gubernatorial race (32,463 votes).³² We are not suggesting that rejected VBM ballots were pivotal to either of these contests, but in principle they could have been in the former considering the number of rejected VBM ballots was greater than the final Senate race margin. Our broad point here is that rejected VBM ballots should not be considered a rounding error. When elections are close, they can matter.

²⁹Florida law dealing with the rejection of VBM ballots is available at <http://www.leg.state.fl.us/statutes/index.cfm.html>, Title IX, Chapter 101, Section 101.68 "Canvassing of vote-by-mail ballot" (last accessed March 5, 2020).

³⁰For details about the canvassing board's role in rejecting VBM ballots in Florida, see fn. 29.

³¹We discuss our methodology for calculating rejected VBM ballots in the sections that follow. According to the U.S. Election Assistance Commission's Election Administration and Voting Survey (EAVS) Dataset Version 1.2 (released February 18, 2020), which is available at <https://www.eac.gov/research-and-data/datasets-codebooks-and-surveys> (last accessed April 2, 2020), variable C4a "By-mail Ballot Rejected: Total" indicates that there were 30,452 rejected mail ballots tabulated in Florida in the 2018 General Election.

³²See Florida Division of Elections archive, available at <https://results.elections.myflorida.com/Index.asp?ElectionDate=11/6/2018&DATAMODE=> (last accessed March 26, 2020).

Data

Our analysis of VBM casting and ballot rejection in the 2018 General Election in Florida relies on individual-level election administration data on registered voters and their vote histories, all of which are public records in Florida. A voter whose absentee ballot was rejected in any given election receives an identifying mark or voting code in the state’s official registered voter database. We obtained from the Florida Division of Elections (FDOE) a copy of the monthly statewide voter database as of January 8, 2019. This database consists of a *details* file for each of Florida’s 67 counties as well as a *history* file. The former contains a registrant’s demographics (name, address, date of birth, date of registration, race/ethnicity, gender, and so forth) and the latter, information indicating whether a voter cast an absentee ballot that was accepted as valid, cast an absentee ballot that was rejected, voted on Election Day or early in-person, or cast a provisional ballot that was rejected.

In contrast with many other states, such as Wisconsin, which either does not collect or make available to the public information about a voter’s age, race/ethnicity, or gender, Florida’s voting records are extensive and available for public scrutiny.³³ Each Florida county’s details and history files are linked by a common voter identification code, a nine-digit integer. We focus our analysis on the eight million individuals who voted in the 2018 General Election, and calculate the VBM ballot rejection rate in Florida county as the number of individuals who cast a rejected VBM ballot divided by the number of total VBM ballots cast by individual voters according to the statewide vote history file.³⁴ When merged using voter identification codes, the 67 details and history files contain records on 8,255,083 individuals who participated

³³For more on Wisconsin’s voter file, see BADGER Voters, available at <https://badgervoters.wi.gov> (last accessed April 15, 2020).

³⁴The January 2019 statewide vote history files contain a small number of discrepancies. There are a total of 32,492 rows that have a voter who cast a ballot coded as a "B" ("Vote-by-Mail Ballot Not Counted"). Across Florida’s 67 counties, there are 695 individuals who are recorded as having multiple, and at times differing, vote history codes in the 2018 General Election. For these individuals, we drop all history codes but one, retaining whichever vote occurred first chronologically or the vote history that was counted as valid if another one is coded as either a rejected provisional ballot (cast on Election Day or early in-person) or as a rejected VBM ballot. For example, if per official vote history file a voter is said to have cast ballots both early in-person and at the polls on Election Day, we retain the code for the early in-person vote. If a voter cast a rejected provisional ballot on Election Day but cast a VBM ballot that was valid, we retain the vote history code for the valid VBM ballot.

in the 2018 General Election in Florida.

Incorporating as well Florida's Legislative Report Election/Recap for the 2018 General Election, also published by the FDOE, we create indicator variables specifying whether a registered voter is a member of the military, a dependent of a military member, needs voting assistance to estimate disability status, and has formerly changed his or her based on the categorical information available from the voter file. We collapse demographic data, such as age (transformed from birth date on the voter file), party affiliation, race, and gender, into nominal variables. We code a registrant's party affiliation as Democrat, Republican, NPA, and collapse all registered voters with a third party as "Other." In keeping with the official classifications on Florida's voter registration form, we code a registrant's race as White, Black, or Hispanic, collapsing all other entries as "other." We rely a registrant's stated gender ("M" or "F"), coding those with no code as "other."³⁵ For descriptive purposes, in some of our analyses we collapse a voter's age on the day of the November 6, 2018 General Election into a nominal variable (with age ranges of 18-21, 22-25, 26-29, 30-44, 45-64, and 65-100).

We also create binary variables for registered voters having a foreign mailing address and for having a domestic mailing address not located in Florida. Lastly, we construct variables to capture information about registered voters' names, such as the number of characters in the first and last names combined, and the presence of a hyphen, suffix, apostrophe in these names. Lastly, we create flags for voters with a middle initial and another flag for voters with middle names. See the appendix for data definitions along with counts of individuals in our data who

³⁵In many states, gender is not a required field on voter registration applications. Florida's form provides applicants the option of volunteering either "M" or "F." Florida's statewide registration database includes this information, and it classifies those who chose not fill in the information as "U" for unknown (Shino et al. N.d.).

have missing or erroneous data.³⁶

Overview of rejected VBM ballots in Florida

Overall, our data from the FDOE contains records of more than 8.25 million individuals who voted in the 2018 General Election. Of the approximately 2.6 million VBM ballots cast in November 2018, nearly 32,000 absentee ballots were invalid, a rejection rate of approximately 1.2 percent.³⁷

We now offer some descriptive statistics and visualizations that provide intuition on VBM ballot rejection in Florida in the 2018 General Election. These form the basis of our statistical model, which appears in the next section of the paper.

Rejected VBM ballots by age group

Younger voters were disproportionately more likely to have their VBM ballots rejected. In the 2018 General Election, as Table 2 shows, the rate of rejected VBM ballots cast by the youngest cohort, 18-21 year-olds, was 5.4 percent, more than eight times greater than that of the oldest cohort. Although 18-29 year-olds comprised only 2.1 percent of all voters who cast a VBM ballot, they accounted for 9.2 percent of all rejected VBM ballots in the 2018 General Election. Among the roughly 33,000 voters of any age who cast a ballot for the first time, which we are able to determine using the statewide vote history file, 4,137 did not have their

³⁶The subject of voter file availability across the United States is beyond our scope, but we note that there is variability in both the extent to which states make public their voter files and the extent to which these files contain demographic information on registered voters. Florida not only makes its voter file public, but this file contains registered voters' self-reported date of birth, race/ethnicity and partisan affiliation. In contrast, Wisconsin, a state that is prominent vis-a-vis VBM voting in light of its 2020 presidential primary, allows access to its voter file (at a cost for the complete file of \$12,500), but this file lacks fields for a registered voter's age, race/ethnicity, or partisan affiliation. See "WisVote Voter Data Requests / Voter List Requests," *WISCONSIN ELECTIONS COMMISSION*, available at <https://elections.wi.gov/clerk/svrs/voter-data> (last accessed April 15, 2020). As such, data availability is another reason that Florida provides an excellent laboratory for studying VBM voting.

³⁷Florida's "official" vote total in the 2018 General Election is 8,305,929, and is available at <https://results.elections.myflorida.com/Index.asp?ElectionDate=11/6/2018&DATAMODE=>. The state's official VBM total in the 2018 General Election is 2,623,798 votes, and is available at <https://dos.myflorida.com/media/700669/early-voting-and-vote-by-mail-report-2018-genpdf.pdf>. The state's total VBM votes cast appears to exclude rejected VBM ballots.

ballots counted, a rejection rate of 3.1 percent. These first-time voters accounted for almost 5.0 percent of those who cast VBM ballots in 2018, yet they accounted for 12.7 percent of the rejected VBM ballots.

