Did Your Mailed Ballot Count: The Unrecognized Unreliability of Voting By Mail

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1. Introduction

Voting By Mail (VBM) was developed to support absentee voters. It was originally intended to handle canonical absentee voters who now fall under the Uniformed and Overseas Citizens Voting Act (UOCAVA) and those with legally acceptable reasons for being unable to appear at the polls on Election Day. Its use slowly expanded to more casual justifications, such as those with planned Election Day travel.

More recently, there has been a trend of further expansion to on-demand VBM in many states. As a result, the percentage of VBM ballots has skyrocketed, with little research regarding its impacts on security, privacy, reliability, and accuracy on U.S. elections.

In virtually every close election, the outcome must await tabulation of VBM ballots. Yet, VBM may be the least reliable voting approach in wide spread use today. Vote By Mail fraud is recognized by some as possibly the single greatest security vulnerability in U.S. elections.

The lack of in-person, at-the-polls accountability makes absentee ballots the tool of choice for those inclined to commit fraud," the Florida Department of Law Enforcement concluded in 1998, after a mayoral election in Miami was thrown out when officials learned that "vote brokers" had signed hundreds of phony absentee ballots.1 Conversely, others recognize theoretical weaknesses in VBM, but generally dismiss its practical impact [1, 2].

In this paper, we identify inherent, widespread vulnerability in VBM systems and illustrate their practical impact with numerous examples. We show specifically why VBM systems are not auditable and demonstrate how their unreliability can negatively impact real elections.

2. VBM [Un-] Reliability

It is well documented that large numbers of VBM ballots are lost in every election. Sacramento County elections spokesman Brad Buyse subtly voiced this, noting: "In each election, we receive ballots back late...". An even more pointed comment comes from a senior elections official:

'It's absolute hysteria,' said John Willis, a Democratic former secretary of state. He warned that chances are far greater that an absentee ballot, rather than one cast via machine, will not be counted because of issues ranging from mail delivery problems to the possibility that a vote will be disqualified because the ballot was not properly filled out.2 Willi's observation is borne out by a 2001 study, where the GAO found that the U. S. domestic VBM ballot disqualification rate is about 1.8% [5], well more than the amount that triggers an automatic recount in many states.

Moreover, because of structure of VBM systems, we cannot know whether unreturned ballots were lost or stolen or if the voters that requested the VBM ballots intentionally failed to vote for some reason. There is no way to know how many VBM ballots were completed and mailed but were lost or stolen in transit or in some phase of the VBM handling process.

There is compelling evidence that in general, up to 5% of received VBM ballots are not counted. In some states, it could approach 10%, while in others it may be lower than 5%.

2.1. Voter Errors.

VBM procedures are inherently complex and error prone. We found little historical data on this topic, but in the 2008 election in Minnesota approximately 4.2% of all VBM ballots were rejected (12,0003 of 288,000) due to procedural errors by voters. Common errors include failure to sign, signing in the wrong place, and improper packaging (e.g. husband and wife bundling two absentee ballots in the same envelope).

This 4.2% vote loss percentage does not include ballot marking errors that may be prevented or corrected at the polling place, so the overall vote loss/error is likely more than 5% greater for VBM voters than in polling place voting.

Similar results occur nationwide.

With regard to absentee ballots that were cast in 2006, 347,000 of these never got counted. In some cases voters didn’t return the ballots on time. In other cases, voters failed to sign the ballot envelope. But more than 52,000 ballots were rejected for 'other' unspecified reasons.4

The same EAC survey [6] shows that nearly 2.7% of all civilian VBM ballots cast in 2006 were not counted.

VBM voters are limited in their ability to change their minds after marking their ballot, making it very difficult to incorporate late-breaking news into their electoral decisions. Moreover, their ballots are disproportionately susceptible to disqualification due to administrative errors than are those of citizens that vote in their local polling place.

2.2. Elections Official Processing Errors

Inherently complex VBM procedures are also difficult for temporary elections officials, who routinely process VBM ballots, to understand and follow. In Minnesota, at least 13% of

1 http://online.wsj.com/article/SB120569673785639827.html
2 http://www.washingtonpost.com/wp-dyn/content/article/2006/10/30/AR2006103001143.html
3 http://www.sos.state.mn.us/docs/postpercanvassingreport1117250p.pdf
rejected absentee ballots were rejected in error. The actual percentage of erroneously rejected ballots may be higher, because there may still be erroneously rejected ballots that have not been detected. In one Minnesota county, after the senate contest was certified and reviewed, another, further review revealed that 20% (30 of 150) of the thrice-reviewed rejected ballots had been originally erroneously rejected by local elections officials: "...who misunderstood state law or mishandled ballot applications".

