

VOTER REFERENCE FOUNDATION

ELECTION INTEGRITY

The Ballot-to-Voter Reconciliation Problem:

Barriers to Verifying Election Integrity and their solutions

Executive Summary

The inability to perform a reliable 1:1 ballot-to-voter reconciliation is not primarily a sign of fraud or malfeasance, it is a structural transparency failure built into how elections are administered and reported. Fixing it requires treating election data as public infrastructure with standardization requirements, not merely as a byproduct of an administrative process.

Elections in the United States are administered at the state and local level, creating a decentralized system with significant variation in data practices, reporting standards, and public disclosure requirements. This decentralization, while serving important constitutional and federalist principles, creates a significant barrier to independent verification of election outcomes.

This report examines a specific and largely unaddressed problem: the practical impossibility of performing a meaningful comparison between (1) the Total Ballots Cast (TBC), the count of ballots on the reconciliation or canvass report after an election and (2) the Registered Voters Ballots Cast (RVBC), the count of voters in the voter roll who have a documented record of casting a ballot. This type of reconciliation is a fundamental check that exists in virtually every other context where large-scale counting is performed, however it is routinely unavailable to election analysts, researchers, journalists, and the public due to systemic data and reporting deficiencies.

The core findings of this report are:

- No true ballot-to-voter reconciliation is currently possible in most U.S. jurisdictions due to the absence of certified, timestamped Election Day snapshots of voter rolls.
- Protected and confidential voter records create an unquantifiable and undisclosed gap in publicly available participation data.
- The complex lifecycle of provisional and mail ballots introduces timing and attribution inconsistencies that prevent clean reconciliation even within election administration systems themselves.
- Significant interstate variation in how election results are reported, particularly the absence of a standardized "total ballots cast" figure, makes national-level analysis effectively impossible.
- Targeted administrative, state-level, and federal policy reforms could substantially address these problems without altering the fundamental decentralized structure of U.S. elections.

Section 1: The Nature of Ballot-to-Voter Reconciliation

1.1 What Reconciliation Means and Why It Matters

In financial auditing, inventory management, and virtually every domain involving large-scale counting, reconciliation is a standard verification practice: the count of items produced or transferred is matched against the count of items received or recorded, with any discrepancy investigated and explained. Election administration is one of the few large-scale counting operations where this basic check is routinely unavailable.

A meaningful ballot-to-voter reconciliation requires three things to be available simultaneously in a clean, certified, and publicly accessible form:

- Total Ballots Cast (TBC): including blank ballots, undervotes on all races, spoiled ballots, and challenged ballots, as a single certified figure.
- Registered Voters Ballots Cast (RVBC): the record of voters in the voter roll who have a documented instance of casting a ballot, drawn from the pollbook or voter participation file. This encompasses every voter who was checked in on Election Day, cast an accepted mail ballot, or had a provisional ballot counted.
- A frozen, certified snapshot of the voter roll as it existed at the close of polls on Election Day.

In practice, none of these three elements are cleanly available to the public simultaneously in most states, and in many jurisdictions, they are not internally consistent even within the election administration system itself. This report examines why each element is unavailable or unreliable, and what policy changes could address each gap.

1.2 The Voter Roll as a Living Document

The voter registration roll, the master list of eligible voters in a jurisdiction, is commonly misunderstood by analysts and the public to be a stable, definitive list. In reality, it is a continuously updated administrative database subject to ongoing modification under two major federal mandates:

The National Voter Registration Act (NVRA) of 1993 requires states to conduct voter list maintenance activities, including removing voters who have died, moved out of jurisdiction, been convicted of disqualifying offenses, or been adjudicated mentally incompetent. However, the NVRA also places restrictions on when mass removals can occur, specifically, no systematic purging is permitted within 90 days of a federal election.

The Help America Vote Act (HAVA) of 2002 imposed additional requirements around database matching, duplicate record resolution, and coordination with other state databases (driver's license records, vital statistics, etc.). These processes generate ongoing updates to the voter file.

The practical consequence is that the voter list that someone can access from a state or county election office months after an election is materially different from the voter roll that existed on Election Day. Common post-election changes can include:

- Removal of voters identified as deceased after Election Day, including those who voted before death (e.g. by absentee ballot).
- Removal or deactivation of records identified as duplicates during post-election database reconciliation.