Table 2: VBM ballots by age, 2018 General Election

Age	VBM total	VBM rejected	VBM accepted	Rejection percent
18-21	55,252	2,977	52,275	5.39
22-25	65,583	2,704	62,879	4.12
26-29	72,013	2,449	69,564	3.40
30-44	316,023	6,662	309,361	2.11
45-64	850,952	9,162	841,790	1.08
65-100	1,276,673	8,015	1,268,658	0.63
Total	2,636,496	31,969	2,604,527	1.21

Rejected VBM ballots by racial and ethnic group

Beyond age, there were in November 2018 differential patterns of rejected VBM ballots across racial and ethnic groups. As Table 3 shows, roughly 0.9 percent of all VBM ballots cast by White voters were rejected by local canvassing boards. In contrast, roughly 2.0 percent of VBM ballots cast by Black, Hispanic, and voters of other racial or ethnic group were rejected. Relatively speaking, the VBM ballots cast by Black, Hispanic, and other racial and ethnic minorities were more than twice as likely to be rejected as VBM ballots cast by White absentee mail voters in 2018. The nearly 240,000 Black voters who voted with mail ballots accounted for nearly 9.0 percent of all VBM ballots cast, but they made up 14.5 percent of all the VBM ballots that were rejected. Over 356,000 Hispanics cast absentee ballots in the election, roughly 13.4 percent of all VBM ballots cast statewide, but Hispanic mail ballot voters accounted for 22.6 percent of all the VBM ballots that were not counted. Voters of other racial and ethnic groups accounted for only 5.6 percent of all mail ballots cast in the election, but they cast 9.4 percent of all the rejected VMB ballots. In contrast, in the 2018 General Election, White voters cast nearly 1.9 million VBM ballots, 72.1 percent of all absentee mail ballots; yet, they were responsible for slightly more than half of all VBM ballots that were rejected by county canvassing boards.

Table 3: VBM ballots by race and ethnicity, 2018 General Election

Race or Ethnicity	VBM total	VBM rejected	VBM accepted	Rejection percent
White	1,898,004	17,039	1,880,965	0.90
Hispanic	353,839	7,241	346,598	2.05
Black	238,200	4,675	233,525	1.96
Other	146,453	3,014	143,439	2.06
Total	2,636,496	31,969	2,604,527	1.21

Rejected VBM ballots by uniformed and overseas civilians

Given the various protections in place for overseas and uniformed personnel under UOCAVA, it is especially surprising that mail ballots returned by these voters are rejected at a rate higher than for voters in Florida overall. Roughly 3.6 percent of VBM ballots cast by military and overseas voters—those covered under UOCAVA—were rejected by county canvassing boards, compared to 1.2 percent of absentee ballots cast in 2018. Overseas voters had approximately 2.3 percent of their mail ballots rejected, regardless of civilian or uniformed status. Domestic military voters, however, have the highest rate of rejection of VBM ballots among UOCAVA voters. As Table 4 shows, at 4.3 percent, the rejection rate in the 2018 General Election for mail ballots cast by domestic military voters was higher than any rejection rate broken down by race or ethnicity. It is possible that some of these voters are not covered under UOCAVA, which only applies to voters who are members of the uniformed services on active duty, and because of their membership in the service, are absent from their voting jurisdiction. Even if the voters marked as members of the military are not in active service and therefore not protected under UOCAVA, this group’s high absentee ballot rejection rate is puzzling.

Table 4: Military/overseas VBM rejection, 2018 General Election

Group	VBM total	VBM rejected	VBM accepted	Rejection percent
Civilian overseas	17,774	412	17,362	2.32
Domestic military	36,438	1,572	34,866	4.31
Military overseas	3,593	84	3,509	2.34
Military or overseas	55,737	2,068	57,805	3.58

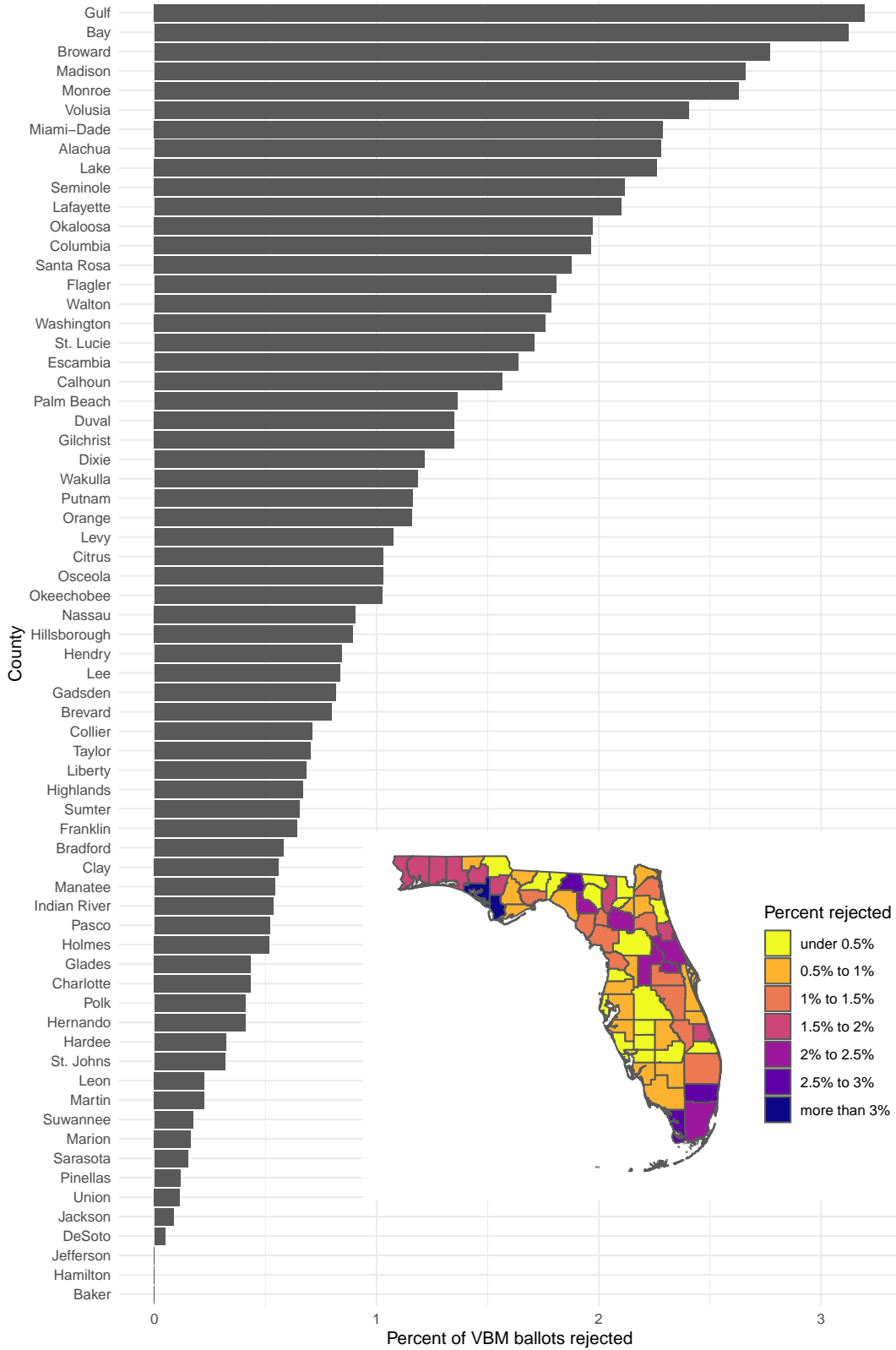
VBM ballot rejection rates by county

As a precursor to a formal analysis of election official discretion, we now turn to the question of geographic variability of VBM rejection rates. There is significant variance in these rates across Florida's 67 counties, suggesting that there is discretion by local officials. The percentage of rejected VBM ballots across Florida ranges from three counties with no rejected VBM ballots (Baker, Hamilton, and Jefferson), to ten counties that rejected more than two percent of all VBM ballots (Alachua, Bay, Broward, Miami-Dade, Gulf, Madison, Marion, Seminole, and Volusia). Figure 1 displays the percentage of rejected VBMs in the 2018 General Election across counties, with the inset map showing the variable geographic distribution of VBM ballot rejection rates across the state.

