

RISK-LIMITING AUDITS: THE BASICS

- **Trusted elections are key to a functional democracy.**
- As concerns about U.S. election security have grown, officials have increasingly returned to voting systems that produce a paper trail of votes.
- One piece of technology is still necessary even with paper-based election systems, however: scanners that interpret the marks on paper as votes and count those votes, called "tabulators."
- Risk-limiting audits (RLAs) provide a check on these tabulators, giving us confidence that the outcome of an election is correct.

Why use machines at all?

American elections are run with the expectation that accurate results will be available almost immediately after polls close – taking days or weeks to publish preliminary totals, as happens in some other countries, isn't usually an option. Machine counts also avoid some of the quality problems like fatigue and inconsistency that can happen with hand counts, especially at scale.

WHAT MAKES AN RLA DIFFERENT?

- Audits designed to check how votes were counted, called post-election tabulation audits, are not new - in fact, they're a longstanding part of election administration.
 - In these audits, officials compare the votes on a sample of paper ballots with the machine-generated count for those same ballots.
 - Traditionally, tabulation audits have looked at a fixed/static percentage of randomly chosen voting districts or voting machines, usually between 1-5%.
- Statisticians argue the utility of traditional tabulation audits is limited:
 - A fixed-percentage audit doesn't take the details of the contest (e.g. margin) into account, so officials are often looking at more ballots than necessary (extra work = inefficient) or fewer than necessary to draw a valid conclusion (not enough work = inaccurate).
- Experts in a number of fields have worked for over a decade to develop RLAs as an alternative that would minimize the workload while ensuring accuracy of the audit.
 - The math we use to conduct RLAs today has been vetted and endorsed by the American Statistical Association, the National Science Foundation, and election integrity groups nationwide.

ADVANTAGES OF RLAs

RLAs are Effective

- RLAs statistically guarantee the probability that the audit will do what we expect - e.g. uncover & correct a wrong outcome.
 - With a risk limit of 5%, an RLA will correct a wrong outcome (if one exists) at least 95% of the time.

RLAs are Efficient

- RLAs adjust the number of ballots to be audited (workload) based on the details of the contest being audited. You'll never look at too many ballots, or too few – just the right amount.)

RLAs are Transparent

- The RLA process is designed to allow citizen participation & observation of the audit. The RLA also produces source data & audit artifacts that can be made publicly available, meaning the audit results can be verified independently.

RLAs IN THE WILD

- RLAs are now considered the gold standard for post-election tabulation audits within the election security community.
- According to the National Conference of State Legislatures:
 - 3 states now require risk-limiting audits in statute: CO, RI, & VA.
 - 2 more states, OH & WA, have audit laws that allow counties to use a risk-limiting audit.
 - CA is also allowing counties to opt-in to conducting a risk-limiting audit beginning in 2020.
 - Multiple other states have piloted the process, including Michigan in 2018.
- Various “flavors” of the process exist to accommodate different types of election administration practices (e.g. central-count vs. precinct-count).