- Addition of voters whose registrations were completed on election day (where allowable) or after the election.
- Addition of voters whose registrations were submitted after the registration deadline.
- Address updates and county or precinct transfers based on subsequent interactions with the DMV or other state agencies.

Most states do not preserve or publicly release a certified Election Day snapshot of the voter roll. The list is treated as an operational database rather than an evidentiary record, and is updated in place without versioning or archiving. This means that the baseline denominator for any reconciliation analysis is, in most cases, simply unavailable.

1.3 The Undervote Reporting Problem

One of the most consequential and least-discussed gaps in public election data is the distinction between ballots cast and votes cast. These are not the same number, but they are frequently conflated.

A ballot is the physical or electronic document submitted by a voter. A vote is a selection made within a specific contest on that ballot. When a voter selects fewer options in a contest than the maximum number allowed or makes no selection at all, this is known as an undervote. Undervoting is a normal behavior; voters frequently skip races they are unfamiliar with, object to all candidates, or are simply unaware of down-ballot contests.

The problem is that many states and virtually all media and third-party reporting of election results reports votes per race rather than ballots cast. This creates a situation where:

- The total number of ballots cast cannot be determined by aggregating race results, because the sum will always be less than or equal to the true ballot count depending on undervote rates.
- Anyone who attempts to calculate turnout by using the top-of-ticket race as a proxy for total ballots cast are implicitly assuming a zero undervote rate in that race, an assumption that is (almost) never accurate.
- In down-ballot or local-only elections where there is no statewide top-of-ticket race, the total ballot count may be entirely unavailable in public reporting.

The magnitude of this problem is often underestimated. Undervote rates in U.S. presidential elections typically run between 0.5% and 2% in the top-of-ticket race, but can reach 10% to 30% or higher in down-ballot judicial, municipal, or ballot measure contests. An individual attempting to reconcile precinct-level results for a multi-race ballot using only race-level vote totals will find that the numbers simply do not add up, not because of any irregularity, but because the data architecture does not capture the underlying ballot count.

Section 2: Structural Barriers to Reconciliation

2.1 Protected and Confidential Voter Records

Every U.S. state maintains a category of confidential or protected voters, individuals whose registration records are withheld from public voter file releases for safety or security reasons. While the specific categories vary by state, common examples include:

- Survivors of domestic violence and sexual assault, whose home addresses are withheld to prevent abusers from locating them.
- Active and retired law enforcement officers, judges, prosecutors, and their immediate family members.
- Participants in state address confidentiality programs.
- Witnesses in criminal cases and individuals under active threat assessments.
- Intelligence community personnel and certain federal employees.

Protected voters are fully registered, eligible, and entitled to vote, and many do. Their participation in elections is recorded internally by election officials. However, their records are either entirely suppressed from public voter file releases, or their addresses are replaced with a substitute address (typically a post office box or government building), making it impossible to match them to their actual voting precinct.

This creates a systematic, undisclosed gap between the public voter file and the true universe of registered voters. Comparing the public file to the total ballot count will cause you to find a discrepancy, but you have no way to determine what portion of that discrepancy is attributable to protected voters rather than data errors or other anomalies.

Compounding this problem is that most states treat even the total number of protected voters as confidential. The public cannot obtain even the aggregate count of protected registrations in a jurisdiction, let alone their participation rate. This makes it impossible to quantify the expected gap in the data, forcing you to either acknowledge an unknown variable or ignore it, neither of which is satisfactory from an analytical standpoint.

2.2 Provisional Ballot Complexity

Provisional ballots are cast when a voter's eligibility cannot be confirmed at the polling place at the time of voting. Federal law requires that all jurisdictions offer provisional ballots in federal elections; state law governs the procedures for casting, reviewing, and counting them.

Provisional ballots introduce multiple reconciliation problems:

Timing

Provisional ballots are cast on Election Day but reviewed and counted over a period of days or weeks afterward. The counting deadline varies significantly by state, some states count provisionals within 7 days; others allow far more days for processing. This means that the official ballot count changes substantially after election night and may not be finalized until weeks later.

Partial Counting

Not all provisional ballots are counted in full. A provisional voter who is registered but cast their ballot in the wrong precinct may have some races counted and others not, depending on state

law. This creates a situation where a single ballot contributes fractionally to the ballot count in ways that do not map cleanly to the voter participation record.