Of course, it is possible that voters across counties differ in their ability to properly vote a VBM ballot. In other words, county-wide VBM ballot rejection rates may be confounded by the non-uniform distribution of age groups and racial and ethnic minorities in Florida. If equal standards are being applied by SOEs and their staff, however, absentee rejection rates conditional on demographic groups should not differ substantially across counties. Still, when it comes to rejected VBM ballots, there is considerable variation within Florida counties when we break them down along age and racial or ethnic groups. Figure 2a and Figure 2b display the percentage of VBM ballots cast by Black and Hispanic voters, respectively, rejected in a county, compared to the percentage of rejected VBM ballots cast by White voters.³⁸ In both plots, the horizontal axis is the rejection rate of VBM ballots (from zero percent to five percent) cast by White voters. Along the vertical axis is the rejection rate of VBM ballots cast by Black voters (Figure 2a) or Hispanic voters (Figure 2b) in each county. If VBM ballot rejection rates were the same for White and Black (or Hispanic) voters, points in these two figures would fall along diagonal 45-degree lines. It is clear, however, that nearly every county falls above the 45 degree line, indicating VBM rates for minorities exceed those of White voters across Florida.

³⁸Figure 2a excludes two counties with unusually high rejection rates for Black voters due to their small sample sizes, Lafayette and Gilchrist. Gilchrist rejected 2 of 16 VBM cast by Black voters. Lafayette rejected 1 of 5 VBM ballots cast by Black voters. Figure 2b excludes one county, Calhoun, which rejected 1 of 9 VBM ballots cast by Hispanic voters.

Figure 1: VBM rejection rates, by county



To better visualize the difference in the rejection of VBM ballots cast by younger and older voters, Figure 2c plots VBM ballot rejection rates by those under and those 30 years-old and older. If VBM ballot rejection rates were equal for voters under 30 years old and those 30 years-old and older, all 67 counties would align along the 45-degree line. Along the horizontal axis is the rejection rate of VBM ballots (from zero to 12.5 percent) cast by voters 30 and older in each county. Along the vertical axis is the rejection rate for the same range of VBM ballots cast by voters younger than 30 years old in each county. If absentee ballot rejection rates were the same in a county, all 67 counties would fall along the diagonal 45 degree.

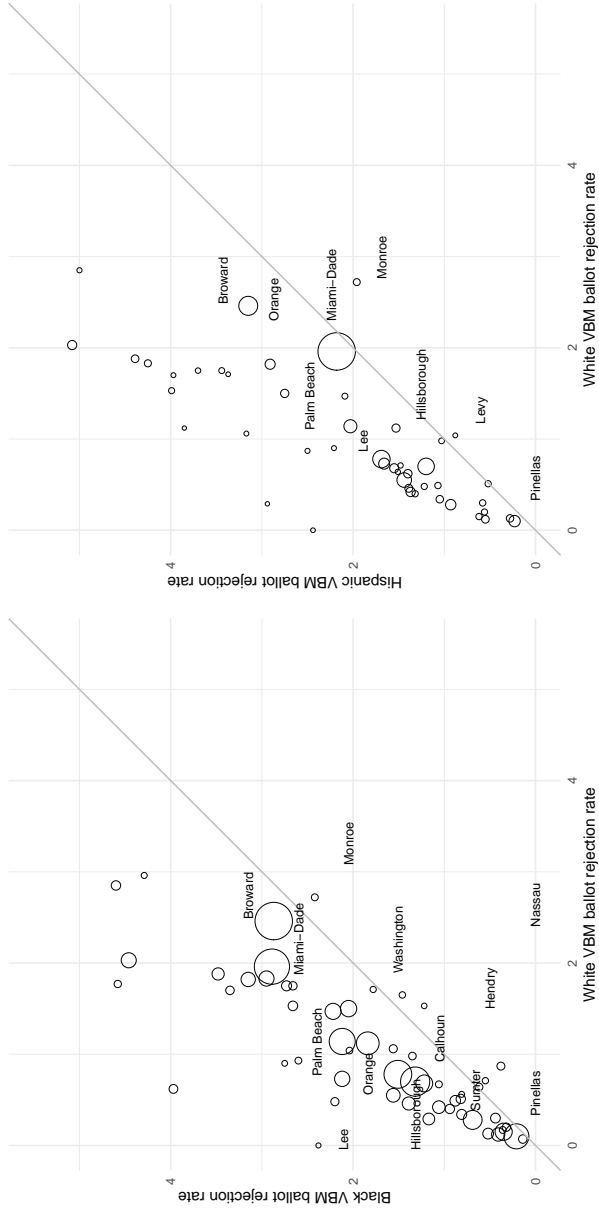
As Figure 2c shows, younger voters in the 2018 General Election in nearly every Florida county have a considerably greater likelihood of having their VBM ballots rejected than those 30 and older. In several counties, the VBM rejection rate of young voters is more than three times as great compared to older voters. In Broward County, for example, roughly seven percent of mail ballots cast by voters under 30 were rejected, compared to less than 2.5 percent of those cast by voters 30 and over. The disparity is even higher in Lafayette, Monroe, Santa Rosa, Volusia, and Walton counties.

Florida law sets a uniform standard of review for the validation of mail ballots by elections officials.³⁹ The evidence we have displayed thus far is hard to rationalize based solely on a theory of individual voter characteristics accounting for VBM rejection rates. Because, say, it is difficult to reason why the characteristics of young voters would dramatically vary across Florida's counties, it appears that county discretion in the manner in which VBM ballots are processed may account for some of the variation we have noted in VBM ballot rejection rates.⁴⁰

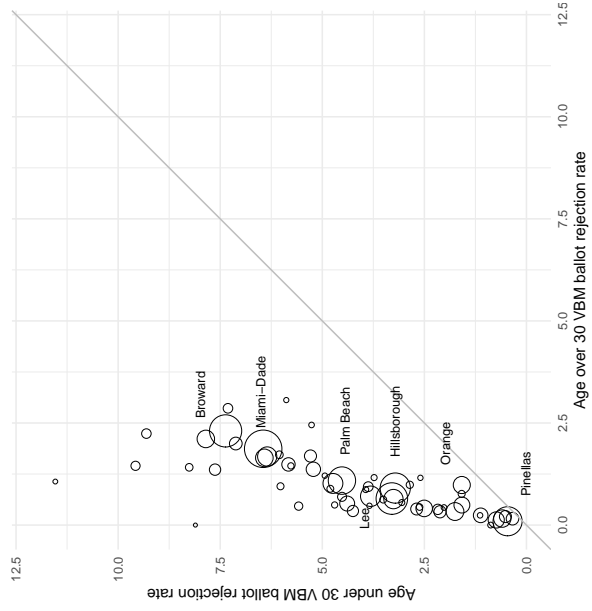
³⁹Florida law dealing with the review of signatures on VBM return envelopes is Title IX, Chapter 101, Section 101.6103, "Mail ballot election procedure," available at http://www.leg.state.fl.us/statutes/index.cfm?App_mode=Display_Statute&URL=0100-0199/0101/0101.html (last accessed March 5, 2020). Specifically, a VBM ballot "shall be counted only if: "(a) It is returned in the return mailing envelope; (b) The elector's signature has been verified as provided in this subsection; and (c) It is received by the supervisor of elections not later than 7 p.m. on the day of the election. The supervisor of elections shall verify the signature of each elector on the return mailing envelope with the signature on the elector's registration records. Such verification may commence at any time prior to the canvass of votes."

