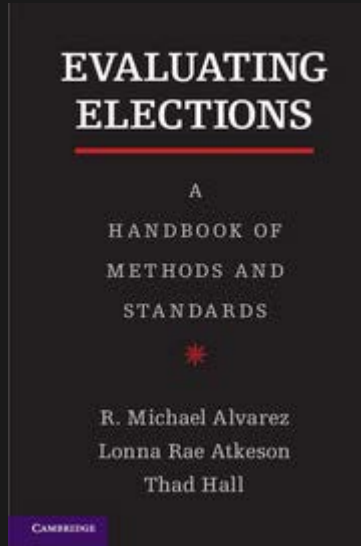


Comprehensive Performance Audits

R. Michael Alvarez, Caltech
Caltech/MIT Voting Technology Project
December 7, 2018

Comprehensive performance audits



Evaluating Elections:

Elections are about data!

How can we use all of that data to evaluate the overall performance of the election ecosystem?

- Outcomes data (turnout and voting data).
- Polling place performance data.
- Voting system logs and data.
- Registration data.
- Auditing data.
- Observational data.

Examples in the book from New Mexico efforts.

Comprehensive auditing issues

Costly for election officials who are focused on planning, implementing, then reconciling and finalizing an election.

- Timeliness? How can comprehensive auditing be done in real-time, so as to be relevant when concerns about the integrity of an election arise?
- Transparent? How can we make the results of comprehensive performance audits available to stakeholders and the public?
- Low cost? How can election officials conduct comprehensive performance audits easily and without a large investment of resources?
- Relevance? How do we make comprehensive performance auditing actionable for election officials?

Orange County pilot project

Collaboration with Orange County (CA) Registrar of Voters, Neal Kelley.

Goal: test approaches for comprehensive and real-time performance auditing using data from the 2018 primary and general election in OC.

Why OC?

- Large and diverse county.
- Expected (and got!) highly competitive congressional elections.
- OCROV collects a lot of evaluative data.
- Election administration in CA is changing quickly, so this election helps establish a baseline for evaluating future changes.
- Neal is a great collaborator.

Monitoring the Election

- Developed a project website (<https://monitoringtheelection.us>).
- Project launch April 16, 2018.
- Used the June and November elections in OC to pilot test a number of different methods to monitor the elections.
- Some of these methods involved direct data feeds from OCROV.
- Goal was to put onto the project website, as quickly as we could, short reports that summarized the results of each method.
- Solicit feedback from OCROV.

Pilot project components

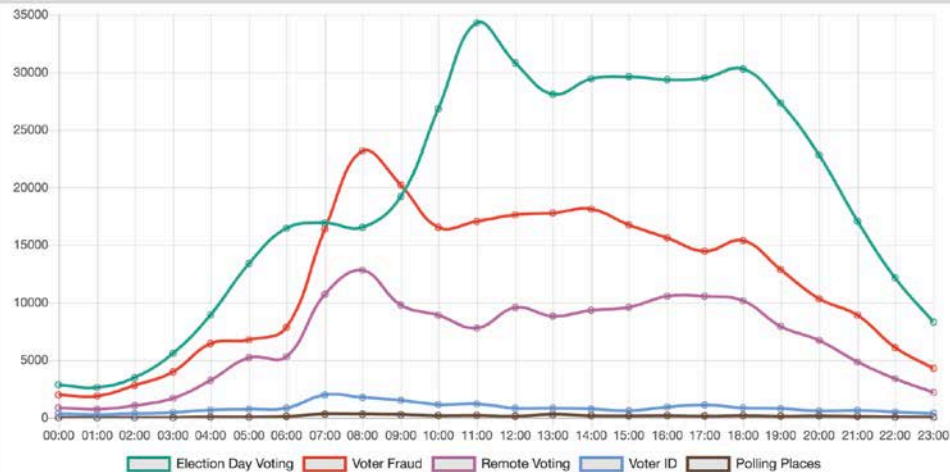
- Continuous social media monitor: election day voting, voter fraud, remote voting, voter ID, and polling places.
- Voter registration database auditing: daily anomaly detection.
- For each election:
 - Mail ballot overview tracker.
 - Early voting observation study.
 - Election day observation study.
 - Post-election precinct turnout forensics.
 - Post-election candidate vote forensics.
 - Voter surveys.

Twitter monitoring

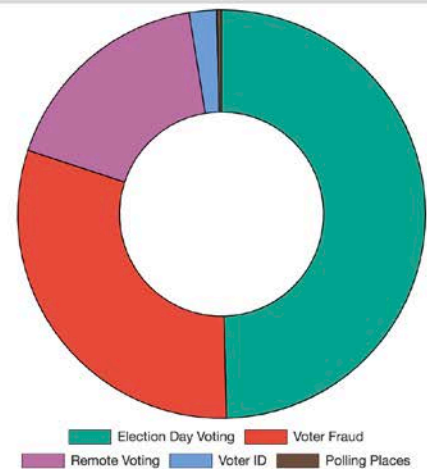
Monitoring the Election » Home Daily Frequency US Maps About

Election Monitor Stream:
Nov 06, 2018

Hourly Frequencies



Daily Totals



Voter registration database monitoring

- Developed a process to securely obtain daily “snapshots” of OCROV database.
- Developed a methodology to link the snapshots, and scan the linked files for changes: records added, records removed, duplicate records, and records where fields have changed.
- After we accumulated a time-series of linked snapshots, we began to implement statistical anomaly detection.
- Detailed reports provided to OCROV; public summaries provided on the project website.
- The “events” we have detected have all been correlated with OCROV activities.

Evaluation and scaling

Method	Timely?	Coverage?	OCROV use?	Public use?	Scale?	Costly?
Social media monitoring	Yes	Yes*	Potential	Yes	Yes	No
Voter registration auditing	Yes**	Yes	Yes	Yes	Yes	Yes
VBM tracker	Yes	Yes	No	Maybe	Yes	No
Early voting observation	Yes	No	Yes	Maybe	Maybe	Yes
Election day observation	Yes	No	Yes	Maybe	No*	Yes
Turnout forensics	Yes***	Yes	Yes	Maybe	Yes***	No
SOV forensics	Yes***	Yes	Yes	Maybe	Yes***	No
Voter surveys	Possibly	Possibly	Maybe	Yes	Yes	Maybe

Note: *s in table indicate caveats for discussion.

Next steps

- Continue the analyses of the primary and general election data we have collected, and produce performance audit and project report.
- Continue working with OCROV moving forward.
- Recruit other jurisdictions to test scale in 2020.

Thanks!

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