



April 15, 2023

Science of Security and Privacy
Best Scientific Cybersecurity Paper Competition

Dear Review Committee:

I would like to nominate the paper "Evaluating mail-based security for electoral processes using attack trees", for the National Security Agency's Science of Security – Cybersecurity Paper Competition. The work not only makes a *significant* contribution to the scientific foundations of election security, specifically mail-based voting, but did so at a time when the fundamental integrity of our democracy and this method of voting's integrity was being publicly criticized. The impact of this research to bridge the gap from research to the larger public discourse to correct persisting election misinformation warrants strong consideration for this award. In addition, the work underscores that cybersecurity is a challenge that needs a multi-disciplinary perspective – the authors are from business and computer science.

The paper was published on January 24, 2022 in *Risk Analysis* – a top-10 journal in its field according to ISI Journal Citation Reports. This paper specifically focuses on the cyber, physical and insider threats to mail-based voting. In the context of the COVID-19 pandemic and the 2020 US General Election, there was significant public discourse on the increased use, security, and integrity of mail-based voting. This paper proposed a novel qualitative approach for assessing the security of mail-based voting using attack trees, a formal modeling tool that enables the analysis of complex threat scenarios, including those of trusted insiders. The authors use this approach to identify and evaluate potential cyber, physical and insider threats to mail-based voting systems, including attacks on mail-in ballots, voter registration databases, and ballot counting procedures. The paper's quantitative approach, building on attack trees and utilizing the Delphi method to calculate the highest relative likelihoods of mail-based voting process attack scenarios, concluded that expanded mail voting disincentivizes adversarial interference and increases voting access. Stated simply, cyber, physical and insider scientific risk evaluation of mail-based voting showed that it was secure, despite the prevalent media and public discourse.

Scientific research should be measured in not only technical and theoretical contribution, but also impact. When mail-based voting was publicly questioned for its security and integrity, this paper's cybersecurity research provided science based conclusions indicating that, despite prevalent misinformation, mail-based voting was safe. These research results were widely publicized amongst the general public in online and news venues, such as *Newsweek*, *USA Today*, *INFORMS*, *WBAL Radio*, *SciLine*, *ABC 23 Bakersfield*, *The Times Standard*, *The Hill*, and *Yahoo Finance*. With the combination of scientific cybersecurity research contributions, broader impact, and a multidisciplinary team including undergraduate and graduate students, I believe this paper merits the highest consideration of this award.

Sincerely,

A handwritten signature in black ink, appearing to read 'Siddharth Kaza'.

Siddharth Kaza