⁴⁰There may be technical reasons for these disparities. For example, in several of the state's larger counties, including Broward, Collier, Duval, Hillsborough, Miami-Dade, Orange, Palm Beach, and Pinellas, election offices rely on Pitney Bowes (now known as BlueCrest) machines to process mail ballots and verify voters' signatures. Personal email correspondence from Collier County Supervisor of Elections, April 14, 2020. Available from the authors). Received VBM ballots in these counties are

Figure 2: Percent of rejected VBM ballots cast by county



(a) White and Black rejected VBM ballots (b) White and Hispanic rejected VBM ballots



(c) Age ≥ 30 and < 30 rejected VBM ballots

Note: Figures exclude, respectively, counties with no rejected VBM ballots cast by Black (10), Hispanic (19), or under age 30 (7) voters. Point size proportional to total VBM ballots cast by Black, Hispanic, or under 30 voters, respectively. Counties are labeled if there were more than 90,000 total VBM ballots cast or if it falls below the 45 degree line.

Modeling VBM ballots cast and rejected

The descriptive analysis of 2018 VBM ballot rejections that we have just presented is potentially confounding in the following two ways. One, registered voters in Florida may sort themselves into counties and this could manifest itself in variability across Florida in VBM rejection rates that looks like county discretion but is actually voter sorting. Two, voters who choose to cast absentee ballots may be systematically different from voters who cast in-person ballots. Perhaps the most obvious reflection of this consists of registered voters living overseas and those in the military and their dependents, i.e., UOCAVA voters. Thus, what appear to be, say, age effects in VBM rejection rates in Florida may in part reflect variability in the extent to which young voters cast VBM ballots in the first place.

Modeling selection in VBM and possible ballot rejection

To address these two concerns, we estimate selection model to account for the choice that Florida voters face over whether to cast a VBM ballot in the 2018 General Election ([Heckman 1977](#)). Our model incorporates two steps: first, the step in which voters decide whether to cast an absentee ballot or to vote in-person (the selection step), and second, the step in which a voter's mail ballot is rejected or not (the outcome step).

The predictors in our selection step (VBM vote or not) and outcome step (rejected ballot or not) follow from the literature we have reviewed as well as considerations about voters' names and various statuses. Our model includes county fixed effects and we cluster standard errors by county as well.

To identify a selection model, we require exclusion restrictions, or predictors that affect the selection step but not the outcome step. We use the congressional, Florida state senate, and Florida state house districts in which a voter resides as our exclusion restrictions. Theoretically, we expect that campaigns may affect the rates of VBM use across these types of districts, given

initially processed through a machine that automatically reviews a signature on the return envelope, matching it to the voter's signature on file; if the signature is missing or mismatched, it goes before the canvassing board for review. In smaller counties, SOE staff members manually processes signatures on return envelopes, forwarding those with problematic signatures to a canvassing board for review.

that campaigns concentrate different levels of effort into encouraging voters to vote by mail (Leighley 2001; Michelson 2005; Hassell 2017). We have no theoretical reason to believe that a registered voter’s congressional or state legislative district should affect the likelihood of his or her VBM ballot being rejected; Florida election administration is conducted at the county level, as we have already reviewed.⁴¹ Our selection model uses a probit in both steps as our selection and outcome steps are binary. We estimate the model with maximum likelihood.

Selection model results

In Table 5, we present abridged results from our selection model. The full table of results is available from the authors. The model’s coefficient estimates are roughly consistent with existing literature, to the extent that it exists, and reinforce most, but not all, of the descriptive statistics offered in the previous section.

⁴¹There are 27 United States congressional districts in Florida along with 40 state senate and 120 state house districts. Florida Senate District 40 is collinear to the collection of other districts, and we drop it from our list of instruments.

Table 5: Heckman two stage selection model for VBM ballots cast and rejected

	Selection: Voted VBM	Outcome: Rejected VBM
Intercept	-0.68** (0.241)	-2.68*** (0.41)
Party: Democratic	0.099*** (0.015)	-0.089*** (0.021)
Party: Other	-0.032*** (0.0079)	0.001 (0.03)
Party: Republican	-0.0039 (0.0072)	-0.11*** (0.01)
Race: Hispanic	-0.027 (-0.03)	0.083** (0.029)
Race: Black	-0.25*** (0.014)	0.099* (0.048)
Race: Other	-0.001 (0.011)	0.11*** (0.018)
Gender: Male	-0.096*** (0.0036)	-0.0019 (0.01)
Gender: Unknown	-0.067*** (0.011)	0.016 (0.015)
Voting assistance	0.02 (0.043)	0.2*** (0.028)
Military	0.32*** (0.049)	0.07 (0.048)
Military dependent	0.25*** (0.032)	0.1* (0.049)
Overseas	1.3*** (0.069)	0.13 (0.12)
Out of state	1.2*** (0.098)	0.65*** (0.097)
Changed name	-0.034*** (0.009)	-0.026** (-0.01)
Name has middle initial	0.016 (0.013)	-0.072*** (0.015)
Name has middle name	0.041*** (0.01)	-0.046*** (0.013)
Name has apostrophe	-0.044*** (0.0078)	-0.025 (0.042)
Name has suffix	-0.0039 (0.0099)	0.012 (0.011)
Name has hyphen	-0.00029 (0.0034)	-0.027 (0.02)
ρ	0.22 (0.12)	
Observations	8,232,781	2,632,347

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Correlates of VBM casting in the 2018 General Election

We turn first to our model's selection step, which estimates who among voters in the 2018 General Election cast a VBM ballot. Insofar as our objective is understanding VBM ballot rejection, not the correlates of VBM casting in the first place, our discussion of first step estimates is brief.

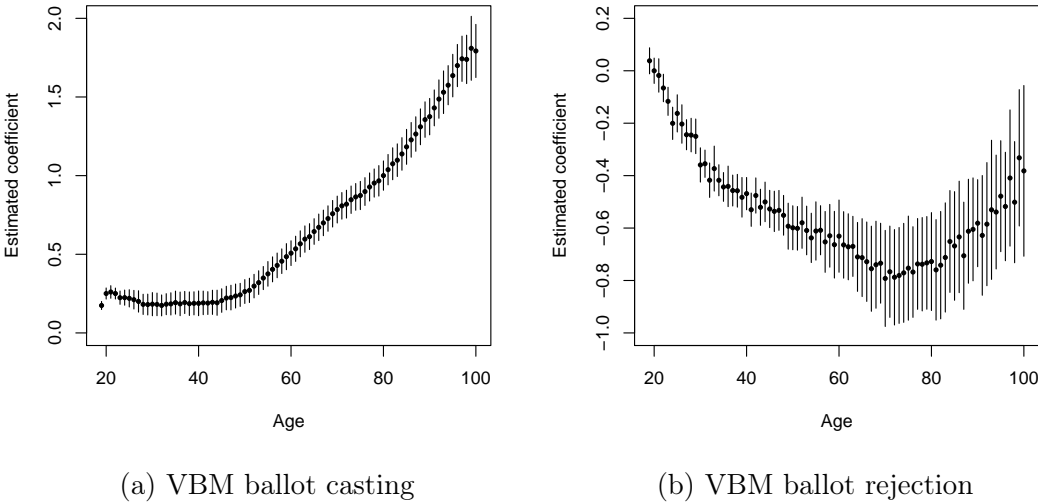
With regards to party registration, we find NPAs (our reference category) to be less likely than Democrats, but more likely than those registered with a third party ("Other"), to vote VBM, all else equal. And, we find Republicans were no more or less likely to vote a VBM ballot in the 2018 General Election than NPAs. That Democrats in Florida in 2018 were more likely than those not registered with a party, but Republicans not similarly predisposed, to vote via VBM may reflect particular efforts by the Democratic Party of Florida to mobilize peripheral voters to the polls in a midterm election that had historically high turnout.⁴²

Turning to other determinants of choosing to vote by mail, White voters (the reference category) who voted in Florida's 2018 General Election were more likely than Black voters to cast a VBM ballot. However, although Hispanics voters were more likely to cast a VBM ballot than Black voters, they were no more or less likely to cast a VBM ballot in 2018 than White voters. The likelihood of casting a VBM ballot by those needing voting assistance—which we take as a proxy for living with a disability—is not statistically significant, but as expected, members of the military and their dependents are disproportionately likely to vote by mail. Similarly, as expected, voters overseas and out-of-state are substantially more likely to cast an absentee ballot.