Administering VBM ballots is an inherently complex process and significant errors are certain to occur.

2.3. Lost Ballots

The nature of modern mail systems combined with complexities of handling VBM ballots ensures that a significant percentage of VBM ballots will be lost during every election. In addition, because of the lack of custody chain, it is often impossible to tell if VBM ballot loss is accidental or malicious.

In this section, we identify specific types of VBM ballot loss and describe inherent VBM properties, such as their being unauditable, that cannot be overcome without fundamental changes that are prohibitively expensive.

2.3.1. Case Study: Riverside California June 2010

In the California primary election in June 2010, at least three California jurisdictions experienced a significant loss of VBM ballots. In El Dorado County, 750 VBM ballots arrived too late to be counted, though that number is dwarfed by over 2,000 disqualified VBM ballots in Sacramento.

Still worse, Riverside California experienced a troubling incident involving about 12,500 apparently misplaced VBM ballots that, as is required by California state law, were disqualified because they did not arrive prior to poll closing. The failed delivery was attributed to a miscommunication between elections officials and the post office that left the sealed ballots at the post office awaiting pick up rather than being delivered to the elections office on time.

While the story does not end here, over twelve thousand VBM ballots were mishandled and were disqualified, prospectively disenfranchising otherwise legitimate voters. Irrespective of their final disposition, this situation perfectly illustrates the complexity and inherent unreliability of VBM systems. If 12,000 VBM ballots can be mishandled in one incident, it raises the specter of manipulation by postal employees, contract carriers, or third parties that can influence mail delivery times.

2.3.2. Misplaced Ballots

Papers are misplaced all the time. Human error is inevitable and paper is notoriously easy to loose, mishandle, or even to errantly discard. Moreover, many elections workers are temporary employees that quickly become desensitized to the importance, not just of maintaining positive control of paper ballots, but also of ensuring that chain of custody is established and documented.

Examples of misplaced ballots are plentiful

King County [Washington] elections workers apparently lost 390 absentee ballots that were ready for counting but never made it into the tabulation...

Thousands of ballots being cast in Washington's presidential preferential primary are invalid because voters aren't signing a ballot oath identifying themselves as a Democrat or a Republican, Secretary of State Sam Reed said Friday.

For a variety of reasons, many absentee ballots ... are not included in the vote tabulation process. ...33% of the overseas ballots received in Florida after November 7, 2000 were invalidated for various reasons... Based on their interpretation of the Florida regulations for what constitutes an acceptable overseas absentee ballot, they found that 680 (27%) of the accepted overseas absentee ballots were flawed.

Had these 680 ballots not been [erroneously] accepted, then 52% of the late overseas absentee ballots would have been rejected in the 2000 Florida election.

...an overseas citizen who returned their absentee ballot was six times more likely to have their ballot challenged and not counted relative to our comparison category of absentee voters who applied by mail.

Lost-and-found ballots have been pivotal in reversing at least two statewide contests since 2004. The Minnesota 2008 Senate race was an issue of ballot handling mishaps.

Franken's campaign said that a dozen "UOCAVA" ballots had been found in a Minneapolis-area warehouse by election officials searching for 133 ballots gone missing during the hand recount in the urban center's 3rd ward, 1st precinct. The ballots come from uniformed and overseas voters and were previously unopened and counted, Franken officials said.

In Washington State, where lost and found ballots were responsible for reversing the Election Day Gubernatorial race results, mechanisms to track VBM ballots were suspect or nonexistent.

The case of King County, Washington, is instructive. In the 2004 gubernatorial elections, when two in three ballots were cast by mail, authorities lacked an effective system to track the number of ballots sent or returned. As a result, King County election officials were unable to account for all absentee ballots.

Unfortunately, VBM ballot accounting deficiencies aren't limited to a few states.

The VBM manual specifies that the staff at elections must count and record such information as ballots return undeliverable and ballots returned unsigned. However, many of the counties that we contacted did not have these data readily available.

