

## Evaluation of Risk-Limiting Audits

### Pros:

- 1) Statistically rigorous auditing method that limits to specified acceptable levels the risk of certifying an incorrect election outcome.
- 2) Different RLA methods apply depending on election system capabilities (ballot comparison vs. batch comparison vs. ballot polling methods).
- 3) Pima County is able to use the ballot comparison method that uses relatively small number of ballots to validate outcomes of most races.
- 4) Method extends naturally to multi-district and statewide contests with jurisdictions sharing the auditing burden in proportion to ballot count.
- 5) The larger the margin, the smaller the number of ballots needed to confirm outcomes. Limited resources are focused on close races. Most contests require small sample sizes.
- 6) The RLA audit compliments the “performance audits” (hand counts) currently done in some AZ counties. If RLA is implemented, perhaps the hand count could be scaled back.
- 7) If discrepancies are found, the ballot comparison RLA adds some diagnostic utility through the comparison of ballots to election system interpretations. The hand count has no such diagnostic utility.
- 8) Any subset of races can be audited. Different risk-limits could apply to different races (relative importance?).
- 9) Audit could be done using ballot images if images are available and accepted as accurate representations of the physical ballots. This would eliminate need to access physical ballots by serial number and would therefore be far more efficient.

### Cons:

- 1) Extremely small margins can require inconveniently large sample sizes.
- 2) Cannot validate county level outcomes if contests extend beyond county boundary (margins within county may not represent actual contest margins).
- 3) Multi-county (including statewide) contests require coordination among counties for ballot sampling and audit termination decisions.
- 4) Efficient uniform sampling strategy is less obvious if multiple audited races have significantly different sample sizes, district boundaries, or ballot counts. The default is to audit each race separately but combine races where clearly appropriate.
- 5) The comparison method requires imprinting a serial number on each physical ballot (unless images are used). Operators need to rotate or flip ballots to avoid serial number overprinting on ballots needing multiple scans. Some serial numbers will be overprinted.
- 6) Added concern if printed serial numbers interfere with ballot timing marks (although this did not seem to cause problems in the mock election despite obvious interference).
- 7) All methods require retrieval of physical ballots from storage boxes (unless images are used). Depending on sample size, it's possible that a large fraction of ballot storage boxes will need to be opened. Write-in ballots (~10% of ballots) are harder to retrieve if serial number sequencing is not maintained.
- 8) Storage boxes must be labeled with ranges of ballot serial numbers and preparation for the RLA requires creation of a ballot manifest to simplify the retrieval of physical ballots.