Various name-related, step one estimates in Table 5 are statistically significant, and we do not have any theoretical explanations for these results. For example, we find that individuals whose names have apostrophes are less likely to vote VBM and that individuals with middle

⁴²In the 2018 election cycle, the Florida state Democratic Party claims to have "signed up 578,000 sporadic voters to receive mail-in ballots." See Gary Fineout, "Florida Democrats launch plan to boost vote-by-mail turnout in 2020," *Politico*, December 5, 2019, available at <https://www.politico.com/states/florida/story/2019/12/05/florida-democrats-launch-plan-to-boost-vote-by-mail-turnout-in-2020-1230761> (last accessed April 11, 2020).

Figure 3: Estimated age coefficients for VBM ballot casting and rejection



names are more likely. It is important that we have controlled for these features of VBM ballot casting because of our ultimate interest in VBM ballot rejection. As to what is driving these results, this is an open matter we leave for future research.

Our model includes indicator variables for each year of voter age (18 years of age is the reference category) and Figure 3a plots age-based coefficient estimates. As shown in the figure, the likelihood of voting by mail is highest among older voters. Among those who cast ballots of any type in the 2018 General Election, voters under the age of 50 were quite similar regarding their proclivity to vote by mail. There is a slight uptick in the probability of voting by mail among college age voters, spiking ever so slightly for those between the ages of 19 and 25.

Finally, we find evidence in the first stage of our selection model in support of expected variation across Florida’s counties in the rates at which voters cast VBM ballots (not displayed in Table 5 and results available from the authors). For purposes of illustration, all else equal, a voter’s probability of casting a VBM ballot increases when registered in Pinellas County, compared to Alachua County, the home of the University of Florida. This result on Pinella County provides intuitive confirmation that our selection model functions as expected.

Correlates of VBM ballot rejection in the 2018 General Election

We turn now to the correlates of rejected VBM ballots and focus attention on the second column of Table 5, which shows an abridged set of coefficient estimates from our selection model's second step. The rightmost column in Table 5 presents estimates which characterize the types of individuals who, conditional on casting VBM ballots, are most likely to have their ballots rejected.

Both of our model's steps are probit regressions, and this reflects the fact that VBM ballot casting and rejection are binary. Probit model estimates, like those in Table 5 are not easily interpreted because of the model's non-linearity. Therefore, rather than focusing on the precise values of the estimates in the rightmost column of the, we focus on average marginal effects.

Table 6: Marginal effects on VBM ballot rejection by party, race, and gender

Variable	Estimate	SE	z
Party: Democratic	-0.20	0.091	-2.21
Party: Other	0.0025	0.075	0.03
Party: Republican	-0.24	0.058	-4.16
Race: Black	0.21	0.15	1.40
Race: Hispanic	0.18	0.089	1.97
Race: Other	0.24	0.070	3.42
Gender: Male	-0.00398	0.0208	-0.19
Gender: Other	0.03455	0.03478	0.99

Note: reports the change in the probability of VBM ballot rejection from a base category of have no party affiliation, being White, or being female to being a member of a given partisan, racial, or gender group. SE is an estimate's standard error, and z is an associated z -statistic.

Our first set of marginal effects concerns party, race, and gender. With regard to party registration, which is in the top half of Table Table 6, the reference category is No Party Affiliation (as in our selection model's first step). It follows from Table 6 that, compared to Democrats and Republicans, both of which are associated with negative marginal effects, NPA registered voters are disproportionately likely to have VBM ballots rejected, all things equal. The table has no evidence that Florida voters registered with a third party are more or less likely to have their VBM ballots rejected than NPAs. The party-based findings in Table 6 comport with the idea that those registered with a major political party may have more guidance from "Get out the Vote" campaigns that may help them fill out and return their VBM ballot.

Turning now to race, the reference category in the middle section of Table 6 is White. We find no significant difference between White and Black VBM voters with respect to ballot rejection, all things equal. Hispanic VBM voters, on the other hand, even in the presence of control variable and controlling for selection, have a slightly elevated risk of ballot rejection, on the order of 0.18 percentage points. A similar, albeit stronger, effect exists for VBM voters of other racial and ethnic categories.

How large are Table 5's party and race effects? A difference of 0.18 percentage points in VBM rejection rates between Hispanic and White voters is not large on the surface, but there are 2,337,804 and 8,872,107 Hispanic and White, registered voters, respectively, in Florida in our January 2019 voter file. In the 2018 General Election, the Hispanic turnout rate was 48.3 percent, quite low compared to the White turnout rate of 63.02 percent. Suppose that the Hispanic turnout rate in November 2020 is again 48.3 percent, and suppose, hypothetically, that all Hispanics voted VBM. Holding constant all other factors, the 0.18 percentage point gap in VBM rejection rates is equivalent to a difference of 2,035 otherwise valid in-person votes cast by Hispanics that would, hypothetically, be rejected if they all voted VBM.

The lower section of Table 6 presents marginal effects of gender. The reference category for gender is female. Per this section's small z statistics, we find no evidence that VBM rejection rates in Florida in the 2018 General Election varied as a function of a voter's gender.

We now turn to marginal effects associated with estimates of the voter characteristics that are in bottom of Table 5. Of the associated estimated average marginal effects presented in Table 7, several are notable. First, those indicating they would need assistance with voting when they registered to vote, all things equal, are 0.42 percentage points more likely to have a rejected VBM ballot. This result describes a relationship between disability status, as proxied for by the need for voting assistance, and VBM ballot rejection. Individuals who reside in Florida but have an out-of-state mailing address have a 1.4 percentage point greater likelihood of VBM ballot rejection. We find no evidence that military status or military dependent status has an independent effect on VBM ballot rejection. The estimate associated with being an overseas voter, however, is positive and significant, and this is intuitive insofar as overseas voters have few options other than voting by mail.

Table 7: Marginal effects on VBM ballot rejection by various voter characteristics

Characteristic	Estimate	SE	z
Voting assistance	0.42	0.14	3.10
Military	0.15	0.11	1.35
Changed name	-0.054	0.020	-2.66
Military dependent	0.21	0.12	1.78
Overseas	0.27	0.19	1.38
Out of state	1.4	0.20	6.71
Name has middle initial	-0.15	0.060	-2.52
Name has middle name	-0.096	0.046	-2.08
Name has apostrophe	-0.052	0.084	-0.62
Name has suffix	0.025	0.026	0.95
Name has hyphen	-0.057	0.048	-1.18

Note: reports the change in the probability of VBM ballot rejection from a base category of not having the characteristic in the body of the table to having the specified characteristic. SE is an estimate's standard error, and z is an associated z -statistic.

In terms of features that decrease the likelihood of a mail ballot being rejected, having a middle initial or middle name is associated with 0.15 and 0.10 percentage point decreases, respectively, in the probability of VBM ballot rejection. We find no significant effects on ballot rejection of the presence in voter names of apostrophes, suffixes, or hyphens. Lastly, the "Changed name" voter characteristic in Table 7 is associated with a lower likelihood of VBM ballot rejection. The effect size is not large (0.05 percentage points), but it is statistically significant. We suspect that a changed name is proxying for voter engagement with an election official and updated voter record maintenance. A voter who changed his or her name presumably did so at an SOE office (or Department of Highway and Motor Vehicles office), and in the process placed a current signature on file.

Although not displayed in Table 5, our selection model considers the effect of name length on VBM ballot rejection. In particular, we include indicator variables for name length ranging from four to 25 (all names with length less than or equal to four are assumed to have length four, and name lengths greater than 25 are similarly censored at 25). We find no statistically significant evidence that name lengths affect the probability of VBM ballot rejection.