9[http://www.startribune.com/opinion/editorials/36194339.html?elr=KAoRs_7PYDiaK7DUvOE7aL_V_BOD7-DuiUD3aPc-YycaxAUU]

10[http://www.startribune.com/politics/national/senate/39314392.html?elr=KAoRs_7PYDiaK7DUvOE7aL_V_BOD7-DuiUD3aPc-YycaxAUU]

2.4. Mishandled Duplicated Ballots
Many jurisdictions require elections officials to duplicate damaged or difficult-to-read VBM ballots. This process entails a human decision that determines voter intent, prescribes a remedy for the ballot malady, and entails an elections worker “remarking” a ballot that meets the designated remedy. This complicated process creates a significant opportunity for error because it ensures that there are at least two ballots for a single voter. In the 2008 Minnesota senate race the Wall Street Journal suggests that duplicates may have been counted twice in several precincts.

But it appears some officials may have failed to mark ballots as duplicates, which are now being counted in addition to the originals. This helps explain why more than 25 precincts now have more ballots than voters who signed in to vote.

2.5. Postal System Loss
Public mail systems are designed to deliver a large volume of mail in a short time. They are not designed to track each item, so mailed items are routinely lost, and occasionally, large volumes of mail are lost.

Because of the mail system design that does not establish a rigorous chain of custody, any approach that employs regular mail, marked ballot delivery, i.e. VBM, is not auditable. VBM ballots can be lost in the mail system with no ability to find them or even to detect their loss.

As noted on the U. S. Postal service web page:

The estimated USPS delivery time for standard mail is two to nine days, and delivery is not guaranteed. The delivery time for the more expensive first-class mail is two to three days and it is also untraceable.

2.5.1. Mail Loss in Bulk
An important aspect of VBM reliability is the necessity for several, synchronized mailed documents to successful transit between elections officials and each voter. If any document is not delivered, or is delivered late, the entire sequence can collapse and result in lost votes. Two examples in Florida illustrate the damage that can occur when a mail system occurs at election time. The first occurred in Tampa in 2008. There, according to the article, over 1,100 VBM ballots just disappeared.

They show a record of them coming into that clearing house, but not going out, and nothing going through Tampa or going back to St. Pete...

Anyone that handles paper records knows how easy it is to misplace a document, particularly if it is somehow separated from a batch. On the other hand, loosing or misplacing 1,100 pieces of paper is not so easy to understand, but it clearly happens with a disconcerting frequency.

The numbers were even worse in Broward County, Florida in 2004, where 58,000 absentee forms were lost.

Tens of thousands of postal ballots have gone missing in the state of Florida, sparking fresh fears of irregularities in the US poll campaign.

Authorities are investigating the apparent loss of 58,000 absentee forms in Broward County while officials have said replacements are being sent out.

These problems are not limited to Florida, for example in 2008: "...nearly 12,500 military and overseas ballots requested from the state of Virginia were not sent out by that deadline. As a result,...3,285 ballots were not returned in time for Election Day."

Colorado similarly experienced a large loss of blank ballots in 2008. The Colorado incident involved about 10,000 blank ballots. Even in Oregon, where VBM processes and integration with the postal service are well-tuned, over 1,000 ballots were lost in a January 2010 election.

Untold thousands of voters are disenfranchised in every election due to handling errors between elections officials and the mail system that result in late delivery of blank ballots. If these ballots were intentionally lost or delayed, it constitutes fraud and can change election outcomes.

2.5.2. Postal Carrier Malfeasance
U. S. residents traditionally trust their postal carriers who pick up and deliver all forms of personal and highly sensitive data and artifacts. But postal carriers are as human as anyone else, and effective oversight of mail pickup and delivery is difficult or impossible. When postal workers are careless, negligent, or malicious they can do significant damage to postal patrons, including VBM voters.

Because most postal items are not tracked, it is difficult to detect when a postal carrier discards mail between the mail box and the post office, particularly if that carrier acts alone. The following reports reflect the detection exception.

20,000 letters found inside the garage of a Philadelphia postal carrier...

Bags Of Stolen Mail Found In Dumpster.

Postmaster accused of discarding mail...Elizabeth T. Simonian, 49, is accused in federal court of pitching mail into the trash at the post office in May.

A Detroit letter carrier told agents he tossed over 300 pieces of bulk and first class mail in a dumpster because he couldn't keep up with the workload.