Geographic Attribution

In some states, provisional ballots from multiple precincts are processed centrally rather than at the precinct level. This means that precinct-level ballot counts and precinct-level participation files will always show a discrepancy, even if the county-level totals reconcile correctly. Analyzing data at the precinct level, the most granular and useful unit of analysis, will encounter structural mismatches that cannot be resolved with publicly available data.

Participation Record Timing

In many jurisdictions, a provisional voter's participation is not recorded in the voter history file until after the provisional ballot review is complete and a determination is made. This means that in the days or weeks between Election Day and provisional ballot adjudication, the participation file is incomplete, and even after adjudication, voters whose ballots were rejected may or may not appear in the file, depending on state practice.

2.3 Mail and Absentee Ballot Processing

The expansion of mail voting in recent election cycles has substantially increased the complexity of ballot-to-voter reconciliation. Mail ballot programs involve multiple distinct administrative steps, each of which may be recorded in separate databases that do not synchronize in real time:

- Ballot request or automatic issuance (for states with universal mail voting).
- Ballot printing and mailing, which may occur weeks before Election Day.
- Ballot receipt by the voter.
- Ballot return by the voter, which may occur before, on, or after Election Day depending on state law.
- Ballot receipt by the election office.
- Signature verification and envelope processing.
- Ballot curing (the process by which voters correct defects in their envelope or signature), which may occur days after receipt.
- Tabulation, which in some states cannot begin until Election Day or even after polls close.

Different states record voter participation at different points in this process, some at the time of ballot issuance, some at receipt of the returned ballot, some only at the time of tabulation. This means that the timing of when a mail voter appears in the participation file is not standardized, making cross-state comparisons unreliable.

Additionally, ballots returned after Election Day (permitted in many states if postmarked by Election Day) are tabulated on a rolling basis for days after the election, causing the official ballot count to continue changing well after election night. In some states, the final certified ballot count is not available until three or four weeks after Election Day.

2.4 Canvass Certification Timing and the Moving Target Problem

The official certification of election results, the formal legal determination of the final vote count, occurs at different times in different states, ranging from approximately one week to over a month after Election Day. During the period between Election Day and certification, the ballot count, the participation file, and even the voter list are all subject to change.

This creates a moving target problem for reconciliation analysis. Someone who downloads data at any given point during the canvass period will be comparing figures that are each at different stages of finalization. There is no defined point at which all three data elements (total ballots, participation file, and voter roll) are simultaneously finalized and publicly available.

In some states, the certified results are never made available in machine-readable format; they exist only as PDF reports or paper filings. In others, the machine-readable data is available but lacks the detail needed for reconciliation (e.g., race-level totals but no total ballot count, or county-level aggregates but no precinct-level breakdown).

Section 3: Interstate Inconsistency in Election Reporting

The absence of a federal reporting standard for election data means that anyone attempting to apply consistent methodology across states must essentially construct a different data model for each jurisdiction. The table below summarizes key reporting dimensions and the variance observed across states:

Reporting Element	Better-Practice States	Common Gaps / Deficiencies
Total ballots cast	Reported as certified figure	Implied by top-of-ticket race only
Precinct participation file	Released publicly post-election	Not released or aggregate only
Mail ballot tracking	Ad-hoc public data	Delayed or not public
Provisional ballot outcomes	Reported by reason code	Accepted/rejected totals only
Voter history timestamp	Date of check-in recorded	Only election recorded
Protected voter count	Aggregate count disclosed	Count withheld entirely
Canvass certification	7–10 days post-election	20–30+ days post-election
Election Day list snapshot	Certified snapshot archived	No snapshot preserved

Beyond these specific dimensions, there are broader structural differences in how states organize and report their election data:

3.1 Results Reporting: Votes vs. Ballots

Perhaps the most consequential state-by-state inconsistency is whether states report total ballots cast as a distinct certified figure. Some states include a "total ballots cast" line in their certified

canvass reports, which can be compared directly to the voter participation file. Others report only vote totals by race, leaving no direct way to determine the total number of ballots cast.

