Online Voting Threatens the Security of Elections

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Experts agree that ballots should not be transmitted over the internet

The use of online or Internet voting, which includes email, fax, web-based voting and mobile apps, remains fundamentally insecure. The lack of a meaningful voter-verified paper record means there is no way to conduct a valid audit of election results or to reliably detect errors or manipulation.

There is currently "no known technology that can guarantee the secrecy, security, and verifiability of a marked ballot transmitted over the Internet," according to the National Academies of Sciences, Engineering, and Medicine 2018 report, Securing the Vote: Protecting American Democracy.[1]

Online voting technology poses unacceptable risks

No technical evidence exists that any internet voting technology is safe or can be made so in the foreseeable future. Scientists and security experts have documented a number of potential vulnerabilities facing any internet voting platform including malware and denial of service attacks; voter authentication; ballot protection and anonymization; and how disputed ballots are handled.[1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

Online voting is unlike other online transactions such as banking because ballots must be kept secret and unconnected to the voter. There is no acceptable rate of loss, fraud or error.

Blockchain-based voting systems introduce additional security vulnerabilities and fail to address the fundamental security concerns scientists, election security experts, and government officials have expressed since the advent of internet voting.[11, 12] Internet and blockchain-based voting increase the risk of undetectable, national-scale election failures.[12]

At a glance ...

Computer scientists and election experts warn that online voting poses unacceptable threats to the security of elections as well as voters' privacy. No technical evidence exists that any internet voting technology is safe or can be made so in the foreseeable future. The lack of a voter-verified paper record means there is no way to conduct a valid audit of election results or to reliably detect errors or manipulation.

In May 2020, the FBI, Election Assistance Commission, National Institute of Standards and Technology, and Department of Homeland Security's Cybersecurity and Infrastructure Security Agency issued a threat assessment of electronic ballot delivery, marking and return and warned states that the electronic return of marked ballots was "high risk" even with the best safeguards.[13]

Election results must be verifiable and auditable

Ensuring accurate election results requires verifiability. Verifiable results are only possible with election systems designed for software independence, a design standard that ensures undetected issues in software cannot produce

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undetected changes in outcomes, and a requirement in the latest guidelines from the U.S. Election Assistance Commission, the independent, bipartisan federal commission charged with ensuring secure, accurate and accessible elections.[14, 15] Online voting systems fail to meet the standard of software independence and do not produce records that enable an efficient audit of votes necessary for verifying ballots are recorded correctly.[12, 16]

Remote electronic balloting should be limited

No state offers online voting to all voters because it is simply not secure. Some states permit the use of remote electronic balloting under limited circumstances. Election officials must support the diverse needs of the electorate and protect the rights of overseas voters and people with disabilities to vote independently and securely.

The most secure option for remote voting is to mail pre-printed paper ballots to voters. Only voters with a disability impacting their ability to mark a ballot by hand should have access to remote electronic ballot marking systems. Printing the blank ballot should be the default action of any ballot download application, and all voters who are able to do so should be encouraged to fill out the printed blank ballot with a pen before mailing.

The expansion of vote by mail in many states may necessitate an option for voters with disabilities. The most secure systems for remote accessible ballot marking confine vote selection data to the voter's devices, are not connected to the Internet when selections are made and remove vote choices from all memory upon closing.

Electronically delivered ballots should be considered to be at higher risk of unauthorized duplication, warranting authentication of the voter's identity and eligibility.[17]

> **"Paper ballots form a body of evidence that is not subject to manipulation by faulty software or hardware and that can be used to audit and verify the results of an election."**
>
> **SECURING THE VOTE: PROTECTING AMERICAN DEMOCRACY, 2018**
> *REPORT BY THE NATIONAL ACADEMIES OF SCIENCES, ENGINEERING, AND MEDICINE*

Improving accessibility

There are many ways to improve our voting systems to better accommodate individuals with disabilities and increase voter turnout, from voter registration to polling places. According to a U.S. Election Assistance Commission study, voting difficulties among people with disabilities declined markedly from 2012 but much more can still be done. In 2020, about one in nine voters with disabilities encountered difficulties voting, double the rate of people without disabilities. In 2020, 74 percent of voters with disabilities voted with a mail ballot or early in-person, a rate higher than that of non-disabled voters.[18] Voters with disabilities should not have to settle for insecure voting methods. Providing mail ballots, accessible polling places and early voting, among other options, improves accessibility without threatening the integrity of elections.

FOR MORE INFORMATION

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