Ramey dumped several dozen pieces of U. S. Mail entrusted to him into a neighborhood apartment complex dumpster to avoid having to deliver the mail.

In Philadelphia, in May 2010, "The United States Postal Service has recovered approximately 20,000 pieces of mail — some of them more than a decade old — from a

http://online.wsj.com/article/SB123111967642552909.html
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news.bbc.co.uk/2/hi/americas/3960679.stm
18 www.rockymountainnews.com/news/2008/oct/24/denver-looking-11000-missing-mail-ballots/
20 www.freeserepublic.com/foocus/news/2513212/posts
22 www.dispatch.com/live/content/local_news/stories/2007/08/01/mail.html
24 www.justice.gov/usao/txs/releases/July%202007/PostalEmployees.htm
Philadelphia postal carrier's garage...some of the mail dates back to 1997.25

Seven postal workers have been charged in New Orleans with stealing or illegally discarding mail...Twenty-four-year-old Tongia Lawson, of New Orleans, was charged with delay of mail for allegedly discarding 217 pieces of mail into a trash bin.26

While it is not clear that VBM ballots were included in these losses, it well illustrates the inability of the postal service to protect the integrity of elections materials.

It is safe to say that for every detected instance, there are many that go undetected. It is also important to recognize that the impacts of VBM loss are not uniform and that distinct constituencies are disproportionately impacted.

First class mail, as its name might imply, does not treat everyone equally. In fact, it discriminates against low-income communities..."This bias is codified in U.S.P.S. Domestic Mail Manual, which provides that if "the addressee of certain mail is unknown to the delivery employee, the mail may be withheld..."There are many common scenarios in which a mail carrier may not know that a person resides at a given address.27

It is also well known that military voters are disproportionately impacted by mail loss.

The figures, released at the commission's annual conference on ways to improve and troubleshoot the absentee voting process, showed that only about 992,000 of the nearly 6 million eligible overseas citizens requested ballots for the 2006 general election. That included about 119,000 military personnel stationed outside the United States. Of those, only about 57,000 -- less than 48 percent - - had their votes successfully cast or counted.28

Similarly, note the contrast between the percentage of requested absentee ballots returned among the general voting population (86%) and those from overseas/military voters (27%) [9].

VBM is inherently unreliable. Worse yet, it disenfranchises discernable constituencies that can influence electoral results, causing other than the voter's choice to determine winners.

3. VBM fraud

It is fundamentally more difficult to ensure the validity of VBM ballots (one person-one vote) than for those cast in person, both because it is more difficult to strongly authenticate the voter (Voter Authentication) and to bind a ballot to the identified voter (Ballot Attribution).

Voter privacy is commonly seen as voters' ability to cast their ballot without anyone being able to know their selections. Well beyond the commonly heard practice of voting for an ill spouse or parent, VBM is inherently susceptible to violations of even this minimal privacy interpretation since each VBM ballot must be bound to the identity of the voter in order to ensure one person-one vote. Elections officials institute procedures to protect voter privacy, but the inherent vulnerability still exists for every VBM ballot.

Worse yet, in order to prevent voter coercion and vote selling/buying, elections demand a much stronger privacy property, essentially that voters' selections cannot provably be attributed to them even if voters themselves desire to prove those selections to another party.

VBM does not protect against vote attribution and is susceptible to widespread fraud. For example, in the 2008 election, organized groups engaged a social network by encouraging young voters to request absentee ballots to then bring them to "Debate and vote parties.29" In these parties, issues were discussed and ballots were marked without access to privacy booths. The opportunity for coercion or other undue influence in such social circles is immense.

Voter Authentication. Beyond eliminating any chance that a long time poll worker might recognize an imposter, there is no opportunity for picture identification or other face-to-face interaction that could detect identification malice, or error, for VBM voters.

Ballot attribution. In a polling place, once a voter is authenticated, ensuring that they (and not an imposter) complete their ballot is simple. Authenticated voters are given a blank ballot and access to a privacy booth. With VBM, after the voter is authenticated, it is impossible to guarantee that a returned VBM ballot was marked by that voter.

The main ballot attribution mechanism, signature recognition, is a highly imprecise practice. Even experts can have trouble identifying signature variations given the small writing sample incorporated in a signature. Elections officials and temporary elections workers that process VBM submissions are not hand writing experts.