In states that report only race totals, the convention in election analysis is to use the top-of-ticket race (typically President or Governor) as a proxy for total ballots, on the assumption that undervote rates in high-profile races are low. While this assumption holds reasonably well for presidential races in presidential election years, it fails significantly in:

- Off-year and midterm elections, where there may be no statewide top-of-ticket race in some jurisdictions.
- Special elections, where a single down-ballot race may appear on an otherwise blank ballot.
- Jurisdictions with high rates of ballot rolloff (undervoting in down-ballot races), which correlates with lower voter education and engagement.
- Any analysis focused on down-ballot races, where the researcher cannot assume the top-of-ticket figure is a reliable denominator.

3.2 Precinct-Level Data Availability

Precinct-level data is the most analytically valuable unit for election analysis because it allows for geographic correlation, outlier detection, and comparison of voter demographics to participation patterns. However, the availability of precinct-level data varies dramatically by state:

- Some states publish precinct-level results and precinct-level voter participation files, enabling close to full reconciliation analysis at the local level.
- Others publish precinct-level results but not participation files, making it possible to examine vote distributions but not to verify participation counts.
- Others publish only county-level or statewide aggregates, making precinct-level analysis entirely impossible from public data.
- A significant number of states provide precinct-level data in inconsistent formats across counties within the same state, due to each county operating its own election management system.

The absence of precinct-level data is a serious structural barrier to public oversight of elections at the most meaningful geographic scale.

3.3 Election Management System Fragmentation

Elections are administered not only at the state level but in many states at the county or even municipal level, with each local jurisdiction potentially operating its own election management system (EMS). Different EMS platforms export data in different formats, use different field names for the same data elements, and apply different business logic to edge cases (such as how to record a voter who requested a mail ballot, received it, but then voted in person on Election Day).

This fragmentation means that even within a single state, the data produced by 50 or 100 different counties may be materially inconsistent, requiring significant cleaning and normalization before any statewide analysis is possible. Researchers and journalists who undertake this normalization work typically do so independently, without shared standards, producing results that are not directly comparable to each other.

Section 4: VRF Research Findings - The TBC/RVBC Reconciliation Gap

The structural problems identified in the preceding sections are not theoretical. The Voter Reference Foundation performed comparative analysis in 2020 and has been analyzing 2024. We have attempted to perform exactly the ballot-to-voter reconciliation that current systems make so difficult, and the results confirm the scope of the problem in concrete terms. This section describes that research methodology, summarizes the findings, and frames their significance for the broader conversation about election data transparency and public trust.

4.1 Research Methodology

The research underlying this section employed a three-source comparative methodology. For each jurisdiction analyzed, three independent figures were identified and placed side by side:

- Total Ballots Cast (TBC): sourced from state-certified canvass reports and official election results published by each jurisdiction's secretary of state or equivalent authority.
- Registered Voters Ballots Cast (RVBC): derived from publicly available voter history files, representing the count of registered voters in the voter roll who carry a record of having cast a ballot in the target election.
- EAVS-Reported Figure: the jurisdiction's total ballots cast as reported to the U.S. Election Assistance Commission and published in the 2024 Election Administration and Voting Survey (EAVS), the federal government's primary post-election data collection system.

TBC, RVBC, and the EAVS-reported count represent what should, in a well-functioning and transparent reporting environment, be the same number or differ only within a narrow, documented, and explainable margin. The central question the research poses is straightforward: do they agree? If not, how large is the discrepancy, and can it be explained by the known sources of variance described in this report?

4.2 Findings: The Numbers Do Not Reconcile

The central finding of this research is direct: in nearly all jurisdictions analyzed, TBC, RVBC, and the EAVS-reported number do not reconcile. The three figures consistently produce different counts, and the differences do not present in a uniform manner that can be assigned to a known variable.

The observed discrepancy patterns include the following recurring themes:

- RVBC is lower than TBC in most cases, consistent with the expected impact of protected voter exclusions and provisional ballot timing gaps described in this report but the gap frequently exceeds what those known factors would reasonably explain.
- The total state level discrepancy is not the absolute discrepancy and often gives the appearance of a narrower divide. Lower-level jurisdictions offset one another (e.g. one county has a RVBC>TBC discrepancy and another has a TBC>RVBC discrepancy), and when aggregated at the state level, the offsets can cancel each other out.
- The EAVS-reported figure diverges from the state-certified canvasses in a significant number of jurisdictions, indicating that the self-reporting pipeline from local election

offices to the EAC introduces its own sources of error or inconsistency, separate from and compounding the TBC-RVBC gap.