With regard to age and VBM ballot rejection, Figure 3b plots probit point estimates and confidence intervals for age-based point estimates. The reference category is 18 years old, and

it is evident that the likelihood of having a VBM ballot rejected decreases with age. Table 8 reports a variety of estimates of age group marginal effects on the probability of VBM ballot rejection. In particular, these effects describe the marginal change in VBM ballot rejection probabilities for the base category 18 year-old voter who moves to another age in the table.

Table 8: Marginal effects on VBM ballot rejection by age

Age	Estimate	SE	z
20	0.0042	0.15	0.03
30	-1.5	0.53	-3.00
40	-1.9	0.61	-3.07
50	-2.1	0.72	-2.99
60	-2.2	0.78	-2.81
70	-2.4	0.86	-2.83
80	-2.3	0.85	-2.77
90	-2.1	0.78	-2.69

Note: reports the change in the probability of VBM ballot rejection from a base category of 18 years old to an age listed in the body of the table. SE is an estimate's standard error, and z is an associated z -statistic.

The implication of Table 8 is straightforward: the older a voter, the less likely his or her VBM ballot will be rejected, all things equal. Compared to an 18 year old voter, for example, a 30 year-old voter has a 1.5 percentage point decrease in ballot rejection probability; a 50 year-old voter has a two percent lower probability. Broadly speaking, these estimates show how VBM ballot rejection disproportionately affected younger voters in Florida in the 2018 election. Figure 3b is consistent with the claim that younger voters may not have a firm grip on their signatures or knowledge about how to fill out a return VBM envelope. Since an individual's signature is never the same, and signature stability is acquired over time, influenced by social and cultural conditions (Pirlo et al. 2014), young voters growing up in a digital world may not yet appreciate their signature as a permanent measure of their identity.

County variability in VBM rejection rates

We now examine disparities across counties with regard to rejection rates of VBM ballots. To do this, we consider the county fixed effects that are part of the second step of our selection model. There are 67 counties in Florida, and three of them—Baker, Hamilton, and Jefferson—

had zero rejected VBM ballots in 2018; these counties are not part of our selection model. Our base category, chosen without loss of generality, is Pinellas County. The estimated fixed effect for Alachua County, say, captures the additional (or decreased) probability that a VBM ballot cast in Alachua County will be rejected compared to a VBM ballot cast in Pinellas County, all things equal. There are 63 total county fixed effects in the second step of our selection model (and also in the first step, but that is not of interest here).

There are ostensibly uniform standards in Florida for determining whether the signature on a VBM return envelope is valid or not. This point we have already noted. However, we have also discussed the matter of local discretion, and our county fixed effects estimates are proxies for the extent to which local officials in Florida’s counties have independent effects on VBM ballot rejection rates.

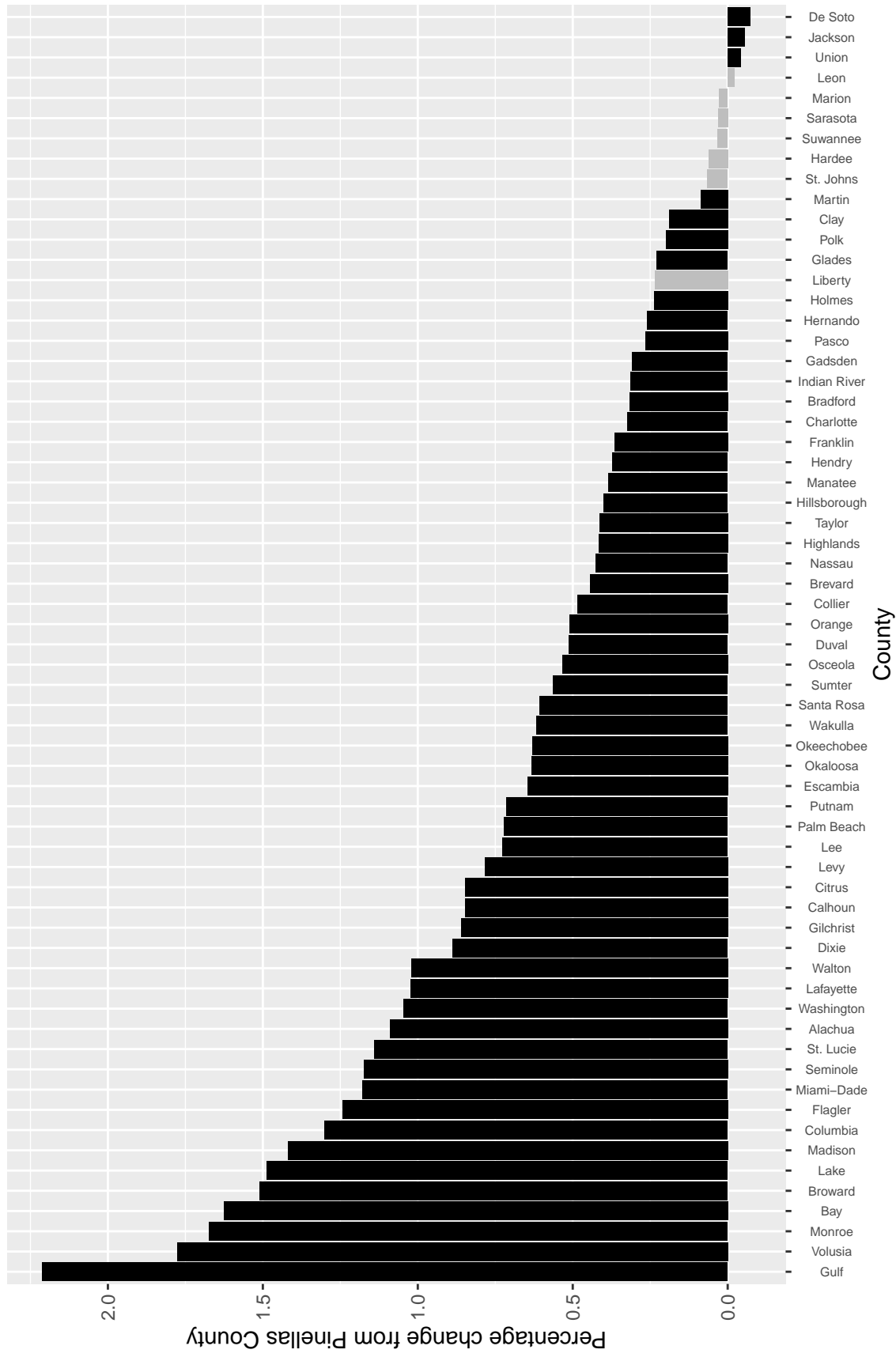
Estimated marginal county effects are displayed in Figure 4, and bars in the figure are sorted from largest to smallest. County names appear under each bar, and bars are colored based on statistical significance at the 0.05 level, black denoting significance and gray, a lack thereof. Each bar is a change in the VBM rejection rate of moving from Pinellas County to a different county.

There are two explanations for the variability in county marginal effects apparent in Figure 4. One, local election official discretion. And two, a missing variable in our selection model that is correlated with county. Given our non-experimental setup, we cannot completely rule out the latter, but we note that our model includes all of the demographics available to us via the Florida voter file. Given the ostensible connection between signature quality and VBM ballot rejection, it seems hard to imagine that penmanship systematically varies across counties, given that our selection model controls for voter age.

Many of the county marginal effects in Figure 4 are greater in magnitude than the marginal effects previously discussed, i.e., those concerning party, race, gender, and age. That by itself is a notable result, implying that the most important predictor of whether a VBM ballot cast in Florida in 2018 was rejected may be the county where it was cast.

The tallest bar in Figure 4 is associated with Gulf County, which was ravished by Hurricane Michael just weeks before the November 6, 2018 election (Zelin and Smith 2020). The

Figure 4: Estimated county fixed estimates



Note: each bar denotes one Florida county. Black bars are statistically significant at the 0.05 level and gray bars are not. Each county fixed effect is based on the omitted Pinellas County, and three counties (Baker, Hamilton, and Jefferson) do not appear in the figure because they had no rejected VBM ballots in the 2018 General Election.