Hospital workers, postal carriers, apartment superintendents, and many other persons in management or maintenance positions among residential populations offer opportunity to request and intercept scores of VBM ballots with little chance of detection and even less chance of being caught themselves.

Clearly, VBM offers a powerful tool for those trying to fraudulently influence elections. "The Florida Department of Law Enforcement has even referred to absentee ballots as 'the tool of choice for those inclined to commit voter fraud [10]."

New Jersey reported several recent incidences of VBM fraud.30,31,32 though VBM fraud does not discriminate geographically. Alabama, for example, also has documented VBM fraud incidences on the record.

In the two months before the election, Smith and Tyree used registered voters' names to apply for absentee ballots, used false addresses so that the ballots would be sent directly to them, convinced some voters to sign absentee ballot affidavits without actually filling out the ballots, and forged voters' signatures on other affidavits.

The investigation revealed that Smith and others involved in the voter fraud conspiracy actually set up an "assembly line process" at the Eutaw Activity Center the night before

25 www.gazette.com/articles/style-98761-philadelphia-stashed.html
26 www.kfkm.com/news/old-38230-year-mail.html
28 www.military.com/NewsContent/0,13319,150477,00.html
29 www.nj.gov/oag/newsreleases09/pr20090804e.html
31 www.njtimes.com/2008/10/17/us/politics/17colorado.html?_r=1&th&email-th&ore&Rlogin
the election to fill out and prepare the fraudulent absentee ballots before they were placed in the mail the next day.33

Dallas, Texas also sports a well-known propensity for VBM fraud, for example:

In Dallas County elections, there is a long tradition of mail-ballet fraud allegations. Fraud, however, is difficult to prove. And harvesting mail-in ballots has proved to be so effective, it's actually made the difference in some races....Sepulveda said numerous people told him they did not request a ballot and did not vote but "somehow there were ballots cast in their name...A 1988 investigation by The Dallas Morning News found that one in four votes cast in Robert Medrano's precinct in his Dallas school board race the previous year was fraudulent. In some cases, mail-in votes were cast in the names of people who said they never received ballots or cast them in the election.34

Similarly, in Miami, Florida, VBM fraud may have influenced a mayor's race [10].

Absentee ballots played a key role in the 1998 Miami mayoral election fraud case. The courts overturned the original election results and installed Joe Carollo as mayor after throwing out all 4,740 absentee ballots that had been cast in the previous November's election. During the investigation, police discovered more than 100 absentee ballots in the home of local political boss Alberto Rossi

Like mail carriers, most citizens accept elected officials as being particularly trustworthy. Unfortunately, there are many examples of elected officials that misuse their positions to maliciously influence the electoral process.

In southwest Pennsylvania, Democratic former congressman Austin Murphy was convicted in 1998 of visiting nursing homes and improperly "assisting" the filling out of absentee ballots. "In this area there's a pattern of nursing-home administrators frequently forging ballots under residents' names," says Sean Cavanaugh, a Democratic former county supervisor who uncovered the scandal.

In 2005, Detroit's city clerk, Jackie Currie, hired people to assist patients in hospitals and nursing homes in voting by absentee ballot. State election officials believe many of those hired violated rules on the extent to which anyone can help the disabled or elderly in marking ballots.35

In Oregon, a state that votes exclusively by mail, there are also instances of VBM fraud.

...in 2000, a survey of just one county in Oregon reported that about 5 percent of residents admitted that other people marked their ballots and 2.4 percent admitted that other people signed their ballot envelopes. The professor who conducted the study suspected that the real numbers were higher since most people are reluctant to admit a party to a crime.36

Similarly, Colorado has documented VBM fraud in recent elections.

At least 122 voters gave new meaning to the adage "vote early and vote often" by apparently casting absentee ballots through the mail, then showing up in person to vote on Election Day. And, officials say, at least 120 felons state-wide cast ballots and now face possible prosecution [11].

The canonical double voter resides in different states according to season. They may vote in person at their Election Day residence (or by VBM in permissive VBM states) and VBM from their remote election residence. Voters that move from one state to another may end up with dual registrations, either accidently or intentionally. Unfortunately, few states cross reference voter rolls and, worse yet, it is not clear how effective such an effort would be. Nonetheless, we know that dual registration occurs and that double voting by these dual registrants would be difficult to stop or even to detect.