- In some jurisdictions all three figures differ from one another simultaneously, meaning that no two of the three independent data sources agree on the total number of ballots cast in the same election, a finding that illustrates the depth of the reporting and recording problem.

It is important to note that this research does not find evidence that the discrepancies are uniform in ways that would suggest systematic manipulation. The gaps vary in size and direction across jurisdictions, and they correlate with the structural data weaknesses documented in this report, namely absence of Election Day snapshots, incomplete voter history, delayed provisional ballot recording, and inconsistent EAVS reporting. This is the signature pattern of a recording and reporting problem, not of deliberate alteration of results.

4.3 What the Research Does and Does Not Claim

It is important to be precise about what this discrepancy research establishes and what it does not. The findings are limited to one claim: that TBC, RVBC, and EAVS numbers do not agree, and that the existing infrastructure does not provide the necessary data to fully explain why.

This research does not identify, allege, or imply the existence of fraud, ballot stuffing, vote manipulation, or any other form of intentional interference with election outcomes. The data gaps documented here are fully consistent with, and in most cases directly traceable to, the administrative and reporting deficiencies described throughout this report. A discrepancy between TBC and RVBC is not evidence of fraud. It is evidence that the data systems used to administer and report elections are not designed to support the kind of external reconciliation that would allow such questions to be definitively answered.

That distinction matters and it points directly to the core problem this research is intended to highlight. A system that cannot reconcile its own outputs is a system that is structurally vulnerable to a broad spectrum of interpretation. When TBC and RVBC do not agree, and no public data exists to explain the gap, that gap becomes available for use by anyone seeking to cast doubt on the legitimacy of an election's outcome. The absence of an explanation is not the same as evidence of wrongdoing, but in a low-trust environment, the lack of an explanation can, and will, be treated as if it were.

4.4 The Trust and Participation Dimension

The case for fixing the reconciliation problem is ultimately a case about the health of our electoral system, not just proper record keeping. Research consistently shows that perceived electoral integrity is one of the strongest predictors of voter participation. When voters believe that their vote will be accurately recorded and fairly counted, they are more likely to turn out. When they believe the system lacks transparency and can be manipulated, participation declines.

The goal of this reconciliation research is therefore not to just point out problems but to show that finding problems and explaining them is possible and provides enormous value to the system. A system in which TBC and RVBC agree, the gap attributable to protected voters is publicly documented, and the EAVS figure matches the state-certified canvass is a system that is harder to attack, easier to defend, and more likely to be trusted by the electorate it serves. That trust, in turn, translates into participation. Reconciliation is not the work of suspicion; it is the work of accountability.

The goal of trying to reconcile election data is not to cast doubt on outcomes, it is to demonstrate that the work of verification is both possible and worthwhile. A system that can be reconciled is a system that can be trusted. A system that can be trusted is a system that people want to participate in.

Section 5: Policy Recommendations

The problems identified in this report are real, but don't have to be intractable. The following recommendations are organized by the level of action required; administrative, state legislative, and federal and by their likely impact and feasibility. The table below provides a summary overview, followed by detailed analysis of each recommendation.

Tier	Recommendation	Description	Path
Tier 1: Administrative	Election Day Roll Snapshot	Certified, timestamped voter roll export at close of polls; archived and publicly released after canvass	No legislation needed
Tier 1: Administrative	Standardized Ballot Count Line	Total ballots cast reported as a distinct certified figure, separate from any race total	No legislation needed
Tier 1: Administrative	Protected Voter Aggregate Count	Disclose aggregate count of confidential voters who participated, without identifying information	No legislation needed
Tier 2: State Legislation	Voter History Timestamp Standard	Mandate that participation records include: specific date, voting method, and tabulation status	State legislative action
Tier 2: State Legislation	Certified Pollbook Release	Require release of certified post-canvass pollbook within 60 days of certification	State legislative action
Tier 2: State Legislation	Provisional Ballot Granularity	Report outcomes by reason code at precinct-level for full reconciliation coverage	State legislative action
Tier 3: Federal	EAC Reporting Standard	Direct the EAC to develop and enforce a uniform election data reporting schema for all states	Federal legislation / HAVA amendment
Tier 3: Federal	HAVA Reconciliation Requirement	Amend HAVA to condition formula funding on demonstrated internal ballot-to-voter reconciliation	Federal legislation / HAVA amendment
Tier 3: Federal	Audit Data Mandate	Federal RLA standard requiring machine-readable release of audit data enabling independent verification	Federal legislation / HAVA amendment

5.1 Tier 1: Administrative Reforms (No Legislation Required)

These reforms can be implemented by state election officials under existing statutory authority. They require administrative will and budget, but not legislative action.