Gulf height is over two percent. Accordingly, VBM voters in Gulf County had more than a two percentage point greater likelihood of VBM ballot rejection than VBM voters in Pinellas County, all things equal. This is despite the observed difference in VBM rejection rates between Pinellas and Gulf being approximately 3.08 percent in 2018. Some of this 3.08 percent reflects voter demographics, which are incorporated in our selection model via inclusion of voter-level predictors. All told, there were 1,251 VBM ballots cast in Gulf County in the 2018 General Election, and two percent of this number is about 25 (40 ballots were actually rejected in 2018).

Is two percent large? The answer to this question depends on the way one defines "large." Gulf County is one of the smallest Florida counties based on voter registration, having 10,792 registered voters as of November 2018 as opposed to 1.5 million in, say, Miami-Dade County. Of Gulf County's registered voters, 5,989 voted in the 2018 General Election. If in November 2020 there were also 5,989 voters in Gulf County and each one cast a VBM ballot, the aforementioned two percent rejection penalty in the county would lead to an excess of approximately 120 VBM ballots being rejected. This is unlikely to be pivotal in an election, which is a reflection of Gulf County's small population.

These calculations, however, say nothing about the fact that a VBM ballot that is valid in one county but on account of discretion rejected in another reflects a lost opportunity for a properly registered voter to exercise the right to vote. We would argue that no voter's franchise should be considered expendable on the basis of not being pivotal. From this perspective, the question, "Is two percent large?" has nothing to do with pivotality.

Table 9 lists four Florida counties, their estimated marginal effects for VBM ballot rejection (i.e., the additional percentage of rejected VBM ballots due to this county compared to Pinellas County), the standard error of the margin effects (all estimates are significant at the 0.05 level), and two columns named "New rejections" and "New percent." The latter two columns operate as follows.

Suppose that every county in Florida (disregarding the three counties that had no rejected VBM ballots) were administered like Pinellas County with respect to VBM ballot rejection. Recalling that Pinellas is our reference category, this would mean that the marginal effect of Volusia County, for example, would be zero rather than 1.776. In this scenario, Volusia County

Table 9: Projected ballots rejected given hypothetical scenarios

County	Marginal effect	SE	New rejections	New percent
Volusia	1.776	0.471	32,216	1.224
Broward	1.511	0.427	32,131	1.221
Miami-Dade	1.179	0.280	32,025	1.217
Pinellas	0.000		31,648	1.202

would have had fewer rejected VBM ballots than it actually had in the 2018 General Election (because zero is less than 1.776), and the amount fewer can be calculated by subtracting 1.776 percentage points from Volusia County's observed VBM ballot rejection percentage, dividing the difference by 100 to convert it to a rate, and then multiplying this rate by 80,667, which is the number of VBM ballots cast in Volusia County in the 2018 General Election. Similar calculations can be made for all Florida counties under the assumption that each had a VBM ballot rejection rate like Pinellas.

This said, the "New rejections" column in Table 9 reports the estimated number of VBM ballot rejections across Florida in the 2018 General Election in the hypothetical scenario in which all counties had the same fixed effect as the county in one of the table's row. The "New percent" column lists the corresponding statewide VBM rejection percent.

Table 9 shows that county variability in VBM rejection rates does affect rejections, but the raw numbers are not appreciably large compared to many Florida election vote margins. The reason that Volusia County appears in the table is because this county had the largest fixed effect (which means, the greatest VBM rejection rate, all things equal) among reasonably populous counties in Florida. With that in mind, the Pinellas-Volusia difference in rejected VBM ballots is $32,216 - 31,648 = 568$ ballots. In other words, the difference in rejected VBM ballots in Florida between all counties decreasing their rejection rates to the level of Pinellas County versus all counties increasing their rejection rates to the level of Volusia County is 568 ballots.

One perspective of the extent to which 568 is large turns on whether 568 ballots is likely to be pivotal in an election. Another perspective focuses on diminished voting rights. 568 VBM ballots rejected that would not have been rejected if all Florida counties had a Pinellas-like standard for VBM ballot rejection is 568 individuals who lost their franchise in an election.

What if the number of VBM ballots cast in Florida doubled?

There were 2,632,349 absentee ballots cast in Florida in the 2018 General Election across the 64 counties with positive VBM rejection rates. If this number were to, say, double in the 2020 General Election, the statewide number of rejected VBM ballots based on Table 9 ranges from 63,281 (if all counties were like Pinellas) to 64,439 (if all Florida counties were like Volusia). These numbers are calculated holding all things equal.

Holding all things equal is not a simple assumption here. Given the attention to VBM voting during a pandemic, one would think that some county election officials in Florida may be sensitive to the exigencies of voting in a crisis and thus perhaps be more forgiving in their assessments of VBM signatures. On the other hand, if the number of VBM voters in Florida doubles, many voters who have never voted by mail will suddenly be doing so. A surge of inexperienced VBM voters, particularly in what is expected to be a high-turnout election, may lead to an increase in the number of signature-related errors in November 2020. Ultimately, we do not know which of these factors will be stronger, but this subject is one that should be considered as the push for VBM in the United States intensifies.

Correlation between VBM ballot casting and rejection

Finally, Table 5 contains an estimate of a correlation parameter ρ . This parameter is a measure of the extent to which the two steps (casting a VBM ballot and having it rejected) in our selection model are correlated, conditional on observed predictors. The estimate of ρ is approximately 0.22 with an estimated standard error of approximately 0.12. This yields a χ^2 statistic of 3.15 with $p \approx 0.0761$.

There are two noteworthy points about this result. First, the point estimate of ρ is positive, implying that voters in Florida in the 2018 General Election who were more likely to cast VBM ballots were also more likely to be the types of individuals who have their VBM ballots rejected, all things equal. This should raise a red flag. Second, the estimate of ρ does not quite cross the conventional threshold for statistical significance, its p -value being slightly greater than 0.05. This is presumably normatively pleasing, but it is close enough to 0.05 to be a matter of concern.

It is an open question whether in other elections in Florida and across other states there is a positive correlation between the likelihood that an individual votes a VBM ballot and his or her ballot is rejected. Table 5’s estimate of this correlation covers just one election in one state. How much this result generalizes is unclear. Still, as the push for mail-voting grows in the shadow of the coronavirus epidemic, a positive correlation between casting a VBM ballot and subsequent ballot rejection is a warning about the importance and potential difficulty of ensuring that all voters in American elections, those who vote VBM and those who vote in-person, have equal voices in political processes.

Discussion

The spread of the coronavirus across the United States has not only thrown 2020 presidential primaries into disarray, but it has also raised questions about how the upcoming presidential election will be administered. The need to protect the health, and ultimately the lives, of American voters is paramount, and this may push the 2020 General Election in the vote-by-mail direction. While the vast majority of VBM ballots cast in Florida in 2018 were not rejected, some were and there are patterns in these rejections.

Who is most at risk of VBM ballot rejection? Our results highlight age, disability status, and geography. Simply, younger voters in Florida in 2018 had disproportionately high VBM rejection rates, and the same is true for voters who need assistance with voting. With respect to geography, we have shown that some counties in Florida have VBM rejection rates that can raise an older voter’s VBM ballot rejection probability (which is normally low) to a level approaching that of a younger voter (which is not as low).

Our empirical assessment of VBM ballots cast and rejected in Florida’s 2018 General Election draws attention to present inequities—at the individual level and jurisdictional—that have affected VBM voting in Florida. For example, if we were to apply the rejection rate of VBM ballots to ballots cast in-person (early or Election Day) in Florida’s 2018 General Election, over 100,000 of the 8.2 million ballots cast would have been rejected, with those rejected disproportionately cast by young voters, those with disabilities, Hispanics, and individuals who

are not affiliated with a major political party. As such, our findings should be of interest not only to scholars of voting rights but also to federal, state, and local election officials who are encouraging VBM voting in response to the coronavirus pandemic. The findings suggest that a wholesale transformation in the United States away from in-person voting must be promulgated carefully if those implementing this transformation want to ensure that ballot rejection rates do not disproportionately affect some voters more than others.