Tens of thousands of Florida voters are also registered to vote in a second state, and more than 1,600 may have cast ballots in Florida and two other states in recent elections..." It's a felony for voters to cast ballots in two states in the same election. But those who double vote face little chance of being caught, because election officials seldom check whether voters are registered or voting in another state.37

Similar instances occurred in Kansas City where: "The Star's investigation uncovered more double voters, and records suggest there could be more than 300 statewide."37

Double voting can occur by accident, as allegedly happened to New Yorker Joe Moschulla.

Maybe Joe Moschella thought he was playing it safe. The 59-year-old retired transit employee had mailed his absentee ballot too late, he thought, so on Election Day 2000, he trotted down to the polls and voted in person. The only problem was that his polling place is in Staten Island, where he lives, while the absentee ballot went to Florida, where he winters.39

Double voting need not involve duplicate registration. Any voter that can acquire another voter's votable ballot can issue a second vote. Such double voting is unlikely to be detected and the perpetrator is not likely to be caught in any case.

Somebody had already voted for me," said Georgia Ireland. She and the other victims reported that people were going door-to-door, offering help to seniors with filing voter registration forms.40

Interestingly, double voting can occur by accident because a voter did not change their address when they moved.

Not too long ago, some renters moved out of a house I own and left the state. Sure enough, a few weeks before the next election, a half dozen official ballots showed up in the mailbox. I could have traced my ex-renters signatures off the rental agreement and onto their ballots and mailed them to the elections division marked any way I chose. Except for God and me, who would have known?41

35 Double voting-voter registration-election officials
36 http://online.wsj.com/article/SB120569673785639827.html
39 http://www.slate.com/id/2108887
41 http://www.newswhitviews.com/Bill/sizemore1.htm
4. The risk of accepting ballots post-voting.

One proposed method of reducing the number of disqualified VBM ballots is to extend the VBM ballot acceptance period from "on or before election day" to "several days after election day". Such procedures leverage controls, such as postmark, to determine if late-received ballots were cast on time.

Most changes in elections and voting systems introduce negative side effects so it is not a surprise that extending the VBM acceptance period creates a security problem. That is, an extended acceptance period grants attackers the fundamental advantage of knowing the preliminary vote count, thus knowing if they need to attack at all and, if they do, also knowing how many votes they need to change during the extended acceptance period.

Requiring ballots to be received by elections officials on Election Day denies prospective attackers knowledge of election outcomes. Thus, it forces them to decide if it is worth the effort, i.e. if they are willing to risk conducting an attack that they may not need or that may not have any chance to garner enough votes to make a difference anyway.

Consider the Riverside, CA case discussed above. The lost ballots were found a few hours after the acceptance deadline passed, but also after the preliminary vote counts were widely known. We cannot know if those ballots would have been found had any particular contest been reported differently.

Additionally, the Riverside, CA judge's subsequent decision to allow the illegal ballots and favor enfranchisement over the rule of law is strong evidence that subjective judgment will yield acceptance of even questionable ballots.

A similar situation occurred in Palm Beach, Florida in 2010. There, "...elections officials counted [about 500] absentee ballots from a box they unexpectedly discovered Tuesday night - a full week after the Nov. 2 election." We cannot know where those ballots had been, if they were legitimate ballots, or if they would have been found had any specific announced electoral result been different.

We know that elections are high-stakes contests and unsuccessful candidates and their supporters will often go to great lengths to win after Election Day, if they believe that they can. Allowing acceptance of VBM ballots beyond Election Day can reduce the VBM rejection rate, but it will also increase the opportunity for meaningful VBM fraud, particularly if VBM proliferation continues.

5. Conclusion

The convenience that on-demand absentee produce is bought at a significant cost to the real and perceived integrity of the voting process. First, restrict or abolish on-demand absentee voting... [12]. Vote By Mail offers voting access to constituencies that may not otherwise be able to cast their ballot in U. S. elections. Unfortunately, vote by mail is inherently un-auditable and there are other significant security and reliability challenges that get progressively worse as VBM use expands.

This paper identifies challenges to expanding VBM use. We describe VBM vulnerability and demonstrate with examples that its vulnerability is not just theoretical; that VBM error and fraud can, and does, change election outcomes. We make a strong case that VBM is an unsafe voting system whose use should be minimized. That is, Vote by Mail should only be used in cases when polling place voting is not possible.

6. Bibliography