5.1.1 Election Day Voter Roll Snapshot

State and county election offices should be required, by administrative rule or executive order, to create a certified, timestamped, read-only export of the voter registration database as it exists at the close of polls on Election Day. This snapshot should be:

- Generated automatically by the voter registration system at a defined time (e.g. 6:00 AM local time on Election Day, or at the moment polls close for jurisdictions allowing same day registration).
- Cryptographically hashed to ensure its integrity and allow later verification that it has not been modified.
- Archived in a secure, non-modifiable storage format by the state or county election office.
- Made publicly available, with protected voter records excluded and the exclusion documented, within a defined window after certification of the canvass (e.g. within 30 days).

This single reform would address the most fundamental barrier VRF has encountered in our reconciliation analysis: the absence of a baseline denominator. It is technically straightforward for any jurisdiction using a modern voter registration system, as it requires only a scheduled database export rather than any modification to the system's core functionality.

5.1.2 Standardized Total Ballots Cast Reporting

All jurisdictions should be required to report total ballots cast as a distinct, separately certified figure in their canvass reports separate from any individual race total. This number should include all ballots that were submitted and accepted, including ballots that were entirely blank, ballots with write-in candidates only, and ballots on which only some races were voted.

This requirement does not change how votes are counted; it simply requires that the count of ballots be maintained and reported separately from the count of votes in each race. All modern election management systems already track this internally; the change requires only that it be included in certified public reports.

5.1.3 Protected Voter Aggregate Count Disclosure

While the individual records of protected voters must remain confidential, election officials should disclose the aggregate count of protected voters who participated in each election. This would allow someone to determine the expected discrepancy between the public voter file and the total participation count, creating a bounded and known variable.

This disclosure would not reveal the identity or location of any protected individual. It would simply inform the public that, for example, in a county with 200,000 total ballots cast, 450 of those ballots were cast by registered voters whose records are excluded from the public file.

5.2 Tier 2: State Legislative Reforms

These reforms require action by state legislatures but do not implicate federal constitutional issues or require interstate coordination. They represent appropriate targets for election reform policy at the state level.

5.2.1 Voter History Timestamp Standardization

State law should require that voter history records (the record of which elections each voter has participated in) include the following data elements for each election:

- The specific date on which the voter cast their ballot (not merely the election).
- The method of voting (in-person on Election Day, early in-person, mail/absentee, or provisional).
- A flag indicating whether the ballot was ultimately counted in full, partially counted, or rejected (for provisional and challenged ballots).

Current voter history records in many states record only the election (e.g. "2024 General Election"), which is barely sufficient for reconciliation purposes. Knowing that a voter participated in the 2024 General Election does not indicate whether they voted in-person on November 5, returned a mail ballot on October 20, or cast a provisional ballot that was later rejected.

5.2.2 Certified Pollbook Release Requirement

State law should require election officials to release a certified, post-canvass pollbook (a list of all voters who were recorded as having cast a ballot) as a public record within a defined window after certification (30-60 days is a reasonable standard). This document is distinct from the voter roll (which records all registered voters) and from voter history (which is a running cumulative record). It is a transaction-level record of participation in a specific election.

The certified pollbook should contain sufficient identifying information to allow matching against the voter roll or voter history (e.g. voter ID number), but does not need to contain personal identifying information like home address or date of birth.

5.2.3 Provisional Ballot Granular Reporting

State law should require that provisional ballot outcomes be reported at the precinct-level, broken down by reason code (e.g., voter not found in rolls, wrong precinct, no ID presented, or ballot request already recorded). This granularity is essential for anyone attempting to reconcile precinct-level participation files, as it allows provisional ballot discrepancies to be attributed to specific administrative categories rather than appearing as unexplained gaps.