We conclude by noting that our study of rejected VBM ballots in Florida likely only captures the tip of the iceberg when it comes to VMB ballot rejection. One reason for this is that we consider here only rejected VBM ballots cast in Florida that were returned to local election officials on time and not domestic VBM ballots that arrived at a proper local election office *after* the state's 7:00PM Election Day deadline. We do not consider VBM ballots received by county officials after the deadline because said ballots were never "cast" and as such are not subject to rejection.

In addition and beyond Florida, our study does not address existing barriers in states that may make it difficult for some voters to request or return their ballots. In some states with either all-mail voting systems (like Washington) or those that have made the temporary jump to an all-mail presidential primary (like Georgia), only active voters are automatically sent mail ballots, not eligible voters on the rolls who have an inactive status.⁴³ Even in states where voters do not need an excuse to request a VBM ballot, many require voters to ask for one in writing, well in advance of Election Day. Across the country, individuals in some jurisdictions might have concerns that United States Postal Service mail delivery and pickup is neither regular nor reliable, which could raise concerns for some prospective VBM voters that their ballots would not be delivered expeditiously.⁴⁴ In addition, not all local election

⁴³For Washington's law, see RCW 29A.40.010 "Ballots by mail," available at <https://app.leg.wa.gov/RCW/default.aspx?cite=29A.40&full=true> (last accessed April 15, 2020); for Georgia's decision in 2020 to mail ballots only to active voters, see "Georgia to mail absentee ballot request forms to all active voters," *Atlanta Constitution Journal*, March 24, 2020, available at <https://www.ajc.com/news/state--regional-govt--politics/georgia-mail-absentee-ballot-request-forms-all-active-voters/s1ZcJ57g8qqIwyG6LNWfIM/> (last accessed April 15, 2020).

⁴⁴See "Delivery Performance Standards, Measurement, and Report Need Improvement," *Government Accountability Office*, GAO-06-733, July 2006, available at <https://www.gao.gov/products/GAO-06-733> (last accessed April 15, 2020).

officials include pre-paid postage on their VBM return envelopes, which might impede some voters from returning their ballots.⁴⁵ Because some local Post Offices do not process letters with postmarks, even in states where the deadline for returning a VBM ballot is Election Day, it can be impossible to pinpoint the date on which a ballot was returned.⁴⁶ And questions remain as to how voters with disabilities, as well as those who have limited English proficiency, may be able to vote privately and independently by mail.

The analysis presented in this paper has shed light on vote-by-mail ballot rejection in one state and in one election. There are many open research questions concerning voting by mail, and these questions are increasingly salient in a world where minimizing physical contact with others is important.

We do not know of other academic studies that examine who votes by mail and then assess rejection rates of mail ballots cast by various demographic groups and across local jurisdictions. Because of the heterogeneity in the adoption and regulation of VBM systems across the states, case selection is important in any effort to identify why some registrants may be more likely to cast a mail ballot (Kousser and Mullin 2007), and, just as significantly, why some voters may be more likely to have their mail ballot rejected. As such, Florida's mixed voting system—which does not require registrants to have an excuse to vote by mail, allows them to opt-in to receive automatically a ballot prior to Election Day, and is relied upon by Republicans and Democrats alike—is a prime case to better understand the considerable discretion that local election officials have in making sure a voter who has cast a ballot has her vote actually count. In addition, Florida's public records laws, including extensive information about registered voters contained in its statewide voter file, makes Florida an excellent case to study from a research design perspective.

⁴⁵See "How much does it cost to mail an absentee ballot?" *Quartz*, October 29, 2018, available at <https://qz.com/1433788/how-many-stamps-should-i-put-on-an-absentee-ballot/> (last accessed April 15, 2020).

⁴⁶"Postmarks, Other Postal Issues Continue to Vex Wisconsin Primary Count," *Election Academy*, April 13, 2020, available at <https://editions.lib.umn.edu/electionacademy/2020/04/13/> (last accessed April 15, 2020).

Appendix: variable definitions

This appendix describes the variables that we use throughout the paper. All of the variables are from either the Florida statewide voter file or the election Recap file. The statewide voter file dated January 8, 2019 was obtained from the Florida Division of Election. We purchased a copy of the publicly available Florida's Legislative Report Election/Recap for the 2018 General Election from the Florida Division of Elections on April 5, 2019.

- **Age.** Available from the Florida voter file in date format. Only the 49,485 registered voters with records exemptions are missing birth dates. For the rest, we transform birth dates to age at the time of the 2018 General Election. We exclude 1,155 registered voters who have ages which fall outside of 18-100 years.
- **Party affiliation.** Available from the Florida voter file. Collapsed to include Democrat, Republican, NPA (no party affiliation), and all other parties ("Other"). No voters are missing party affiliations.
- **Race.** Available in the Florida voter file. We code a voter's race as White, Black, or Hispanic, collapsing all other entries as "Other." No registered voters are missing a race/ethnicity code in the voter file, although eight contain an invalid value in the field and are thus placed in the "other" category.
- **Gender.** We rely on a voter's stated gender ("M" or "F") in the Florida voter file, coding those with no code as "Other." 5,476 individuals are categorized as "Other" as a result of a missing gender field, and 43,237 registered voters already had an "U" ("Unknown") gender as coded in the voter file.
- **Military status.** From the January 2019 Recap voter file, this variable comes as a "Y" or "N."
- **Military dependent.** This field is taken from the January 2019 Recap voter file, in which it is "Y" or "N."
- **Voting assistance.** From the January 2019 Recap voter file, this variable is either "Y" or "N," identifying voters who indicate that they have a disability when they register to

vote. There are 23 registered voters with erroneous codes.

- **Overseas.** Available as a "Y" or "N" item from the January 2019 Recap voter file.
- **Out of state.** We create this variable from registrants' mailing states in the voter file. Coded as one if a voter's mailing state is not Florida; otherwise coded as zero. Our assessment of state abbreviations is case-insensitive.
- **Changed name.** Derived from the January 2019 Recap voter file, which contains a voter's previous name, if an SOE ever had a different name on file. We create a variable which takes a value of one if there is any number of characters in this field and zero if the field is empty.
- **Name has middle initial.** We say that a registered voter has a middle initial if the voter's middle name field in the voter file contains one letter.
- **Name has middle name.** We say that a registered voter has a middle name if the voter's middle name field in the voter file contains more than one letter.
- **Name has apostrophe.** From a registered voter's name in the voter file, we create a variable which takes a value of one if the voter has at least one apostrophe in their first, middle, or last name fields.
- **Name has suffix.** From a voter's name in the voter file, we create a variable which takes a value of one if the voter has a suffix in the designated name suffix field. Our set of standard name suffixes is as follows: "Jr", "Sr", "I", "II", "III", "IV", "IX", "V", "VI", "VII," and "VIII." Our assessment of whether a registered voter has a standard name suffix is insensitive to case and punctuation.
- **Name has hyphen.** From a voter's name in the voter file, we create a variable which takes a value of one if and only if the voter has at least one hyphen in his or her first, middle, or last names.
- **Name length.** Defined as the number of characters in a voter's first and last name. There are registered voters in the voter file who are missing a first or last name.

Based on the above definitions, we drop 52,034 individuals who voted in the 2018 General

Election (out of 8,307,118, approximately 0.63 percent). These individuals are broken down in Table 10.

Table 10: Dropped records 2018 Florida voter file

Exclusion criteria	Number of voters removed
Records exemption	49,485
Age range	1,155
Florida Senate District 0	1,048
Missing flags	273
Missing name	31
Invalid flags	23
Congressional District 0	19
Total	52,034

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