5.3 Tier 3: Federal Reforms

These reforms would have the broadest impact but face the most significant political and constitutional obstacles. They are included here as long-term targets rather than near-term achievable reforms.

5.3.1 EAC Uniform Election Data Reporting Standard

Congress could direct the Election Assistance Commission (EAC) to develop and enforce a uniform election data reporting schema for all states participating in federal elections. This would function similar to how the Federal Election Commission standardizes campaign finance data

reporting. The federal government does not control how states run their elections, but it can require that data about federal elections be reported in a consistent, machine-readable format.

Such a standard would specify: the format and contents of precinct-level results files; the required data elements in certified canvass reports (including total ballots cast); the format and timing of voter participation file releases; and the minimum data elements required in public voter roll distributions. States that fail to comply with the standard could be ineligible to receive certain categories of federal election administration funding.

5.3.2 HAVA Amendment - Internal Reconciliation Requirement

An amendment to the Help America Vote Act could require states to demonstrate internal reconciliation: specifically, a documented comparison of Total Ballots Cast (TBC) against Registered Voters Ballots Cast (RVBC), with any discrepancy above a defined threshold explained and publicly reported as a condition of receiving HAVA formula funding. This would create a financial incentive for states to develop the administrative systems necessary for reconciliation, without mandating any specific approach.

5.3.3 Mandatory Audit Data Release

Federal standards for post-election risk-limiting audits (RLAs) exist in several states but are not nationally required. A federal mandate requiring the release of RLA data, including the specific ballots sampled, the reported outcomes, and the statistical results all in a machine-readable format would allow independent verification of election outcomes and provide additional data for reconciliation analysis.

Section 6: Framing and Analytical Considerations

6.1 Distinguishing Transparency Failures from Fraud Claims

It is essential that this analysis be clearly distinguished from claims of widespread election fraud. The problems documented in this report are problems of data availability and standardization, not necessarily problems of intentional manipulation. There is not enough evidence that a jurisdiction that does not preserve an Election Day voter roll snapshot is engaged in any wrongdoing; it is likely just operating under practices designed for internal efficiency instead of external verification.

This distinction matters for two reasons. First, it is analytically accurate: the documented gaps in election data exist across jurisdictions of all political compositions and likely arise from administrative resource constraints, not from deliberate concealment. Second, it is strategically important: analyses that conflate data transparency failures with fraud allegations are easily dismissed as partisan, undermining the legitimate case for reform.

That being said, if there are officials who openly oppose even considering the suggestions outlined in this report, these good-faith presumptions should be considered null. The benefit of the doubt, and the onus to address these concerns are in the hands of the administrators.

The argument for the reforms proposed in this report is fundamentally nonpartisan: transparent, verifiable election administration is a public good that benefits all participants in the democratic process, regardless of party affiliation. No party or candidate benefits from election results that cannot be independently verified, nor should they benefit from a lack of transparency.

6.2 Limitations of Current Analytical Approaches

Anyone working in this space should be aware of several common methodology pitfalls:

- Using top-of-ticket vote totals as a proxy for total ballots cast introduces systematic error, particularly in jurisdictions with high undervote rates.
- Comparing voter history counts to ballot counts without accounting for protected voters, provisional rejections, and processing timing will produce apparent discrepancies that are entirely explained by data architecture rather than any irregularity.
- Precinct-level comparisons can be particularly susceptible to apparent discrepancies arising from split precincts, precinct boundary changes between elections, and the central processing of provisional or mail ballots.

6.3 The Role of Independent Analysis

The reforms proposed in this report would enable, but not replace, independent analysis of election data. Even with improved data availability, meaningful reconciliation analysis requires significant expertise, careful attention to data quality, and rigorous documentation of methodology. The election research community, including academic researchers, nonpartisan election integrity organizations, and investigative journalists, all play an essential role in performing this analysis and translating its findings for public audiences.

One practical implication of the current data environment is that analysts should document, in detail, every assumption they make to bridge data gaps. When a protected voter count is unknown, that should be stated explicitly. When a voter roll snapshot is unavailable and a post-election roll is used instead, the implications of that substitution should be disclosed. Methodological transparency is essential when the underlying data suffers from all the limitations outlined in this document.

Conclusion

American elections are among the most scrutinized and documented in the world. Yet the data produced by those elections is, in most jurisdictions, insufficient to support the basic analytical verification that citizens, researchers, and policymakers have a legitimate interest in performing.

The specific problem examined in this report, the impossibility of reliable ballot-to-voter reconciliation, is a consequence of cumulative administrative decisions made over decades, not the result of any single policy failure. Voter rolls were designed as operational tools, not evidentiary records. Election result reporting was designed for certification and publication, not for standardized analysis. Voter participation files were designed for internal use, not for public accountability.

The reforms proposed here do not require a fundamental restructuring of American election administration. They require only that data which already exists, or which could be created with minimal additional effort, be preserved, standardized, and made available to the public in forms that enable meaningful verification. This is a modest ask in service of a foundational democratic principle: that the results of elections should be verifiable by those who participate in them.

The goal is not to create new mechanisms for challenging election results, but to create the conditions under which election results are genuinely above challenge, not because challenges are legally unavailable, but because the data to sustain them, or to refute them, is fully and transparently available to all. Trust, but verify.

Appendix: Key Terms and Definitions

Ballot: The physical or electronic document submitted by a voter, containing all races and questions presented to that voter based on their registration address and polling precinct. A single ballot may contain races from multiple levels of government.

Ballots Cast: The total number of ballots submitted and accepted in an election. Includes ballots on which a voter made no selections in one or more races (undervotes), and ballots on which only a write-in vote was cast. Does not typically include spoiled or rejected provisional ballots.

Total Ballots Cast (TBC): The certified count of all ballots submitted and accepted in a given election, reported as a single aggregate figure distinct from any individual race total. TBC includes ballots containing undervotes in one or more races and ballots with write-in selections only. TBC is the primary denominator used in ballot-to-voter reconciliation analysis and should not be inferred from top-of-ticket vote totals, which systematically undercount due to undervoting.

Canvass: The official post-election process by which an election authority reviews, verifies, and certifies the election results. The canvass includes review of provisional ballots, resolution of questionable ballots, and reconciliation of machine counts against manual tallies where required.

Confidential/Protected Voter: A registered voter whose record is withheld from public voter file releases due to safety or security concerns. Categories vary by state but typically include domestic violence survivors, law enforcement personnel, and participants in state address confidentiality programs.

Pollbook: The record maintained at a polling place of all voters who checked in and received a ballot on Election Day. In a post-election context, the "certified pollbook" refers to the complete list of all voters recorded as having cast a ballot in a given election, after all provisional and mail ballot adjudications are complete.

Provisional Ballot: A ballot cast by a voter whose eligibility cannot be confirmed at the time of voting. Provisional ballots are held separately and reviewed after Election Day, with some or all races counted depending on the determination of the voter's eligibility.

Risk-Limiting Audit (RLA): A post-election audit methodology that uses statistical sampling to determine, with a specified level of confidence, that the reported election outcome is correct. RLAs require the release of detailed audit data to allow independent verification.

Undervote: A voter's choice not to make a selection in a particular race on a ballot. Undervotes are distinct from overvotes (where a voter makes too many selections, invalidating that race) and from blank ballots (where a voter makes no selections on the entire ballot). Undervotes in a given race are counted toward total ballots cast but not toward vote totals in that race.

Voter History File: A database record, typically maintained by state or county election authorities, documenting which elections each registered voter has participated in. The level of detail in voter history records varies significantly by state.

Voter Registration Roll / Voter File: The master database of all individuals registered to vote in a jurisdiction. Public voter files are versions of this database with certain information redacted (e.g., Social Security numbers, full dates of birth) that are made available to campaigns, researchers, and the public under state public records laws.

Registered Voters Ballots Cast (RVBC): The count of voters appearing in the voter registration roll who have a documented record of casting a ballot in a specific election, as derived from the certified pollbook or voter participation file. RVBC represents the voter-side denominator in ballot-to-voter reconciliation: the number of identifiable registered voters for whom a participation record exists. Because publicly available voter files exclude confidential and protected registrants, the publicly computable RVBC will always be lower than the true participation count by an amount equal to the number of protected voters who voted. A meaningful reconciliation requires that TBC and RVBC be compared against a frozen Election Day voter roll snapshot, with any gap attributable to protected voters disclosed in aggregate.